



## منظمة الطيران المدني الدولي

---

فريق الخبراء المعني بالبضائع الخطرة

الاجتماع الخامس والعشرون

مونتريال، 2015/10/19 إلى 2015/10/30

### ملف التقرير

لم تنظر لجنة الملاحة الجوية في المادة الواردة في هذا التقرير. وينبغي اعتبار الآراء المعرب عنها فيه بوصفها مشورة مقدمة من فريق من الخبراء تابع للجنة الملاحة الجوية، وأنها لا تمثل آراء المنظمة. وبعد أن تنظر لجنة الملاحة الجوية في هذا التقرير، سوف تصدر إضافة له تتضمن الإجراءات التي اتخذتها لجنة الملاحة الجوية في هذا الشأن.

الاجتماع الخامس والعشرون  
فريق خبراء البضائع الخطرة (2015)

كتاب إحالة

إلى: رئيس لجنة الملاحة الجوية

من: رئيسة فريق خبراء البضائع الخطرة (2015)

أشرف بتقديم تقرير الاجتماع الخامس والعشرين لفريق خبراء البضائع الخطرة  
الذي عقد في مونتريال من 19 إلى 2015/10/30.



ميشلين بيكيت

رئيسة فريق خبراء البضائع الخطرة



## جدول المحتويات

### الصفحة

### الخلفية التاريخية للاجتماع

ii-1	1- مدة الاجتماع.....
ii-1	2- الحضور .....
ii-3	3- المسؤولون والأمانة.....
ii-4	4- جدول أعمال الاجتماع.....
ii-4	5- ترتيبات العمل.....
ii-5	6- الملاحظات الافتتاحية من جانب رئيس لجنة الملاحة الجوية.....

### تقرير الاجتماع

1-1	البند 1 من جدول الأعمال: وضع مقترحات، إذا دعت الضرورة إلى ذلك، بإجراء تعديلات على الملحق الثامن عشر — النقل الآمن للبضائع الخطرة بطريق الجو .....
2-1	البند 2 من جدول الأعمال: إعداد توصيات لإجراء تعديلات على التعليمات الفنية للنقل الآمن للبضائع الخطرة بطريق الجو (الوثيقة (Doc 9284)) لإدراجها في طبعة 2017-2018.....
3-1	البند 3 من جدول الأعمال: إعداد توصيات لتعديل الإضافة إلى التعليمات الفنية للنقل الآمن للبضائع الخطرة بطريق الجو (الوثيقة (Doc 9284 SU)) لإدراجها في طبعة 2017-2018.....
4-1	البند 4 من جدول الأعمال: إعداد توصيات لتعديل وثيقة إرشادات التعامل مع حالات الطوارئ المرتبطة بحوادث الطائرات الناتجة عن البضائع الخطرة (Doc 9481) لإدراجها في طبعة 2017-2018.....
5-1	البند 5 من جدول الأعمال: وضع استراتيجية شاملة للتخفيف من المخاطر المرتبطة بنقل بطاريات الليثيوم بما في ذلك وضع معايير للتغليف قائمة على الأداء وجهود لتيسير الامتثال.....
6-1	البند 6 من جدول الأعمال: القيام، إن أمكن، ببحث بنود الأعمال غير المتكررة التي حدتها لجنة الملاحة الجوية أو فريق الخبراء:.....
6-1	1-6: إعداد إطار عالمي لتبادل المعلومات بشأن الحوادث والوقائع المرتبطة بالبضائع الخطرة.....
6-3	2-6: إعداد أحكام للتدريب القائم على الكفاءة فيما يتعلّق بالبضائع الخطرة.....
6-6	3-6: إعداد مواد إرشادية بشأن مواجهة الاستخدام المحتمل للبضائع الخطرة في أفعال التدخل غير المشروع.....
6-7	4-6: النظر في إجراءات انتقالية لإدخال تعديلات على التعليمات الفنية.....
7-1	البند 7 من جدول الأعمال: الأعمال الأخرى .....

## الصفحة

## قائمة التوصيات\*

1-2	تعديل شروط العزل للمواد السامة والمعدية الواردة في الملحق 18 .....	1/1	التوصيات بشأن
	تعديل التعليمات الفنية للنقل الآمن للبضائع الخطرة بطريق الجو (Doc 9284) لإدراجها في طبعة 2017-2018 .....	1/2	القواعد القياسية والتوصيات والإجراءات
2-14	تعديل التعليمات الفنية للنقل الآمن للبضائع الخطرة بطريق الجو (Doc 9284) لإدراجها في طبعة 2015-2016 .....	2/2	
2-14	تعديل الإضافة للتعليمات الفنية للنقل الآمن للبضائع الخطرة بطريق الجو (Doc 9284SU) لإدراجها في طبعة 2017-2018 .....	1/3	
3-3	تعديل وثيقة إرشادات التعامل مع حالات الطوارئ المرتبطة بحوادث الطائرات الناتجة عن البضائع الخطرة (Doc 9481) لإدراجها في طبعة 2017-2018 .....	1/4	
4-1	وضع قواعد قياسية للتغليف القائم على الأداء للنقل الآمن للبطاريات الليثيوم كبضائع بطريق الجو .....	1/5	
5-16	وضع مواد إرشادية للمشغلين والمنظمين حول كيفية إجراء تقييم مخاطر السلامة المرتبطة بنقل بطاريات الليثيوم بطريق الجو .....	2/5	
5-16	تعديل أحكام بطاريات الليثيوم في التعليمات الفنية للنقل الآمن للبضائع الخطرة بطريق الجو (Doc 9284) لإدراجها في طبعة 2017-2018 .....	3/5	
5-16	تعديل أحكام بطاريات الليثيوم في التعليمات الفنية للنقل الآمن للبضائع الخطرة بطريق الجو (Doc 9284) لإدراجها في طبعة 2015-2016 لمعالجة الشواغل العاجلة في مجال السلامة .....	4/5	
5-16	تعديل أحكام بطاريات الليثيوم في التعليمات الفنية للنقل الآمن للبضائع الخطرة بطريق الجو (Doc 9284) لإدراجها في طبعة 2015-2016 لمعالجة الشواغل العاجلة في مجال السلامة .....	4/5	
5-16	تعديل وثيقة التعليمات الفنية للنقل الآمن للبضائع الخطرة بطريق الجو (Doc 9284) لإدراجها في طبعة 2017-2018 بحيث تتضمن أحكام التدريب القائم على الكفاءة .....	1/6	
6-5			

\* التوصيات التي ترد إلى جانبها عبارة "التوصيات بشأن القواعد القياسية والتوصيات والإجراءات" تخص اقتراحات بتعديل القواعد والتوصيات الدولية وإجراءات خدمات الملاحة الجوية والمواد الإرشادية الواردة في ملحق من الملاحق.

## الاجتماع الخامس والعشرون لفريق خبراء البضائع الخطرة

مونتريال، من 19 إلى 2015/10/30

### الخلفية التاريخية للاجتماع

#### 1- مدة الاجتماع

1-1 افتتح السيد فريد زيزي، رئيس لجنة الملاحة الجوية، الاجتماع الخامس والعشرين لفريق خبراء البضائع الخطرة في مونتريال في الساعة العاشرة صباحاً، يوم 2015/10/19. وانتهى الاجتماع في يوم 2015/10/30.

#### 2- الحضور

1-2 حضر الاجتماع أعضاء ومراقبين رشحتهم 22 دولة متعاقدة وخمس منظمات دولية، فضلا عن عدد من المستشارين وآخرين على النحو الوارد أدناه.

الأعضاء	المستشارون	جهة الترشيح
ب. فيركينز	أستراليا	أستراليا
ب. كرارا	ه. غيديس	البرازيل
م. باكيت	د. إيفانز ت. هوارد ب. جانو	كندا
ق. زو	ج. أبوتشار س. تشان ي. لي ز. كيو	الصين
ب. تاتين	م. بلاسارت	فرنسا
ه. بروكهاوس	يو. وينكي	ألمانيا
ب. بريفييرا	س. كاروني أ. بيلاس م. تورتيوسي	إيطاليا

الأعضاء	المستشارون	جهة الترشيح
هـ. ساغيموتو	أ. أوانو ي. فوناي ن. إيكي ك. مائدا إ. أوهارا س. يابي ك. ياناغاوا	اليابان
ت. موللر	د. كاميمان س. فان زيغل ك. فيرميرتس	هولندا
س-وون بارك	ج. كي-وونغ	جمهورية كوريا
د. ميركو	د. كوردتشكو إ. ماناكوف	الاتحاد الروسي
ب. روس		إسبانيا
هـ. المهيري	ك. البلوشي ب. بلاسبرامانيان أ. وجيه	الإمارات العربية المتحدة
ر. ماكلاتشان	د. وarden	المملكة المتحدة
أ. ستيلفيلد	ج. غاردين م. غيفينز ر. هيل س. كيلبي ج. ماكلفلين ر. ميدل د. بفتد هـ. ويستر	الولايات المتحدة
د. برينان	ب. أوبنهايمر د. تيندلي	اتحاد النقل الجوي الدولي
ب. روهريخ	د. فيرغسون	المجلس التنسيقي الدولي لاتحادات صناعات الطيران والفضاء
م. روجرز	س. شوارتز	الاتحاد الدولي لرابطات طياري الخطوط الجوية

		المستشارون
المجلس الاستشاري المعني بالبضائع الخطرة	أ. ألتيموس ج. ليتش	ن. ماكلوتش
منظمة الصحة العالمية		م. سامان
		المراقبون
النمسا		م. بويهم
جزر البهاما		ف. كارول
الدانمرك		ج. دبليو بنغتون
ناميبيا		س. شيكونغو س. غوندو
سنغافورة		ن. لوم
جنوب أفريقيا		ت. زيمبي ل. غيكي
سويسرا		ن. هاغمان
رابطة المعنيين بالبطاريات القابلة لإعادة الشحن (PRBA)		ج. كريشنر
إعادة الشحن – الرابطة الأوروبية للمعنيين بالبطاريات المتطورة القابلة لإعادة الشحن المعهد النووي العالمي للنقل (WTNI)		س. تشانسون بونارديل أزاريللي
وكالة السلامة الجوية الأوروبية (EASA)		ل. كاليجا-بارسينا
رابطة شركات البريد السريع العالمية (GEA)		ر. ماكلياند أ. ماكلوتش م. بتزينغر ج. وايات

### 3- المسؤولين والأمانة

- 1-3 انتُخبت السيدة ميشلين باكيت (كندا) رئيسة للاجتماع كما انتُخب السيد بن فيركينز (أستراليا) نائباً للرئيس.
- 2-3 وتولت مهام أمانة الاجتماع الدكتورة كاثرين روني، رئيسة قسم سلامة البضائع، وساعدتها في ذلك الدكتورة روز-ماري هفتبرغر والسيدة لين ماكغوين المسؤولتان الفئيتان من القسم ذاته.

**4- جدول أعمال الاجتماع**

- 1-4 أقرت لجنة الملاحه الجوية في 2015/6/5 جدول أعمال الاجتماع الوارد أدناه:
- البند 1 من جدول الأعمال: وضع مقترحات، إذا دعت الضرورة إلى ذلك، بإجراء تعديلات على الملحق الثامن عشر — النقل الآمن للبضائع الخطرة بطريق الجو
- البند 2 من جدول الأعمال: إعداد توصيات لإجراء تعديلات على التعليمات الفنية للنقل الآمن للبضائع الخطرة بطريق الجو (الوثيقة (Doc 9284)) لإدراجها في طبعة 2017-2018
- البند 3 من جدول الأعمال: إعداد توصيات لتعديل الإضافة إلى التعليمات الفنية للنقل الآمن للبضائع الخطرة بطريق الجو (الوثيقة (Doc 9284 SU)) لإدراجها في طبعة 2017-2018
- البند 4 من جدول الأعمال: إعداد توصيات لتعديل وثيقة إرشادات التعامل مع حالات الطوارئ المرتبطة بحوادث الطائرات الناتجة عن البضائع الخطرة (Doc 9481) لإدراجها في طبعة 2017-2018
- البند 5 من جدول الأعمال: وضع استراتيجية شاملة للتخفيف من المخاطر المرتبطة بنقل بطاريات الليثيوم بما في ذلك وضع معايير للتغليف قائمة على الأداء وجهود لتيسير الامتثال
- البند 6 من جدول الأعمال: القيام، إن أمكن، ببحث بنود الأعمال غير المتكررة التي حدّتها لجنة الملاحه الجوية أو فريق الخبراء:
- 1-6: إعداد إطار عالمي لتبادل المعلومات بشأن الحوادث والوقائع الناجمة عن البضائع الخطرة
- 2-6: إعداد أحكام للتدريب القائم على الكفاءة فيما يتعلّق بالبضائع الخطرة
- 3-6: إعداد مواد إرشادية بشأن مواجهة الاستخدام المحتمل للبضائع الخطرة في أفعال التدخل غير المشروع
- 4-6: النظر في إجراءات انتقالية لإدخال تعديلات على التعليمات الفنية
- البند 7 من جدول الأعمال: الأعمال الأخرى

**5- ترتيبات العمل**

- 1-5 عقد فريق الخبراء اجتماعه في شكل هيئة واحدة، وشكل أفرقة خاصة للصياغة حسب الحاجة. وأُجريت المناقشات في الاجتماع الرئيسي باللغات العربية والصينية والإنجليزية والفرنسية والروسية والإسبانية. وقُدمت بعض ورقات العمل باللغة الانجليزية فقط. وصدر التقرير باللغات العربية (السرد فقط) والصينية والإنجليزية والفرنسية والروسية والإسبانية.

## 6- الملاحظات الافتتاحية من جانب رئيس لجنة الملاحة الجوية

1-6 رحب الرئيس بأعضاء فريق خبراء البضائع الخطرة في مونتريال وفي مقر الايكاو. وأشار إلى انفراد الفريق بأن اجتماعاته الرسمية تستمر على مدى أسبوعين خلافاً لكل أفرقة الخبراء الأخرى التابعة للجنة الملاحة الجوية، التي عادة ما تجتمع رسمياً لمدة أسبوع واحد. وأعرب عن أمله في أن يهيئ هذان الأسبوعان بيئة مواتية لتطوير علاقات طيبة من شأنها أن تساعد على تعزيز المناقشات التي يعرف أنها ستتطرق إلى بعض القضايا المثيرة للجدل. واعترف بأن جدول أعمال الاجتماع كان مزدحماً، كما أشار إلى أن الأسبوع الثاني من الاجتماع سيخصص أساساً لمناقشات حول الشأن المعني ببطاريات الليثيوم.

2-6 وذكر أنه منذ الاجتماع الرابع والعشرين للفريق، طرأ عدد من التغييرات في عضوية الفريق. وأفادت أمينة الاجتماع أن السيد ماريانو غيلسومينو والسيد كريس غلاسو تركا الفريق، وحل محلهما السيد باولو بريفييتيرا المرشح من قبل إيطاليا، والسيدة أنجيلا ستيلفيلد المرشحة من قبل الولايات المتحدة. وبالإضافة إلى ذلك، كانت اللجنة قد وافقت على السيد بول روهرياخ عضواً جديداً، المرشح من قبل المجلس التنسيقي الدولي لاتحادات صناعات الطيران والقضاء. وبهذه التغييرات أصبح عدد أعضاء الفريق ثمانية عشر عضواً مرشحين من قبل خمس عشرة دولة متعاقدة وثلاث منظمات دولية. ورحب الرئيس بالأعضاء الجدد وأعرب عن تقديره لأولئك الذين تركوا الفريق.

3-6 ذكّر الرئيس المشاركين باجتماعهم الذي عقده كفريق خبراء وكان الجميع حاضرين بصفتهم الشخصية ويحملون وجهات نظر قد لا تكون وجهات النظر ذاتها لدى إدارتهم أو منظماتهم. وكان ترشيح المشاركين من قبل الحكومات أو المنظمات وقيلتهم لجنة الملاحة الجوية كخبراء بناءً على مؤهلاتهم، وعلى هذا النحو كان من المتوقع أن يعبروا عن آرائهم المهنية الخاصة. وكان القصد من هذا النهج هو تمكين المشاركين من المحاجة ارتكازاً على أرضية تقنية راسخة ولب الموضوع دون الخوض في مواقف تفاوضية. وكان نجاح اجتماع أي فريق من أفرقة خبراء الايكاو يتحدد بقدرة المشاركين على تسوية القضايا التقنية بطريقة تعاونية. وعلى الرغم من أن توافق الآراء ليس شرطاً مطلقاً، إلا أنه كان دون أي شك ضماناً للنجاح.

4-6 وأعلن الرئيس عن عقد احتفال يوم 2015/11/5 إحياءً لمناسبة انعقاد الدورة المائتين للجنة الملاحة الجوية. وأن جائزة 'والتر بناغي - لوريل' التي تمنحها لجنة الملاحة الجوية ستقدم خلال هذا الحدث إلى رئيس فريق خبراء الفصل بين الطائرات وسلامة المجال الجوي تقديراً لقيادته وإسهامه التقني في الفريق الذي ترأسه لسنوات عديدة. كما أعلن أن لجنة الملاحة الجوية قد نشرت كتيبها التذكاري الذي يوجز أعمال وإنجازات كل فريق من أفرقة الخبراء التابعة لها. وكانت هذه اللفات الطبية فرصة للجنة لتذكّر الدول بمدى أهمية العمل الذي يضطلع به خبراء اللجنة من أجل الطيران المدني الدولي.

5-6 وبالإشارة إلى المناقشات التي ستجري بشأن بطاريات الليثيوم، فقد أقر الرئيس بأن هذا الموضوع كان مثيراً للجدل لسنوات عديدة، وأنه كان هناك عدم توافق في الآراء بشأن العديد من توصيات اللجنة. كما أكد أن اللجنة تنتظر مبررات وآراء منطقية لكل ما يرد في التقرير من وجهات نظر لأقلية أو أغلبية لكي تتمكن اللجنة من وضع توصياتها بشكل شامل وملموس قبل أن تقدمها إلى المجلس.

6-6 وقد أخطر الرئيس فريق الخبراء بالموقع الإلكتروني المركزي الجديد الخاص بأفرقة الخبراء التابعة للجنة الملاحة الجوية، وأعرب عن أمله في أن يسهل هذا الموقع عمل كل فريق، وأن يشجع الأفرقة على التعاون فيما بينها. وأشار إلى أن اختصاصات فريق خبراء البضائع الخطرة التي عدّلت مؤخراً قد أصبحت متاحة على الموقع إلى جانب اختصاصات جميع أفرقة الخبراء الأخرى التابعة للجنة الملاحة الجوية. ودعا أعضاء الفريق إلى استخدام الموقع الإلكتروني وتقديم أي تعليقات تساعد على تحسينه. كما أخطر الاجتماع بأن هناك وثيقة إرشادية جديدة قيد الإعداد بشأن تطوير القواعد القياسية، وأنه قد تم توزيعها فيما بين مختلف أفرقة الخبراء لإبداء التعليقات بشأنها. وأعرب عن ثقته بأن توفر هذه الوثيقة نهجاً ثابتاً لجميع الخبراء الفنيين لاستخدامها في تطوير القواعد القياسية بشكل جيد. وأكد أنه عند تطوير قواعد وتوصيات دولية جديدة، فيتعين على الفريق أن يراعي تبعات تطبيق ذلك على الدول.

7-6 وفي إشارة إلى الاجتماع الرابع والعشرين لفريق الخبراء الذي عُقد في شهر أكتوبر 2013، ذكر الرئيس أن اللجنة قد نظرت في التقرير وأوصت بأن يعتمد المجلس جميع التوصيات التي وردت فيه. وكان المجلس قد اعتمد في يوم

2015/3/2 التعديل 12 للملحق 18 الذي دخل حيز النفاذ اعتباراً من 2015/7/13، وأصبح واجب النفاذ اعتباراً من 2015/11/12. وأقر بأن مفوضي اللجنة كان لديهم تحفظات فيما يتعلق بتوصيات فريق الخبراء المتعلقة ببطاريات الليثيوم مفادها أنه على الرغم من أن الفريق قد عالج خطر معروف تشكله بطاريات الليثيوم على طائرات الركاب، فإن المفوضين كانوا ينشرون استراتيجية أكثر شمولاً من شأنها أن تعالج المخاطر التي تشكلها جميع البطاريات على متن طائرات الركاب والبضائع على حد سواء. وشدد الرئيس على أن دافع الفريق لم يكن الحاجة إلى نقل بطاريات الليثيوم وإنما وجوب نقلها بأمان. وكانت لجنة الملاحة الجوية تبحث عن استراتيجية من شأنها أن تعالج المخاطر الحالية فضلاً عن توفيرها وسيلة منهجية للمضي قدماً. وأشار إلى أنه تشجع بالتوصيات الصادرة عن الاجتماع الدولي الثالث المتعدد التخصصات بشأن تنسيق نقل بطاريات الليثيوم فيما يتعلق بمعايير أداء التغليف، ورأى أنها وسيلة للمضي قدماً. وأقر الرئيس بالتحديات الفريدة التي كانت أمام فريق خبراء البضائع الخطرة حيث إن المخاطر المرتبطة بالبضائع تأتي من خارج نظام الطيران. وبالتالي فلن يكون بمقدور أوساط صناعة الطيران أن تعالج الشأن المتعلق ببطاريات الليثيوم بمفردها، وأنها تحتاج للمساعدة من أوساط صناعة البطاريات.

8-6 أعلن الرئيس افتتاح الاجتماع الخامس والعشرين لفريق خبراء البضائع الخطرة، وتمنى للفريق التوفيق والنجاح في عمله وطيب الإقامة في مونتريال.

-----

**البند 1:** وضع مقترحات، إذا دعت الضرورة لذلك، بإجراء تعديلات على الملحق الثامن عشر — النقل الآمن للبضائع الخطرة بطريق الجو

**1-1** تستيف المواد السامة والمعدية  
(ورقة العمل DGP/25-WP/30)

1-1-1 تسليماً بأن شروط العزل للمواد السامة والمعدية قد أزيلت من طبعة 2015-2016 من التعليمات الفنية (انظر الفقرة 1-1-7-2 من التقرير DGP/24)، فقد اتفق في الاجتماع على إجراء تعديل تبقي بإزالة القاعدة القياسية الواردة في الملحق 18 التي تشير إلى الأحكام التي تم إزالتها. وعلى أساس أن التعديل كان طفيفاً ولا يتعلق بأمر السلامة، فقد أوصى الأمين بالانتظار حتى وجود المزيد من التعديلات الموضوعية المقترح إدخالها على الملحق 18، قبل وضع المقترح أمام لجنة الملاحة الجوية لاستعراضه بشكل أولي ثم إرساله إلى الدول لتلقي تعليقاتها عليه. وهذا ما اتفق عليه.

**2-1** طلب الحصول على المشورة بشأن نطاق تطبيق أحكام الملحق الثامن عشر والتعليمات الفنية (ورقة العمل DGP/25-WP/44)

1-2-1 سواء كانت الجهات، من غير المشغلين الجويين، المشاركة عن غير علم (مثل وكلاء الشحن الذين يتناولون البضائع العامة) في مناقلة بضائع خطرة تقع ضمن نطاق الملحق 18، قد أثيرت أم لم تثر خلال المناقشات بشأن الأحكام الجديدة المعنية بالتدريب القائم على الكفاءة فيما يتعلق بالبضائع الخطرة (انظر الفقرة 1-2-6 تحت البند 6 من هذا التقرير). فقد لوحظ أن الأحكام الحالية في التعليمات الفنية قد ألزمت تحديداً وكلاء الشحن بوضع وتحديث برامج تدريب أولية ومكررة فيما يتعلق بالبضائع الخطرة، ويشمل ذلك وكلاء الشحن الذين يعملون في تجهيز البضائع أو البريد خلاف البضائع الخطرة، وذلك بموجب الجزء 1؛ 4-1-1 (و)، والجزء 1؛ 2-2-4. وفي الواقع، فلو لم يسمح الملحق 18 لوجود سلطة تنظيمية على هذه الكيانات، لكان هناك تناقض في أحكام التدريب الواردة في التعليمات الفنية يستلزم المعالجة. وقد اتفق جميع أعضاء فريق الخبراء بشدة على أن تدريب هذه الكيانات من شأنه أن يسهم في تعزيز سلسلة توريد النقل الآمن، لا سيما فيما يتعلق بالكشف عن البضائع الخطرة غير المعلنة. ومع ذلك، فقد رأى بعض أعضاء الفريق أن الهيكل الحالي للملحق 18 لا يوفر أساساً قانونياً لمعالجة موقف الموظفين الذين لا يتعاملون مع البضائع الخطرة، وبالتالي فكان الإلزام بتدريب هذه الكيانات فيما يتعلق بالبضائع الخطرة داخل دولهم غير قابل للتنفيذ من الناحية القانونية.

2-2-1 وقد أوضح مسؤول قانوني لفريق الخبراء بأنه ما إذا كان الشرط الإلزامي، الوارد في التعليمات الفنية القاضي بتدريب وكلاء الشحن غير المتعاملين مع البضائع الخطرة، قابلاً للنفاد من الناحية القانونية، اعتماداً على نطاق الملحق 18. فقد أبرز أن موقف المكتب القانوني للايكاو بشأن هذا الموضوع، كان مفاده أنه نظراً لانطباق الملحق 18 على جميع عمليات الطائرات المدنية الدولية، وعلى الكيانات المعنية بإدخال بضائع خطرة، عن علم، في نظام الطيران، وكذلك الكيانات التي حددها الملحق تندرج ضمن نطاق هذا الانطباق. فإن الملحق 18 لم يحدد وكلاء الشحن، وإنما يمكن اعتبارهم ضمن نطاق اختصاصه بمقتضى أحكام النقل السطحي الواردة في الفقرة 2-6. ولما كان حكم هذه المادة مصاغاً كتوصية، فيجب بالتالي أن يكون شرط التدريب لوكلاء الشحن غير المتعاملين مع البضائع الخطرة على نفس الغرار كتوصية. وأكد أنه على الرغم من طابع التوصية لهذا الحكم، فليس هناك ما يمنع دولة من اشتراط التدريب الإلزامي للكيانات التي تقع خارج نطاق الملحق 18.

1-2-3 وبينما كانت المشورة المقدمة من المكتب القانوني موضع تقدير، إلا أن بعض الأعضاء قد تساءلوا عما إذا كانت تلك التوصية المتعلقة بالنقل السطحي تشكل حكماً مناسباً ليرتكز عليه المكتب القانوني في تفسير نطاق التدريب المعني بالضائع الخطرة. وأشار إلى أن وكيل الشحن قد يدخل إلى النظام الجوي، عن غير علم، بضائع خطيرة قدمها الشاحن، ومن شأنه عندئذ أن يقع ضمن نطاق الملحق. وأشار المسؤول القانوني إلى النية الإجرامية وضرورة وجود عنصر التعمد. وهنا تساءل آخرون عما كان إذا الشيء ذاته ينطبق على وكلاء المناولة الأرضية، الذين لم يحدد الملحق 18، أو على مشغلي البريد المعينين، الذين لم يكونوا جزءاً من نظام نقل البضائع الخطرة. وأوضحت الأمانة العامة أن كلا الكيانين يقعان ضمن نطاق الملحق 18 بحكم المناولة الأرضية، الذي عرفه الملحق 6 وعالجه، مما يجعلهما جزءاً من نظام الطيران، كما أن مشغلي البريد المعينين قد حددهم الملحق 18 وعالج موقفهم.

1-2-4 ومع التسليم بتباين الآراء بشأن هذا الموضوع فيما بين أعضاء فريق الخبراء، فقد أشير إلى الحال سيكون هكذا أيضاً فيما بين الدول من غير أعضاء أو مراقبي الفريق. واقترح الأمين طلب الحصول من جميع الدول المتعاقدة، عبر كتاب المنظمة، على تعليقات بشأن هذا الموضوع.

1-2-5 وأثق على أنه يجب اتخاذ تدابير لتحديد جدوى تعديل الملحق 18 لتوضيح نطاقه مع ضمان تطبيقه على كيانات مثل وكلاء الشحن الذين يشاركون، عن غير علم، في مناولة البضائع الخطرة، وما إذا كان يمكن تطبيق النطاق باستمرار على جميع الدول المتعاقدة. وأعرب الفريق عن اعتقاده بأن هذه المهمة كانت تتجاوز نطاق اختصاصه، وطلب الحصول على توجيه في هذا الشأن من لجنة الملاحاة الجوية والمجلس.

### 3-1 التوصية

1-3-1 في ضوء المناقشة الأتفة الذكر، صدر عن الاجتماع التوصية التالية:

**التوصية 1/1 - تعديل شروط العزل للمواد السامة والمعدية الواردة في الملحق 18**

القواعد والتوصيات الدولية

يتعين طلب الحصول على تعليقات من الدول بشأن التعديل المقترح إدخاله على الملحق 18 فيما يتعلق بشروط العزل للمواد السامة والمعدية على النحو الوارد في المرفق بالتقرير عن هذا البند من جدول الأعمال، على أن يكون ذلك عند إعداد المزيد من التعديلات الموضوعية على الملحق 18.

-----



## المرفق

### التعديل المقترح إدخاله على الملحق 18

...

### الفصل الثامن - مسؤوليات المشغل

...

#### 7-8 الفصل والعزل

1-7-8 الطرود التي تحتوي على بضائع خطيرة قد يحدث بينها تفاعل خطر يجب عدم وضعها على الطائرة متلاصقة أو في وضع يسمح بتفاعل بينها في حالة حدوث تسرب.

2-7-8 يجب ترتيب طرود المواد المشعة على متن الطائرة بحيث تكون مفصولة عن الأشخاص والحيوانات الحية والأفلام غير المحمضة، وفقاً لأحكام التعليمات الفنية.

...

-----

البند 2 من جدول الأعمال: إعداد توصيات لإجراء تعديلات على التعليمات الفنية للنقل الآمن للبضائع الخطرة بطريق الجو (الوثيقة (Doc 9284) لإدراجها في طبعة 2017-2018)

1-2 التعديلات على الجزء 1 من التعليمات الفنية:

أحكام عامة

1-1-2 مسودة التعديلات على التعليمات الفنية بغرض مواعمتها مع

توصيات الأمم المتحدة — الجزء 1 (DGP/25-WP/11)

1-1-1-2 استعرض الاجتماع التعديلات على الجزء 1 من التعليمات الفنية كي تعكس القرارات الصادرة عن لجنة خبراء الأمم المتحدة المعنية بنقل البضائع الخطرة وبالنظام العالمي المنسق لتصنيف المواد الكيميائية ووسمها (ويشار إليها لاحقاً في التقرير، توخياً للإيجاز، باسم "لجنة الخبراء التابعة للأمم المتحدة" في دورتها السابعة (جنيف، 2014/12/12). وتعكس هذه التعديلات أيضاً الاقتراحات التي وافق عليها الفريق العامل التابع لفريق خبراء البضائع الخطرة في اجتماعه (DGP-WG/15)، مونتريال من 4/27 إلى 2015/5/1). وتم الموافقة على التعديلات.

2-1-2 الاستثناء العام الذي ينطبق على عمليات البحث والإنقاذ (DGP/25-WP/9)

1-2-1-2 أثير قيود مقترحة بالنسبة للجزء 1-5-1 (د) بشأن البضائع الخطرة المستخدمة لأغراض المعونة فيما يتصل بعمليات البحث والإنقاذ. فقد حددت الأحكام أن الاستثناء مطبق على مرحلة "أثناء الطيران"، ولكن كانت هناك بعض البضائع الخطرة اللازمة لعمليات البحث والإنقاذ ويجري استخدامها على الأرض وليس أثناء الطيران مثل أسطوانات الغطس، والمشاعل اليدوية ومعدات الإنقاذ الأخرى. كما كان هناك عدم اليقين فيما يتعلق بما إذا كان يمكن تطبيق الحكم على رحلات الطيران التدريبية التي يمكن أن تحمل البضائع الخطرة ذاتها كتلك التي يمكن أن تحملها العمليات الحية. وأشار مقدم الاقتراح إلى أنه يتعين على المشغل، في دولته، إما إزالة البضائع الخطرة من الطائرات أثناء التدريب وإما التماس الموافقة من الدولة على حمل البضائع على سبيل الاستثناء. وأعرب مقدم الاقتراح عن اعتقاده بأن كلا النهجين مغالين. ودُعِيَ فريق الخبراء إلى النظر في اقتراح تعديل من شأنه توسيع نطاق انطباق الحكم ليراعي هذه القيود.

2-2-1-2 بينما حظي الاقتراح بالتأييد من حيث المبدأ، فإن الاجتماع لم يتمكن من التوصل إلى اتفاق على الصياغة الأصلية المقترحة حيث كان هناك شاغل بأن ذلك من شأنه أن يوسع نطاق انطباق الحكم. وقد تم إعداد مقترح منقح استناداً إلى التعليقات المقدمة. وتم الاتفاق على التعديل المنقح، بيد أنه اقترح أن يستمر العمل خلال فترة السنتين المقبلتين على مواصلة تحسين الحكم بالابتعاد عن محاولات دمج قائمة موسعة من عمليات الطائرات الخاصة التي تنطبق عليها استثناءات للسماح باتباع نهج أكثر نظامية لتحديد مدى خضوع عملية طائرة خاصة تخضع لاستثناءات.

3-1-2 البند الخاص رقم A62 - دولة المنشأ (DGP/25-WP/35)

1-3-1-2 طُلب توضيح بشأن تفسير تعريف مصطلح "دولة المنشأ" وكيفية ارتباطه بالبند الخاص رقم A62 الذي خصص للإدخالات العامة للمتفجرات، غير المنصوص عليها بطريقة أخرى. وقد حدد البند الخاص A62 أن الإدخالات لا يمكن استخدامها إلا عند عدم وجود أي تسمية مناسبة أخرى في قائمة البضائع الخطرة، شريطة موافقة السلطة المختصة في دولة المنشأ. ومع التسليم بأن تعريف مصطلح "دولة المنشأ" كان الدولة التي تم منها تحميل الشحنة لأول مرة على متن طائرة، وأن تعريف الشحنة أشار إلى طرود بضائع خطرة قبلها مشغل من شاحن في أحد الأوقات في أحد العناوين لنقلها إلى مرسل إليه في أحد العناوين، وثمة تساؤل عما إذا كان هذا يعني أن الموافقة مطلوبة لكل شحنة على حدة من كل دولة للمتفجرات

التي ينطبق عليها البند الخاص رقم A62. ولوحظ أن تعريف "دولة المنشأ" قد تم تعديله في طبعة 2013-2014 من التعليمات الفنية، وأن الطبعة السابقة أشارت إلى مصطلح "البضائع" بدلاً من مصطلح "الشحنة". ودُعِيَ الاجتماع إلى مناقشة ما إذا كان قد غُض الطرف عن التغيير التبعي للبند الخاص A62 عندما تم تغيير التعريف، أو إذا كانت الموافقة مطلوبة في الواقع من كل دولة لكل شحنة من المتفجرات على حدة من الشحنات التي تنطبق عليها أحكام البند الخاص رقم A62.

2-3-1-2 على الرغم من اعتقاد الكثيرين بأن القصد من البند الخاص كان طلب موافقة الدولة لمرة واحدة على التصنيف حيث تم تصنيع المنتجات في الأصل، فإن تعريف "دولة المنشأ" وصياغة نص هذا البند الخاص لم توضح ذلك. واقترح بأن الإشارة إلى دولة المنشأ فيما يتعلق بالموافقات لأغراض التصنيف قد لا تكون مناسبة. ولوحظ خلال المناقشات أن الأحكام الأخرى في التعليمات الفنية التي تنطوي على موافقة على التصنيف قد أشارت أيضاً إلى دولة المنشأ.

2-3-1-3 وعلى الرغم من أن البند الخاص A62 قد استند إلى البند الخاص (SP 178) من اللوائح النموذجية الذي أشار إلى بلد المنشأ، فإن عدم الوضوح الذي نشأ عندما تم تعديل تعريف "دولة المنشأ" في التعليمات الفنية لم يشكل مشكلة في اللوائح النموذجية. واقترح أن الاستعاضة عن مصطلح "دولة المنشأ" بمصطلح "دولة الصنع" من شأنها أن توضح القصد من هذا الاقتراح، ولكن لوحظ أن "دولة الصنع" قد ورد تعريفها في الملحق 8 فيما يتعلق بتجميع الطائرات، مما يجعلها بالتالي غير مناسبة. ولذلك فقد اقترح مصطلح لم يشير إلى عبارة سبق تعريفها. وقد وافق فريق الخبراء على الاستعاضة في البند الخاص رقم A62 عن مصطلح "دولة المنشأ" بمصطلح "دولة صنع البضائع الخطرة". ولوحظ أن مصطلح "دولة المنشأ" فيما يتعلق بالتصنيف قد أشير إليه في أحكام أخرى في كافة جنابات التعليمات الفنية، واتفق على تنسيق النص في هذه الأحكام مع البند الخاص المنقح A62.

## 2-2 التعديلات على الجزء 2 من التعليمات الفنية: أحكام عامة

### 1-2-2 مشروعات التعديلات على التعليمات الفنية بغرض موافقتها مع

#### توصيات الأمم المتحدة - الجزء 2 (DGP/25-WP/12)

2-2-1-1 استعرض الاجتماع التعديلات على الجزء 2 من التعليمات الفنية كي تعكس القرارات الصادرة عن لجنة الخبراء التابعة للأمم المتحدة في دورتها السابعة (جنيف، 2014/12/12). وتعكس هذه التعديلات أيضاً الاقتراحات التي وافق عليها الفريق العامل التابع لفريق خبراء البضائع الخطرة في اجتماعه (DGP-WG/15). وأثيرت المسائل التالية في النقاش الذي دار خلال الاجتماع:

(أ) تم تعديل وصف شعبة 4-1 من المواد في الفقرة 2 من الفصل التمهيدي من الجزء 2 لتشمل "الصلبة" قبل "المتفجرات المنزوعة الحساسية" من أجل الاتساق مع اللائحة النموذجية للأمم المتحدة؛

(ب) شرط إرفاق نسخة من وثيقة الموافقة بالشحنة التي تتضمن المواد التي حددها الشاحن (بموافقة السلطة الوطنية المختصة) على النحو المدرج في قائمة الأسماء الواردة في الجدول 3-1، ولكن أضيفت من أجلها معايير التصنيف التي تنطبق على فئة أو شعبة خطر أخرى إلى الجزء 2؛ 1-2 خلال اجتماع الفريق العامل التابع لفريق خبراء البضائع الخطرة (DGP-WG/15). وثمة تساؤل عما إذا كان ذلك ضرورياً، مع الإقرار بأنه لم تلزم الدول كلها الشاحن بالحصول على وثيقة الموافقة لهذا الغرض. وقد اعترض بعض الأعضاء على إزالة هذا الشرط على أساس أن هناك ضرورة لدى المشغلين لأغراض

التحقق خلال عمليات الفحص الذي يتقرر بناءً عليه قبول الشحنة. واقترح حلّ وسط يطلب بياناً عن وثيقة النقل يوضح أن التصنيف استند إلى أحكام الجزء 1؛ 2-1 بدلاً من شرط الحصول على نسخة من وثيقة الموافقة. بينما لم يدعم بعض أعضاء ذلك لأنهم يرون أهمية أن يكون لدى المشغل دليل على الموافقة، وأشار آخرون إلى أن استخدام البند الوارد في الجزء 1؛ 2-1 يعني أن الشاحن كان يحمل مخاطر إضافية، وبالتالي فإن الدليل على الموافقة سيكون مطلباً مغالاً فيه. وقد تم الإبقاء على الشرط كما كان مكتوباً؛

ج) أشار النص المدرج في البند الخاص الجديد A209 إلى الأحكام الجديدة الخاصة بالغازات المحظورة ضمن الفئة 2، وإلى المواد المحظورة من الفئة 3، وتم نقل الشعبة 6-1 والفئة 8 المتعلقة بالتحكم في درجة الحرارة إلى الإضافة كجزء من البند الخاص A330.

## 2-2-2 الاستعاضة عن العبارة "الإعفاء" الواردة في الفصل الثاني من الجزء الثاني بالعبارة "الاستثناء" (DGP/25-WP/7)

2-2-2-1 اقترح تعديل من أجل الاستعاضة عن مصطلح "إعفاء" بمصطلح "استثناء" في الملاحظة الواردة في الجزء 2؛ 2-2 الذي أخرج شعبة 2-2 من الغازات من الخضوع للتعليمات عند الإدراج في قائمة المواد. وأشار إلى أنه على الرغم من أن استخدام مصطلح "إعفاء" يتماشى مع نص اللائحة النموذجية للأمم المتحدة، فقد كان للمصطلح معنى محدد في التعليمات الفنية على النحو المحدد في الجزء 1؛ 3. واتفق على أن مصطلح "استثناء" كان أنسب نظراً لاستخدامه في كافة جنبات التعليمات الفنية للإشارة إلى حالات لا تنطبق عليها كل أو بعض أحكام التعليمات الفنية. وتم الاتفاق على التعديل.

## 3-2 التعديلات على الجزء 3 من التعليمات الفنية: أحكام عامة

### 1-3-2 مشروعات التعديلات على التعليمات الفنية بغرض موافقتها مع توصيات الأمم المتحدة — الجزء 3 (DGP/25-WP/13)

2-1-3-1 استعرض الاجتماع التعديلات على الجزء 3 من التعليمات الفنية كي تعكس القرارات الصادرة عن لجنة الخبراء التابعة للأمم المتحدة في دورتها السابعة (جنيف، 2014/12/12). وتعكس هذه التعديلات أيضاً الاقتراحات التي وافق عليها الفريق العامل التابع لفريق خبراء البضائع الخطرة في اجتماعه: (DGP-WG/14، ريو دي جانيرو 20-24/10/2014)، و(DGP-WG/15، مونتريال من 27/4 إلى 1/5/2015). وأثيرت المسائل التالية في النقاشات التي دارت خلال الاجتماعين:

أ) لوحظ أن بعض الأحكام الواردة في البند الخاص المنقح SP 240 من اللائحة النموذجية لم تكن مدرجة في البند الخاص المناظر A21 من التعليمات الفنية نظراً لأنها موجودة بالفعل في تعليمات التعبئة السارية أو في أحكام خاصة أخرى. وتم الاتفاق على تعديلات أخرى تتعلق بالبند الخاص A21 خلال مناقشات دارت بشأن مقترح بتوضيح الأحكام فيما يتعلق بالبطاريات الواردة في المعدات ضمن تعليمات التعبئة 952 (انظر الفقرة 2-4-2 من هذا التقرير)؛

ب) وافقت الفريق العامل التابع لفريق خبراء البضائع الخطرة في اجتماعه (DGP-WG15) على إزالة "نوع آخر من منصات التحميل" من كافة طيات التعليمات، ولكنه أراد إيلاء مزيد من الدراسة لإزالة هذا المصطلح من البند الخاص A70. واتفق فريق خبراء البضائع الخطرة في اجتماعه (DGP/25) على إزالته؛

ج) تم تعديل نص شرط إرفاق نسخة من وثيقة الموافقة بشحنة نموذج المنتج أو البطاريات المنخفضة الإنتاج المنقولة وفقاً للبند الخاص A88 بإزالة أي اقتراح بأن توفير القيود الكمية كان هو المعلومات الوحيدة اللازمة لمنح الموافقة. كما أدخلت تعديلات تحريرية طفيفة إلى البند الخاص. وتم نقل معظم الأحكام الواردة في البند الخاص A88 المختصة ببطاريات الليثيوم إلى تعليمات التعبئة 910 الجديدة (انظر المرفق بالتقرير بشأن البند 3 من جدول الأعمال)؛

د) وتم الاتفاق على إجراء تعديل تحريري للاستعاضة عن مصطلح "الإدراج" بمصطلح "الإدخال" في البند الخاص A102، الذي يقابل البند الخاص SP 244 من اللائحة النموذجية للأمم المتحدة. وسيجري إبلاغ اللجنة الفرعية للأمم المتحدة بذلك؛

هـ) تم نقل نص من البند الخاص الجديد A209 المتعلق بالتحكم في درجة الحرارة إلى الإضافة كجزء من البند الخاص A330؛

و) أدرج مزيد من التعديلات على الأحكام المنقحة المعنية بالغللاف الخارجي للبضائع الخطرة المعبأة بكميات محدودة والكميات المستثناة الواردة في اللائحة النموذجية للأمم المتحدة لتعكس متطلبات الوسم الإضافية في حالة المنوال الجوي. كما أدرجت تعديلات تحريرية لتوضيح القصد من الأحكام.

2-1-3-2 تم الاتفاق على التعديل.

2-3-2 الكمية المسموح بها في كل طرد فيما يخص الوقود الدفعي الصلب 1.4C، ضمن

تصنيف الأمم المتحدة UN0501، والتي تنقلها طائرات البضائع فقط (DGP/25-WP/10)

1-2-3-2 لوحظ أن الوقود الدفعي الصلب شعبة 1.4C من المتفجرات التي تقع ضمن تصنيف الأمم المتحدة (UN0501)، كان مدرجاً ضمن المواد المحظور نقلها على كل من طائرات الركاب وطائرات البضائع في الجدول 1-3. بينما جميع المتفجرات الأخرى ضمن شعبة 1.4C المدرجة في الجدول 1-3 محظور نقلها على طائرات الركاب، باستثناء المواد المدرجة ضمن تصنيف الأمم المتحدة (UN0501) التي كانت محظورة أيضاً على طائرات البضائع. ويسمح بحمل كمية صافية قصوى مقدارها 75 كغم لكل طرد على متن طائرات البضائع فقط لجميع المتفجرات الأخرى ضمن شعبة 1.4C فقط، وهو ما يتسق مع الكميات المسموح بها المنصوص عليها في المواد الإرشادية لمساعدة فريق خبراء البضائع الخطرة على إعداد التعليمات الفنية والوثائق الداعمة. كما أفيد أن فريق عمل الأمم المتحدة المعني بالمتفجرات قد قرر في اجتماعه في شهر يونيو عام 2015 أنه لم تكن هناك اختلافات بين مخاطر النقل التي يفرضها تصنيف الأمم المتحدة (UN0501) وبين المتفجرات الأخرى ضمن شعبة 1.4C. ووفقاً لذلك، فقد اقترح إدخال تعديل على الجدول 1-3 للسماح بنقل كمية صافية قصوى مقدارها 75 كغم لكل طرد من الوقود الدفعي الصلب المدرج ضمن تصنيف الأمم المتحدة (UN0501) على متن طائرات البضائع فقط، على أن يكون مغلفاً وفقاً لتعليمات التعبئة 114.

2-2-3-2 كانت هناك بعض الاعتراضات على إزالة حظر النقل على متن طائرات البضائع على أساس أن هذه المتفجرات يمكن أن تحترق دون وجود أكسجين مكمل. وبالتالي فإن نشوب حريق بين هذه المواد يمكن بالتالي أن يتجاوز قدرات أنظمة مكافحة الحريق الموجودة على الطائرة. كما كانت هناك مخاوف من تأثير تكيف الضغط على هذه المتفجرات. وقد أيد غالبية أعضاء فريق الخبراء التعديل على أساس المدخلات التي قدمها فريق عمل الأمم المتحدة الذي أشار إلى أن الأخطار التي تشكلها هذه المتفجرات تحديداً لا تختلف عن الأخطار التي تشكلها المتفجرات الأخرى ضمن شعبة 1.4C

المسموح بنقلها. ولوحظ أن شعبة 1.4 تقتصر على المواد والمنتجات التي لا تحمل خطراً كبيراً، وإنما تحمل خطراً صغيراً في حالة الاشتعال أو بدء الاشتعال أثناء النقل. وقد تم الاتفاق على التعديل.

### 2-3-3-2 مراجعة البند "السلع الاستهلاكية" كي يشمل ذلك المواد المعتمدة في مجال الطيران (DGP/25-WP/32)

1-3-3-2-1 يصف الخاص A112، المخصص من أجل "السلع الاستهلاكية" ذات الرمز التعريفي ID 8000، أنواع المواد التي يمكن إسنادها إلى الرمز ID 8000، وتضمن قائمة بأرقام الأمم المتحدة المسموح بها، شريطة ألا تتضمن هذه المواد أي خطر إضافي. واقترح تعديل بتوسيع القائمة لتشمل التصنيف UN3334 - السوائل المعتمدة في مجال الطيران، غير منصوص عليها بطريقة أخرى \*n.o.s.، والتصنيف UN3335 - المواد الصلبة المعتمدة في مجال الطيران، غير المنصوص عليها بطريقة أخرى \*n.o.s.، مع ملاحظة أن المحاليل التي تحتوي على فورمالديهايد بنسبة تركيز تقل عن 25 في المائة كثيراً ما تدرج ضمن التصنيف UN3334 وتُشحن عادة في شكل مناسب للبيع بالتجزئة.

2-3-3-2 تم الاتفاق على التعديل.

### 2-3-3-4 الشروط المعنية بأجهزة التعقيم التي تحتوي على ثاني أكسيد النيتروجين أو أكسيد النيتريك (DGP/25-WP/34 Revised)

1-4-3-2-1 طُلب من الاجتماع النظر في اعتماد بنود خاصة جديدة للسماح بنقل أجهزة التعقيم، اللازمة لعمليات الاستجابة الطبية في حالات الإغاثة من الكوارث، التي تحتوي على كميات صغيرة من التصنيف UN1067 - ثاني أكسيد النيتروجين، و التصنيف UN1660 - أكسيد النيتريك، المضغوط، و التصنيف UN2031 - حامض النيتريك، خلاف الأبخرة الحمراء التي تحتوي على أكثر من 20% وأقل من 65% من حمض النيتريك (مجموعة المغلفات الثانية) على طائرات الركاب والبضائع. واقترح اثنين من البنود الخاصة، أحدهما للغازات والآخر للسوائل. وأفيد بأن التعقيم بهذه الغازات أو السوائل لا يحتاج إلى كهرباء، ويحسن التوافق والسلامة على نحو أفضل من غيره من المواد المستخدمة لتعقيم المعدات والأجهزة الطبية. الأمر الذي من شأنه أن يكون مفيداً في مواجهة حالات الطوارئ للكوارث. واستندت الصياغة المقترحة للبند الخاص على البند الخاص A131.

2-4-3-2-2 كان هناك تأييد للمقترح من حيث المبدأ، مع الاعتراف بضرورة توفير آلية آمنة لتسهيل عمليات الإغاثة الإنسانية. بيد أن هناك عدداً من الشواغل التي أثارت مع المقترح الأولي تتضمن ما يلي:

(أ) ضمان تطبيق البند الخاص فقط عند التأكد على وجود المواد في أجهزة التعقيم؛

(ب) استند التعديل إلى البند الخاص A131 - على الرغم من أن القيود الكمية كانت أقل تقييداً، إلا أنه كان من الضروري وجود نهج متسق؛

(ج) كان يجب وجود مؤشر لتحديد علامات (بطاقات) الخطر التي يجب تطبيقها، إلى جانب مؤشر لتحديد متطلبات التوثيق؛

(د) كان هناك تأييد للاقتراح لتوفير بند أكثر شمولاً، يمكن تطبيقه على أجهزة التعقيم التي تحتوي على بضائع خطيرة أخرى، ولكن مقدم الاقتراح أوضح أن الجهود التي بُذلت للقيام بذلك جانبها التوفيق بسبب الخصائص المختلفة لمختلف أنواع الأجهزة.

3-4-3-2 تم الاتفاق على اقتراح معدل لمعالجة الشواغل التي أثارها فريق خبراء البضائع الخطرة.

## 5-3-2 البند الخاص A104 (DGP/25-WP/36)

2-3-5-1 اقترح إدخال تعديل لإزالة البند الخاص A104، المدرج ضمن التصنيف UN1230 - الميثانول، المصنف في الإدخال باعتباره سائلاً قابلاً للاشتعال فضلاً عن خطورته كمادة سامة حسبما يرد في التعليمات الفنية. ولوحظ أن لجنة الخبراء التابعة للأمم المتحدة (UNCOE) استندت أصلاً في تحديد الخطر الإضافي كمادة سامة إلى التجربة البشرية بدلاً من بيانات السمية، وإلى أن الحوادث التي تنطوي على تعاطي عمال السكك الحديدية عمداً للميثانول ظناً منهم بالخطأ بأنه إيثانول قد ساهم في هذا القرار. وقد أضيف إلى التعليمات الفنية استثناء من شرط علامة (بطاقة) التنبيه إلى الخطر الإضافي كمادة سامة، وذلك لتفادي شرط عزل المواد السامة والمعدية من الحيوانات والمواد الغذائية، مع الإقرار بأن شرط العزل ليس ذا صلة بتبرير لجنة خبراء الأمم المتحدة لتعيين الخطر الإضافي. وكانت بطاقة الخطر الإضافي شرطاً للتصنيف UN1230 - الميثانول لجميع وسائط النقل الأخرى. وعلى هذا النحو، فقد حدد البند الخاص A104 أنه على الرغم من أن التعليمات الفنية لم تشترط علامة التنبيه، إلا أنه لا يزال من الممكن تطبيقها. ومع ملاحظة أن متطلبات العزل للمواد السامة والمعدية قد أزيلت من طبعات 2015-2016 من التعليمات الفنية، إلا أنه قد رُوي أن الإعفاء من شرط وضع العلامات لم يعد له ما يبرره. وضمناً للتسويق متعدد الوسائط، فقد تم الاتفاق على إضافة علامة "مادة سامة" في العمود 5 من قائمة البضائع الخطرة وحذف البند الخاص A104.

2-3-5-2 على الرغم من وجود بعض الاعتراضات على الاقتراح من قبل بعض المؤيدين للوضع الراهن، ممن لديهم تخوف من أن يسبب التغيير مشاكل مع النقل متعدد الوسائط في دولهم، وأيدت الأغلبية ذلك. وتم الاتفاق على التعديل.

## 2-3-6 الحادث المتعلق بمادة كاتيكول بورين (DGP/25-WP/47)

2-3-6-1 أخطر الاجتماع بحادث الكاتيكول بورين الذي صُنّف على أنه مدخل عام للتصنيف UN2924 - سوائل ومواد أكالة قابلة للاشتعال، غير منصوص عليها بطريقة أخرى n.o.s.، وأظهرت خصائص المنتج أن هذه المادة تتحلل إلى غاز البورين بمعدل اثنين في المائة في الأسبوع في درجة حرارة الغرفة، ويمكن لهذا الغاز أن يشتعل عند اتصاله بالهواء الرطب، وأن مادة كاتيكول بورين تتفاعل بشدة مع الماء. وكان أن تأخر نقل المادة من آسيا إلى أوروبا لمدة تسعة أيام نتيجة لإعصار، وكان أن ظلت درجة الحرارة المحيطة أعلى من 33 درجة مئوية طيلة المدة. ووجدت أربع زجاجات محطمة بعد وصولها إلى وجهتها. وتم تخزين المادة بعد وصولها لمدة أسبوعين في درجة حرارة تبلغ 8 درجات مئوية تقريباً، ولكن حدث أن انفجرت عدة زجاجات وشبت فيها النيران بمجرد أن تم انتقاؤها وإعدادها من أجل شحنة أخرى. وخُصص إلى أن الهواء الرطب قد تخلل إلى داخل الزجاجات خلال عملية العبور التي استغرقت وقتاً طويلاً تحت درجات حرارة عالية مما تسبب في حدوث تفاعل كيميائي وتراكم الضغط. وأوصت أوساط الصناعة بحظر نقل مادة كاتيكول بورين جواً إلا في أوعية الضغط وتحت ظروف تبريد. ولم يُقدّم أي اقتراح لتعديل التعليمات الفنية، غير أن فريق الخبراء دُعِيَ إلى مناقشة الحادث والتوصية باتخاذ إجراءات إذا لزم الأمر.

2-3-6-2 أشارت المقدمة إلى أنها كانت على علم بالشاحنين الذين قاموا بشحن المادة خلال أشهر الشتاء فقط لضمان التحكم في درجة الحرارة بشكل مناسب، الأمر الذي شكل شاغلاً كبيراً مع الإقرار بعدم وجود طريقة لضمان التحكم في درجة الحرارة في مقصورة الشحن بالطائرات. كما أشارت إلى أن العديد من الشركات المصنعة قد صنفت المادة بنفس الطريقة. وكان هناك إجماع عام على أنه ينبغي حظر نقل هذه المادة جواً، على الرغم من أن البعض قد حذر من مغبة اتخاذ قرار متسرع بناءً على حادث واحد غير مسبوق دون الحصول على معلومات أكثر شمولاً. وقد تشكك أعضاء فريق الخبراء في أنها قد تكون مشكلة تصنيف، ولكن يتعين تحديد ما إذا كان ذلك راجعاً إلى خطأ من الشاحن أم نتيجة لوجود فيود في اللوائح بشأن معايير التصنيف. وبينما تبدو إضافة مدخل جديد لمادة كاتيكول بورين في الجدول 3-1 كحل معقول، كانت هناك مخاوف من أن تكون المادة واحدة من مجموعة مواد لها الخصائص ذاتها. ولم تكن الحاجة إلى التحكم في درجة الحرارة سوى

السبب في تزايد تلك الشواغل. وعلى الرغم من الاعتراف بأن الحل الشامل يتطلب مزيداً من المعلومات وقيام اللجنة الفرعية للأمم المتحدة بإجراء مزيد من التحقيقات، فقد وافق فريق الخبراء على أن الوضع الراهن ليس خياراً يمكن اتخاذه على أساس مخاطر السلامة التي كانت معروفة بالفعل. وفي حالة غياب رقم التصنيف (UNxxxx) الذي تعينه لجنة خبراء الأمم المتحدة (UNCOE)، مع التسليم بأن عملية الأمم المتحدة لن تكون فورية، فقد أوصى فريق الخبراء بإضافة إدخال بخط خفيف إلى التعليمات الفنية وإدراج بند خاص فيه يحظر نقل المادة جواً على كل من طائرات الركاب وطائرات البضائع. ويمكن النقل على طائرات البضائع بموافقة دولة المنشأ ودولة المشغل. وتسليماً بالتهديد المحتمل للسلامة، فقد أوصى فريق الخبراء بإدراج التعديل في طبعة 2015-2016 من التعليمات الفنية عن طريق إضافة. وشدد الفريق على أهمية سرعة نشر المعلومات على أوسع نطاق ممكن. وعلى هذا النحو، يتعين أن تصدر الأمانة العامة نشرة إلكترونية للدول تدعوهم فيها إلى نشر المعلومات فيما بين أوساط الصناعة، كما يتعين على ممثلي أوساط الصناعة من المشاركين في فريق الخبراء نشر هذه المعلومات خلال شبكاتهم التي تضم الشاحنين.

## 4-2 التعديلات على الجزء 4 من التعليمات الفنية: أحكام عامة

### 1-4-2 مشروع التعديلات على التعليمات الفنية بغرض مواعمتها مع توصيات الأمم المتحدة — الجزء 4 (DGP/24-WP/14)

1-1-4-2 استعرض الاجتماع التعديلات على الجزء 4 من التعليمات الفنية كي تعكس القرارات الصادرة عن لجنة الخبراء التابعة للأمم المتحدة في دورتها السابعة (جنيف، 2014/12/12). وتعكس هذه التعديلات أيضاً الاقتراحات التي وافق عليها الفريق العامل التابع لفريق خبراء البضائع الخطرة في اجتماعيه: (DGP-WG/14) و (DGP-WG/15). وأثيرت المسائل التالية في النقاشات التي دارت خلال الاجتماعين:

أ) أضيفت إلى تعليمات التعبئة 203 و Y203 قيود على صافي كمية محتوى الغاز في الطرود الصغيرة من الهباء الجوي وخرطيش الغاز وأوعية الغاز، وذلك للتعاظم بشكل أوثق مع تعليمات التعبئة الخاصة بالفئات الأخرى التي تضع أيضاً قيوداً كمية؛

ب) من أجل التنسيق، يتعين أن تتماشى الأغلفة الخارجية المدرجة في تعليمات التعبئة 450 مع ما كانت تسمح به اللائحة النموذجية للأمم المتحدة فيما يتعلق بالتصنيف UN3527 - عدة راتنجات البوليستر على الرغم من حقيقة أنه ليست كل العبوات المسموحة عملية من حيث الاستخدام.

2-1-4-2 تم الاتفاق على إدخال التعديلات على الجزء 4 بصيغته المعدلة.

### 2-4-2 تنقيح تعليمات التعبئة رقم (952) بخصوص المركبات الصغيرة التي تعمل ببطاريات (DGP/25-WP/5)

1-2-4-2 لوحظ أن تعليمات التعبئة رقم 952، المرتبطة بالتصنيف UN3171 - معدات تعمل ببطاريات، والتصنيف UN3171 - مركبات تعمل ببطاريات، لا تتطلب تغليفاً خارجياً حيث إنه من المفترض أن المركبات والمعدات ستكون كبيرة وقوية بما يكفي لمنع الضرر أثناء النقل. وعلى الرغم من البند الخاص A21 الذي يلزم بأن تكون المعدات التي تعمل ببطاريات الليثيوم التي تُسحق ضمن التصنيف UN3091 - بطاريات معدن الليثيوم، أو ضمن التصنيف UN3480 - بطاريات أيون الليثيوم، مغلقة أو موجودة داخل المعدة، فلم يكن هناك مثل هذا الشرط بالنسبة للمركبات التي تعمل ببطاريات الليثيوم. وقدمت أمثلة على أصناف أصغر حجماً تعمل ببطاريات الليثيوم وتستوفي وصف المركبة المحددة في البند الخاص A21، وأشار إلى أنها يمكن أن تكون عرضة للتلف أثناء النقل دون تغليف. ولضمان أن المركبات التي تعمل ببطاريات على وجه الخصوص

كانت محمية من التلث أثناء النقل، فقد اقترح إدخال تعديل على تعليمات التعبئة 952 على نحو يلزم بتغليف المركبات التي يمكن مناوئتها في وضع خلاف الوضع الرأسي بغلاف خارجي قوي شديد التحمل.

2-2-4-2 ومع ملاحظة أن اقتراح تنقيح البند الخاص A21 كان من أجل التوافق مع التنقيح الذي اعتمده فريق خبراء الأمم المتحدة في الأحكام الخاصة بالمعادلة في اللائحة النموذجية للأمم المتحدة (SP 240) بالسماح بفصل أجزاء من المركبة، بما في ذلك البطارية، إذا كان يتعين شحن المركبة مغلقة، كما دُعي فريق الخبراء للنظر فيما يلي:

(أ) عدم اعتماد التغيير في البند الخاص A21؛

(ب) أو ما إذا كان ينبغي الإلزام بتغليف بطاريات أيون الليثيوم المفصولة عن المركبة وفقاً لمواصفات الأمم المتحدة للتعبئة والتغليف.

3-2-4-2 كان هناك اتفاق على أن بطاريات الليثيوم المنزوعة عن المركبة يجب أن تُصنّف بشكل منفصل كبطاريات ليثيوم مغلقة بمفردها. وبالتالي فقد أزيلت الصياغة الجديدة المقترحة للمركبات المفككة التي تعمل بالبطاريات، وكذلك كانت القائمة المنفصلة للتغليف الخارجي الذي كان مقترحاً لبطاريات أيون الليثيوم أو الصوديوم المغلقة مع السيارة. ولم يكن هناك إجماع على الموافقة على أن النص المقترح الذي يشير إلى المركبات التي يمكن أن يتم مناوئتها في وضع خلاف الوضع الرأسي يمكن أن يكون وسيلة فعّالة للتمييز بين المركبات الصغيرة والكبيرة. فأهمية ضمان أن البطارية موجودة في مركبة كبيرة وقوية بما يكفي لحمايتها كانت هي الهدف المنشود، ولكن هؤلاء الأعضاء شككوا في قدرة الصيغة المقترحة على تحقيق ذلك. بيد أن الأغلبية قد أيدت الصيغة المقترحة، وبالتالي تم الاتفاق على التعديل المنقح لتعليمات التعبئة 952.

4-2-4-2 قرر فريق الخبراء عدم اعتماد النص الجديد في البند الخاص A21، الذي تمت إضافته إلى البند الخاص المقابل في اللائحة النموذجية للأمم المتحدة، الذي يشير إلى السيارات التي يجري تفكيكها عن أطرها لتتسجم مع التغليف ورئي أنه غير ضروري.

### 3-4-2 بند خاص باستخدام المغلفات الكبيرة (DGP/25-WP/43)

1-3-4-2 لوحظ أن المغلفات التي يتجاوز صافي كتلتها 400 كغم تعتبر ضمن المغلفات الكبيرة التي لا يُسمح حالياً بنقلها جواً. بيد أنه أُشير إلى أن التعليمات الفنية تسمح ببعض المواد التي تتجاوز كتلتها 400 كغم بحكم مصطلح "لا حدود" الذي يظهر في صافي الكمية القصوى لخانة العبوة في الجدول 3-1، وأن مثل هذه المواد يجب وضعها في مغلفات أكبر. ولذلك فقد اقترح إضافة أحكام إلى التعليمات الفنية من أجل استخدام المغلفات الكبيرة لهذه المواد ليتسنى نقلها على متن طائرات البضائع، شريطة موافقة السلطة الوطنية المختصة في دولة المنشأ ودولة المشغل. كما اقترح إضافة فصل جديد (13) إلى الجزء S-4 من الإضافة ليتضمن الشروط المطبقة على استخدام مثل هذه المغلفات.

2-3-4-2 تم تنقيح التعديل لتوضيح أن هذا البند ينطبق على مادة واحدة ولإيضاح متطلبات علامات وبطاقات وسم معينة يتعين لصقها على الجانبين المتقابلين للعبوة. وأثير تساؤل بشأن سبب اقتصار التعديل على طائرات البضائع. وكان التفسير هو أن ذلك يستند إلى الأحكام القائمة للصهاريج المحملة، التي لا يسمح بها سوى على طائرات البضائع، ورئي أن ذلك مناسب نظراً لأن طائرات الركاب لن تكون مجدية دائماً لهذه المواد الكبيرة.

3-3-4-2 تم الاتفاق على التعديل.

### 5-2 تعديلات على الجزء 5 من التعليمات الفنية: أحكام عامة

1-5-2 مشروع التعديلات على التعليمات الفنية بغرض مواعمتها مع  
توصيات الأمم المتحدة — الجزء 5 (DGP/25-WP/15)

1-1-5-2 استعرض الاجتماع التعديلات على الجزء 5 من التعليمات الفنية كي تعكس القرارات الصادرة عن لجنة الخبراء التابعة للأمم المتحدة في دورتها السابعة (جنيف، 2014/12/12). وتعكس هذه التعديلات أيضاً الاقتراحات التي وافق عليها الفريق العامل التابع لفريق خبراء البضائع الخطرة في اجتماعه (DGP-WG/15).

2-1-5-2 اعتُبر أن التعديلات المتعلقة ببطاريات الليثيوم تندرج ضمن البند 5 من جدول الأعمال. وتم الاتفاق على التعديلات المتبقية.

2-5-2 استخدام العلامة "المواد الخطرة بيئياً"  
(DGP/25-WP/46)

1-2-5-2 اقترح تنقيح البند الخاص بالعلامة الخاصة بالمواد الخطرة بيئياً لإعادة إدخال استثناء من المواد الخطرة بيئياً على المغلفات التي تحتوي على كمية صافية قدرها 5 لترات أو أقل للسوائل أو كتلة صافية قدرها 5 كغم أو أقل للمواد الصلبة. إذ أن الاستثناء قد تم إزالته من طبعة 2015-2016 من التعليمات الفنية نظراً لاعتباره زائداً عن الحاجة مع إدخال البند الخاص A197، ذلك البند المخصص للإدخالات الخاصة بالمواد الخطرة بيئياً في قائمة البضائع الخطرة. وهذا البند الخاص قد جعل المواد الخطرة بيئياً غير خاضعة لأي أحكام أخرى من التعليمات الفنية عندما تكون بكميات من 5 لترات أو أقل للسوائل أو 5 كغم أو أقل للمواد الصلبة، شريطة تلبية بعض أحكام التغليف العامة. وقد جرى عمل هذه التنقيحات من أجل المواعمة مع اللائحة النموذجية للأمم المتحدة. إذ أنه قد أُفيد، مع ذلك، بأن بعض الشاحنين قد رغبوا في نقل مواد خطرة بيئياً تندرج ضمن التصنيف UN3077 أو UN3082 كمواد معتمدة بشكل كامل، حتى وإن كانت في حدود الكميات المحددة بالبند الخاص الجديد. بيد أنه بسبب حذف استثناء استخدام علامة المواد الخطرة بيئياً للمغلفات الأقل من 5 لترات أو أقل من 5 كغم، فقد أصبح استخدام علامة إلزامياً الآن دون تطبيق البند الخاص A197. وأشار إلى أنه لم يكن في القصد مطلقاً بالإلزام باستخدام العلامة في مثل هذه الشحنات، وبالتالي فإن التعديل المقترح له ما يبرره. ولوحظ أن الاتفاق الأوروبي المتعلق بالنقل الدولي للبضائع الخطرة بالطرق البرية قد أعاد الاستثناء الذي تسبب في مشاكل للنقل متعدد الوسائط لأن المنوال الجوي لا يزال مطلوباً. ومع التسليم بأن القضية كانت ذات طبيعة متعددة الوسائط، ويتعين، كخطوة أولى، طرحها أمام اللجنة الفرعية للأمم المتحدة للنظر فيها، الأمر الذي يعني أن التنقيح لن يمكن إدخاله إلا في طبعة 2019-2020 من التعليمات الفنية. ولذلك فقد طُلب من فريق الخبراء أن ينظر في اعتماد التعديل من أجل طبعة 2017-2018، وإخطار اللجنة الفرعية للأمم المتحدة وفقاً لذلك.

2-2-5-2 كان هناك تفهم للمشكلات اللوجستية التي سببها الافتقار إلى عدم التناغم بين فئتي النقل المتعدد الوسائط البري والجوي، وبينما أيد عدة أعضاء التعديل، فقد عارضه الأغلبية لأنهم لم يجدوا مبرراً للإخلال بالتناغم مع اللائحة النموذجية للأمم المتحدة، لا سيما أن هذه المسألة قد نوقشت باستفاضة في اللجنة الفرعية للأمم المتحدة. ولم يتم الاتفاق على التعديل.



تسليماً بمحدودية جدوى النص المكتوب لأولئك الذين لا يفهمون اللغة المستخدمة في الكتابة. وكانت المواد الإرشادية التي طوّرت لإدراجها في الإضافة محل تأييد أيضاً. وأشار إلى أنه ينبغي تعزيز الإرشادات بشأن الربط بين الملحق 6 والملحق 18. إذ أن إضافة فصل جديد حول البضائع الخطرة إلى الملحق 6 قد ساعد على تحسين الوعي بالمسؤوليات الإشرافية للدول على المشغلين، ولكن لا يزال هناك العديد من الدول التي تقتصر إلى هذا الوعي.

2-7-4 تم الاتفاق على التعديل المنقح الذي وضعه الفريق العامل المخصص الذي تولى معالجة تعليقات فريق الخبراء، وذلك وفقاً لعدد من التعديلات التحريرية وإضافة مواد إرشادية جديدة تم تطويرها من أجل الإضافة بشأن الكيفية التي يمكن بها للدول أن تخطر المشغلين بمعلومات محددة أو بالإرشادات اللازمة لتنفيذ نظام إخطار الركاب.

### 2-7-3 قائمة القبول المرجعية (DGP/25-WP/28)

2-7-3-1 أشير إلى أن إجراءات القبول الموجودة حالياً لدى المشغل لا تتطلب صراحة قيام المشغل بملء قائمة مرجعية، وإنما باستخدامها. وبالتالي فلم تكن هناك طريقة موضوعة لتحديد الشخص الذي يجري عملية فحص القبول. وأشار إلى أن ذلك جزء هام من المعلومات التي يجب أن تكون موجودة في حالة وقوع حادث يستوجب التحقيق فيه. وبالتالي فقد اقترح إجراء تعديل يتطلب قيام الشخص الذي يتولى فحص الشحنة بملء قائمة قبول مرجعية والتوقيع عليها. وعلى الرغم من عدم تأييد فريق الخبراء للاقتراح الأولي، فقد تم الاتفاق على التعديل المنقح الذي أشار بوضوح إلى النتيجة المرجوة، أي أن المشغل يجب أن يكون قادراً على تحديد الشخص الذي يجري عملية فحص القبول. وبالإضافة إلى ذلك، فقد تم الاتفاق على أن شرط الإبقاء على هذه المعلومات سيضاف إلى الأحكام القائمة المعنية بالإبقاء على الوثائق أو المعلومات في الجزء 7؛ 11-4.

### 2-7-4 الإبلاغ عن البضائع الخطرة في أمتعة الركاب

#### والطاقم (DGP/25-WP/42)

2-7-4-1 لوحظ أن معظم الدول تسند مسؤولية الكشف الأمني على الأمتعة المسجلة والأمتعة اليدوية وعلى الركاب وأفراد الطاقم، إما مباشرة عن طريق وكالة حكومية لأمن الطيران، وإما عن طريق وكالات يتعاقد معها مشغل المطار كجزء من مسؤولية مشغل المطار بمقتضى اللوائح الوطنية لأمن الطيران. وبالإشارة إلى مقتضيات الإبلاغ لدى المشغل بشأن البضائع الخطرة المحظور نقلها ضمن أمتعة الركاب أو الطاقم أو المحمولة كأغراض شخصية، فقد أشير إلى أن هذه الوكالات لم يكن مسؤوليتها تشريعياً عن تقديم المشورة للمشغلين. وكان من المستحيل في هذه الحالات أن يتمكن المشغلون من الوفاء بمسؤوليات الإبلاغ المسندة إليهم. ولذلك اقترح تنقيح الجزء 7؛ 4-5 لتقييد التزام المشغل بالإبلاغ عند اكتشاف البضائع الخطرة أو عند إعلامه بتفاصيل البضائع الخطرة التي اكتشفها طرف ثالث.

2-7-4-2 اقترح تعديل على الجزء 1؛ 7 لتوسيع نطاق التوصية للجهات الأخرى خلاف المشغلين بالإفادة عن الحوادث المتعلقة بالبضائع الخطرة، والحوادث، وحالات اكتشاف بضائع خطيرة غير معلنة أو معلن عنها بشكل خاطئ، بحيث يتضمن هذا النطاق بعد توسيعه البضائع الخطرة التي اكتشفت في الأمتعة أو ضمن الأغراض الشخصية ولم يكن مسموحاً بها وفقاً للجزء 8. وكان يعتقد أن ذلك من شأنه أن يشجع الاتصال المباشر بين السلطات الوطنية المختصة المسؤولة عن أمن الطيران وأولئك المسؤولين عن الطيران المدني لتهيئة المجال لأن يكون الإبلاغ أكثر شمولاً.

2-7-4-3 بينما كان هناك اتفاق حول أنه ينبغي للفاحصين الأمنيين إعلام المشغلين بالبضائع الخطرة التي تم اكتشافها أثناء الكشف الأمني، فلم يكن فريق الخبراء متفانلاً بأن أي تعديلات على التعليمات الفنية بغرض حمل الفاحصين الأمنيين على الإبلاغ ستكون فعّالة لأنهم لا يقعون بشكل واضح ضمن نطاق الملحق 18 والتعليمات الفنية. إذ أن الأحكام لا تكون فعّالة إلا إذا كانت إلزامية، وهو ما يعني إدخال تعديل على الملحق 17 - الأمن - حماية الطيران المدني الدولي من أفعال التدخل غير المشروع. ومع ذلك، فقد تم تذكير فريق خبراء البضائع الخطرة، بعدم وجود الدافع لدى فريق خبراء أمن الطيران للتعاون مع فريق خبراء البضائع الخطرة، وذلك على الرغم من توجيهات الأمين العام بتشكيل فرقة عمل مختصة مشتركة بين

الفريقين. وبالتالي فلم يتم الاتفاق على تعديل الجزء 1؛ 7. ومع ذلك، فقد اتفق فريق خبراء البضائع الخطرة بأنه ينبغي مواصلة الجهود للمشاركة مع فريق خبراء أمن الطيران.

2-4-4-7-4 لم تكن هناك معارضة لتعديل الجزء 7 من التعليمات الفنية لتوضيح أن المشغل غير ملزم سوى بالإبلاغ عن الحوادث التي تتطوي على البضائع الخطرة غير المعلنة، أو معلن عنها بشكل خاطئ التي لم يكن على بيينة بها. وتم الاتفاق على تعديل الجزء 7؛ 4-5.

## 2-8-2 تعديلات على الجزء 8 من التعليمات الفنية: أحكام عامة

### 1-8-2 مشروع التعديلات على التعليمات الفنية بحيث تتوافق مع الفريق العامل الخامس عشر التابع لخبراء البضائع (DGP/25-WP/18)

2-1-8-1 استعرض الاجتماع التعديلات على الجزء 8 من التعليمات الفنية كي تعكس الاقتراحات التي وافق عليها الفريق العامل التابع لفريق خبراء البضائع الخطرة (DGP-WG/15)، وتم الاتفاق على هذه التعديلات.

### 2-8-2 تقييد حمل الركاب أو أعضاء الطاقم لأجهزة قياس الحرارة التي تحتوي على مادة الزئبق (DGP/25-WP/4)

2-8-2-1 طرح اقتراح للدراسة يقضي بإلغاء الأحكام المعنية بالأجهزة الطبية أو السريرية الصغيرة لقياس درجة الحرارة من النوع الذي يحتوي على الزئبق، تلك الأحكام التي كانت تسمح للركاب بحملها ضمن الأمتعة اليدوية أو الأغراض الشخصية. وأبرز مقدم الاقتراح حادثين وقعا في دولته، لتسرب الزئبق من جهاز قياس درجة الحرارة كان ضمن الأمتعة المحمولة داخل المقصورة، الأمر الذي أسفر عن ضرورة تطهير الطائرة. ومع الإقرار بأن موازين الحرارة الرقمية قد أضحت متاحة على نطاق واسع، فقد اقترح أنه لم تعد هناك حاجة للسماح بحمل موازين حرارة زئبقية سواء في مقصورة الركاب أو القيادة. وكان هناك تأييد للاقتراح، واعتراضاً بكلفة وصعوبة عملية تنظيف التسرب واحتمال حدوث ضرر خطير إذا لم يتم كشفها. وكان هناك بعض النقاش بشأن ما إذا كان ينبغي أيضاً حظر حمل موازين الحرارة الزئبقية ضمن الأمتعة المسجلة، إلا أنه اتفق على الإبقاء على الأحكام فيما يتعلق بالأمتعة المسجلة، على أساس أن هناك أجزاء من العالم ينتشر فيها استخدام هذه الموازين. وتم الاتفاق على التعديل.

### 2-8-3 أجهزة التنقل (الكراسي المتحركة) التي تعمل ببطاريات (DGP/25-WP/41)

2-8-3-1 اقترح تنقيح الأحكام المتعلقة بالركاب فيما يتعلق بأجهزة التنقل (الكراسي المتحركة) التي تعمل ببطاريات، نظراً لأن الإدخالات الثلاثة المدرجة حالياً في الجدول 8-1 فيما يتعلق بأجهزة التنقل التي تعمل ببطاريات غير جافة وغير قابلة للانسكاب، وأجهزة التنقل التي تعمل ببطاريات قابلة للانسكاب، وأجهزة التنقل التي تعمل ببطاريات قابلة للانسكاب، وأجهزة التنقل التي تعمل ببطاريات الليثيوم، قد دمجت كلها في إدخال واحد. مع ملاحظة أن الأحكام الحالية تتضمن متطلبات لا يمكن تطبيقها إلا عن طريق المشغل وتخرج عن سيطرة الركاب، كما أن الإدخال الجديد المفرد قد حد من تلك الأحكام التي كانت تحت سيطرة الركاب. وقد تم نقل تلك الأحكام التي كانت تقع ضمن مسؤولية المشغل إلى قسم جديد ضمن الفصل المعني بالتخزين والتحميل في الجزء 7 (الجزء 7؛ 2-13). وتضمن الجزء الجديد توضيحاً بأنه يمكن الإبقاء على بطاريات أجهزة التنقل القابلة للطي في حال عدم طيها، وأنه ليست كل أجهزة التنقل يلزم إزالة بطارياتها عند طيها. ولم يتضمن الجزء الجديد متطلبات معنية بأجهزة التنقل المفصولة عن بطارياتها، مع التسليم بأن أجهزة التنقل في حد ذاتها لا تعتبر كصنف من أصناف البضائع الخطرة.

2-3-8-2 كان هناك تأييد قوي للمبادئ المطبقة في إعداد التعديل. وطُرح أثناء المناقشة عدد من الاقتراحات للتحسين. واستقر الأمر على استمرار العمل على الأحكام على مدى العامين المقبلين.

#### 4-8-2 إعادة تشكيل الجدول 1-8 (DGP/25-WP/50)

1-4-8-2 دُعِيَ فريق الخبراء إلى التعليق على التتحيات التي تهدف إلى تبسيط الأحكام المتعلقة بالركاب لإدراجها في الطبعة 2019-2020 من التعليمات الفنية. وكان الفريق قد اتفق خلال اجتماع الفريق العامل التابع له على أن هيكل الجدول 1-8 لا يفتأ يتزايد تعقيداً مع ضم المزيد والمزيد من الإدخالات إلى القائمة. وتم تبسيط القائمة المنقحة بتجميع الإدخالات بشكل عام وفقاً لخطورتها ووظائفها. الأمر الذي سمح بإزالة النصوص الزائدة عن الحاجة التي تكررت في الأحكام الحالية. كما أن الأحكام المنقحة قد فصلت الأصناف التي لم يكن يتوقع أن يحملها الراكب "المتوسط"، مثل الأدوات التي تحملها منظمة حظر الأسلحة الكيميائية، ووضعتها في جدول منفصل 2-8.

2-4-8-2 كما دُعِيَ أعضاء فريق الخبراء إلى النظر في تحديد أن تلك البضائع الخطرة التي يحملها الركاب وافراد الطاقم يجب أن تكون معدة للاستخدام الشخصي فقط، وذلك في محاولة لوقف تجار التجزئة من حمل كميات كبيرة من البضائع الخطرة. وأخيراً، دُعِيَ أعضاء الفريق إلى النظر في إزالة عمود البضائع الخطرة المحمولة ضمن "الأغراض الشخصية"، مع ملاحظة أن ذلك لا ينطبق سوى على الولايات وأعواد الثقاب. واقتُرِح إدراج هذا القيد بجانب الأصناف المعمول بها في عمود "القيود".

3-4-8-2 كان هناك تأييد قوي للنهج المتبع في تطوير التعديلات المقترحة، مع الإعراب عن التقدير للعمل المُنجز.

4-4-8-2 وقد أشار أحد المشاركين إلى الالتباس في دولته بشأن ما إذا كان يتعين اعتبار المواد الأكبر حجماً وتحتوي على بطاريات، مثل لعب الأطفال الكبيرة أو السكوتر الإلكتروني، ضمن الأجهزة الإلكترونية "المحمولة". وأشار إلى أنه لن يكون هناك أي التباس مع الأحكام بعد إعادة هيكلتها، نظراً لأن هذه القيود تنطبق تحديداً على بطاريات الليثيوم أو البطاريات غير القابلة للانسكاب، وليس على المادة. وبالتالي فلن يكون لحجم المادة التي تحتوي على البطارية صلة. وتحظر الأحكام المعاد هيكلتها نقل البطاريات ضمن الأمتعة المسجلة. وبالتالي فيجب إزالة البطاريات الخاصة من الأصناف الكبيرة جداً التي يتعذر حملها داخل المقصورة قبل وضعها ضمن الأمتعة المسجلة.

5-4-8-2 كان هناك تأييد قوي للفلسفة المستخدمة في إعادة هيكلة الأحكام. فثمة تسليم بضرورة جعل الجدول بحيث يسهل التنقل بين خاناته مع استخدام مصطلحات بسيطة يسهل على الركاب فهمها. وأشار إلى أن الأمر يستلزم مزيداً من التمعن فيما إذا كان يلزم وجود جدول منفصل من أجل الأصناف التي يتوقع أن يحملها الراكب "المتوسط"، مع التسليم بالصعوبات الممكنة في التفريق بين الراكب "المتوسط" والراكب "المعتاد".

6-4-8-2 ينبغي مواصلة العمل على إعادة هيكلة الجدول. ولاحظ مقدم الاقتراح أن ذلك مشروعٌ طويل الأجل من شأنه أن يسفر عن هيكل مستقر يقلل من الحاجة المستمرة إلى تعديل الجدول مستقبلاً. وكان الهدف هو وضع هيكل الجدول في شكل نهائي يمكن إدراجه في طبعة 2019-2020 من التعليمات الفنية.

## 9-2 التوصيات

1-9-2 في ضوء المناقشات الآتفة الذكر، أصدر الاجتماع التوصيات التالية:

**التوصية 1-2 تعديل التعليمات الفنية للنقل الآمن للبضائع الخطرة بطريق الجو (Doc 9284) الذي يتعين إدراجه في طبعة 2017-2018**

تُعدّل التعليمات الفنية على النحو المشار إليه في المرفق (أ) بالتقرير عن هذا البند من جدول الأعمال.

**التوصية 2-2 تعديل التعليمات الفنية للنقل الآمن للبضائع الخطرة بطريق الجو (Doc 9284) الذي يتعين إدراجه في طبعة 2015-2016 لمعالجة الشواغل العاجلة في مجال السلامة**

تُعدّل طبعة 2015-2016 من التعليمات الفنية على النحو المشار إليه في المرفق (ب) بالتقرير عن هذا البند من جدول الأعمال.

-----

## المرفق (أ)

## التعديلات المقترحة إدخالها على التعليمات الفنية

## Part 1

## GENERAL

## Chapter 1

## SCOPE AND APPLICABILITY

*Parts of this Chapter are affected by State Variations AE 3, AE 8, BE 2, BE 4, BE 5, BR 4, CA 6, CH 3, DE 1, DE 4, DK 2, FR 2, GB 2, HR 2, HR 3, HR 4, HR 5, IN 1, IR 1, IT 1, IT 5, KH 1, NL 6, RO 1, RO 2, RO 3, US 1, VC 1, VC 2, VC 3, VU 2; see Table A-1*

---

UN Model Regulations, Chapter 1.1, ST/SG/AC.10/42/Add.1 and DGP/25-WP/3 (see paragraph 3.2.1.1) and ST/SG/AC.10/42/Add.1/Corr.1

---

*Note.— Recommendations on Tests and Criteria, which are incorporated by reference into certain provisions of these Instructions, are published as a separate Manual (United Nations Recommendations on the Transport of Dangerous Goods, Manual of Tests and Criteria) (ST/SG/AC.10/11/Rev.5, Rev.6 Amend.1 and Amend. 2), the contents of which are:*

*Part I. Classification procedures, test methods and criteria relating to explosives of Class 1;*

*Part II. Classification procedures, test methods and criteria relating to self-reactive and polymerizing substances of Division 4.1 and organic peroxides of Division 5.2; and*

*Part III. Classification procedures, test methods and criteria relating to substances or articles of Class 2, Class 3, Class 4, Division 5.1, Class 8 and Class 9.*

*Part IV. Test methods concerning transport equipment*

---

UN Model Regulations, Chapter 1.1, ST/SG/AC.10/42/Add.1/Corr.1

---

*Part V. Classification procedures, test methods and criteria relating to sectors other than transport.*

*Appendices. Information common to a number of different types of tests and national contacts for test details.*

## 1.1 GENERAL APPLICABILITY

...

## 1.1.5 General exceptions

1.1.5.1 Except for 7.4.2, these Instructions do not apply to dangerous goods carried by an aircraft where the dangerous goods are:

...

---

DGP/25-WP/9 (paragraph 2.1.2 of this report)

---

d) to provide, during flight, or related to the flight, aid in connection with search and rescue operations;

...

---

UN Model Regulations, Chapter 1.1.1.2, Note 3, ST/SG/AC.10/42/Add.1 and DGP/25-WP/3  
(see paragraph 3.2.1.1)

---

- f) required for the propulsion of the means of transport or the operation of its specialized equipment during transport (e.g. refrigeration units) or that are required in accordance with the operating regulations (e.g. fire extinguishers) (see 2.2).

Note.— This exception is only applicable to the means of transport performing the transport operation.

...

---

DGP/25-WP/9 (paragraph 2.1.2 of this report)

---

1.1.5.5 Dangerous goods transported under 1.1.5.1 a), b), c) and d) may be carried on flights made by the same aircraft for other purposes (e.g. training flights and positioning flights prior to or after maintenance), subject to the conditions in 1.1.5.4 a) to i).

...

---

UN Model Regulations, Chapter 1.1.1.7, Note 3, ST/SG/AC.10/42/Add.1 and DGP/25-WP/3  
(see paragraph 3.2.1.1)

---

### 1.3 APPLICATION OF STANDARDS

Where the application of a standard is required and there is any conflict between the standard and these Instructions, the Instructions take precedence. The requirements of the standard that do not conflict with these Instructions must be applied as specified, including the requirements of any other standard, or part of a standard, referenced within that standard as normative.

...

## Chapter 3

### GENERAL INFORMATION

*Parts of this Chapter are affected by State Variation BE 1; see Table A-1*

#### 3.1 DEFINITIONS

3.1.1 The following is a list of definitions of commonly used terms in these Instructions. Definitions of terms which have their usual dictionary meanings or are used in the common technical sense are not included. Definitions of additional terms used solely in conjunction with radioactive material are contained in 2;7.1.3.

---

UN Model Regulations, Chapter 1.2, ST/SG/AC.10/42/Add.1 and DGP/25-WP/3 (see paragraph 3.2.1.1)

---

**Aerosols or aerosol dispensers.** An article consisting of a Non-refillable receptacle meeting the requirements of 6;3.2.7, made of metal, glass or plastic and containing a gas, compressed, liquefied or dissolved under pressure, with or without a liquid, paste or powder, and fitted with a release device allowing the contents to be ejected as solid or liquid particles in suspension in a gas, as a foam, paste or powder or in a liquid state or in a gaseous state.

...

**Design life.** For composite cylinders and tubes, the maximum life (in number of years) to which the cylinder or tube is designed and approved in accordance with the applicable standard.

...

**GHS.** The ~~fourth~~ sixth revised edition of the *Globally Harmonized System of Classification and Labelling of Chemicals*, published by the United Nations as document ST/SG/AC.10/30/Rev. 46.

...

---

DGP/25-WP/43 (see paragraph 2.4.3 of this report)

---

**Large packaging.** ~~(Not permitted for air transport.)~~ A packaging consisting of an outer packaging which contains articles or inner packagings and which:

- a) is designed for mechanical handling; and
- b) exceeds 400 kg net mass or 450 litres capacity but has a volume of not more than 3 m<sup>3</sup>;

Note.— Large packagings are only permitted as provided for in Part 4, Introductory Note 13 and S-4:13 of the Supplement.

**Large salvage packaging.** (Not permitted for air transport.) A special packaging which:

- a) is designed for mechanical handling; and
- b) exceeds 400 kg net mass or 450 litres capacity but has a volume of not more than 3 m<sup>3</sup>;

into which damaged, defective ~~or~~ leaking or non-conforming dangerous goods packages, or dangerous goods that have spilled or leaked are placed for purposes of transport for recovery or disposal.

...

**Liquids.** Dangerous goods which at 50°C have a vapour pressure of not more than 300 kPa (3 bar), which are not completely gaseous at 20°C and at a pressure of 101.3 kPa, and which have a melting point or initial melting point of 20°C or less at a pressure of 101.3 kPa. A viscous substance for which a specific melting point cannot be determined must be subjected to the ASTM D 4359-90 test; or to the test for determining fluidity (penetrometer test) prescribed in section 2.3.4 of Annex A of the *European Agreement Concerning the International Carriage of Dangerous Goods by Road (ADR)* (United Nations publication: ECE/TRANS/202225 (Sales No. E.14.VIII.1)).

...

**Manual of Tests and Criteria.** The ~~fifth~~ sixth revised edition of the United Nations publication entitled Recommendations on the Transport of Dangerous Goods, Manual of Tests and Criteria (ST/SG/AC.10/11/~~Rev.5~~Rev.6, ~~Amend.1 and Amend.2~~).

...

---

DGP/25-WP/3 (see paragraph 3.2.1.1.1):

---

**Multiple-element gas containers (MEGCs).** ~~(See UN Recommendations Chapter 1.2).~~ Not permitted for air transport.) A multimodal assembly of cylinders, tubes or bundles of cylinders which are interconnected by a manifold and which are assembled within a framework. The MEGC includes service equipment and structural equipment necessary for the transport of gases.

...

**Pressure drums.** ~~(See UN Recommendations, Chapter 1.2).~~ Not permitted for air transport.) A welded transportable pressure receptacle of a water capacity exceeding 150 litres and of not more than 1 000 litres. (e.g. cylindrical receptacles equipped with rolling hoops, spheres on skids).

...

**Remanufactured large packaging.** ~~(See UN Recommendations, Chapter 1.2).~~ Not permitted for air transport.) A metal or rigid plastics large packaging that:

- a) is produced as a UN type from a non-UN type; or

b) is converted from one UN design type to another UN design type.

Remanufactured large packagings are subject to the same requirements of the UN Model Regulations that apply to new large packagings of the same type (see also design type definition in 6.6.5.1.2 of the UN Model Regulations).

...

**Reused large packaging.** (See UN Recommendations, Chapter 1.2). Not permitted for air transport.) A large packaging to be refilled which has been examined and found free of defects affecting the ability to withstand the performance tests: the term includes those which are refilled with the same or similar compatible contents and are transported within distribution chains controlled by the consignor of the product.

...

**Salvage pressure receptacle.** (See UN Recommendations, Chapter 1.2). Not permitted for air transport.) A pressure receptacle with a water capacity not exceeding 3 000 litres into which are placed damaged, defective, leaking or non-conforming pressure receptacle(s) for the purpose of transport e.g. for recovery or disposal.

...

---

UN Model Regulations, Chapter 1.2, ST/SG/AC.10/42/Add.1 and DGP/25-WP/3 (see paragraph 3.2.1.1)

---

**Self-accelerating polymerization temperature (SAPT).** The lowest temperature at which polymerization may occur with a substance in the packaging as offered for transport. The SAPT must be determined in accordance with the test procedures established for the self-accelerating decomposition temperature for self-reactive substances in accordance with Part II, Section 28 of the UN *Manual of Tests and Criteria*.

...

**Service life.** For composite cylinders and tubes, the number of years the cylinder or tube is permitted to be in service.

...

---

DGP/25-WP/3 (see paragraph 3.2.1.1.1):

---

**Tube.** (Not permitted for air transport.) A transportable pressure receptacle of seamless or composite construction having a water capacity exceeding 150 litres but not more than 3 000 litres.

...

---

DGP/25-WP/3 (see paragraph 3.2.1.3):

---

## Chapter 4

### TRAINING

...

#### 4.1 ESTABLISHMENT OF DANGEROUS GOODS TRAINING PROGRAMMES

##### 4.1.1 Establishment and maintenance

4.1.1.1 Initial and recurrent dangerous goods training programmes must be established and maintained by or on behalf of:

- a) shippers of dangerous goods, including packers and persons or organizations undertaking the responsibilities of the shipper;
- b) operators;

- c) ground handling agencies which perform, on behalf of the operator, the act of accepting, handling, loading, unloading, transferring or other processing of cargo or mail;
- d) ground handling agencies located at an airport which perform, on behalf of the operator, the act of processing passengers;
- e) agencies, not located at an airport, which perform, on behalf of the operator, the act of checking in passengers;
- f) freight forwarders;
- g) agencies engaged in the security screening of passengers and crew and their baggage and/or cargo or mail; and
- h) designated postal operators.

#### **4.1.2 Review and approval**

4.1.2.1 Dangerous goods training programmes required by 4.1.1.1 b) must be subjected to review and approval by the appropriate authority of the State of the Operator.

4.1.2.2 Dangerous goods training programmes required by 4.1.1.1 h) must be subjected to review and approval by the civil aviation authority of the State where the mail was accepted by the designated postal operator.

4.1.2.3 Dangerous goods training programmes required by other than 4.1.1.1 b) and h) should be subjected to review and approval as determined by the appropriate national authority.

...

## Part 2

# CLASSIFICATION OF DANGEROUS GOODS

## INTRODUCTORY CHAPTER

*Parts of this Chapter are affected by State Variations DE 5, NL 4; see Table A-1*

### 1. RESPONSIBILITIES

UN Model Regulations, Chapter 2.0.0, ST/SG/AC.10/42/Add.1 and DGP/25-WP/3 (see paragraph 3.2.2.1.1 a) and b))

1.1 Classification must be made by the appropriate national authority when so required or may otherwise be made by the shipper.

1.2 A shipper who has identified, on the basis of test data, that a substance listed by name in column 1 of the Dangerous Goods List in Part 3, Chapter 2, Table 3-1 meets classification criteria for a hazard class or division that is not identified in the list, may, with the approval of the appropriate national authority, consign the substance:

a) under the most appropriate generic or not otherwise specified (n.o.s.) entry reflecting all hazards; or

b) under the same UN number and name but with additional hazard communication information as appropriate to reflect the additional subsidiary risk(s) (documentation, label) provided that the primary hazard class remains unchanged and that any other transport conditions (e.g. limited quantity, packaging provisions) that would normally apply to substances possessing such a combination of hazards are the same as those applicable to the substance listed.

Additional requirement for the air mode (copy of the document of approval). Not included in UN Model Regulations:

1.2.1 A copy of the document of approval must accompany the consignment.

*Note.— When an appropriate national authority grants such approvals, it should inform the United Nations Sub-Committee of Experts on the Transport of Dangerous Goods accordingly and submit a relevant proposal of amendment to the Dangerous Goods List. Should the proposed amendment be rejected, the appropriate national authority should withdraw its approval.*

### 2. CLASSES, DIVISIONS, PACKING GROUPS — DEFINITIONS

2.1 Substances (including mixtures and solutions) and articles subject to these Instructions are assigned to one of nine classes according to the hazard or the most predominant of the hazards they present. Some of these classes are subdivided into divisions. These classes and divisions are:

...

Class 4: Flammable solids; substances liable to spontaneous combustion; substances which, on contact with water, emit flammable gases

UN Model Regulations, Chapter 2.0.1.1, ST/SG/AC.10/42/Add.1/Corr.1 and DGP/25-WP/12 (see paragraph 2.2.1.1 a) of this report)

Division 4.1: Flammable solids, self-reactive and related substances and solid desensitized explosives and polymerizing substances

Division 4.2: Substances liable to spontaneous combustion

Division 4.3: Substances which, in contact with water, emit flammable gases

...

---

UN Model Regulations, Chapter 2.0.2.2 ST/SG/AC.10/42/Add.1 and DGP/25-WP/3 (see paragraph 3.2.2.1) (editorial amendment in 3.1 was incorporated in 2015-2016 Edition by way of corrigendum)

---

### 3. UN NUMBERS AND PROPER SHIPPING NAMES

3.1 Dangerous goods are assigned to UN numbers and proper shipping names according to their hazard classification and their composition.

3.2 Dangerous goods commonly carried are listed in Table 3-1. Where an article or substance is specifically listed by name, it must be identified in transport by the proper shipping name in Table 3-1. Such substances may contain technical impurities (for example, those deriving from the production process) or additives for stability or other purposes that do not affect its classification. However, a substance listed by name containing technical impurities or additives for stability or other purposes affecting its classification must be considered a mixture or solution (see 3.5). For dangerous goods not specifically listed by name, "generic" or "not otherwise specified (n.o.s.)" entries are provided (see 3.8) to identify the article or substance in transport. The substances listed by name in column 1 of Table 3-1 must be transported according to their classification in the list or under the conditions specified in 1.2. Each entry in Table 3-1 is characterized by a UN number. Table 3-1 also contains relevant information for each entry, such as hazard class, subsidiary risk(s) (if any), packing group (where assigned), packing requirements, passenger and cargo aircraft requirements, etc. Entries in Table 3-1 are of the following four types:

...

## Chapter 1

### CLASS 1 — EXPLOSIVES

...

#### 1.3 DIVISIONS

---

UN Model Regulations, Chapter 2.1.1.4 (f) ST/SG/AC.10/42/Add.1 and DGP/25-WP/3 (see paragraph 3.2.2.1)

---

1.3.1 Class 1 is divided into six divisions:

- a) Division 1.1 — Substances and articles which have a mass explosion hazard (a mass explosion is one which affects almost the entire load virtually instantaneously).

...

- f) Division 1.6 — Extremely insensitive articles which do not have a mass explosion hazard.

This division comprises articles which predominantly contain ~~only~~ extremely insensitive substances and which demonstrate a negligible probability of accidental initiation or propagation.

*Note.— The risk from articles of Division 1.6 is limited to the explosion of a single article.*

...

#### 1.4 COMPATIBILITY GROUPS

...

1.4.2.1 Certain Division 1.4S explosives, identified by Special Provision A165 in Table 3-1, are subject to Test Series 6 (d) of Part I of the *UN Manual of Tests and Criteria* (see ~~ST/SG/AC.10/36/Add.2~~ ST/SG/AC.10/11/ Rev.6) to demonstrate that any hazardous effects arising from functioning are confined within the package. Evidence of a hazardous effect outside the package includes:

...

---

UN Model Regulations, Chapter 2.1.2.1.1 ST/SG/AC.10/42/Add.1 and DGP/25-WP/3 (see paragraph 3.2.2.1)

---

**Table 2-2. Classification codes**

<i>Description of substance or article to be classified</i>	<i>Compatibility group</i>	<i>Classification code</i>
---	----------------------------	----------------------------

...

Articles <u>predominantly</u> containing <del>only</del> extremely insensitive substances	N	1.6N
---	---	------

...

---

UN Model Regulations, Chapter 2.1.3.7, ST/SG/AC.10/42/Add.1 and DGP/25-WP/3 (see paragraph 3.2.2.1)

---

#### 1.5.3 Classification documentation

...

1.5.3.1 An appropriate national authority assigning an article or substance into Class 1 should confirm with the applicant that classification in writing.

1.5.3.2 An appropriate national authority classification document may be in any form and may consist of more than one page, provided pages are numbered consecutively. The document should have a unique reference.

1.5.3.3 The information provided must be easy to identify, legible and durable.

1.5.3.4 Examples of the information that may be provided in the classification documents are as follows:

- a) the name of the appropriate national authority and the provisions in national legislation under which it is granted its authority;
- b) the modal or national regulations for which the classification document is applicable;
- c) confirmation that the classification has been approved, made or agreed in accordance with the UN Model Regulations or these Instructions;
- d) the name and address of the person in law to which the classification has been assigned and any company registration which uniquely identifies a company or other body corporate under national legislation;
- e) the name under which the explosives will be placed onto the market or otherwise supplied for transport;
- f) the proper shipping name, UN number, class, hazard division and corresponding compatibility group of the explosives;
- g) where appropriate, the maximum net explosive mass of the package or article;
- h) the name, signature, stamp, seal or other identification of the person authorized by the appropriate national authority to issue the classification document is clearly visible;
- i) where safety in transport or the hazard division is assessed as being dependent upon the packaging, the packaging mark or a description of the permitted:
  - i) inner packagings;
  - ii) intermediate packagings; and
  - iii) outer packagings;
- j) the classification document states the part number, stock number or other identifying reference under which the explosives will be placed onto the market or otherwise supplied for transport;
- k) the name and address of the person in law who manufactured the explosives and any company registration which uniquely identifies a company or other body corporate under national legislation;
- l) any additional information regarding the applicable packing instruction and special packing provisions where appropriate;
- m) the basis for assigning the classification, i.e. whether on the basis of test results, default for fireworks, analogy with classified explosive, by definition from the Dangerous Goods List etc.;
- n) any special conditions or limitations that the appropriate national authority has identified as relevant to the safety for transport of the explosives, the communication of the hazard and international transport;
- o) the expiry date of the classification document is given where the appropriate national authority considers one to be appropriate.

...

## Chapter 2

### CLASS 2 — GASES

...

---

DGP/25-WP/7 (see paragraph 2.2.2 of this report)

---

#### 2.2 DIVISIONS

...

2.2.3 Gases of Division 2.2 are not subject to these Instructions when contained in the following:

- a) foodstuffs, including carbonated beverages (except UN 1950);
- b) balls intended for use in sports; or
- c) tyres which meet the provisions of Special Provision A59.

Note.— This ~~exemption~~ exception does not apply to lamps. For lamps see 1;2.6.

...

---

UN Model Regulations, Chapter 2.2.4 ST/SG/AC.10/42/Add.1, DGP/25-WP/3 (see paragraphs 3.2.2.1.1 d) and e)) and DGP/25-WP/12 (see paragraph 2.2.1.1 c) of this report)

---

#### 2.6 Gases forbidden for transport

2.6.1 Chemically unstable gases of Class 2 are forbidden for transport unless the necessary precautions have been taken to prevent the possibility of a dangerous decomposition or polymerization under normal conditions of transport. For the precautions necessary to prevent polymerization, see Special Provision A209. To this end particular care must be taken to ensure that receptacles do not contain any substances liable to promote these reactions.

...

## Chapter 3

### CLASS 3 — FLAMMABLE LIQUIDS

...

#### 3.2 ASSIGNMENT OF PACKING GROUPS

3.2.1 Table 2-4 should be used for the determination of the packing group of a liquid that presents a risk due to flammability. For liquids whose only hazard is flammability, the packing group for the material is the packing group shown in Table 2-4. For a liquid possessing an additional hazard(s), the packing group, determined by using Table 2-4, and the packing group based on the severity of the additional hazard(s), must be considered. In such cases, the table of precedence of hazard characteristics appearing in Table 2-1 should be used to determine the correct classification of the liquid.

3.2.2 Viscous flammable liquids such as paints, enamels, lacquers, varnishes, adhesives and polishes having a flash point of less than 23 °C may be assigned to Packing Group III in conformity with the procedures prescribed in Part III, subsection 32.3 of the UN *Manual of Tests and Criteria* provided that:

---

UN Model Regulations, Chapter 2.3.2.2 (a), ST/SG/AC.10/42/Add.1 and DGP/25-WP/3 (see paragraph 3.2.2.1.1 f))

---

- a) the viscosity<sup>1</sup> ~~expressed as the flowtime in seconds~~ and flash point are in accordance with Table 2-5;

Viscosity determination: Where the substance concerned is non-Newtonian, or where a flow cup method of viscosity <sup>1</sup>

- b) less than 3 per cent of the clear solvent layer separates in the solvent separation test;
- c) the mixture or any separated solvent does not meet the criteria for Division 6.1 or Class 8;
- d) the net quantity per package does not exceed 30 L for passenger aircraft or 100 L for cargo aircraft.

...

UN Model Regulations, Chapter 2.3.2.2, ST/SG/AC.10/42/Add.1 and DGP/25-WP/3 (see paragraph 3.2.2.1)

**Table 2-5. Viscosity and flashpoints**

<i>Kinematic viscosity (extrapolated) v (at near-zero shear rate) mm<sup>2</sup>/s at 23 °C</i>	<i>Flow time t in seconds</i>	<i>Jet diameter in mm</i>	<i>Flash point in °C (closed-cup)</i>
<u>20 &lt; v ≤ 80</u>	20 < t ≤ 60	4	above 17
<u>80 &lt; v ≤ 135</u>	60 < t ≤ 100	4	above 10
<u>135 &lt; v ≤ 220</u>	20 < t ≤ 32	6	above 5
<u>220 &lt; v ≤ 300</u>	32 < t ≤ 44	6	above -1
<u>300 &lt; v ≤ 700</u>	44 < t ≤ 100	6	above -5
<u>700 &lt; v</u>	100 < t	6	-5 and below

...

UN Model Regulations, Chapter 2.3.5, ST/SG/AC.10/42/Add.1, DGP/25-WP/3 (see paragraphs 3.2.2.1.1 d) and e)) and DGP/25-WP/12 (see paragraph 2.2.1.1 c) of this report)

### **3.5 Substances forbidden for transport**

3.5.1 Chemically unstable substances of Class 3 are forbidden for transport unless the necessary precautions have been taken to prevent the possibility of a dangerous decomposition or polymerization under normal conditions of transport. For the precautions necessary to prevent polymerization, see Special Provision A209. To this end particular care must be taken to ensure that receptacles do not contain any substances liable to promote these reactions.

...

determination is otherwise unsuitable, a variable shear-rate viscometer must be used to determine the dynamic viscosity coefficient of the substance, at 23 °C, at a number of shear rates. The values obtained are plotted against shear rate and then extrapolated to zero shear rate. The dynamic viscosity thus obtained, divided by the density, gives the apparent kinematic viscosity at near-zero shear rate.

## Chapter 4

### CLASS 4 — FLAMMABLE SOLIDS; SUBSTANCES LIABLE TO SPONTANEOUS COMBUSTION; SUBSTANCES WHICH, IN CONTACT WITH WATER, EMIT FLAMMABLE GASES

...

UN Model Regulations, Chapter 2.4, ST/SG/AC.10/42/Add.1 and DGP/25-WP/3 (see paragraph 3.2.2.1)

#### 4.1 DEFINITIONS AND GENERAL PROVISIONS

4.1.1 Class 4 is divided into three divisions as follows:

a) Division 4.1 — Flammable solids.

Solids which, under conditions encountered in transport, are readily combustible or may cause or contribute to fire through friction; self-reactive substances and polymerizing substances which are liable to undergo a strongly exothermic reaction; desensitized explosives which may explode if not diluted sufficiently.

b) Division 4.2 — Substances liable to spontaneous combustion.

Substances which are liable to spontaneous heating under normal conditions encountered in transport, or to heating up in contact with air, and being then liable to catch fire.

c) Division 4.3 — Substances which, in contact with water, emit flammable gases.

Substances which, by interaction with water, are liable to become spontaneously flammable or to give off flammable gases in dangerous quantities.

4.1.2 As referenced in this Chapter, test methods and criteria, with advice on application of the tests, are given in the current edition of the UN *Manual of Tests and Criteria*, for the classification of the following types of substances of Class 4:

a) Flammable solids (Division 4.1);

b) Self-reactive substances (Division 4.1);

c) Polymerizing substances (Division 4.1);

ed) Pyrophoric solids (Division 4.2);

ee) Pyrophoric liquids (Division 4.2);

ef) Self-heating substances (Division 4.2); and

fg) Substances which, in contact with water, emit flammable gases (Division 4.3).

Test methods and criteria for self-reactive substances and polymerizing substances are given in Part II of the UN *Manual of Tests and Criteria*, and test methods and criteria for the other types of substances of Class 4 are given in Part III, section 33 of the UN *Manual of Tests and Criteria*.

#### 4.2 FLAMMABLE SOLIDS, SELF-REACTIVE SUBSTANCES ~~AND~~, DESENSITIZED EXPLOSIVES AND POLYMERIZING SUBSTANCES

##### 4.2.1 General

Division 4.1 includes the following types of substances:

a) flammable solids (see 4.2.2);

- b) self-reactive substances (see 4.2.3); ~~and~~
- c) solid desensitized explosives (see 4.2.4); and
- d) polymerizing substances (see 4.2.5).

...

#### 4.2.3 Division 4.1 — Self-reactive substances

...

---

DGP/25-WP/35 (see paragraph 2.1.3 of this report)

---

4.2.3.2.5 Classification of self-reactive substances not listed in Table 2-6 and assignment to a generic entry must be made by the appropriate authority of the ~~State of Origin~~ State in which the dangerous goods were manufactured on the basis of a test report. Principles applying to the classification of such substances are provided in 2.4.2.3.3 of the UN Recommendations. The applicable classification procedures, test methods and criteria, and an example of a suitable test report, are given in the current edition of the UN *Manual of Tests and Criteria*, Part II. The statement of approval must contain the classification and the relevant transport conditions.

---

UN Model Regulations, Chapter 2.4, new 2.4.2.5.3, ST/SG/AC.10/42/Add.1 and DGP/25-WP/3 (see paragraph 3.2.1.1) and ST/SG/AC.10/42/Add.1/Corr.1

---

#### 4.2.5 Division 4.1 — Polymerizing substances and mixtures (stabilized)

##### 4.2.5.1 Definitions and properties

4.2.5.1.1 Polymerizing substances are substances which, without stabilization, are liable to undergo a strongly exothermic reaction resulting in the formation of larger molecules or resulting in the formation of polymers under conditions normally encountered in transport. Such substances are considered to be polymerizing substances of Division 4.1 when:

- a) their self-accelerating polymerization temperature (SAPT) is 75 °C or less under the conditions (with or without chemical stabilization as offered for transport) and in the packaging in which the substance or mixture is to be transported;
- b) they exhibit a heat of reaction of more than 300 J/g; and
- c) they do not meet any other criteria for inclusion in Classes 1 to 8.

4.2.5.1.2 A mixture meeting the criteria of a polymerizing substance must be classified as a polymerizing substance of Division 4.1.

4.2.5.1.3 Polymerizing substances are subject to temperature control in transport if their self-accelerating polymerization temperature (SAPT) is 50 °C or less in the packaging in which the substance is to be transported.

...

#### 4.4 SUBSTANCES WHICH, IN CONTACT WITH WATER, EMIT FLAMMABLE GASES (DIVISION 4.3)

...

##### 4.4.3 Assignment of packing groups

4.4.3.1 Packing Group I must be assigned to any substance which reacts vigorously with water at ambient temperatures and demonstrates generally a tendency for the gas produced to ignite spontaneously, or which reacts readily with water at ambient temperatures such that the rate of evolution of flammable gas is equal to or greater than 10 L/kg of substance over any one minute.

4.4.3.2 Packing Group II must be assigned to any substance which reacts readily with water at ambient temperatures such that the maximum rate of evolution of flammable gas is equal to or greater than 20 L/kg of substance per hour, and which does not meet the criteria for Packing Group I.

4.4.3.3 Packing Group III must be assigned to any substance which reacts slowly with water at ambient temperatures such that the maximum rate of evolution of flammable gas is ~~equal to or~~ greater than 1 L/kg of substance per hour, and which does not meet the criteria for Packing Groups I or II.

...

## Chapter 5

### CLASS 5 — OXIDIZING SUBSTANCES; ORGANIC PEROXIDES

...

DGP/25-WP/35 (see paragraph 2.1.3 of this report)

#### 5.2 OXIDIZING SUBSTANCES (DIVISION 5.1)

##### 5.2.1 Classification in Division 5.1

5.2.1.1 Oxidizing substances are classified in Division 5.1 in accordance with the test methods, procedures and criteria in 5.2.2, 5.2.3 and the UN *Manual of Tests and Criteria*, Part III, section 34. In the event of divergence between test results and known experience, the appropriate authority of the ~~State of Origin~~ State in which the dangerous goods were manufactured must be consulted to establish the appropriate classification and packing group.

*Note.— Where substances of this division are listed in the Dangerous Goods List in 3;2, reclassification of those substances in accordance with these criteria need only be undertaken when this is necessary for safety.*

...

##### 5.3.2 Classification of organic peroxides

5.3.2.5 Classification of organic peroxides not listed in 5.3.2.4 and assignment to a generic entry must be made by the appropriate authority of the ~~State of Origin~~ State in which the dangerous goods were manufactured on the basis of a test report. Principles applying to the classification of such substances are provided in 2.5.3.3 of the UN Recommendations. The applicable classification procedures, test methods and criteria, and an example of a suitable test report, are given in the current edition of the UN *Manual of Tests and Criteria*, Part II. The statement of approval must contain the classification and the relevant transport conditions.

...

**Table 2-7. List of currently assigned organic peroxides in packages**

*Note.— Peroxides to be transported must fulfil the classification and the control and emergency temperatures (derived from the self-accelerating decomposition temperature (SADT)) as listed.*

UN Model Regulations, Chapter 2.5, ST/SG/AC.10/42/Add.1 and DGP/25-WP/3 (see paragraph 3.2.2.1)

Organic peroxide	Concentration (per cent)	Diluent type A (per cent)	Diluent type B (per cent) (Note 1)	Inert solid (per cent)	Water (per cent)	Control tempera- ture (°C)	Emergency tempera- ture (°C)	UN generic entry	Notes
tert-Butyl cumyl peroxide	>42-100							<del>3105</del> <u>34073109</u>	
tert-Butyl peroxy-3,5,5- trimethylhexanoate	> <del>32</del> <u>37</u> -100							3105	
tert-Butyl peroxy-3,5,5- trimethylhexanoate	≤42			≥58				3106	

...

...

Organic peroxide	Concentration (per cent)	Diluent type A (per cent)	Diluent type B (per cent) (Note 1)	Inert solid (per cent)	Water (per cent)	Control tempera- ture (°C)	Emergency tempera- ture (°C)	UN generic entry	Notes
tert-Butyl peroxy-3,5,5- trimethylhexanoate	≤ <del>32</del> 37		≥ <del>68</del> 63					3109	
...									
Dibenzoyl peroxide	> <del>54</del> 52-100			≤48				FORBIDDEN	3
...									
Dicetyl peroxydicarbonate	≤100					+30	+35	<del>3446</del> 3120	
...									
...									

## Chapter 6

### CLASS 6 — TOXIC AND INFECTIOUS SUBSTANCES

...

#### 6.2 DIVISION 6.1 — TOXIC SUBSTANCES

...

UN Model Regulations, Chapter 2.1.3.7, ST/SG/AC.10/42/Add.1, DGP/25-WP/3 (see paragraphs 3.2.2.1.1 d) and e)) and DGP/25-WP/12 (see paragraph 2.2.1.1 c) of this report)

#### 6.2.5 Substances forbidden for transport

6.2.5.1 Chemically unstable substances of Division 6.1 are forbidden for transport unless the necessary precautions have been taken to prevent the possibility of a dangerous decomposition or polymerization under normal conditions of transport. For the precautions necessary to prevent polymerization, see Special Provision A209. To this end particular care must be taken to ensure that receptacles do not contain any substances liable to promote these reactions.

...

DGP/25-WP/45 (see paragraph 3.3 of this report)

#### 6.3.6 Infected ~~live~~ animals

##### 6.3.6.1 Infected live animals

A live animal that has been intentionally infected and is known or suspected to contain an infectious substance must not be transported by air unless the infectious substance contained cannot be consigned by any other means. Live animals must not be used to consign infectious substances unless such a substance cannot be consigned by any other means. Infected live animals—A live animal that has been intentionally infected and is known or suspected to contain an infectious substance may only be transported by air under the terms and conditions of an approval granted by the appropriate national authority authorities of the States of Origin, Transit, Destination and Operator in accordance with the Supplement to these Instructions (Part S-1;2).

##### 6.3.6.2 Infected animal material

—Unless an infectious substance cannot be consigned by any other means, live animals must not be used to consign such a

substance.

~~6.3.6.3~~—Animal material ~~from animals intentionally infected for the purpose of propagating pathogens-affected by pathogens~~ of Category A or which would be assigned to Category A in cultures only, must be assigned to UN 2814 or UN 2900 as appropriate. Animal material infected by pathogens of Category B other than those which would be assigned to Category A if they were in cultures must be assigned to UN 3373.

...

## Chapter 7

### CLASS 7 — RADIOACTIVE MATERIAL

...

#### 7.2.4 Classification of packages

...

7.2.4.1.1.3 Radioactive material which is enclosed in or is included as a component part of an instrument or other manufactured article may be classified under UN 2911 — **Radioactive material, excepted package — instruments or articles** provided that:

- a) the radiation level at 10 cm from any point on the external surface of any unpackaged instrument or article is not greater than 0.1 mSv/h; and
- b) each instrument or article bears the marking "RADIOACTIVE" on its external surface except for the following:
  - i) radioluminescent time-pieces or devices;
  - ii) consumer products that either have received regulatory approval in accordance with 1;6.1.4 c) or do not individually exceed the activity limit for an exempt consignment in Table 2-12 (column 5), provided such products are transported in a package that bears the marking "RADIOACTIVE" on an internal surface in such a manner that a warning of the presence of radioactive material is visible on opening the package; and
  - iii) other instruments or articles too small to bear the marking "RADIOACTIVE", provided that they are transported in a package that bears the marking "RADIOACTIVE" on its internal surface in such a manner that a warning of the presence of radioactive material is visible on opening the package;
- c) the active material is completely enclosed by non-active components (a device performing the sole function of containing radioactive material must not be considered to be an instrument or manufactured article); and
- d) the limits specified in columns 2 and 3 of Table 2-14 are met for each individual item and each package, respectively.

7.2.4.1.1.4 Radioactive material in forms other than as specified in 7.2.4.1.1.3 and with an activity not exceeding the limits specified in column 4 of Table 2-14 may be classified under UN 2910 — **Radioactive material, excepted package — limited quantity of material**, provided that:

- a) the package retains its radioactive contents under routine conditions of transport; and
- b) the package bears the marking "RADIOACTIVE" on either:
  - i) an internal surface in such a manner that a warning of the presence of radioactive material is visible on opening the package; or
  - ii) the outside of the package, where it is impractical to mark an internal surface.

...

## Chapter 8

### CLASS 8 — CORROSIVE SUBSTANCES

UN Model Regulations, Chapter 2.1.3.7, ST/SG/AC.10/42/Add.1, DGP/25-WP/3 (see paragraphs 3.2.2.1.1 d) and e)) and DGP/25-WP/12 (see paragraph 2.2.1.1 c) of this report)

---

### **8.3 Substances forbidden for transport**

Chemically unstable substances of Class 8 are forbidden for transport unless the necessary precautions have been taken to prevent the possibility of a dangerous decomposition or polymerization under normal conditions of transport. For the precautions necessary to prevent polymerization, see Special Provision A209. To this end particular care must be taken to ensure that receptacles do not contain any substances liable to promote these reactions.

...

## Part 3

# DANGEROUS GOODS LIST, SPECIAL PROVISIONS AND LIMITED AND EXCEPTED QUANTITIES

## Chapter 1

### GENERAL

...

#### 1.2 PROPER SHIPPING NAME

...

1.2.2 Proper shipping names may be used in the singular or plural as appropriate. In addition, when qualifying words are used as part of the proper shipping name, their sequence on documentation or package ~~markings~~ marks is optional. For instance, “**Dimethylamine solution**” may alternatively be shown as “**Solution of Dimethylamine**”. However, the entry in column 1 reflects the preferred sequence. Alternative spelling reflecting common usage around the world is acceptable for words such as “**caesium**” for “**cesium**”, “**sulfur**” for “**sulphur**”, “**aluminum**” for “**aluminium**”, etc. However, the spelling appearing in Table 3-1 is preferred.

...

**Table 3-1. Dangerous Goods List**

See Attachments A and B for proposed changes to Table 3-1 (Attachment A = Numerical order according to Column 2, UN No. Attachment B = Alphabetical order according to Column 1, Name)

## Chapter 3

### SPECIAL PROVISIONS

...

UN Model Regulations, paragraph 3.3.1, ST/SG/AC.10/42/Add.1 and DGP/25-WP/3 (see paragraph 3.2.3.2.1 c))

3.1 Table 3-2 lists the special provisions referred to in column 7 of Table 3-1 and the information contained in them is additional to that shown for the relevant entry. Where the wording of the special provision is equivalent to that in the UN Model Regulations, the UN special provision number is shown in parentheses.

3.2 Where a special provision includes a requirement for package marking, the provisions of Part 5:2.2 must be met. If the required mark is in the form of specific wording indicated in quotation marks, the size of the mark must be at least 12 mm, unless otherwise indicated in the special provision or elsewhere in these Instructions.

...

**Table 3-2. Special provisions**

TIs UN

...

DGP/25-WP/35 (see paragraph 2.1.3 of this report)

- A17 These substances must not be classified and transported unless authorized by the appropriate authority of the State of Origin State in which the dangerous goods were manufactured on the basis of results from Series 2 tests and a Series 6(c) test on packages as prepared for transport.

...

UN Model Regulations, SP 225, ST/SG/AC.10/42/Add.1 and DGP/25-WP/3 (see paragraph 3.2.3.2)

- A19 (225) Fire extinguishers under this entry may include installed actuating cartridges (cartridges, power device of Division 1.4C or 1.4S), without changing the classification of Division 2.2 provided the total quantity of deflagrating (propellant) explosives does not exceed 3.2 grams per extinguishing unit.

Fire extinguishers must be manufactured, tested, approved and labelled according to the provisions applied in the State of Manufacture.

Note.— Provisions applied in the State of Manufacture means the provisions applicable in the State of Manufacture or those applicable in the State of use.

Fire extinguishers under this entry include:

- a) portable fire extinguishers for manual handling and operation;
- b) fire extinguishers for installation in aircraft;
- c) fire extinguishers mounted on wheels for manual handling;
- d) fire extinguishing equipment or machinery mounted on wheels or wheeled platforms or units transported similar to (small) trailers; and
- e) fire extinguishers composed of a non-rollable pressure drum and equipment, and handled, for example, by fork lift or crane when loaded or unloaded.

The following text was included as a note in the UN Model Regulations. DGP determined it should be shown as regular text as it is regulatory. The UN Sub-Committee Secretary informed the 47th Session that legal requirements were included as notes in the Model Regulations and also in the ADR.

Cylinders which contain gases for use in the above-mentioned extinguishers or for use in stationary fire-fighting installations must meet the requirements in Part 6;5 and all requirements applicable to the relevant dangerous goods when these cylinders are transported separately.

TIs UN

...

UN Model Regulations, SP 240, ST/SG/AC.10/42/Add.1, DGP/25-WP/3 (see paragraph 3.2.3.2.1 d)), DGP/25-WP/13 (see paragraph 2.3.1.1 a) of this report) and DGP/25-WP/5 (see paragraph 2.4.2.4 of this report)

A21 This entry only applies to vehicles powered by wet batteries, sodium batteries, lithium metal batteries or lithium ion batteries and equipment powered by wet batteries or sodium batteries which are transported with these batteries installed.

For the purpose of this special provision, vehicles are self-propelled apparatus designed to carry one or more persons or goods. Examples of such vehicles are electrically-powered cars, motorcycles, scooters, three- and four-wheeled vehicles or motorcycles, ~~trucks, locomotives, battery-assisted~~ bicycles (pedal cycles with an electric motor) and other vehicles of this type (e.g. self-balancing vehicles or vehicles not equipped with at least one seating position), wheelchairs, lawn tractors, self-propelled farming and construction equipment, boats and aircraft.

Examples of equipment are lawnmowers, cleaning machines or model boats and model aircraft. Equipment powered by lithium metal batteries or lithium ion batteries must be consigned under the entries UN 3091 **Lithium metal batteries contained in equipment** or UN 3091 **Lithium metal batteries packed with equipment** or UN 3481 **Lithium ion batteries contained in equipment** or UN 3481 **Lithium ion batteries packed with equipment**, as appropriate.

~~Vehicles or equipment that also contain an internal combustion engine must be consigned under the entries UN 3166 **Engine, internal combustion, flammable gas powered** or UN 3166 **Engine, internal combustion, flammable liquid powered** or UN 3166 **Vehicle, flammable gas powered** or UN 3166 **Vehicle, flammable liquid powered**, as appropriate.~~ Hybrid electric vehicles powered by both an internal combustion engine and wet batteries, sodium batteries, lithium metal batteries or lithium ion batteries, transported with the battery(ies) installed, must be consigned under the entries UN 3166 **Vehicle, flammable gas powered** or UN 3166 **Vehicle, flammable liquid powered**, as appropriate.

~~Vehicles or equipment powered by a fuel cell engine must be consigned under the entries UN 3166 **Vehicle, fuel cell, flammable gas powered** or UN 3166 **Vehicle, fuel cell, flammable liquid powered**, or UN 3166 **Engine, fuel cell, flammable gas powered** or UN 3166 **Engine, fuel cell, flammable liquid powered**, as appropriate.~~

Text added to UN SP 240 related to vehicles which contain dangerous goods other than batteries is not included in Special Provision A21 because it is included in Packing Instructions 220, 378, 950 and 951.

...

UN Model Regulations, SP 207, ST/SG/AC.10/42/Add.1 and DGP/25-WP/3 (see paragraph 3.2.3.2)

A38 (207) ~~Polymeric beads and m~~Moulding compounds may be made from polystyrene, poly(methyl methacrylate) or other polymeric material.

...

DGP/25-WP/35 (see paragraph 2.1.3 of this report)

A49 Other inert material or inert material mixture may be used at the discretion of the appropriate authority of the State of Origin State in which the dangerous goods were manufactured, provided this inert material has identical phlegmatizing properties.

...

A62 (178) This designation may only be used when no other appropriate designation exists in the list and then only with the approval of the appropriate authority of the State of Origin State in which the dangerous goods were manufactured.

TIs UN

...

UN Model Regulations, SP 236, ST/SG/AC.10/42/Add.1 and DGP/25-WP/3 (see paragraph 3.2.3.2.1 e))

A66 (236) Polyester resin kits consist of two components: a base material (~~either Class 3 or Division 4.1, Packing Group II or III~~) and an activator (~~Division 5.2 organic peroxide~~). The organic peroxide must be type D, E or F, not requiring temperature control. ~~The packing group must be Packing Group II or III-is assigned,~~ according to the criteria for ~~either Class 3 or Division 4.1, as appropriate,~~ applied to the base material.

...

DGP/25-WP/2 (see paragraph 3.2.7.2):

“Machinery” was added to Special Provision A70 to account for new entries in Table 3-1 for internal combustion machinery.

A70 Internal combustion or fuel cell engines ~~or machinery~~ being shipped either separately or incorporated into a vehicle, machine or other apparatus, without batteries or other dangerous goods, are not subject to these Instructions when carried as cargo provided that:

...

Multiple engines may be shipped in a unit load device ~~or other type of pallet~~ provided that the shipper has made prior arrangements with the operator(s) for each shipment.

When this special provision is used, the words “not restricted” and the special provision number A70 must be provided on the air waybill when an air waybill is issued.

...

UN Model Regulations, SP 310, ST/SG/AC.10/42/Add.1, DGP/25-WP/3 (see paragraph 3.2.3.2.1 f)) and DGP/25-WP/13 (see paragraph 2.3.1.1 c) of this report)

A88 ~~Pre-production P~~ prototypes of lithium batteries or cells, when these prototypes are transported for testing, or low production runs (i.e. annual production runs consisting of not more than 100 lithium batteries ~~or and~~ cells) of lithium batteries or cells that have not been tested to the requirements in ~~Part III~~, subsection 38.3 of the UN *Manual of Tests and Criteria* may be transported aboard cargo aircraft if approved by the appropriate authority of the State of Origin and the ~~following~~ requirements ~~in Packing Instruction 910 of the Supplement~~ are met:

~~a) except as provided in paragraph c), cells or batteries must be transported in an outer packaging that is a metal, plastic or plywood drum or a metal, plastic or wooden box and that meets the criteria for Packing Group I packagings;~~

~~b) except as provided in paragraph c), each cell or battery must be individually packed in an inner packaging inside an outer packaging and surrounded by cushioning material that is non-combustible, and non-conductive. Cells or batteries must be protected against short-circuiting;~~

~~c) lithium batteries with a mass of 12 kg or greater and having a strong, impact resistant outer casing, or assemblies of such batteries, may be packed in strong outer packagings or protective enclosures not subject to the requirements of Part 6 of these Instructions. The batteries or battery assemblies must be protected against short-circuiting; and~~

d) a copy of the document of approval ~~showing the quantity limitations~~ must accompany the consignment. ~~Transport in accordance with this special provision must be noted on the dangerous goods transport document.~~

TIs UN

Irrespective of the limit specified in column 13 of Table 3-1, the battery or battery assembly as prepared for transport may have a mass exceeding 35 kg-G.

...

UN Model Regulations, SP 244, ST/SG/AC.10/42/Add.1, DGP/25-WP/3 (see paragraph 3.2.3.2.1 g) and DGP/25-WP/13 (see paragraph 2.3.1.1 d) of this report)

A102 (244) This ~~listing entry~~ includes aluminium dross, aluminium skimmings, spent cathodes, spent potliner and aluminium salt slags.

DGP/25-WP/36 (see paragraph 2.3.5 of this report)

~~A104 A toxic subsidiary risk label, although not required by these Instructions, may be applied.~~

...

DGP/25-WP/32 (see paragraph 2.3.3 of this report)

A112 Consumer commodities may only include substances of Class 2 (non-toxic aerosols only), Class 3, Packing Group II or III, Division 6.1 (Packing Group III only), UN 3077, UN 3082 ~~and~~, UN 3175, ~~UN 3334 and UN 3335~~, provided such substances do not have a subsidiary risk. Dangerous goods that are forbidden for transport aboard passenger aircraft must not be transported as consumer commodities.

...

UN Model Regulations, SP 204, ST/SG/AC.10/42/Add.1 and DGP/25-WP/3 (see paragraph 3.2.3.2.1 h))

A132 (204) Articles containing smoke-producing substance(s) corrosive according to the criteria for Class 8 must be labelled with a "Corrosive" subsidiary risk label. ~~Articles containing smoke-producing substance(s) toxic by inhalation according to the criteria for Division 6.1 must be labelled with a "TOXIC" subsidiary risk label (Figure 5-17), except that those manufactured before 31 December 2016 may be offered for transport until 31 December 2018 without a "TOXIC" subsidiary label.~~

...

UN Model Regulations, SP 312, ST/SG/AC.10/42/Add.1 and DGP/25-WP/3 (see paragraph 3.2.3.2.1 i))

A134 (312) Vehicles ~~or machinery~~ powered by a fuel cell engine must be consigned under the entries UN 3166 ~~Vehicle, fuel cell, flammable gas powered~~ or UN 3166 ~~Vehicle, fuel cell, flammable liquid powered, or UN 3166 Engine, fuel cell, flammable gas powered or UN 3166 Engine, fuel cell, flammable liquid powered~~, as appropriate. These entries include hybrid electric vehicles powered by both a fuel cell and an internal combustion engine with wet batteries, sodium batteries, lithium metal batteries or lithium ion batteries, transported with the battery(ies) installed.

TIs UN

...

DGP/25-WP/2 (see paragraph 3.2.7.2):

A151 When dry ice is used as a refrigerant for other than dangerous goods loaded in a unit load device ~~or other type of pallet~~, the quantity limits per package shown in columns 11 and 13 of Table 3-1 for dry ice do not apply. In such case, the unit load device ~~or other type of pallet~~ must be identified to the operator and must allow the venting of the carbon dioxide gas to prevent a dangerous build-up of pressure.

...

UN Model Regulations, SP 373, ST/SG/AC.10/42/Add.1 and DGP/25-WP/3 (see paragraph 3.2.3.2)

- A190 (373) Neutron radiation detectors containing non-pressurized boron trifluoride gas in excess of 1 g and radiation detection systems containing neutron radiation detectors as components may be transported on cargo aircraft in accordance with all applicable requirements of these Instructions irrespective of the indication of "forbidden" in columns 12 and 13 of Table 3-1 and with "Toxic gas" and "Corrosive" labels displayed on each package irrespective of no labels being indicated in column 5, provided the following conditions are met:
- a) each radiation detector must meet the following conditions:
    - i) the pressure in each neutron radiation detector must not exceed 105 kPa absolute at 20 °C;
    - ii) the amount of gas must not exceed 13 grams per detector;
    - iii) each detector must be manufactured under a registered quality assurance programme;
 

*Note.— The application of ISO 9001:2008 may be considered acceptable for this purpose.*
    - iv) each neutron radiation detector must be of welded metal construction with brazed metal to ceramic feed through assemblies. These detectors must have a minimum burst pressure of 1 800 kPa as demonstrated by design type qualification testing; and
    - v) each detector must be tested to a  $1 \times 10^{-10}$  cm<sup>3</sup>/s leaktightness standard before filling.
  - b) radiation detectors transported as individual components must be transported as follows:
    - i) they must be packed in a sealed intermediate plastic liner with sufficient absorbent or adsorbent material to absorb or adsorb the entire gas contents;
    - ii) they must be packed in strong outer packagings and the completed package must be capable of withstanding a 1.8 m drop test without leakage of gas contents from detectors; and
    - iii) the total amount of gas from all detectors per outer packaging must not exceed 52 grams.
  - c) completed neutron radiation detector systems containing detectors meeting the conditions of subparagraph a) must be transported as follows:
    - i) the detectors must be contained in a strong sealed outer casing;
    - ii) the casing must contain sufficient absorbent or adsorbent material to absorb or adsorb the entire gas contents; and
    - iii) the completed system must be packed in strong outer packagings capable of withstanding a 1.8 m drop test without leakage unless a system's outer casing affords equivalent protection.

...

UN Model Regulations, SP 369, ST/SG/AC.10/42/Add.1 and DGP/25-WP/3 (see paragraph 3.2.3.2)

TIs UN

A194 (369) In accordance with Part 2, Introductory Chapter, paragraph 4, this radioactive material in an excepted package possessing toxic and corrosive properties is classified in ~~Class 8, Division 6.1~~ with ~~a~~ radioactive material and corrosive subsidiary risks.

Uranium hexafluoride may be classified under this entry only if the conditions of 2;7.2.4.1.1.2, 2;7.2.4.1.1.5, 2;7.2.4.5.2 and, for fissile-excepted material, of 2;7.2.3.6 are met.

In addition to the provisions applicable to the transport of ~~Class 8, Division 6.1~~ substances with a corrosive subsidiary risk, the provisions of 5;1.2.2.2, 5;1.6.3, 7;1.6 and 7;3.2.1 to 7;3.2.4 apply.

No Class 7 label is required to be displayed.

...

UN Model Regulations, SP 378, ST/SG/AC.10/42/Add.1 and DGP/25-WP/3 (see paragraph 3.2.3.2.1 j))

A202 (≈378) Radiation detectors containing this gas in non-refillable cylinders not meeting the requirements of Part 6;5 and Packing Instruction 200 may be offered for transport under this entry provided:

- a) the working pressure in each cylinder does not exceed 50 bar;
- b) the cylinder capacity does not exceed 12 L;
- c) each cylinder has a minimum burst pressure of at least three times the working pressure when a relief device is fitted and at least four times the working pressure when no relief device is fitted;
- d) each cylinder is manufactured from material which will not fragment upon rupture;
- e) each detector is manufactured under a registered quality assurance programme;

Note.— ISO 9001:2008 may be used for this purpose.

- f) detectors are transported in strong outer packagings. The complete package must be capable of withstanding a 1.2 m drop test without breakage of the detector or rupture of the outer packaging. Equipment that includes a detector must be packed in a strong outer packaging unless the detector is afforded equivalent protection by the equipment in which it is contained; and
- g) transport in accordance with this special provision must be noted on the dangerous goods transport document.

Radiation detectors, including detectors in radiation detection systems, are not subject to any other requirements of these Instructions if the detectors meet the requirements in a) to f) above and the capacity of detector cylinders does not exceed 50 mL.

...

UN Model Regulations, SP 380, ST/SG/AC.10/42/Add.1 and DGP/25-WP/3 (see paragraph 3.2.3.2)

A203 (380) If a vehicle is powered by a flammable liquid and a flammable gas internal combustion engine, it must be assigned to UN 3166 — **Vehicle, flammable gas powered.**

...

UN Model Regulations, SP 382, ST/SG/AC.10/42/Add.1 and DGP/25-WP/3 (see paragraph 3.2.3.2)

A204 (382) Polymeric beads may be made from polystyrene, poly (methyl methacrylate) or other polymeric material. When it can be demonstrated that no flammable vapour, resulting in a flammable atmosphere, is evolved according to test U1 (Test method for substances liable to evolve flammable vapours) of Part III, sub-section 38.4.4 of the *Manual of Tests and Criteria*, polymeric beads, expandable need not be classified under this UN number. This test should only be performed when de-classification of a substance is considered.

2A-25

المرفق (أ) بالتقرير عن البند 2 من جدول الأعمال

TIs UN

...

UN Model Regulations, SP 383, ST/SG/AC.10/42/Add.1 and DGP/25-WP/3 (see paragraph 3.2.3.2)

A205 (383) Table tennis balls manufactured from celluloid are not subject to these Instructions where the net mass of each table tennis ball does not exceed 3.0 g and the total net mass of table tennis balls does not exceed 500 g per package.

...

UN Model Regulations, SP 384, ST/SG/AC.10/42/Add.1 and DGP/25-WP/3 (see paragraph 3.2.3.2.1 k))

A206 (384) The hazard label must conform to the model shown in Figure 5-26. Figure 5-25 may continue to be used until 31 December 2018.

...

UN Model Regulations, SP 385, ST/SG/AC.10/42/Add.1 and DGP/25-WP/3 (see paragraph 3.2.3.2.1 d))

A207 (≈385) This entry applies to vehicles powered by flammable liquid or gas internal combustion engines or fuel cells. Hybrid electric vehicles powered by both an internal combustion engine and wet batteries, sodium batteries, lithium metal batteries or lithium ion batteries, transported with the batteries installed must be consigned under this entry. Vehicles powered by wet batteries, sodium batteries, lithium metal batteries or lithium ion batteries, transported with the batteries installed, must be consigned under the entry UN 3171 — **Battery-powered vehicle** (see Special Provision A21).

For the purpose of this special provision, vehicles are self-propelled apparatus designed to carry one or more persons or goods. Examples of such vehicles are cars, motorcycles, trucks, locomotives, scooters, three- and four-wheeled vehicles or motorcycles, lawn tractors, self-propelled farming and construction equipment, boats and aircraft.

Text added to UN SP 385 related to securely installing dangerous goods that are integral components of the vehicle and lithium batteries meeting the requirements of 2.9.3 were not included in Special Provision A207 because the provisions were adequately addressed in Packing Instructions 950 and 951.

...

UN Model Regulations, SP 363, ST/SG/AC.10/42/Add.1 and DGP/25-WP/3 (see paragraph 3.2.3.2.1 d))

A208 (≈363) SP 363 of the Model Regulations includes the phrase “except those which are assigned under UN 3166 or UN 3363” at the end of sub-paragraph a) but was not included here as it was not considered necessary. A208 is assigned to 3528, 3529 and 3530 in Table 3-1.

a) This entry applies to engines or machinery, powered by fuels classified as dangerous goods via internal combustion systems or fuel cells (e.g. combustion engines, generators, compressors, turbines, heating units).

TIs UN

SP 363 of the Model Regulations includes an exception (sub-paragraph b of that provision) for Engines or machinery which are empty of liquid or gaseous fuels and which do not contain other dangerous goods which is not included in special Provision A208 as it is proposed that the provisions in Special Provision A70 contradict this and that A70 should be retained.

b) Engines and machinery containing fuels meeting the classification criteria of Class 3, must be consigned under the entries UN 3528 — **Engine, internal combustion, flammable liquid powered** or UN 3528 — **Engine, fuel cell, flammable liquid powered** or UN 3528 — **Machinery, internal combustion, flammable liquid powered** or UN 3528 — **Machinery, fuel cell, flammable liquid powered**, as appropriate.

c) Engines and machinery containing fuels meeting the classification criteria of Division 2.1, must be consigned under the entries UN 3529 — **Engine, internal combustion, flammable gas powered** or UN 3529 — **Engine, fuel cell, flammable gas powered** or UN 3529 — **Machinery, internal combustion, flammable gas powered** or UN 3529 — **Machinery, fuel cell, flammable gas powered**, as appropriate.

Engines and machinery powered by both a flammable gas and a flammable liquid must be consigned under the appropriate UN 3529 entry.

d) Engines and machinery containing liquid fuels meeting the classification criteria for environmentally hazardous substances and not meeting the classification criteria of any other class or division, must be consigned under the entries UN 3530 — **Engine, internal combustion** or UN 3530 — **Machinery, internal combustion**, as appropriate.

DGP/25-WP/40 (see paragraph 6.4.1 of this report)

*Note.— Until 31 March 2017, shippers may identify engines as Class 9, UN 3166 using the proper shipping names and Packing Instruction 950 or 951 as shown in the 2015-2016 Edition of these Instructions. In that instance the dangerous goods transport document must indicate the packing instruction number and the UN number and proper shipping name in effect in the 2015-2016 Edition of these Instructions. The marks and labels applied, when required, must be consistent with the information shown on the dangerous goods transport document.*

Text included in UN SP 363 (sub-paragraph f) related to dangerous goods required for the functioning or safe operation of the engines or machinery and lithium batteries meeting the requirements of 2.9.3 is not included in Special Provision A208 because the provisions are adequately addressed in the applicable packing instructions (220, 378, 972)

Most of the provisions included in sub-paragraph g) of UN SP 363 were not included in Special Provision A208 as they were considered inappropriate for the air mode. It was considered more appropriate to include the remaining provisions (i.e. sub-sub paragraphs i) ii) and iii)) in the applicable packing instructions.

...

UN Model Regulations, SP 386, ST/SG/AC.10/42/Add.1, DGP/25-WP/3 (see paragraph 3.2.3.2), DGP/25-WP/12 (see paragraph 2.2.1.1 c) of this report) and DGP/25-WP/19 (see paragraph 3.1.3 of this report)

Provisions included in UN SP 386 related to temperature control were not included in Special Provision A209 since they applied to substances which were forbidden for transport by air unless exempted. They were included in the Supplement as new Special Provision A330 (see the appendix to the Report on Agenda Item 3).

**A209** When chemical stabilization is employed, the person offering the packaging for transport must ensure that the level of stabilization is sufficient to prevent the substance in the packaging from dangerous polymerization at a bulk mean temperature of 50 °C. Where chemical stabilization becomes ineffective at lower temperatures within the anticipated duration of transport, temperature control is required in which case the substances are forbidden for transport by air.

DGP/25-WP/47 (see paragraph 2.3.6 of this report)

TIs UN

A210 This substance is forbidden for transport by air. It may be transported on cargo aircraft only with the prior approval of the appropriate authority of the State of Origin and the State of the Operator under the written conditions established by those authorities.

DGP/25-WP/34, Revised (see paragraph 2.3.4 of this report)

A211 Receptacles, small containing gas (toxic, oxidizing and corrosive) or Gas cartridges (toxic, oxidizing and corrosive) which are intended for use in sterilization devices only, when containing:

- a) UN1067 — Nitrogen dioxide; or
- b) UN1660 — Nitric oxide, compressed

may be transported on passenger and cargo aircraft irrespective of the indication of “forbidden” in columns 10 to 13 of Table 3-1, provided:

- a) the water capacity of receptacles or gas cartridges does not exceed 30 mL;
- b) receptacles or gas cartridges are designed such that the burst pressure is not less than four times the pressure in the cartridge at 55 °C;
- c) receptacles or gas cartridges are packed in a compatible, sealed intermediate packaging with sufficient adsorbent material capable of containing the contents of the gas cartridge;
- d) intermediate packagings are securely packed in an outer packaging of a type permitted by Packing Instruction 203 meeting the Packing Group I performance requirements of Part 6; Chapter 1;
- e) the aggregate water capacity of all receptacles or gas cartridges in a package does not exceed 300 mL;
- f) packages bearing hazard labels denoting the hazards of “toxic gas”, “oxidizer” and “corrosive”; and
- g) reference to Special Provision A211 is made on the dangerous goods transport document as required by Part 5:4.1.5.8.

If the above conditions are met, the requirements of Special Provision A2 do not apply.

A212 UN 2031 — Nitric acid, other than red fuming, with more than 20% and less than 65% nitric acid intended for use in sterilization devices only, may be transported on passenger aircraft irrespective of the indication of “forbidden” in columns 10 and 11 of Table 3-1 provided:

- a) each inner packaging contains not more than 30 mL;
- b) each inner packaging is contained in a sealed leak-proof intermediate packaging with sufficient absorbent material capable of containing contents of the inner packaging;
- c) intermediate packagings are securely packed in an outer packaging of a type permitted by Packing Instruction 855 meeting the Packing Group I performance requirements of Part 6; Chapter 1;
- d) the maximum quantity of nitric acid in the package does not exceed 300 mL; and
- e) reference to Special Provision 212 is made on the dangerous goods transport document as required by Part 5:4.1.5.8.

...

## Chapter 4

### DANGEROUS GOODS IN LIMITED QUANTITIES

...

---

UN Model Regulations, Chapter 3.4, ST/SG/AC.10/42/Add.1, DGP/25-WP/3 (see paragraph 3.2.3.2) and DGP/25-WP/13 (see paragraph 3.2.1.1 e) of this report)

---

#### 4.5 PACKAGE MARKING

4.5.1 Packages containing limited quantities of dangerous goods must be marked as required by the applicable paragraphs of 5;2, except that 5;2.4.4.1 does not apply.

4.5.2 Packages containing limited quantities of dangerous goods and prepared in accordance with this chapter must bear the ~~marking mark~~ shown in Figure 3-1 below. The ~~marking mark~~ must be readily visible, legible and able to withstand open weather exposure without a substantial reduction in effectiveness. The ~~marking mark~~ must be in the form of a square set at an angle of 45°(diamond shaped). The top and bottom portions and the surrounding line must be black. The centre area must be white or a suitable contrasting background. The minimum dimension must be 100 mm × 100 mm and the minimum width of the line forming the diamond must be 2 mm. The symbol "Y" must be placed in the centre of the mark and must be clearly visible. Where dimensions are not specified, all features must be in approximate proportion to those shown.

4.5.2.1 If the size of the package so requires, the minimum outer dimensions shown in Figure 3-1 may be reduced to be not less than 50 mm × 50 mm provided the ~~marking mark~~ remains clearly visible. The minimum width of the line forming the diamond may be reduced to a minimum of 1 mm. The symbol "Y" must remain in approximate proportion to that shown in Figure 3-1.

...

#### 4.5.3 Use of overpacks

4.5.3.1 ~~When packages~~An overpack containing dangerous goods ~~packed~~ in limited quantities ~~are placed in an overpack, the overpack must be marked with the word "OVERPACK" and the marking required by this chapter, unless the markings representative of all dangerous goods in the overpack are visible must be:~~

- ~~a) marked with the word "OVERPACK" in lettering of at least 12 mm high;~~
- ~~b) marked with the other marks required by this chapter; and~~
- ~~c) labelled as required by this chapter~~

~~unless the marks and labels representative of all dangerous goods in the overpack are visible.~~

...

---

UN Model Regulations, Chapter 3.5, ST/SG/AC.10/42/Add.1 and DGP/25-WP/3 (see paragraph 3.2.3.2)

---

## Chapter 5

### DANGEROUS GOODS PACKED IN EXCEPTED QUANTITIES

...

#### 5.2 PACKAGINGS

5.2.1 Packagings used for the transport of dangerous goods in excepted quantities must be in compliance with the following:

- a) there must be an inner packaging and each inner packaging must be constructed of plastic (when used for liquid dangerous goods it must have a thickness of not less than 0.2 mm), or of glass, porcelain, stoneware, earthenware or metal (see also 4;1.1.3.1) and the closure of each inner packaging must be held securely in place with wire, tape or other positive means; any receptacle having a neck with moulded screw threads must have a leak proof threaded type cap. The closure must be resistant to the contents;
- b) each inner packaging must be securely packed in an intermediate packaging with cushioning material in such a way that, under normal conditions of transport, they cannot break, be punctured or leak their contents. ~~The intermediate packaging must completely contain the contents in case of breakage or leakage, regardless of package orientation.~~ For liquid dangerous goods, the intermediate ~~or outer~~ packaging must contain sufficient absorbent material to absorb the entire contents of the inner packagings. ~~In such cases~~ ~~When placed in the intermediate packaging,~~ the absorbent material may be the cushioning material. Dangerous goods must not react dangerously with cushioning,

absorbent material and packaging material or reduce the integrity or function of the materials. Regardless of its orientation, the package must completely contain the contents in case of breakage or leakage;

- c) the intermediate packaging must be securely packed in a strong, rigid outer packaging (wooden, fibreboard or other equally strong material);
- d) each package type must be in compliance with the provisions in 5.3;
- e) each package must be of such a size that there is adequate space to apply all necessary ~~markings~~ marks; and
- f) overpacks may be used and may also contain packages of dangerous goods or goods not subject to these Instructions provided that the packages are secured within the overpack.

...

#### 5.4 MARKING OF PACKAGES

5.4.1 Packages containing excepted quantities of dangerous goods prepared in accordance with this chapter must be durably and legibly marked with the mark shown in Figure 3-2. The primary hazard class or, when assigned, the division of each of the dangerous goods contained in the package must be shown in the mark. Where the name of the shipper or consignee is not shown elsewhere on the package, this information must be included within the mark.

5.4.2 The ~~marking mark~~ must be in the form of a square. The hatching and symbol must be of the same colour, black or red, on white or suitable contrasting background. The dimensions of the mark must be a minimum of 100 mm × 100 mm. Where dimensions are not specified, all features must be in approximate proportion to those shown.

---

UN Model Regulations, Chapter 3.5, ST/SG/AC.10/42/Add.1 and DGP/25-WP/3 (see paragraph 3.2.3.2) and DGP/25-WP/13 (see paragraph 3.2.1.1 e) of this report

---

#### 5.4.3 Use of overpacks

5.4.3.1 An overpack containing dangerous goods packed in excepted quantities ~~must display the markings required by 5.4.1, must be:~~

- a) marked with the word "OVERPACK" in lettering of at least 12 mm high; and
- b) marked with the other marks required by this chapter

unless the marks representative of all dangerous goods on packages in the overpack are clearly visible. The other provisions of 5.2.4.10 apply only if other dangerous goods which are not packed in excepted quantities are contained in the overpack and only in relation to these other dangerous goods.

## Part 4

# PACKING INSTRUCTIONS

### INTRODUCTORY NOTES

...

---

DGP/25-WP/3 (see paragraph 3.2.3.1.2)

---

*Note 7.— Carriage of oxygen and air with aquatic animals*

| With the approval of the appropriate authority of the State of Origin, ~~of Destination~~ and of the Operator, for the purpose of providing life support to aquatic animals during transport, cylinders containing Oxygen compressed (UN 1072) or Air, compressed (UN 1002) may be carried to oxygenate the water in accordance with the provisions of Table S-3-1 and Special Provision A302 (which appear in the Supplement).

...

*Note 10.— Carriage of flames*

| With the approval of the appropriate authority of the State of Origin, ~~or transit (where applicable), of Destination~~ and of the Operator, lamps fuelled by UN 1223 — **Kerosene** or UN 3295 — **Hydrocarbons, liquid, n.o.s.**, carried by a passenger to transport a symbolic flame (e.g. Olympic flame, Peace flame) may be carried in accordance with the provisions of Special Provision A324 (which appears in the Supplement to this document).

...

---

DGP/25-WP/43 (see paragraph 2.4.3 of this report)

---

*Note 13.— Large packagings*

| With the approval of the appropriate authority of the State of Origin and the State of the Operator, an article with a total net mass exceeding 400 kg may be packed in large packagings and carried on cargo aircraft in accordance with the provisions of Part S-4;13 of the Supplement.

## Chapter 1

### GENERAL PACKING REQUIREMENTS

*Parts of this Chapter are affected by State Variations JP 24;  
see Table A-1*

#### 1.1 GENERAL REQUIREMENTS APPLICABLE TO ALL CLASSES EXCEPT CLASS 7

...

---

UN Model Regulations, paragraph 4.1.1.5, ST/SG/AC.10/42/Add.1 and DGP/25-WP/3 (see paragraph 3.2.4.1)

---

1.1.10 Inner packagings must be so packed, secured or cushioned in an outer packaging in such a way that, under normal conditions of transport, they cannot break, be punctured or leak their contents into the outer packaging. Inner packagings containing liquids must be packaged with their closures upward and placed within outer packagings consistent with the orientation ~~markings mark~~ prescribed in 5;3.2.12 b) of these Instructions. Inner packagings that are liable to break or be punctured easily, such as those made of glass, porcelain or stoneware or of certain plastic material, must be secured in outer packagings with suitable cushioning material. Any leakage of the contents must not substantially impair the protective

properties of the cushioning material or of the outer packaging.

...

UN Model Regulations, ST/SG/AC.10/42/Add.1 and DGP/25-WP/3 (see paragraph 3.2.4.1)

1.1.14 Except as provided in 5;3.5.1.1 a), a package must be of such size that there is adequate space to affix all necessary labels and ~~markings~~ marks.

...

UN Model Regulations, paragraph 4.1.1.12, ST/SG/AC.10/42/Add.1 and DGP/25-WP/3 (see paragraph 3.2.4.1)

1.1.18 Every packaging intended to contain liquids must successfully undergo a suitable leakproofness test. This test is part of a quality assurance programme as required by 4;1.1.2 which shows the capability and be capable of meeting the appropriate test level indicated in 6;4.4.2:

- a) before it is first used for transport;
- b) after remanufacturing or reconditioning, before it is reused for transport.

For this test, packagings need not have their own closures fixed.

The inner receptacle of composite packagings may be tested without the outer packaging provided the test results are not affected. This test is not necessary for inner packagings of combination packagings.

...

## Chapter 3

### CLASS 1 — EXPLOSIVES

...

UN Model Regulations, P112(c), PP48, ST/SG/AC.10/42/Add.1 and DGP/25-WP/3 (see paragraph 3.2.4.1)

#### Packing Instruction 114

...

##### b) solid dry

###### Inner packagings

Bags  
 paper, kraft  
 plastics  
 textile, siftproof  
 woven plastics, siftproof  
 Receptacles  
 fibreboard  
 metal  
 paper  
 plastics  
 wood  
 woven plastics, siftproof

###### Intermediate packagings

Not necessary

###### Outer packagings

Boxes  
 fibreboard (4G)  
 natural wood, ordinary (4C1)  
 natural wood, with siftproof walls (4C2)  
 plywood (4D)  
 reconstituted wood (4F)  
 Drums  
 aluminium (1B1, 1B2)  
 fibre (1G)  
 other metal (1N1, 1N2)  
 plastics (1H1, 1H2)  
 plywood (1D)  
 steel (1A1, 1A2)

##### PARTICULAR PACKING REQUIREMENTS OR EXCEPTIONS:

- For UN 0077, 0132, 0234, 0235 and 0236, packagings must be lead-free.
- For UN 0508 and 0509, metal packagings must not be used. Packagings of other material with a small amount of metal, for example metal closures or other metal fittings such as those mentioned in 6;3, are not considered metal

**packagings.**

- For UN 0160 and 0161, when metal drums (1A1, 1A2, 1B1, 1B2, 1N1 or 1N2) are used as the outer packaging, metal packagings must be so constructed that the risk of explosion, by reason of increase in internal pressure from internal or external causes, is prevented.
- For UN 0160 and 0161, inner packagings are not required if drums are used as the outer packaging.

...

UN Model Regulations, Chapter 4.1, 4.1.4.1, ST/SG/AC.10/42/Add.1/Corr.1

**Packing Instruction 130**

...

**PARTICULAR PACKING REQUIREMENTS OR EXCEPTIONS:**

- The following applies to UN 0006, 0009, 0010, 0015, 0016, 0018, 0019, 0034, 0035, 0038, 0039, 0048, 0056, 0137, 0138, 0168, 0169, 0171, 0181, 0182, 0183, 0186, 0221, 0238, 0243, 0244, 0245, 0246, 0254, 0280, 0281, 0286, 0287, 0297, 0299, 0300, 0301, 0303, 0321, 0328, 0329, 0344, 0345, 0346, 0347, 0362, 0363, 0370, 0412, 0424, 0425, 0434, 0435, 0436, 0437, 0438, 0451, 0459 ~~and~~, 0488, 0502 and 0510. Large and robust explosive articles, normally intended for military use, without their means of initiation or with their means of initiation containing at least two effective protective features, may be carried unpackaged. When such articles have propelling charges or are self-propelled, their ignition systems must be protected against stimuli encountered during normal conditions of transport. A negative result in Test Series 4 on an unpackaged article indicates that the article can be considered for transport unpackaged. Such unpackaged articles may be fixed to cradles or contained in crates or other suitable handling, storage or launching devices in such a way that they will not become loose during normal conditions of transport. Where such large explosive articles are as part of their operational safety and suitability tests subjected to test regimes that meet the intentions of these Instructions and such tests have been successfully undertaken, the appropriate national authority may approve such articles to be transported under these Instructions.
- For UN 0457, 0458, 0459 and 0460, whenever loose explosive substances or the explosive substance of an uncased or partly cased article may come into contact with the inner surface of metal packagings (1A2, 1B2, 4A, 4B and metal receptacles), the metal packaging must be provided with an inner liner or coating.

...

---

 UN Model Regulations, packing instruction 137, ST/SG/AC.10/42/Add.1 and DGP/25-WP/3 (see paragraph 3.2.4.1)
 

---

### Packing Instruction 137

#### *Inner packagings*

Bags  
  plastics

Boxes  
  fibreboard  
  wood

Tubes  
  fibreboard  
  metal  
  plastics

Dividing partitions in the  
outer packagings

#### *Intermediate packagings*

Not necessary

#### *Outer packagings*

Boxes  
  aluminium (4B)  
  fibreboard (4G)  
  natural wood, ordinary (4C1)  
  natural wood, with siftproof walls (4C2)  
  other metal (4N)

+ plastics, solid (4H2)  
  plywood (4D)  
  reconstituted wood (4F)  
  steel (4A)

#### **PARTICULAR PACKING REQUIREMENTS OR EXCEPTIONS:**

- For UN 0059, 0439, 0440 and 0441, when the shaped charges are packed singly, the conical cavity must face downwards and the package ~~marked "THIS SIDE UP"~~ **must be marked in accordance with 4.1.1.13**. When the shaped charges are packed in pairs, the conical cavities must face inwards to minimize the jetting effect in the event of accidental initiation.

...

## Chapter 4

### CLASS 2 — GASES

...

---

 UN Model Regulations, paragraph 4.1.6.12, ST/SG/AC.10/42/Add.1 and DGP/25-WP/3 (see paragraph 3.2.4.1)
 

---

4.1.1.2 Parts of cylinders and closed cryogenic receptacles that are in direct contact with dangerous goods must not be affected or weakened by those dangerous goods and must not cause a dangerous effect (e.g. catalysing a reaction or reacting with the dangerous goods). In addition to the requirements specified in the relevant packing instruction, which take precedence, the applicable provisions of ISO 11114-1:2012 and ISO 11114-2:2000~~13~~ must be met.

...

---

 UN Model Regulations, paragraph 4.1.6.8, ST/SG/AC.10/42/Add.1 and DGP/25-WP/3 (see paragraph 3.2.4.1)
 

---

4.1.1.8 Valves must be designed and constructed in such a way that they are inherently able to withstand damage without release of the contents or must be protected from damage, which could cause inadvertent release of the contents of the cylinder and closed cryogenic receptacle, by one of the following methods:

- a) Valves are placed inside the neck of the cylinder and closed cryogenic receptacle and protected by a threaded plug or cap;
- b) Valves are protected by caps. Caps must possess vent holes of a sufficient cross-sectional area to evacuate the gas if leakage occurs at the valves;
- c) Valves are protected by shrouds or guards;
- d) Not used; or
- e) Cylinders and closed cryogenic receptacles are transported in an outer packaging. The packaging as prepared for transport must be capable of meeting the drop test specified in 6.4.3 at the Packing Group I performance level.

For cylinders and closed cryogenic receptacles with valves as described in b) and c), the requirements of ISO 11117:1998 must be met; for valves with inherent protection, the requirements of Annex A of ISO 10297:2006 **or Annex A of**

ISO 10297:2014 must be met. For metal hydride storage systems, the valve protection requirements specified in ISO 16111:2008 must be met.

...

---

UN Model Regulations, paragraphs 4.1.6.12 and 4.1.6.13, ST/SG/AC.10/42/Add.1 and DGP/25-WP/3 (see paragraph 3.2.4.1)

---

4.1.1.12 Cylinders and closed cryogenic receptacles must not be offered for filling:

- a) when damaged to such an extent that the integrity of the cylinder and closed cryogenic receptacle or its service equipment may be affected;
- b) unless the cylinder and closed cryogenic receptacle and its service equipment have been examined and found to be in good working order; or
- c) unless the required certification, retest, and filling markings marks are legible.

4.1.1.13 Filled cylinders and closed cryogenic receptacles must not be offered for transport:

- a) when leaking;
- b) when damaged to such an extent that the integrity of the cylinder and closed cryogenic receptacle or its service equipment may be affected;
- c) unless the cylinder and closed cryogenic receptacle and its service equipment have been examined and found to be in good working order; or
- d) unless the required certification, retest, and filling markings marks are legible.

...

## 4.2 PACKING INSTRUCTIONS

---

UN Model Regulations, packing instruction P200, ST/SG/AC.10/42/Add.1, DGP/25-WP/3 (see paragraph 3.2.4.1.1 a)) and alignment with UN efforts to introduce consistent use of terms “mark” and “marking”)

---

### Packing Instruction 200

For cylinders, the general packing requirements of 4;1.1 and 4;4.1.1 must be met.

Cylinders, constructed as specified in 6;5 are authorized for the transport of a specific substance when specified in the following tables (Table 1 and Table 2). Cylinders other than UN marked and certified cylinders may be used if the design, construction, testing, approval and markings marks conform to the requirements of the appropriate national authority in which they are approved and filled. The substances contained must be permitted in cylinders and permitted for air transport according to these Instructions. Cylinders for which prescribed periodic tests have become due must not be charged and offered for transport until such retests have been successfully completed. Valves must be suitably protected or must be designed and constructed in such a manner that they are able to withstand damage without leakage as specified in Annex B of ISO 10297:1999. Cylinders with capacities of one litre or less must be packaged in outer packaging constructed of suitable material of adequate strength and design in relation to the packaging capacity and its intended use, and secured or cushioned so as to prevent significant movement within the outer packaging during normal conditions of transport. For some substances, the special packing provisions may prohibit a particular type of cylinder. The following requirements must be met:

- 1) Pressure relief devices must be fitted on cylinders used for the transport of UN 1013 **Carbon dioxide** and UN 1070 **Nitrous oxide**. Other cylinders must be fitted with a pressure relief device if specified by the appropriate national authority of the country of use. The type of pressure relief device, the set to discharge pressure and relief capacity of pressure relief devices, if required, must be specified by the appropriate national authority of the country of use. Manifolding of cylinders is not permitted.
- 2) The following two tables cover compressed gases (Table 1) and liquefied and dissolved gases (Table 2). They provide:

- a) the UN number, name and description, and classification of the substance;
- b) the LC<sub>50</sub> for toxic substances;
- c) the types of cylinders authorized for the substance, shown by the letter "X";
- d) the maximum test period for periodic inspection of the cylinders;

Note.— For cylinders which make use of composite materials, the maximum test period must be five years. The test period may be extended to that specified in Tables 1 and 2 (i.e. up to ten years), if approved by the appropriate national authority of the country of use.

- e) the minimum test pressure of the cylinders;
  - f) the maximum working pressure of the cylinders for compressed gases (where no value is given, the working pressure must not exceed two-thirds of the test pressure) or the maximum filling ratio(s) dependent on the test pressure(s) for liquefied and dissolved gases;
  - g) special packing provisions that are specific to a substance.
- 3) In no case must cylinders be filled in excess of the limit permitted in the following requirements:

- a) For compressed gases, the working pressure must be not more than two-thirds of the test pressure of the cylinders. Restrictions to this upper limit on working pressure are imposed by special packing provision "o". In no case must the internal pressure at 65°C exceed the test pressure.
- b) For high pressure liquefied gases, the filling ratio must be such that the settled pressure at 65°C does not exceed the test pressure of the cylinders.

The use of test pressures and filling ratios other than those in the table is permitted provided that the above criterion is met, except where special packing provision "o" applies.

For high pressure liquefied gases and gas mixtures for which relevant data are not available, the maximum filling ratio (FR) must be determined as follows:

$$FR = 8.5 \times 10^{-4} \times d_g \times P_h$$

where FR = maximum filling ratio  
 $d_g$  = gas density (at 15°C, 1 bar)(in g/l)  
 $P_h$  = minimum test pressure (in bar).

If the density of the gas is unknown, the maximum filling ratio must be determined as follows:

$$FR = \frac{P_h \times MM \times 10^{-3}}{R \times 338}$$

where FR = maximum filling ratio  
 $P_h$  = minimum test pressure (in bar)  
 MM = molecular mass (in g/mol)  
 $R = 8.31451 \times 10^{-2}$  bar.l/mol.K (gas constant).

For gas mixtures, the average molecular mass is to be taken, taking into account the volumetric concentrations of the various components.

- c) For low pressure liquefied gases, the maximum mass of contents per litre of water capacity (filling factor) must equal 0.95 times the density of the liquid phase at 50°C; in addition, the liquid phase must not fill the cylinder at any temperature up to 60°C. The test pressure of the cylinder must be at least equal to the vapour pressure (absolute) of the liquid at 65°C, minus 100 kPa (1 bar).

For low pressure liquefied gases for which filling data is not provided in the table, the maximum filling ratio must be determined as follows:

$$FR = (0.0032 \times BP - 0.24) \times d_l$$

where FR = maximum filling ratio  
 BP = boiling point (in Kelvin)  
 $d_l$  = density of the liquid at boiling point (in kg/l).

- d) For UN 1001, **Acetylene, dissolved**, and UN 3374 **Acetylene, solvent free**, see p).

e) For liquefied gases charged with compressed gases, both components — the liquid phase and the compressed gas — have to be taken into consideration in the calculation of the internal pressure in the cylinder.

The maximum mass of contents per litre of water capacity must not exceed 0.95 times the density of the liquid phase at 50°C; in addition, the liquid phase must not completely fill the cylinder at any temperature up to 60°C.

When filled, the internal pressure at 65°C must not exceed the test pressure of the cylinders. The vapour pressures and volumetric expansions of all substances in the cylinders must be considered. When experimental data is not available, the following steps must be carried out:

- i) Calculation of the vapour pressure of the liquid component and of the partial pressure of the compressed gas at 15°C (filling temperature);
- ii) Calculation of the volumetric expansion of the liquid phase resulting from the heating from 15°C to 65°C and calculation of the remaining volume for the gaseous phase;
- iii) Calculation of the partial pressure of the compressed gas at 65°C considering the volumetric expansion of the liquid phase;

*Note.*— The compressibility factor of the compressed gas at 15°C and 65°C must be considered.

iv) Calculation of the vapour pressure of the liquid component at 65°C;

v) The total pressure is the sum of the vapour pressure of the liquid component and the partial pressure of the compressed gas at 65°C;

vi) Consideration of the solubility of the compressed gas at 65°C in the liquid phase;

The test pressure of the cylinder must not be less than the calculated total pressure minus 100 kPa (1bar).

If the solubility of the compressed gas in the liquid component is not known for the calculation, the test pressure can be calculated without taking the gas solubility (sub-paragraph (vi)) into account.

- 4) Gas mixtures containing any of the following gases must not be offered for transport in aluminium alloy cylinders unless approved by the appropriate national authority of the State of Origin and the State of the Operator:

UN 1037 **Ethyl chloride**  
 UN 1063 **Methyl chloride**  
 UN 1063 **Refrigerant gas R 40**  
 UN 1085 **Vinyl bromide, stabilized**  
 UN 1086 **Vinyl chloride, stabilized**  
 UN 1860 **Vinyl fluoride, stabilized**  
 UN 1912 **Methyl chloride and methylene chloride mixture**

- 5) The filling of cylinders must be carried out by qualified staff using appropriate equipment and procedures. The procedures should include checks of:

- The conformity of cylinders and accessories with these Instructions;
- Their compatibility with the product to be transported;
- The absence of damage which might affect safety;
- Compliance with the degree or pressure of filling, as appropriate;
- Marks and identification.

These requirements are deemed to be met if the following standards are applied:

ISO 10691: 2004 Gas cylinders — Refillable welded steel cylinders for liquefied petroleum gas (LPG) — Procedures for checking before, during and after filling.

ISO 11372: 2011 Gas cylinders — Acetylene cylinders — Filling conditions and filling inspection

ISO 11755: 2005 Gas cylinders — Cylinder bundles for compressed and liquefied gases (excluding acetylene) — Inspection at time of filling

ISO 13088: 2011 Gas cylinders — Acetylene cylinder bundles — Filling conditions and filling inspection

ISO 24431:2006 Gas cylinders — Cylinders for compressed and liquefied gases (excluding acetylene) — Inspection at time of filling

## 56) "Special packing provisions":

## Material compatibility

- a) Aluminium alloy cylinders are forbidden.
- b) Copper valves are forbidden.
- c) Metal parts in contact with the contents must not contain more than 65 per cent copper.
- d) When steel cylinders are used, only those bearing the "H" mark in accordance with 6;5.2.7.4 p) are permitted.

## Gas specific provisions:

- l) UN 1040 **Ethylene oxide** may also be packed in hermetically sealed glass ampoules or metal inner packagings suitably cushioned in fibreboard, wooden or metal boxes meeting the Packing Group I performance level. The maximum quantity permitted in any glass inner packaging is 30 g, and the maximum quantity permitted in any metal inner packaging is 200 g. After filling, each inner packaging must be determined to be leak-tight by placing the inner packaging in a hot water bath at a temperature, and for a period of time, sufficient to ensure that an internal pressure equal to the vapour pressure of ethylene oxide at 55°C is achieved. The maximum net mass in any outer packaging must not exceed 2.5 kg. When cylinders are used, they must be of the seamless or welded steel types that are equipped with suitable pressure relief devices. Each cylinder must be tested for leakage with an inert gas before each refilling and must be insulated with three coats of heat retardant paint or in any equally efficient manner. The maximum net quantity per cylinder must not exceed 25 kg.

m) Cylinders must be filled to a working pressure not exceeding 5 bar.

o) In no case must the working pressure or filling ratio shown in the table be exceeded.

- p) For UN 1001 **Acetylene, dissolved**, and UN 3374 **Acetylene, solvent free**: cylinders must be filled with a homogeneous monolithic porous mass; the working pressure and the quantity of acetylene must not exceed the values prescribed in the approval or in ISO 3807-1:2000 ~~or~~ ISO 3807-2:2000 or ISO 3807:2013, as applicable.

For UN 1001 **Acetylene, dissolved**, cylinders must contain a quantity of acetone or suitable solvent as specified in the approval (see ISO 3807-1:2000 ~~or~~ ISO 3807-2:2000 or ISO 3807:2013, as applicable); cylinders fitted with pressure relief devices must be transported vertically.

The test pressure of 52 bar applies only to cylinders ~~conforming to ISO 3807-2:2000~~ fitted with a fusible plug.

- ra) Ethyl chloride may be carried in securely sealed glass ampoules (IP.8) containing not more than 5 g of ethyl chloride with a ullage of not less than 7.5 per cent at 21°C. Ampoules must be cushioned with efficient non-combustible material in partitioned cartons with not more than 12 ampoules per carton. The cartons must be tightly packed to prevent movement in wooden boxes (4C1, 4C2), plywood boxes (4D), reconstituted wood boxes (4F), fibreboard boxes (4G) or plastic boxes (4H1, 4H2) that meet the performance testing requirements of 6;4 at the Packing Group II performance level. Not more than 300 g of ethyl chloride is permitted per package.

- s) Aluminium alloy cylinders must be:

- Equipped only with brass or stainless steel valves; and
- Cleaned in accordance with ISO 11621:1997 and not contaminated with oil.

## Periodic inspection:

- u) The interval between periodic tests may be extended to 10 years for aluminium alloy cylinders when the alloy of the cylinder has been subjected to stress corrosion testing as specified in ~~ISO 7866:1999~~ ISO 7866:2012 + Cor 1:2014.
- v) The interval between periodic inspections for steel cylinders may be extended to 15 years if approved by the appropriate national authority of the country of use.

## Requirements for N.O.S. descriptions and for mixtures:

- z) The construction materials of the cylinders and their accessories must be compatible with the contents and must not react to form harmful or dangerous compounds therewith.

The test pressure and filling ratio must be calculated in accordance with the relevant requirements of PI 200.

The necessary steps must be taken to prevent dangerous reactions (i.e. polymerization or decomposition) during transport. If necessary, stabilization or addition of an inhibitor may be required.

*Note.— For the carriage of oxygen to provide life support to aquatic animals, see Note 7 of the Introductory Notes to this Part.*

...

...

### Packing Instruction 202

#### Requirements for open cryogenic receptacles

Open cryogenic receptacles must be constructed to meet the following requirements:

...

9. Open cryogenic receptacles must bear the following marks permanently affixed, e.g. by stamping, engraving or etching:

- the manufacturer's name and address;
- the model number or name;
- the serial or batch number;
- the UN number and proper shipping name of gases for which the receptacle is intended;
- the capacity of the receptacle in litres.

*Note.— The size of the marking **mark** must be as set out for cylinders in Part 6;5.2.7.1. Open cryogenic receptacles manufactured prior to 1 January 2012 are not required to be so marked.*

10. Open cryogenic receptacles are permitted for nitrogen, argon, krypton, neon and xenon refrigerated liquids.

DGP/25-WP/2 (see paragraph 3.2.4.1):

### Packing Instruction 203

Passenger and cargo aircraft for UN 1950 and 2037 only

The general packing requirements of 4;1 must be met.

For the purposes of this packing instruction, a receptacle is considered to be an inner packaging.

*Note.— "Receptacle" has the same meaning as set out in 1;3. Any reference in this packing instruction to receptacle will include "aerosols" of UN 1950 and "receptacles, small, containing gas" and "gas cartridges" of UN 2037.*

#### **Metal aerosols (IP.7, IP.7A, IP.7B) and non-refillable receptacles containing gas (gas cartridges)**

Non-refillable metal aerosols and non-refillable receptacles containing gas (gas cartridges) must not exceed 1 000 mL capacity.

The following conditions must be met:

- a) the pressure in the receptacle must not exceed 1 500 kPa at 55°C and each receptacle must be capable of withstanding without bursting a pressure of at least 1.5 times the equilibrium pressure of the contents at 55°C;
- b) if the pressure in the receptacle exceeds 970 kPa at 55°C but does not exceed 1 105 kPa at 55°C, an IP.7, IP.7A or IP.7B metal receptacle must be used;
- c) if the pressure in the receptacle exceeds 1 105 kPa at 55°C but does not exceed 1 245 kPa at 55°C, an IP.7A or IP.7B metal receptacle must be used;
- d) if the pressure in the receptacle exceeds 1 245 kPa at 55°C, an IP.7B metal receptacle must be used;

- e) IP.7B metal receptacles having a minimum burst pressure of 1 800 kPa may be equipped with an inner capsule charged with a non-flammable, non-toxic compressed gas to provide the propellant function. In this case, the pressures indicated in a), b), c) or d) do not apply to the pressure within the capsule for an aerosol. The quantity of gas contained in the capsule must be so limited such that the minimum burst pressure of the receptacle would not be exceeded if the entire gas content of the capsule were released into the outer metal receptacle;
- f) the liquid content must not completely fill the closed receptacle at 55°C;
- g) each receptacle exceeding 120 mL capacity must have been heated until the pressure in the receptacle is equivalent to the equilibrium pressure of the contents at 55°C, without evidence of leakage, distortion or other defect. [For aerosols, non-flammable \(tear gas devices\), this heat test applies to all aerosols regardless of their capacity.](#)

#### **Plastic aerosols (IP.7C)**

Non-refillable plastic aerosols must not exceed 120 mL capacity, except when the propellant is a non-flammable, non-toxic gas and the contents are not dangerous goods in accordance with the provisions of the ~~se-Technical~~ Instructions, in which case the quantity must not exceed 500 mL.

The following conditions must be met:

- a) the contents must not completely fill the closed receptacle at 55°C;
- b) the pressure in the receptacle may not exceed 970 kPa at 55°C; and
- c) each receptacle must be leak tested in accordance with the provisions of 6;3.2.8.1.6.

#### **Non-flammable aerosols containing medical preparations or biological products**

Aerosols, non-flammable, containing only a non-toxic substance or substances and biological products or a medical preparation which will be deteriorated by a heat test, are acceptable in inner non-refillable receptacles not exceeding 575 mL capacity each, providing all the following conditions are met:

- a) the pressure in the aerosol must not exceed 970 kPa at 55°C;
- b) the liquid contents must not completely fill the closed receptacle at 55°C;
- c) one aerosol out of each lot of 500 or less must be heated until the pressure in the aerosol is equivalent to the equilibrium pressure of the contents at 55°C, without evidence of leakage, distortion or other defect;
- d) the valves must be protected by a cap or other suitable means during transport.

<u>UN number and name</u>	<u>Net quantity per package</u>	
	<u>Passenger</u>	<u>Cargo</u>
UN 1950 <u>Aerosols, flammable</u>	<u>75 kg</u>	<u>150 kg</u>
UN 1950 <u>Aerosols, flammable (engine starting fluid)</u>	<u>Forbidden</u>	<u>150 kg</u>
UN 1950 <u>Aerosols, non-flammable</u>	<u>75 kg</u>	<u>150 kg</u>
UN 1950 <u>Aerosols, non-flammable (tear gas devices)</u>	<u>Forbidden</u>	<u>50 kg</u>
UN 2037 <u>Gas cartridges</u>	<u>1 kg</u>	<u>15 kg</u>
UN 2037 <u>Receptacles, small, containing gas</u>	<u>1 kg</u>	<u>15 kg</u>

DGP/25-WP/2 (see paragraph 3.2.4.1) and DGP/25-WP/3 (see paragraph 3.2.4.1.1 b))

#### ADDITIONAL PACKING REQUIREMENTS

- Packagings must meet Packing Group II performance requirements.
- Release valves on aerosols must be protected by a cap or other suitable means to prevent inadvertent release of the contents during normal conditions of air transport.
- Receptacles must be tightly packed, so as to prevent excessive movement and inadvertent discharge during normal conditions of transport.

DGP/25-WP/2 (see paragraph 3.2.4.1)

#### UN 1950 Aerosols, non-flammable (tear gas devices) – Cargo Aircraft Only

- Only metal receptacles, IP.7, IP.7A, IP.7B are permitted. The aerosols must be individually placed into spiral wound tubes fitted with metal ends or a double-faced fibreboard box with suitable padding before being packed into the outer packaging.

#### OUTER PACKAGINGS (see 6;3.1)

##### *Boxes*

Aluminium (4B)  
Fibreboard (4G)  
Natural wood (4C1, 4C2)  
Other metal (4N)  
Plastics (4H1, 4H2)  
Plywood (4D)  
Reconstituted wood (4F)  
Steel (4A)

##### *Drums*

Aluminium (1B2)  
Fibre (1G)  
Other metal (1N2)  
Plastics (1H2)  
Plywood (1D)  
Steel (1A2)

### Packing Instruction Y203

Passenger and cargo aircraft for UN 1950 and 2037 only

The requirements of 3;4 must be met.

For the purposes of this packing instruction, a receptacle is considered to be an inner packaging.

*Note.* — “Receptacle” has the same meaning as set out in 1;3. Any reference in this packing instruction to receptacle will include “aerosols” of UN 1950 and “receptacles, small, containing gas” and “gas cartridges” of UN 2037.

#### **Metal aerosols (IP.7, IP.7A, IP.7B) and non-refillable receptacles containing gas (gas cartridges)**

Non-refillable metal aerosols and non-refillable receptacles containing gas (gas cartridges) containing toxic substances must not exceed 120 mL capacity.

All other non-refillable metal aerosols and non-refillable receptacles containing gas (gas cartridges) must not exceed 1 000 mL capacity.

The following conditions must be met:

- a) the pressure in the receptacle must not exceed 1 500 kPa at 55°C and each receptacle must be capable of withstanding without bursting a pressure of at least 1.5 times the equilibrium pressure of the contents at 55°C;
- b) if the pressure in the receptacle exceeds 970 kPa at 55°C but does not exceed 1 105 kPa at 55°C, an IP.7, IP.7A or IP.7B metal receptacle must be used;
- c) if the pressure in the receptacle exceeds 1 105 kPa at 55°C, an IP.7A or IP.7B metal receptacle must be used;
- d) if the pressure in the receptacle exceeds 1 245 kPa at 55°C, an IP.7B metal receptacle must be used;
- e) IP.7B metal receptacles having a minimum burst pressure of 1 800 kPa may be equipped with an inner capsule charged with a non-flammable, non-toxic compressed gas to provide the propellant function. In this case, the pressures indicated in a), b), c) or d) do not apply to the pressure within the capsule for an aerosol. The quantity of gas contained in the capsule must be so limited such that the minimum burst pressure of the receptacle would not be exceeded if the entire gas content of the capsule were released into the outer metal receptacle;
- f) the liquid content must not completely fill the closed receptacle at 55°C;
- g) each receptacle exceeding 120 mL capacity must have been heated until the pressure in the receptacle is equivalent to the equilibrium pressure of the contents at 55°C, without evidence of leakage, distortion or other defect.

#### **Plastic aerosols (IP.7C)**

Non-refillable plastic aerosols must not exceed 120 mL capacity, except when the propellant is a non-flammable, non-toxic gas and the contents are not dangerous goods in accordance with the provisions of ~~the Technical~~ these Instructions, in which case the quantity must not exceed 500 mL.

The following conditions must be met:

- a) the contents must not completely fill the closed receptacle at 55°C;
- b) the pressure in the receptacle may not exceed 970 kPa at 55°C; and
- c) each receptacle must be leak tested in accordance with the provisions of 6;3.2.8.1.6.

**Non-flammable aerosols containing medical preparations or biological products**

Aerosols, non-flammable, containing only a non-toxic substance or substances and biological products or a medical preparation which will be deteriorated by a heat test, are acceptable in inner non-refillable receptacles not exceeding 575 mL capacity each, providing all the following conditions are met:

- a) the pressure in the aerosol must not exceed 970 kPa at 55°C;
- b) the liquid contents must not completely fill the closed receptacle at 55°C;
- c) one aerosol out of each lot of 500 or less must be heated until the pressure in the aerosol is equivalent to the equilibrium pressure of the contents at 55°C, without evidence of leakage, distortion or other defect;
- d) the valves must be protected by a cap or other suitable means during transport.

<u>UN number and name</u>	<u>Total gross mass per package</u>
<u>UN 1950 Aerosols, flammable</u>	<u>30 kg G</u>
<u>UN 1950 Aerosols, flammable (engine starting fluid)</u>	<u>30 kg G</u>
<u>UN 1950 Aerosols, non-flammable</u>	<u>30 kg G</u>
<u>UN 1950 Aerosols, non-flammable (tear gas devices)</u>	<u>30 kg G</u>
<u>UN 2037 Gas cartridges</u>	<u>1 kg</u>
<u>UN 2037 Receptacles, small, containing gas</u>	<u>1 kg</u>

UN Model Regulations, packing instruction P207, ST/SG/AC.10/42/Add.1

The words “and inadvertent discharge during normal conditions of transport” is included in the 18th revised edition of the UN Model Regulations. DGP-WG/15 was invited to consider whether these words should be included in the Technical Instructions along with the word “excessive” introduced through ST/SG/AC.10/42/Add.1.

**ADDITIONAL PACKING REQUIREMENTS**

- Release valves on aerosols must be protected by a cap or other suitable means to prevent inadvertent release of the contents during normal conditions of air transport.
- Receptacles must be ~~tightly~~ packed, so as to prevent excessive movement and inadvertent discharge during normal conditions of transport.

**OUTER PACKAGINGS (see 6;3.1)**

<i>Boxes</i>	<i>Drums</i>
Aluminium	Aluminium
Fibreboard	Fibre
Natural wood	Other metal
Other metal	Plastics
Plastics	Plywood
Plywood	Steel
Reconstituted wood	
Steel	

**Packing Instruction 204**

~~The general packing requirements of 4;1 must be met.~~

~~Aerosols, non-flammable, containing biological products or a medical preparation which will be deteriorated by a heat test, are acceptable in inner non-refillable receptacles not exceeding 575 mL capacity each, providing all the following conditions are met:~~

- ~~— a) the pressure in the aerosol must not exceed 970 kPa at 55°C;~~
- ~~— b) the liquid contents must not completely fill the closed receptacle at 55°C;~~
- ~~— c) one aerosol out of each lot of 500 or less must be heated until the pressure in the aerosol is equivalent to the equilibrium pressure of the contents at 55°C, without evidence of leakage, distortion or other defect;~~
- ~~— d) the valves must be protected by a cap or other suitable means during transport;~~
- ~~— e) aerosols must be tightly packed, so as to prevent movement, in wooden boxes (4C1, 4C2), plywood boxes (4D), reconstituted wood boxes (4F), fibreboard boxes (4G) or plastic boxes (4H1, 4H2) of Packing Group II.~~

### Packing Instruction Y204

The requirements of 3;4 must be met.

Single packagings are not permitted.

#### COMBINATION PACKAGINGS:

##### INNER:

Aerosols, non-flammable, containing only a non-toxic substance or substances and biological products or a medical preparation which will be deteriorated by a heat test, are acceptable in inner non-refillable receptacles not exceeding 575 mL capacity each, providing all the following conditions are met:

- ~~— a) the pressure in the aerosol must not exceed 970 kPa at 55°C;~~
- ~~— b) the liquid contents must not completely fill the closed receptacle at 55°C;~~
- ~~— c) one aerosol out of each lot of 500 or less must be heated until the pressure in the aerosol is equivalent to the equilibrium pressure of the contents at 55°C, without evidence of leakage, distortion or other defect;~~
- ~~— d) the valves must be protected by a cap or other suitable means during transport;~~
- ~~— e) aerosols must be tightly packed, so as to prevent movement, in one of the following boxes:~~

##### OUTER:

##### Boxes

- ~~— Fibreboard~~
- ~~— Plastics~~
- ~~— Plywood~~
- ~~— Reconstituted wood~~
- ~~— Wooden~~

...

### Packing Instruction 212

The general packing requirements of 4;1 must be met.

Aerosols, non-flammable, which are tear gas devices are permitted in inner non-refillable metal receptacles not exceeding 1 000 mL capacity each providing all the following conditions are met:

- ~~— a) the pressure in the aerosol must not exceed 1 500 kPa at 55°C and each receptacle must be capable of withstanding without bursting a pressure of at least 1.5 times the equilibrium pressure of the contents at 55°C;~~
- ~~— b) if the pressure in the aerosol does not exceed 1 105 kPa at 55°C, an IP.7, IP.7A or IP.7B metal receptacle must be used;~~

- ~~c) if the pressure in the aerosol exceeds 1 105 kPa at 55°C but does not exceed 1 245 kPa at 55°C, an IP.7A or IP.7B metal receptacle must be used;~~
- ~~d) if the pressure in the aerosol exceeds 1 245 kPa at 55°C, an IP.7B metal receptacle must be used;~~
- ~~e) IP.7B metal receptacles having a minimum burst pressure of 1 800 kPa may be equipped with an inner capsule charged with a non-flammable, non-toxic compressed gas to provide the propellant function. In this case, the pressures indicated in a), b), c) or d) do not apply to the pressure within the capsule. The quantity of gas contained in the capsule must be so limited such that the minimum burst pressure of the receptacle would not be exceeded if the entire gas content of the capsule were released into an aerosol;~~
- ~~f) the liquid content must not completely fill the closed receptacle at 55°C;~~
- ~~g) each aerosol must have been heated until the pressure in the aerosol is equivalent to the equilibrium pressure of the contents at 55°C, without evidence of leakage, distortion or other defect;~~
- ~~h) the valves must be protected by a cap or other suitable means during transport;~~
- ~~i) aerosols must be individually placed into spiral wound tubes fitted with metal ends or a double-faced fibreboard box with suitable padding, which must be tightly packed in wooden boxes (4C1, 4C2), plywood boxes (4D), reconstituted wood boxes (4F), fibreboard boxes (4G) or plastic boxes (4H1, 4H2) of Packing Group II. Maximum net quantity per package is 50 kg.~~

...

UN Model Regulations, packing instruction P205, ST/SG/AC.10/42/Add.1 and DGP/25-WP/3  
(see paragraph 3.2.4.1)

### Packing Instruction 214

Cargo aircraft only for UN 3468 only

This Instruction applies to storage systems containing hydrogen absorbed in a metal hydride (UN 3468) individually or when contained in equipment and apparatus when transported on cargo aircraft.

- 1) For metal hydride storage systems, the general packing requirements of 4;4.1 must be met.
- 2) Only cylinders not exceeding 150 L in water capacity and having a maximum developed pressure not exceeding 25 MPa are covered by this packing instruction.
- 3) Metal hydride storage systems meeting the applicable requirements of 6;5 for the construction and testing of cylinders containing gas may be used for the transport of hydrogen only.
- 4) When steel cylinders or composite cylinders with steel liners are used, only those bearing the "H" mark, in accordance with 6;5.2.9.2 j) are permitted.
- 5) Metal hydride storage systems must meet the service conditions, design criteria, rated capacity, type tests, batch tests, routine tests, test pressure, rated charging pressure and provisions for pressure relief devices for transportable metal hydride storage systems specified in ISO 16111:2008, and their conformity and approval must be assessed in accordance with 6;5.2.5.
- 6) Metal hydride storage systems must be filled with hydrogen at a pressure not exceeding the rated charging pressure shown in the permanent markings mark on the system as specified in ISO 16111:2008.
- 7) The periodic test requirements for a metal hydride storage system must be in accordance with ISO 16111:2008 and carried out in accordance with 6;5.2.6, and the interval between periodic inspections must not exceed five years.
- 8) Storage systems with a water capacity of less than 1 L must be packaged in rigid outer packagings constructed of suitable material of adequate strength and design in relation to the packaging capacity and its intended use. They must be adequately secured or cushioned so as to prevent damage during normal conditions of transport.
- 9) Maximum net quantity per package for cargo aircraft is 100 kg of metal hydride storage systems, including when such storage systems are packed with equipment or contained in equipment.

...

UN Model Regulations, packing instruction P206, ST/SG/AC.10/42/Add.1 and DGP/25-WP/3  
(see paragraph 3.2.4.1)

### Packing Instruction 218

Passenger and cargo aircraft for UN 3500, 3501, 3502, 3503, 3504 and 3505 only

#### General requirements

The general requirements of 4;4.1 applicable to cylinders must be met. Cylinders, constructed as specified in 6;5 are authorized for the transport of UN 3500, UN 3501, UN 3502, UN 3503, UN 3504 and UN 3505. Cylinders other than UN marked and certified cylinders may be used if the design, construction, testing, approval and markings marks conform to the requirements of the appropriate national authority of the State in which they are approved and filled. The substances contained must be permitted in cylinders and permitted for air transport according to these Instructions. Cylinders for which prescribed periodic tests have become due must not be charged and offered for transport until such retests have been successfully completed.

#### Compatibility requirements

- The construction materials of the cylinders and their accessories must be compatible with the contents and must not react to form harmful or dangerous compounds therewith.
- The necessary steps must be taken to prevent dangerous reactions (i.e. polymerization or decomposition) during transport. If necessary, stabilization or addition of an inhibitor may be required.

#### Periodic inspection

- The maximum test period for periodic inspection of the cylinders must be 5 years.

#### ADDITIONAL PACKING REQUIREMENTS

- a) Cylinders must be so filled that at 50 °C the non-gaseous phase does not exceed 95% of their water capacity and they are not completely filled at 60 °C. When filled, the internal pressure at 65 °C must not exceed the test pressure of the cylinders. The vapour pressures and volumetric expansion of all substances in the cylinders must be taken into account.
- b) Spray application equipment (such as a hose and wand assembly) must not be connected during transport.
- c) The minimum test pressure must be in accordance with Packing Instruction 200 for the propellant but must not be less than 20 bar.
- d) Non-refillable cylinders used may have a water capacity in litres not exceeding 1 000 litres divided by the test pressure expressed in bars provided capacity and pressure restrictions of the construction standard comply with ISO 11118:1999, which limits the maximum capacity to 50 litres.
- e) For liquids charged with a compressed gas both components — the liquid phase and the compressed gas — have to be taken into consideration in the calculation of the internal pressure in the cylinder. When experimental data is not available, the following steps must be carried out:
  - 1) Calculation of the vapour pressure of the liquid component and of the partial pressure of the compressed gas at 15 °C (filling temperature);
  - 2) Calculation of the volumetric expansion of the liquid phase resulting from the heating from 15 °C to 65 °C and calculation of the remaining volume for the gaseous phase;
  - 3) Calculation of the partial pressure of the compressed gas at 65 °C considering the volumetric expansion of the liquid phase;

Note.— The compressibility factor of the compressed gas at 15 °C and 65 °C must be considered.
  - 4) Calculation of the vapour pressure of the liquid component at 65 °C;
  - 5) The total pressure is the sum of the vapour pressure of the liquid component and the partial pressure of the compressed gas at 65 °C;
  - 6) Consideration of the solubility of the compressed gas at 65 °C in the liquid phase.

The test pressure of the cylinders must not be less than the calculated total pressure minus 100 kPa (1 bar).

If the solubility of the compressed gas in the liquid component is not known for the calculation, the test pressure can be calculated without taking the gas solubility (sub-paragraph f) into account.

**OUTER PACKAGINGS***Boxes**Drums**Jerricans*

Strong outer packagings

UN Model Regulations, packing instruction P208, ST/SG/AC.10/42/Add.1 and DGP/25-WP/3  
(see paragraph 3.2.4.1)

**Packing Instruction 219**

For cylinders, the general packing requirements of 4;1.1 and 4;4.1.1 must be met.

This Instruction applies to Class 2 adsorbed gases.

- 1) The following packagings are permitted provided the general packing requirements of 4.1.1 are met:
  - a) Cylinders constructed as specified in 6;5.2 and in accordance with ISO 11513:2011 or ISO 9809-1:2010-; and
  - b) Cylinders constructed before 1 January 2016 in accordance with 6;5.3 and a specification approved by the appropriate national authorities of the countries of transport and use.
- 2) The pressure of each filled cylinder must be less than 101.3 kPa at 20 °C and less than 300 kPa at 50 °C.
- 3) The minimum test pressure of the cylinder is 21 bar.
- 4) The minimum burst pressure of the cylinder is 94.5 bar.
- 5) The internal pressure at 65 °C of the filled cylinder must not exceed the test pressure of the cylinder.
- 6) The adsorbent material must be compatible with the cylinder and must not form harmful or dangerous compounds with the gas to be adsorbed. The gas in combination with the adsorbent material must not affect or weaken the cylinder or cause a dangerous reaction (e.g. a catalyzing reaction).
- 7) The quality of the adsorbent material must be verified at the time of each fill to assure the pressure and chemical stability requirements of this packing instruction are met each time an adsorbed gas package is offered for transport.
- 8) The adsorbent material must not meet the criteria of any of the classes or divisions in these Instructions.
- 9) The filling procedure must be in accordance with Annex A of ISO 11513:2011.
- 10) The maximum period for periodic inspections is five years.
- 11) The construction materials of the cylinders and their accessories must be compatible with the contents and must not react to form harmful or dangerous compounds therewith.

UN Model Regulations, packing instruction P005, ST/SG/AC.10/42/Add.1, DGP/25-WP/3 (see paragraph 3.2.3.2.1 d)) and DGP/25-WP/3 (see paragraph 3.2.4.1)

### Packing Instruction **954 220**

Cargo aircraft only for UN ~~31663529~~ only

(See Packing Instruction ~~950-378~~ for flammable liquid-powered ~~vehicles and~~ engines or machinery. Packing Instruction 950 for flammable liquid-powered vehicles, Packing Instruction 951 for flammable gas-powered vehicles, ~~or~~ Packing Instruction 952 for battery-powered equipment and vehicles or Packing Instruction 972 for engines or machinery containing only environmentally hazardous fuels)

#### General requirements

Part 4, Chapter 1 requirements must be met, including:

#### Compatibility requirements

- Substances must be compatible with their packagings as required by 4;1.1.3.

<i>UN number and proper shipping name</i>	<i>Quantity — passenger</i>	<i>Quantity — cargo</i>
UN <del>31663529</del> <u>Engines, internal combustion, flammable gas powered, Machinery, internal combustion, flammable gas powered or Vehicle, flammable gas powered or Vehicle, fuel cell, flammable gas powered, or Engine, fuel cell, flammable gas powered or Machinery, fuel cell, flammable gas powered</u>	Forbidden	No limit

#### ADDITIONAL PACKING REQUIREMENTS

The following general requirements are included in UN SP 363 sub-paragraph g) and not in corresponding Special Provision A208 of the Technical Instructions. It was considered more appropriate to include these requirements in this packing instructions (see note before Special Provision A208 in DGP/25-WP/13).

#### General

- 1) The engine or machinery, including the means of containment containing dangerous goods, must be in compliance with the construction requirements specified by the appropriate national authority;
- 2) The engines or machinery must be oriented to prevent inadvertent leakage of dangerous goods and secured by means capable of restraining the engines or machinery to prevent any movement during transport which would change the orientation or cause them to be damaged

#### *Flammable gas vessels*

- 1) for flammable gas-powered ~~vehicles~~, machines or equipment, pressurized vessels containing the flammable gas must be completely emptied of flammable gas. Lines from vessels to gas regulators, and gas regulators themselves, must also be drained of all trace of flammable gas. To ensure that these conditions are met, gas shut-off valves must be left open and connections of lines to gas regulators must be left disconnected upon delivery of the ~~vehicle engine or machinery~~ to the operator. Shut-off valves must be closed and lines reconnected at gas regulators before loading ~~the vehicle~~ aboard the aircraft;

or alternatively,

- 2) flammable gas-powered ~~vehicles~~, machines or equipment that have pressure receptacles (fuel tanks) equipped with electrically operated valves that close automatically in case the power is disconnected, or with manual shut-off valves, may be transported under the following conditions:
  - i) the tank shut-off valves must be in the closed position and in the case of electrically operated valves, power to those valves must be disconnected;

- ii) after closing the tank shut-off valves, the ~~vehicle~~, equipment or machinery must be operated until it stops from lack of fuel before being loaded aboard the aircraft;
- iii) in no part of the closed system must the remaining pressure of compressed gases exceed 5 per cent of the maximum allowable working pressure of the pressure receptacle (fuel tank) system, or more than 2 000 kPa (20 bar), whichever is the lower.

#### Batteries

All batteries must be installed and securely fastened in the battery holder of the ~~vehicle~~, machine or equipment and must be protected in such a manner so as to prevent damage and short circuits. In addition:

- 1) if spillable batteries are installed, and it is possible for the ~~vehicle~~, machine or equipment to be handled in such a way that batteries would not remain in their intended orientation, they must be removed and packed according to Packing Instruction 492 or 870 as applicable;
- 2) if lithium batteries are installed, they must meet the provisions of Part 2;9.3, unless otherwise approved by the appropriate authority of the State of Origin, must be securely fastened in the ~~vehicle~~, machinery or equipment and must be protected in such a manner so as to prevent damage and short circuits; and
- 3) if sodium batteries are installed they must conform to the requirements of Special Provision A94.

#### Other operational equipment

- 1) Dangerous goods required for the operation or safety of the ~~vehicle~~, machine or equipment, such as fire extinguishers, tire inflation canisters or safety devices, must be securely mounted in the ~~vehicle~~, machine or equipment. ~~Aircraft may also contain other articles and substances which would otherwise be classified as dangerous goods but which are installed in that aircraft in accordance with the pertinent airworthiness requirements and operating regulations. If fitted, life rafts, emergency escape slides and other inflation devices must be protected such that they cannot be activated accidentally. Vehicles containing dangerous goods identified in Table 3-1 as forbidden on passenger aircraft may only be transported on cargo aircraft. Replacements for the dangerous goods permitted must not be carried under this packing instruction.~~
- 2) ~~Vehicles equipped with theft-protection devices, installed radio communications equipment or navigational systems must have such devices, equipment or systems disabled.~~

#### Internal combustion or fuel cell engine shipped separately (not installed)

- 1) When internal combustion engines or fuel cell engines are being shipped separately, all fuel, coolant or hydraulic systems remaining in or on the engine must be drained as far as practicable and all disconnected fluid pipes must be sealed with leakproof caps, which are positively retained.
- 2) This requirement also applies to ~~vehicles~~, machines or equipment containing internal combustion engines or fuel cell engines which are being shipped in a dismantled state such that fuel lines have been disconnected.

...

## Chapter 5

## CLASS 3 — FLAMMABLE LIQUIDS

...

**Packing Instruction 950 378**

Passenger and cargo aircraft for UN ~~34663528~~ only  
 (See Packing Instruction ~~954220~~ for flammable gas-powered ~~vehicles and engines~~ or machinery, Packing Instruction 950 for flammable liquid-powered vehicles, Packing Instruction 951 for flammable gas-powered vehicles, or Packing Instruction 952 for battery-powered equipment and vehicles or Packing Instruction 972 for engines or machinery containing only environmentally hazardous fuels)

**General requirements**

Part 4, Chapter 1 requirements must be met, including:

**Compatibility requirements**

- Substances must be compatible with their packagings as required by 4;1.1.3.

<i>UN number and proper shipping name</i>	<i>Quantity — passenger</i>	<i>Quantity — cargo</i>
UN <del>34663528</del> <b>Engines, internal combustion, flammable liquid powered or Machinery, internal combustion, flammable liquid powered <del>Vehicle, flammable liquid powered or Vehicle, fuel cell, flammable liquid powered or Engine, fuel cell, flammable liquid powered or Machinery, fuel cell, flammable liquid powered</del></b>	No limit	No limit

**ADDITIONAL PACKING REQUIREMENTS**

The following general requirements were included in UN SP 363 sub-paragraph g) and not in corresponding Special Provision A208 of the Technical Instructions. It was considered more appropriate to include these requirements in this packing instruction (see note before Special Provision A208 in DGP/25-WP/13).

***General***

- 1) The engine or machinery, including the means of containment containing dangerous goods, must be in compliance with the construction requirements specified by the appropriate national authority;
- 2) Any valves or openings (e.g. venting devices) must be closed during transport;
- 3) The engines or machinery must be oriented to prevent inadvertent leakage of dangerous goods and secured by means capable of restraining the engines or machinery to prevent any movement during transport which would change the orientation or cause them to be damaged.

***Flammable liquid fuel tanks***

Except as otherwise provided for in this packing instruction, fuel tanks must be drained of fuel and tank caps fitted securely. Special precautions are necessary to ensure complete drainage of the fuel system of ~~vehicles~~, machines or equipment incorporating internal combustion engines, such as lawn mowers and outboard motors, where such machines or equipment could possibly be handled in other than an upright position. ~~When it is not possible to handle in other than an upright position, vehicles, except those with diesel engines, must be drained of fuel as far as practicable, and if any fuel remains, it must not exceed one quarter of the tank capacity.~~

***Diesel engines***

~~Vehicles equipped with diesel engines are excepted from the requirement to drain the fuel tanks, provided that a sufficient ullage space has been left inside the tank to allow fuel expansion without leakage, and the tank caps are tightly closed. A careful check must be made to ensure there are no fuel leakages.~~

**Batteries**

All batteries must be installed and securely fastened in the battery holder of the ~~vehicle~~, machine or equipment and must be protected in such a manner so as to prevent damage and short circuits. In addition:

- 1) if spillable batteries are installed, and it is possible for the ~~vehicle~~, machine or equipment to be handled in such a way that batteries would not remain in their intended orientation, they must be removed and packed according to Packing Instruction 492 or 870 as applicable;
- 2) if lithium batteries are installed, they must meet the provisions of Part 2;9.3, unless otherwise approved by the appropriate authority of the State of Origin, must be securely fastened in the ~~vehicle~~, machine or equipment and must be protected in such a manner so as to prevent damage and short circuits; and
- 3) if sodium batteries are installed they must conform to the requirements of Special Provision A94.

**Other operational equipment**

- 1) Dangerous goods required for the operation or safety of the ~~vehicle~~, machine or equipment, such as fire extinguishers, tire inflation canisters or safety devices, must be securely mounted in the ~~vehicle~~, machine or equipment. ~~Aircraft may also contain other articles and substances which would otherwise be classified as dangerous goods but which are installed in that aircraft in accordance with the pertinent airworthiness requirements and operating regulations. If fitted, life rafts, emergency escape slides and other inflation devices must be protected such that they cannot be activated accidentally. Vehicles containing dangerous goods identified in Table 3-1 as forbidden on passenger aircraft may only be transported on cargo aircraft. Replacements for the dangerous goods permitted must not be carried under this packing instruction.~~
- 2) ~~Vehicles equipped with theft protection devices, installed radio communications equipment or navigational systems must have such devices, equipment or systems disabled.~~

**Internal combustion or fuel cell engine shipped separately (not installed)**

- 1) When internal combustion engines or fuel cell engines are being shipped separately, all fuel, coolant or hydraulic systems remaining in or on the engine must be drained as far as practicable and all disconnected fluid pipes must be sealed with leakproof caps, which are positively retained.
- 2) This requirement also applies to vehicles, ~~machines or equipment~~ containing internal combustion engines or fuel cell engines which are being shipped in a dismantled state such that fuel lines have been disconnected.

**Chapter 6**

**CLASS 4 — FLAMMABLE SOLIDS; SUBSTANCES  
LIABLE TO SPONTANEOUS COMBUSTION;  
SUBSTANCES WHICH, IN CONTACT WITH WATER,  
EMIT FLAMMABLE GASES**

...

UN Model Regulations, packing instruction P412, ST/SG/AC.10/42/Add.1, DGP/25-WP/3 (see paragraph 3.2.4.1) and DGP/25-WP/14 (see paragraph 2.4.1.1 b) of this report)

### **Packing Instruction 450**

Passenger and cargo aircraft for UN 3527 (Packing Group II or III) only

#### **General requirements**

Part 4, Chapter 1 requirements must be met, including:

#### **1) Compatibility requirements**

- Substances must be compatible with their packagings as required by 4;1.1.3.
- Metal packagings must be corrosion resistant or be protected against corrosion for substances with a Class 8 subsidiary risk.

#### **2) Closure requirements**

- Closures must meet the requirements of 4;1.1.4.

<b><u>COMBINATION PACKAGINGS</u></b>						<b><u>SINGLE PACKAGINGS</u></b>
<u>Packing conditions</u>	<u>Inner packaging (see 6;3.2)</u>	<u>Inner packaging quantity (per receptacle) — for base liquid material</u>	<u>Inner packaging quantity (per receptacle) — for liquid activator</u>	<u>Inner packaging quantity (per receptacle) — for solid activator</u>	<u>Total quantity per package</u>	
<u>Activator (Organic peroxide)</u>	<u>Plastics*</u>	<u>n/a</u>	<u>125 mL</u>	<u>500 g</u>	<u>5 kg</u>	<u>No</u>
	<u>Metal*</u>	<u>n/a</u>	<u>125 mL</u>	<u>500 g</u>		
<u>Base material Division 4.1 Packing Group II</u>	<u>Glass</u>	<u>1.0 kg</u>	<u>n/a</u>	<u>n/a</u>		
	<u>Plastics</u>	<u>5.0 kg</u>	<u>n/a</u>	<u>n/a</u>		
	<u>Metal</u>	<u>5.0 kg</u>	<u>n/a</u>	<u>n/a</u>		
<u>Activator (Organic peroxide)</u>	<u>Plastics*</u>	<u>n/a</u>	<u>125 mL</u>	<u>500 g</u>		
	<u>Metal*</u>	<u>n/a</u>	<u>125 mL</u>	<u>500 g</u>		
<u>Base material Division 4.1 Packing Group III</u>	<u>Glass</u>	<u>2.5 kg</u>	<u>n/a</u>	<u>n/a</u>		
	<u>Plastics</u>	<u>10.0 kg</u>	<u>n/a</u>	<u>n/a</u>		
	<u>Metal</u>	<u>10.0 kg</u>	<u>n/a</u>	<u>n/a</u>		

\*Including tubes.

The total quantity of kits per package is to be calculated on a one-to-one basis of their volume, i.e. 1 L equal to 1 kg.

#### **ADDITIONAL PACKING REQUIREMENTS FOR COMBINATION PACKAGINGS**

The components may be placed in the same outer packaging provided that they will not interact dangerously in the event of leakage (see 4;1.1.7).

#### **OUTER PACKAGINGS OF COMBINATION PACKAGINGS (see 6;3.1)**

##### Boxes

Aluminium (4A, 4B)  
Fibreboard (4G)  
Natural wood (4C1, 4C2)  
Other metal (4N)  
Plastics (4H1, 4H2)  
Plywood (4D)  
Reconstituted wood (4F)  
Steel (4A)

##### Drums

Aluminium (1B1, 1B2)  
Fibre (1G)  
Other metal (1N1, 1N2)  
Plastics (1H1, 1H2)  
Plywood (1D)  
Steel (1A1, 1A2)

##### Jerricans

Aluminium (3B1, 3B2)  
Plastics (3H1, 3H2)  
Steel (3A1, 3A2)

**Packing Instruction Y450**

Limited quantities

Passenger and cargo aircraft for UN 3527 (Packing Group II or III) only**General requirements**

Part 4, Chapter 1 requirements must be met (except that 4;1.1.2, 1.1.9 c), 1.1.9 e), 1.1.16, 1.1.18 and 1.1.20 do not apply), including:

**1) Compatibility requirements**

- Substances must be compatible with their packagings as required by 4;1.1.3.
- Metal packagings must be corrosion resistant or be protected against corrosion for substances with a Class 8 subsidiary risk.

**2) Closure requirements**

- Closures must meet the requirements of 4;1.1.4.

**3) Limited quantity requirements**

- Part 3, Chapter 4 requirements must be met, including:
  - the capability of the package to pass a 1.2 m drop test;
  - a 24-hour stacking test; and
  - inner packagings for liquids must be capable of passing a pressure differential test (4;1.1.6).

<b>COMBINATION PACKAGINGS</b>							<b>SINGLE PACKAGINGS</b>
<i>Packing conditions</i>	<i>Inner packaging (see 6;3.2)</i>	<i>Inner packaging quantity (per receptacle) — for base liquid material</i>	<i>Inner packaging quantity (per receptacle) — for liquid activator</i>	<i>Inner packaging quantity (per receptacle) — for solid activator</i>	<i>Total quantity per package</i>	<i>Total gross mass per package</i>	
Activator (Organic peroxide)	Plastics*	n/a	30 mL	100 g	1 kg	30 kg	No
	Metal*	n/a	30 mL	100 g			
Base material Division 4.1 Packing Group II	Glass	1.0 kg	n/a	n/a			
	Plastics	1.0 kg	n/a	n/a			
	Metal	1.0 kg	n/a	n/a			
Activator (Organic peroxide)	Plastics*	n/a	30 mL	100 g	5 kg		
	Metal*	n/a	30 mL	100 g			
Base material Division 4.1 Packing Group III	Glass	2.5 kg	n/a	n/a			
	Plastics	5.0 kg	n/a	n/a			
	Metal	5.0 kg	n/a	n/a			

\*Including tubes.

The total quantity of kits per package is to be calculated on a one-to-one basis of their volume, i.e. 1 L equal to 1 kg.

**ADDITIONAL PACKING REQUIREMENTS FOR COMBINATION PACKAGINGS**

The components may be placed in the same outer packaging provided that they will not interact dangerously in the event of leakage (see 4;1.1.7).

**OUTER PACKAGINGS OF COMBINATION PACKAGINGS (see 6;3.1)***Boxes*

Aluminium  
Fibreboard  
Natural wood  
Other metal  
Plastics  
Plywood  
Reconstituted wood  
Steel

*Drums*

Aluminium  
Fibre  
Other metal  
Plastics  
Plywood  
Steel

*Jerricans*

Aluminium  
Plastics  
Steel

UN Model Regulations, P406, PP48, ST/SG/AC.10/42/Add.1 and DGP/25-WP/3 (see paragraph 3.2.4.1.1 c))

**Packing Instruction 451**

Passenger and cargo aircraft — wetted explosives (Packing Group I)

...

**ADDITIONAL PACKING REQUIREMENTS FOR COMBINATION PACKAGINGS**

- Packagings must be designed and constructed to prevent the loss of water or alcohol content or the content of the phlegmatizer.
- Packagings must be so constructed and closed so as to avoid an explosive over pressure or pressure build-up of more than 300 kPa (3 bar).
- The type of packaging and maximum permitted quantity per packaging are limited by the provisions of Part 2;1.5.2 and may be less than the limits shown above.
- Plastic or glass inner packagings must be packed in tightly closed metal or rigid plastic receptacles before packing in outer packagings. Inner packagings must be packed with absorbent material in sufficient quantity to absorb the contents in the event of leakage.

*For UN 3474*

Metal packagings must not be used. Packagings of other material with a small amount of metal, for example metal closures or other metal fittings such as those mentioned in 6;3, are not considered metal packagings.

**OUTER PACKAGINGS OF COMBINATION PACKAGINGS (see 6;3.1)***Boxes*

Aluminium (4B)  
Fibreboard (4G)  
Natural wood (4C1, 4C2)  
Other metal (4N)  
Plastics (4H1, 4H2)  
Plywood (4D)  
Reconstituted wood (4F)  
Steel (4A)

*Drums*

Aluminium (1B2)  
Fibre (1G)  
Other metal (1N2)  
Plastics (1H1, 1H2)  
Plywood (1D)  
Steel (1A2)

*Jerricans*

Aluminium (3B2)  
Other metal (3N2)  
Plastics (3H1, 3H2)  
Steel (3A2)

...

**Packing Instruction 459**Passenger and cargo aircraft — self-reactive substances and polymerizing substances**General requirements**

Part 4, Chapter 1 requirements must be met, including:

**1) Compatibility requirements**

— Substances must be compatible with their packagings as required by 4;1.1.3.

**2) Closure requirements**

— Closures must meet the requirements of 4;1.1.4.

COMBINATION PACKAGINGS							SINGLE PACKAGINGS
UN number and proper shipping name	Inner packaging (see 6;3.2)	Inner packaging quantity (per receptacle) — passenger	Total quantity per package — passenger	Inner packaging quantity (per receptacle) — cargo	Total quantity per package — cargo		
<b>Liquids</b>							No
UN 3223	<b>Self-reactive liquid type C</b>	Plastics	0.5 L	5 L	1.0 L	10 L	
UN 3225	<b>Self-reactive liquid type D</b>	Plastics	0.5 L	5 L	1.0 L	10 L	
UN 3227	<b>Self-reactive liquid type E</b>	Plastics	1.0 L	10 L	2.5 L	25 L	
UN 3229	<b>Self-reactive liquid type F</b>	Plastics	1.0 L	10 L	2.5 L	25 L	
<u>UN 3532</u>	<u>Polymerizing substance, liquid, stabilized, n.o.s.*</u>	<u>Plastics</u>	<u>1.0 L</u>	<u>10 L</u>	<u>2.5 L</u>	<u>25 L</u>	
<b>Solids</b>							No
UN 3224	<b>Self-reactive solid type C</b>	Plastics	0.5 kg	5 kg	1.0 kg	10 kg	
		Plastic bag	0.5 kg	5 kg	1.0 kg	10 kg	
UN 3226	<b>Self-reactive solid type D</b>	Plastics	0.5 kg	5 kg	1.0 kg	10 kg	
		Plastic bag	0.5 kg	5 kg	1.0 kg	10 kg	
UN 3228	<b>Self-reactive solid type E</b>	Plastics	1.0 kg	10 kg	2.5 kg	25 kg	
		Plastic bag	1.0 kg	10 kg	2.5 kg	25 kg	
UN 3230	<b>Self-reactive solid type F</b>	Plastics	1.0 kg	10 kg	2.5 kg	25 kg	
		Plastic bag	1.0 kg	10 kg	2.5 kg	25 kg	
<u>UN 3531</u>	<u>Polymerizing substance, solid, stabilized, n.o.s.*</u>	<u>Plastics</u>	<u>1.0 kg</u>	<u>10 kg</u>	<u>2.5 kg</u>	<u>25 kg</u>	
		<u>Plastic bag</u>	<u>1.0 kg</u>	<u>10 kg</u>	<u>2.5 kg</u>	<u>25 kg</u>	

**ADDITIONAL PACKING REQUIREMENTS FOR COMBINATION PACKAGINGS**

- Cushioning materials must not be readily combustible.
- Packagings must meet the Packing Group II performance requirements.

**OUTER PACKAGINGS OF COMBINATION PACKAGINGS (see 6;3.1)***Boxes*

Fibreboard (4G)  
 Natural wood (4C1, 4C2)  
 Plastics (4H1, 4H2)  
 Plywood (4D)  
 Reconstituted wood (4F)

*Drums*

Fibre (1G)  
 Plastics (1H1, 1H2)  
 Plywood (1D)

*Jerricans*

Plastics (3H1, 3H2)

**Chapter 7****CLASS 5 — OXIDIZING SUBSTANCES;  
ORGANIC PEROXIDES**

...

**Packing Instructions 553 – 555**

Cargo aircraft only

**General requirements**

Part 4, Chapter 1 requirements must be met, including:

**1) Compatibility requirements**

- Substances must be compatible with their packagings as required by 4;1.1.3.
- Metal packagings must be corrosion resistant or be protected against corrosion for substances with a Class 8 subsidiary risk.

**2) Closure requirements**

- Closures must meet the requirements of 4;1.1.4.

COMBINATION PACKAGINGS					SINGLE PACKAGINGS
Packing instruction	Packing Group	Inner packaging (see 6;3.2)	Inner packaging quantity (per receptacle)	Total quantity per package	
553	I	Glass	1.0 L	2.5 L	No
		Plastics	1.0 L		
		Metal	1.0 L		
554	II	Glass	2.5 L	5 L	No
		Plastics	2.5 L		
		Metal	2.5 L		
555	III	Glass	5.0 L	30 L	30 L
		Plastics	5.0 L		
		Metal	5.0 L		

UN Model Regulations, P502, ST/SG/AC.10/42/Add.1 and DGP/25-WP/3 (see paragraph 3.2.4.1)

#### ADDITIONAL PACKING REQUIREMENTS FOR COMBINATION PACKAGINGS

##### *Packing Group I*

- UN 1873 ~~only glass inner packagings are permitted, parts of packagings which are in direct contact with perchloric acid must be constructed of glass or plastics.~~
- Inner packagings must be packed with sufficient absorbent material to absorb the entire contents of the inner packagings and placed in a rigid leakproof receptacle before packing in outer packagings.

##### *Packing Group III*

- Packagings must meet the Packing Group II performance requirements.

#### OUTER PACKAGINGS OF COMBINATION PACKAGINGS (see 6;3.1)

<i>Boxes</i>	<i>Drums</i>
Aluminium (4B)	Aluminium (1B1, 1B2)
Fibreboard (4G)	Fibre (1G)
Natural wood (4C1, 4C2)	Other metal (1N1, 1N2)
Other metal (4N)	Plastics (1H1, 1H2)
Plastics (4H1, 4H2)	Steel (1A1, 1A2)
Plywood (4D)	
Reconstituted wood (4F)	
Steel (4A)	

#### ADDITIONAL PACKING REQUIREMENTS FOR SINGLE PACKAGINGS

##### *Packing Group III*

- Packagings must meet the Packing Group II performance requirements.

#### SINGLE PACKAGINGS FOR PACKING GROUP III (PI 555)

<i>Composites</i>	<i>Drums</i>	<i>Jerricans</i>
All (see 6;3.1.18)	Aluminium (1B1) Other metal (1N1) Plastics (1H1) Steel (1A1)	Aluminium (3B1) Plastics (3H1) Steel (3A1)

...

## Chapter 8

### CLASS 6 — TOXIC AND INFECTIOUS SUBSTANCES

UN Model Regulations, P603, ST/SG/AC.10/42/Add.1, DGP/25-WP/3 (see paragraphs 3.2.2.1.2 and 3.2.4.1)

Move Packing Instruction 877 from Chapter 10 and renumber it 603

#### Packing Instruction **877603**

Passenger and cargo aircraft for UN 3507 only

##### General requirements

Part 4, Chapter 1 and Part 4;9.1.2, 9.1.4 and 9.1.7 requirements must be met, including:

##### 1) Compatibility requirements

- Substances must be compatible with their packagings as required by 4;1.1.3.
- Metal packagings must be corrosion resistant or be protected against corrosion.

##### 2) Closure requirements

- Closures must meet the requirements of 4;1.1.4.

<i>UN number and name</i>	<i>Quantity per package — passenger</i>	<i>Quantity per package — cargo</i>
UN 3507 <b>Uranium hexafluoride, radioactive material, excepted package, non-fissile or fissile-excepted</b>	Less than 0.1 kg	Less than 0.1 kg

##### ADDITIONAL PACKING REQUIREMENTS FOR COMBINATION PACKAGINGS

- Substances must be packed in a metal or plastics primary receptacle in a leakproof rigid secondary packaging in a rigid outer packaging.
- Primary inner receptacles must be packed in secondary packagings in a way that, under normal conditions of transport, they cannot break, be punctured or leak their contents into the secondary packaging. Secondary packagings must be secured in outer packagings with suitable cushioning material to prevent movement. If multiple primary receptacles are placed in a single secondary packaging, they must be either individually wrapped or separated so as to prevent contact between them.
- The contents must comply with the provisions of 2;7.2.4.5.2.
- The provisions of 6;7.3 must be met.
- In the case of fissile-excepted material, limits specified in 2;7.2.3.5 and 6;7.10.2.

##### OUTER PACKAGINGS OF COMBINATION PACKAGINGS (see 6;3.1)

###### *Boxes*

Aluminium (4B)  
Fibreboard (4G)  
Natural wood (4C1, 4C2)  
Plastics (4H1, 4H2)  
Plywood (4D)  
Reconstituted wood (4F)  
Steel (4A)

###### *Drums*

Aluminium (1B2)  
Fibre (1G)  
Other metal (1N2)  
Plastics (1H2)  
Plywood (1D)  
Steel (1A2)

###### *Jerricans*

Aluminium (3B2)  
Plastics (3H2)  
Steel (3A2)

...

### Packing Instruction 620

...

#### Special packing provisions

- a) Shippers of infectious substances must ensure that packages are prepared in such a manner that they arrive at their destination in good condition and present no hazard to persons or animals during transport.
- b) The definition in 1;3, and the general packing requirements of 4;1, apply to infectious substances packages.
- c) An itemized list of contents must be enclosed between the secondary packaging and the outer packaging. When the infectious substances to be transported are unknown, but suspected of meeting the criteria for inclusion in Category A, the words "suspected Category A infectious substance" must be shown in parentheses following the proper shipping name on the itemized list of contents inside the outer packaging.
- d) Before an empty packaging is returned to the shipper, or sent elsewhere, it must be disinfected or sterilized to nullify any hazard, and any label or marking mark indicating that it had contained an infectious substance must be removed or obliterated.

UN Model Regulations, P650, ST/SG/AC.10/42/Add.1 and DGP/25-WP/3 (see paragraph 3.2.4.1)

### Packing Instruction 650

...

- 10) When packages are placed in an overpack, the package markings marks required by this packing instruction must either be clearly visible or the markings marks must be reproduced on the outside of the overpack and the overpack must be marked with the word "Overpack".
- 11) Infectious substances assigned to UN 3373 which are packed and marked in accordance with this packing instruction are not subject to any other requirement in these Instructions except for the following:
  - a) the name and address of the shipper and of the consignee must be provided on each package;
  - b) the name and telephone number of a person responsible must be provided on a written document (such as an air waybill) or on the package;
  - c) classification must be in accordance with 2;6.3.2;
  - d) the incident reporting requirements in 7;4.4 must be met;
  - e) the inspection for damage or leakage requirements in 7;3.1.3 and 7;3.1.4; and
  - f) passengers and crew members are prohibited from transporting infectious substances either as, or in, carry-on baggage or checked baggage or on their person.

*Note.— When the shipper or consignee is also the "person responsible" as referred to in b), the name and address need be marked only once in order to satisfy the name and marking provisions in both a) and b).*
- 12) Clear instructions on filling and closing such packages must be provided to the shipper or to the person who prepares the package (e.g. patient) by packaging manufacturers and subsequent distributors to enable the package to be correctly prepared for transport.
- 13) Other dangerous goods must not be packed in the same packaging as Division 6.2 infectious substances unless they are necessary for maintaining the viability, stabilizing or preventing degradation or neutralizing the hazards of the infectious substances. A quantity of 30 ml or less of dangerous goods included in Class 3, 8 or 9 may be packed in each primary receptacle containing infectious substances provided these substances meet the requirements of 3;5. When these small quantities of dangerous goods are packed with infectious substances in accordance with this packing instruction no other requirements in these Instructions need be met.

#### Additional requirements:

- 1) Alternative packagings for the transport of animal material may be authorized by the competent authority in accordance with the provisions of 4;2.8.

...

## Chapter 11

### CLASS 9 — MISCELLANEOUS DANGEROUS GOODS

...

UN Model Regulations, packing instruction P005, ST/SG/AC.10/42/Add.1, DGP/25-WP/3 (see paragraphs 3.2.3.2.1 d) and 3.2.4.1)

#### Packing Instruction 950

Passenger and cargo aircraft for UN 3166 only

(See [Packing Instruction 220 for flammable gas-powered engines and machinery](#), [Packing Instruction 378 for flammable liquid-powered engines and machinery](#), [Packing Instruction 951 for flammable gas-powered vehicles](#) ~~and engines or~~, [Packing Instruction 952 for battery-powered equipment and vehicles](#) ~~or Packing Instruction 972 for engines or machinery containing only environmentally hazardous fuels~~)

#### General requirements

Part 4, Chapter 1 requirements must be met, including:

#### Compatibility requirements

- Substances must be compatible with their packagings as required by 4;1.1.3.

<i>UN number and proper shipping name</i>	<i>Quantity — passenger</i>	<i>Quantity — cargo</i>
UN 3166 <del>Engines, internal combustion, flammable liquid powered or Vehicle, flammable liquid powered or Vehicle, fuel cell, flammable liquid powered or Engine, fuel-cell, flammable powered</del>	No limit	No limit

#### ADDITIONAL PACKING REQUIREMENTS

##### *Flammable liquid fuel tanks*

Except as otherwise provided for in this packing instruction, fuel tanks must be drained of fuel and tank caps fitted securely. Special precautions are necessary to ensure complete drainage of the fuel system of vehicles, ~~machines or equipment~~ incorporating internal combustion engines, such as lawn mowers ~~and outboard motors~~, where such ~~machines or equipment vehicles~~ could possibly be handled in other than an upright position. When it is not possible to handle in other than an upright position, vehicles, except those with diesel engines, must be drained of fuel as far as practicable, and if any fuel remains, it must not exceed one-quarter of the tank capacity.

##### *Diesel engines*

Vehicles equipped with diesel engines are excepted from the requirement to drain the fuel tanks, provided that a sufficient ullage space has been left inside the tank to allow fuel expansion without leakage, and the tank caps are tightly closed. A careful check must be made to ensure there are no fuel leakages.

##### *Batteries*

All batteries must be installed and securely fastened in the battery holder of the vehicle, ~~machine or equipment~~ and must be protected in such a manner so as to prevent damage and short circuits. In addition:

- 1) if spillable batteries are installed, and it is possible for the vehicle, ~~machine or equipment~~ to be handled in such a way that batteries would not remain in their intended orientation, they must be removed and packed according to Packing Instruction 492 or 870 as applicable;
- 2) if lithium batteries are installed, they must meet the provisions of Part 2;9.3, unless otherwise approved by the appropriate authority of the State of Origin, must be securely fastened in the vehicle, ~~machine or equipment~~ and must be protected in such a manner so as to prevent damage and short circuits; and

- 3) if sodium batteries are installed they must conform to the requirements of Special Provision A94.

#### Other operational equipment

- 1) Dangerous goods required for the operation or safety of the vehicle, ~~machine or equipment~~, such as fire extinguishers, tire inflation canisters or safety devices, must be securely mounted in the vehicle, ~~machine or equipment~~. Aircraft may also contain other articles and substances which would otherwise be classified as dangerous goods but which are installed in that aircraft in accordance with the pertinent airworthiness requirements and operating regulations. If fitted, life-rafts, emergency escape slides and other inflation devices must be protected such that they cannot be activated accidentally. Vehicles containing dangerous goods identified in Table 3-1 as forbidden on passenger aircraft may only be transported on cargo aircraft. Replacements for the dangerous goods permitted must not be carried under this packing instruction.
- 2) Vehicles equipped with theft-protection devices, installed radio communications equipment or navigational systems must have such devices, equipment or systems disabled.

#### Internal combustion or fuel cell engine shipped separately (not installed)

- 1) ~~When internal combustion engines or fuel cell engines are being shipped separately, all fuel, coolant or hydraulic systems remaining in or on the engine must be drained as far as practicable and all disconnected fluid pipes must be sealed with leakproof caps, which are positively retained.~~
- 2) ~~This requirement also applies to vehicles, machines or equipment containing internal combustion engines or fuel cell engines which are being shipped in a dismantled state such that fuel lines have been disconnected.~~

UN Model Regulations, packing instruction P005, ST/SG/AC.10/42/Add.1, DGP/25-WP/3 (see paragraphs 3.2.3.2.1 d) and 3.2.4.1)

### Packing Instruction 951

Cargo aircraft only for UN 3166 only

(See [Packing Instruction 220 for flammable gas-powered engines and machinery](#), [Packing Instruction 378 for flammable liquid-powered engines and machinery](#), [Packing Instruction 950 for flammable liquid-powered vehicles, and engines or](#) [Packing Instruction 952 for battery-powered equipment and vehicles](#) [or Packing Instruction 972 for engines or machinery containing only environmentally hazardous fuels](#))

#### General requirements

Part 4, Chapter 1 requirements must be met, including:

#### Compatibility requirements

- Substances must be compatible with their packagings as required by 4.1.1.3.

<i>UN number and proper shipping name</i>	<i>Quantity — passenger</i>	<i>Quantity — cargo</i>
UN 3166 <del>Engines, internal combustion, flammable gas powered or Vehicle, flammable gas powered or Vehicle, fuel cell, flammable gas powered, or Engine, fuel cell, flammable gas powered</del>	Forbidden	No limit

#### ADDITIONAL PACKING REQUIREMENTS

##### Flammable gas vessels

- 1) for flammable gas-powered vehicles, ~~machines or equipment~~, pressurized vessels containing the flammable gas must be completely emptied of flammable gas. Lines from vessels to gas regulators, and gas regulators themselves, must also be drained of all trace of flammable gas. To ensure that these conditions are met, gas shut-off valves must be left open and connections of lines to gas regulators must be left disconnected upon delivery of the vehicle to the operator. Shut-off valves must be closed and lines reconnected at gas regulators before loading the vehicle aboard the aircraft;

or alternatively,

- 2) flammable gas-powered vehicles, ~~machines or equipment~~ that have pressure receptacles (fuel tanks) equipped with electrically operated valves that close automatically in case the power is disconnected, or with manual shut-off valves, may be transported under the following conditions:

- i) the tank shut-off valves must be in the closed position and in the case of electrically operated valves, power to those valves must be disconnected;
- ii) after closing the tank shut-off valves, the vehicle, ~~equipment or machinery~~ must be operated until it stops from lack of fuel before being loaded aboard the aircraft;
- iii) in no part of the closed system must the remaining pressure of compressed gases exceed 5 per cent of the maximum allowable working pressure of the pressure receptacle (fuel tank) system, or more than 2 000 kPa (20 bar), whichever is the lower.

#### Batteries

All batteries must be installed and securely fastened in the battery holder of the vehicle, ~~machine or equipment~~ and must be protected in such a manner so as to prevent damage and short circuits. In addition:

- 1) if spillable batteries are installed, and it is possible for the vehicle, ~~machine or equipment~~ to be handled in such a way that batteries would not remain in their intended orientation, they must be removed and packed according to Packing Instruction 492 or 870 as applicable;
- 2) if lithium batteries are installed, they must meet the provisions of Part 2;9.3, unless otherwise approved by the appropriate authority of the State of Origin, must be securely fastened in the vehicle, ~~machinery or equipment~~ and must be protected in such a manner so as to prevent damage and short circuits; and
- 3) if sodium batteries are installed they must conform to the requirements of Special Provision A94.

#### Other operational equipment

- 1) Dangerous goods required for the operation or safety of the vehicle, ~~machine or equipment~~, such as fire extinguishers, tire inflation canisters or safety devices, must be securely mounted in the vehicle, machine or equipment. Aircraft may also contain other articles and substances which would otherwise be classified as dangerous goods but which are installed in that aircraft in accordance with the pertinent airworthiness requirements and operating regulations. If fitted, life-rafts, emergency escape slides and other inflation devices must be protected such that they cannot be activated accidentally. Vehicles containing dangerous goods identified in Table 3-1 as forbidden on passenger aircraft may only be transported on cargo aircraft. Replacements for the dangerous goods permitted must not be carried under this packing instruction.
- 2) Vehicles equipped with theft-protection devices, installed radio communications equipment or navigational systems must have such devices, equipment or systems disabled.

#### ~~Internal combustion or fuel cell engine shipped separately (not installed)~~

- ~~1) When internal combustion engines or fuel cell engines are being shipped separately, all fuel, coolant or hydraulic systems remaining in or on the engine must be drained as far as practicable and all disconnected fluid pipes must be sealed with leakproof caps, which are positively retained.~~
- ~~2) This requirement also applies to vehicles, machines or equipment containing internal combustion engines or fuel cell engines which are being shipped in a dismantled state such that fuel lines have been disconnected.~~

...

UN Model Regulations, packing instruction P005, ST/SG/AC.10/42/Add.1, DGP/25-WP/3 (see paragraphs 3.2.3.2.1 d) and 3.2.4.1)

### Packing Instruction 952

Passenger and cargo aircraft for UN 3171 only

(See [Packing Instruction 220 for flammable gas-powered engines and machinery](#), [Packing Instruction 378 for flammable liquid-powered engines and machinery](#), [Packing Instruction 950 for flammable liquid-powered vehicles and engines or](#)

[Packing Instruction 951 for flammable gas-powered vehicles and engines or Packing Instruction 972 for engines or machinery containing only environmentally hazardous fuels](#))

...

DGP/25-WP/5 (see paragraph 2.4.2 of this report)

#### ADDITIONAL PACKING REQUIREMENTS

This entry applies to vehicles and equipment which are powered by wet batteries, sodium batteries or lithium batteries and which are transported with these batteries installed. Examples of such vehicles and equipment are electrically-powered cars, lawn mowers, wheelchairs and other mobility aids. Vehicles that also contain an internal combustion engine must be consigned under the entry UN 3166 Vehicle (flammable gas powered) (See Packing Instruction 951) or Vehicle (flammable liquid powered) (See Packing Instruction 950), as appropriate.

Where vehicles could possibly be handled in other than an upright position, the vehicle must be secured in a strong, rigid outer packaging of the type below. The vehicle must be secured by means capable of restraining the vehicle in the outer packaging to prevent any movement during transport which would change the orientation or cause the vehicle to be damaged

Battery-powered vehicles, machines or equipment must meet the following requirements:

...

#### Strong outer packagings – vehicles

##### Boxes

Aluminium  
Fibreboard  
Natural wood  
Other metal  
Plastics  
Plywood  
Reconstituted wood  
Steel

##### Drums

Aluminium  
Fibre  
Other metal  
Plastics  
Plywood  
Steel

##### Jerricans

Aluminium  
Plastics  
Steel

...

---

DGP/25-WP/2 (see paragraph 3.2.7.2) and DGP/25-WP/3 (see paragraph 3.2.7.4.1)

---

### Packing Instruction 954

Passenger and cargo aircraft for UN 1845 only

...

Dry ice ~~used for other than dangerous goods~~ may be shipped in a unit load device ~~or other type of pallet~~ prepared by a single shipper provided that:

- a) the shipper has made prior arrangements with the operator;
- b) the unit load device does not contain dangerous goods other than UN 3373, **Biological substance, Category B** or ID 8000, **Consumer commodity**. Where the unit load device contains UN 3373 or ID 8000, the provisions of these Instructions that apply to those substances must be met in addition to the provisions set out in this packing instruction;
- b) the unit load device ~~or other type of pallet~~, must allow the venting of the carbon dioxide gas to prevent a dangerous build-up of pressure (the marking requirements of 5;2 and the labelling requirements of 5;3 do not apply to the unit load device); and
- c) the shipper must provide the operator with written documentation or, where agreed with the operator, information by EDP or EDI techniques, stating the total quantity of the dry ice contained in the unit load device ~~or other type of pallet~~.

...

UN Model Regulations, P906, ST/SG/AC.10/42/Add. and DGP/25-WP/3 (see paragraph 3.2.4.1)

**Packing Instruction 956**

Passenger and cargo aircraft for UN 1841, UN 1931, UN 3432, UN 2969, UN 3077, UN 3152 and UN 3335 only

...

<i>UN number and proper shipping name</i>	<b>COMBINATION PACKAGINGS</b>				<b>SINGLE PACKAGINGS</b>	
	<i>Inner packaging (see 6.3.2)</i>	<i>Inner packaging quantity (per receptacle)</i>	<i>Total quantity per package — passenger</i>	<i>Total quantity per package — cargo</i>	Quantity — passenger	Quantity — cargo
UN 1841 <b>Acetaldehyde ammonia</b>	Glass	10.0 kg	200 kg	200 kg	200 kg	200 kg
	Fibre	50.0 kg				
	Metal	50.0 kg				
	Paper bag	50.0 kg				
	Plastics	50.0 kg				
	Plastic bag	50.0 kg				
UN 1931 <b>Zinc dithionite or Zinc hydrosulphite</b>	Glass	10.0 kg	100 kg	200 kg	100 kg	200 kg
	Fibre	50.0 kg				
	Metal	50.0 kg				
	Paper bag	50.0 kg				
	Plastics	50.0 kg				
	Plastic bag	50.0 kg				
UN 2969 <b>Castor beans or Castor flake or Castor meal or Castor pomace</b>	Glass	10.0 kg	No limit	No limit	No Limit	No Limit
	Fibre	50.0 kg				
	Metal	50.0 kg				
	Paper bag	50.0 kg				
	Plastics	50.0 kg				
	Plastic bag	50.0 kg				
UN 3077 <b>Environmentally hazardous substance, solid, n.o.s.</b>	Glass	10.0 kg	400 kg	400 kg	400 kg	400 kg
	Fibre	50.0 kg				
	Metal	50.0 kg				
	Paper bag	50.0 kg				
	Plastics	50.0 kg				
	Plastic bag	50.0 kg				
UN 3152 <b>Polyhalogenated biphenyls, solid or Polyhalogenated terphenyls, solid or <u>Halogenated monomethyl-diphenylmethanes, solid</u></b>	Glass	10.0 kg	100 kg	200 kg	100 kg	200 kg
	Fibre	50.0 kg				
	Metal	50.0 kg				
	Paper bag	50.0 kg				
	Plastics	50.0 kg				
	Plastic bag	50.0 kg				
UN 3335 <b>Aviation regulated solid, n.o.s.</b>	Glass	10.0 kg	400 kg	400 kg	400 kg	400 kg
	Fibre	50.0 kg				
	Metal	50.0 kg				
	Paper bag	50.0 kg				
	Plastics	50.0 kg				
	Plastic bag	50.0 kg				
UN 3432 <b>Polychlorinated biphenyls, solid</b>	Glass	10.0 kg	100 kg	200 kg	100 kg	200 kg
	Fibre	50.0 kg				
	Metal	50.0 kg				
	Paper bag	50.0 kg				
	Plastics	50.0 kg				
	Plastic bag	50.0 kg				

...

The following amendment is made in accordance with UN Model Regulations ST/SG/AC.10/42/Add.1, which introduced consistent use of the terms “mark” and “marking”.

## Packing Instruction 959

Passenger and cargo aircraft for UN 3245 only

### General requirements

Part 4, Chapters 1 and 2 requirements must be met, including:

#### 1) Compatibility requirements

- Substances must be compatible with their packagings as required by 4;1.1.3.

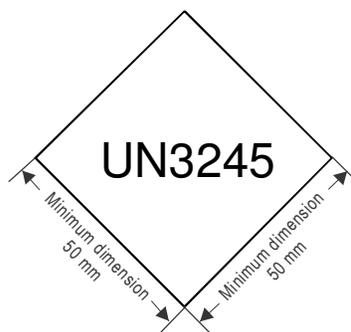
#### 2) Closure requirements

- Closures must meet the requirements of 4;1.1.4.

The following packagings are authorized:

- 1) Packagings meeting the provisions of 4;1.1.1, 4;1.1.3.1, 4;1.1.5 and 4;2 and so designed that they meet the construction requirements of 6;3. Outer packagings constructed of suitable material of adequate strength and designed in relation to the packaging capacity and its intended use must be used. Where this packing instruction is used for the transport of inner packagings of combination packagings, the packaging must be designed and constructed to prevent inadvertent discharge during normal conditions of transport.
- 2) Packagings, which need not conform to the packaging test requirements of Part 6, but conforming to the following:
  - a) an inner packaging comprising:
    - 1) primary receptacle(s) and a secondary packaging, the primary receptacle(s) or the secondary packaging must be leakproof for liquids or siftproof for solids;
    - 2) for liquids, absorbent material placed between the primary receptacle(s) and the secondary packaging. The absorbent material must be in a quantity sufficient to absorb the entire contents of the primary receptacle(s) so that any release of the liquid substance will not compromise the integrity of the cushioning material or of the outer packaging;
    - 3) if multiple fragile primary receptacles are placed in a single secondary packaging they must be individually wrapped or separated to prevent contact between them;
  - b) an outer packaging must be strong enough for its capacity, mass and intended use, and with a smallest external dimension of at least 100 mm.

For transport, the mark illustrated below must be displayed on the external surface of the outer packaging on a background of a contrasting colour and must be clearly visible and legible. The mark must be in the form of a square set at an angle of 45° (diamond-shaped) with each side having a length of at least 50 mm; the width of the line must be at least 2 mm and the letters and numbers must be at least 6 mm high.



When packages are placed in an overpack, the package markings **marks** required by this packing instruction must either clearly be visible or the markings **marks** must be reproduced on the outside of the overpack and the overpack must be marked with the word "Overpack".

GMOs or GMMOs assigned to UN 3245 which are packed and marked in accordance with this packing instruction are not subject to any other requirement in these Instructions except for the following:

- 1) the name and address of the shipper and of the consignee must be provided on each package;
- 2) classification must be in accordance with 2;9.2.1 c);
- 3) the incident reporting requirements in 7;4.4 must be met;
- 4) the inspection for damage or leakage requirements in 7;3.1.3 and 7;3.1.4;
- 5) passengers and crew members are prohibited from transporting UN 3245 either as, or in, carry-on baggage or checked baggage or on their person.

#### ADDITIONAL PACKING REQUIREMENTS

- When dry ice or liquid nitrogen is used, all applicable requirements of these Instructions must be met. When used, ice or dry ice must be placed outside the secondary packagings or in the outer packaging or an overpack. Interior supports must be provided to secure the secondary packagings in the original position after the ice or dry ice has dissipated. If ice is used, the outside packaging or overpack must be leakproof. If dry ice is used, the requirements in Packing Instruction 954 must be met.
- The primary receptacle and the secondary packaging must maintain their integrity at the temperature of the refrigerant used as well as the temperatures and the pressures which could result if refrigeration were lost.

...

DGP/25-WP/2 (see paragraph 3.2.7.2)

### Packing Instruction Y963

Passenger and cargo aircraft for ID 8000 only

Consumer commodities are materials that are packaged and distributed in a form intended or suitable for retail sale for the purposes of personal care or household use. These include items administered or sold to patients by doctors or medical administrations. Except as otherwise provided below, dangerous goods packed in accordance with this packing instruction do not need to comply with 4;1 or Part 6 of these Instructions; they must, however, comply with all other applicable requirements.

...

- k) Consumer commodities shipped according to these provisions may be shipped in a unit load device ~~or other type of pallet~~ prepared by a single shipper provided they contain no other dangerous goods. The shipper must provide the operator with written documentation stating the number of packages of consumer commodities contained in each unit load device ~~or other type of pallet~~.

...

...

UN Model Regulations, P906, ST/SG/AC.10/42/Add. and DGP/25-WP/3 (see paragraph 3.2.4.1)

### Packing Instruction 964

Passenger and cargo aircraft for UN 1941, UN 1990, UN 2315, UN 3151, UN 3082 and UN 3334 only

...

UN number and proper shipping name	COMBINATION PACKAGINGS			SINGLE PACKAGINGS		
	Inner packaging (see 6.3.2)	Inner packaging quantity (per receptacle)	Total quantity per package — passenger	Total quantity per package — cargo	Passenger	Cargo
UN 1941 <b>Dibromodifluoromethane</b>	Glass	10.0 L	100 L	220 L	100 L	220 L
	Plastics	30.0 L				
	Metal	40.0 L				
UN 1990 <b>Benzaldehyde</b>	Glass	10.0 L	100 L	220 L	100 L	220 L
	Plastics	30.0 L				
	Metal	40.0 L				
UN 2315 <b>Polychlorinated biphenyls, liquid</b>	Glass	10.0 L	100 L	220 L	100 L	220 L
	Plastics	30.0 L				
	Metal	40.0 L				
UN 3082 <b>Environmentally hazardous substance, liquid, n.o.s.</b>	Glass	10.0 L	450 L	450 L	450 L	450 L
	Plastics	30.0 L				
	Metal	40.0 L				
UN 3151 <b>Polyhalogenated biphenyls, liquid or Polyhalogenated terphenyls, liquid or <u>Halogenated monomethyldiphenylmethanes, liquid</u></b>	Glass	10.0 L	100 L	220 L	100 L	220 L
	Plastics	30.0 L				
	Metal	40.0 L				
UN 3334 <b>Aviation regulated liquid, n.o.s.</b>	Glass	10.0 L	450 L	450 L	450 L	450 L
	Plastics	30.0 L				
	Metal	40.0 L				

...

UN Model Regulations, packing instruction P005, ST/SG/AC.10/42/Add.1, DGP/25-WP/3 (see paragraph 3.2.3.2.1 d)) and DGP/25-WP/3 (see paragraph 3.2.4.1n)

### Packing Instruction 972

Cargo aircraft only for UN 3530 only

(See Packing Instruction 220 for flammable gas-powered engines and machinery, Packing Instruction 378 for flammable liquid-powered engines and machinery, Packing Instruction 950 for flammable liquid-powered vehicles, Packing Instruction 951 for flammable gas-powered vehicles or Packing Instruction 952 for battery-powered equipment and vehicles

#### General requirements

Part 4, Chapter 1 requirements must be met, including:

#### Compatibility requirements

— Substances must be compatible with their packagings as required by 4:1.1.3.

<i>UN number and proper shipping name</i>	<i>Quantity — passenger</i>	<i>Quantity — cargo</i>
UN 3530 <b>Engine, internal combustion or Machinery, internal combustion</b>	No limit	No limit

**General**

- 1) The engine or machinery, including the means of containment containing dangerous goods, must be in compliance with the construction requirements specified by the appropriate national authority;
- 2) Any valves or openings (e.g. venting devices) must be closed during transport;
- 3) The engines or machinery must be oriented to prevent inadvertent leakage of dangerous goods and secured by means capable of restraining the engines or machinery to prevent any movement during transport which would change the orientation or cause them to be damaged.

**ADDITIONAL PACKING REQUIREMENTS**

If the engine or machinery is constructed and designed so that the means of containment containing the dangerous goods affords adequate protection, an outer packaging is not required. Dangerous goods in engines or machinery must otherwise be packed in outer packagings constructed of suitable material, and of adequate strength and design in relation to the packaging capacity and its intended use, and meeting the applicable requirements of 4.1.1.1, or they must be fixed in such a way that they will not become loose during normal conditions of transport, e.g. in cradles or crates or other handling devices.

**Liquid fuel tanks**

Except as otherwise provided in this packing instruction, fuel tanks must be drained of fuel and tank caps fitted securely. Special precautions are necessary to ensure complete drainage of the fuel system of machines or equipment incorporating internal combustion engines, such as lawn mowers and outboard motors, where such machines or equipment could possibly be handled in other than an upright position.

**Batteries**

All batteries must be installed and securely fastened in the battery holder of the machine or equipment and must be protected in such a manner so as to prevent damage and short circuits. In addition:

- 1) if spillable batteries are installed, and it is possible for the machine or equipment to be handled in such a way that batteries would not remain in their intended orientation, they must be removed and packed according to Packing Instruction 492 or 870 as applicable;
- 2) if lithium batteries are installed, they must meet the provisions of Part 2;9.3, unless otherwise approved by the appropriate authority of the State of Origin, must be securely fastened in the machinery or equipment and must be protected in such a manner so as to prevent damage and short circuits; and
- 3) if sodium batteries are installed they must conform to the requirements of Special Provision A94.

**Other operational equipment**

- 1) Dangerous goods required for the operation or safety of the machine or equipment, such as fire extinguishers, tire inflation canisters or safety devices, must be securely mounted in the machine or equipment

## Part 5

# SHIPPER'S RESPONSIBILITIES

...

## Chapter 1

### GENERAL

...

#### 1.1 GENERAL REQUIREMENTS

Before a person offers any package or overpack of dangerous goods for transport by air, that person must ensure that:

...

---

DGP/25-WP/3 (see paragraph 3.2.7.4)

---

- g) the dangerous goods are not included in any freight container/unit load device except ~~for radioactive material as specified in 7.2.9 (subject to the approval of the operator, this does not apply to a unit load device containing consumer commodities prepared according to Packing Instruction Y963 or dry ice used as a refrigerant for other than dangerous goods when prepared according to Packing Instruction 954 or magnetized material when prepared according to Packing Instruction 953) as specified in 7.1.4;~~

---

The following amendment is made in accordance with UN Model Regulations ST/SG/AC.10/42/Add.1, which introduced consistent use of the terms "mark" and "marking".

---

- h) before a package or overpack is reused, all inappropriate dangerous goods labels and ~~markings~~ marks are removed or completely obliterated;

---

UN Model Regulations, paragraph 5.1.2.2, ST/SG/AC.10/42/Add. and DGP/25-WP/3 (see paragraph 3.2.5.1)

---

- i) each package contained within an overpack is properly packed, marked, labelled and is free of any indication that its integrity has been compromised and in all respects is properly prepared as required in these Instructions. The "overpack" ~~marking~~ mark described in 2.4.10 is an indication of compliance with this requirement. The intended function of each package must not be impaired by the overpack; and

...

#### 1.2 GENERAL PROVISIONS FOR CLASS 7

...

#### 1.2.3 Determination of transport index (TI) and criticality safety index (CSI)

##### 1.2.3.1 Determination of transport index

1.2.3.1.1 The transport index (TI) for a package, overpack or freight container, must be the number derived in accordance with the following procedure:

- a) Determine the maximum radiation level in units of millisieverts per hour (mSv/h) at a distance of 1 m from the external surfaces of the package, overpack, or freight container. The value determined must be multiplied by 100 and the resulting number is the transport index. For uranium and thorium ores and their concentrates, the maximum radiation level at any point 1 m from the external surface of the load may be taken as:

0.4 mSv/h for ores and physical concentrates of uranium and thorium;

- 
- 0.3 mSv/h for chemical concentrates of thorium;
  - 0.02 mSv/h for chemical concentrates of uranium, other than uranium hexafluoride;
  - b) For freight containers, the value determined in step a) above must be multiplied by the appropriate factor from Table 5-1;
  - c) The value obtained in steps a) and b) above must be rounded up to the first decimal place (e.g. 1.13 becomes 1.2), except that a value of 0.05 or less may be considered as zero.
- 

DGP/25-WP/3 (see paragraph 3.2.5.2)

*Note.— DGP-WG/15 proposed adding the following note to the 2017-2018 Edition of the Technical Instructions provided there were no objections from TRAANSC and the UN Sub-Committee (the Secretary would seek comments from both groups at their summer sessions). There were no objections from either group.*

---

*Note.— If the measured dose rate comprises more than one type of radiation, then the transport index should be based on the sum of all the dose rates from each type of radiation (see paragraph 523.1 of the IAEA Specific Safety Guide No. SSG-26 (2012 Edition)).*

...

### 1.5 SALVAGE PACKAGINGS

Before a person offers any salvage packaging for transport by air, that person must ensure that:

- it is marked with the proper shipping name and UN number of, and bear all the labels appropriate for, the dangerous goods contained therein;

---

The following amendment is made in accordance with UN Model Regulations ST/SG/AC.10/42/Add.1, which introduced consistent use of the terms “mark” and “marking”.

---

- it is marked with the word “Salvage” and the lettering of the “Salvage”-~~marking~~ mark must be at least 12 mm high;
- the words “Salvage package” are added after the description of the goods in the dangerous goods transport document required by 4.1; and
- where the package contains dangerous goods restricted to transport on cargo aircraft only, it bears a “Cargo aircraft only” label and the dangerous goods transport document contains the necessary statement according to 4.1.5.7.1 b).

In addition, that person must ensure that all other applicable requirements are met.

~~— Note.— The size requirement for the “Salvage” marking applies as from 1 January 2016.~~

---

The following amendment is made in accordance with UN Model Regulations ST/SG/AC.10/42/Add.1, which introduced consistent use of the terms “mark” and “marking”.

---

### 1.6 EMPTY PACKAGINGS

1.6.1 Other than for Class 7, a packaging which previously contained dangerous goods must be identified, marked, labelled and placarded as required for those dangerous goods unless steps such as cleaning, purging of vapours or refilling with a non-dangerous substance are taken to nullify any hazard.

1.6.2 Before an empty packaging which had previously contained an infectious substance is returned to the shipper, or sent elsewhere, it must be disinfected or sterilized to nullify any hazard, and any label or ~~marking mark~~ indicating that it had contained an infectious substance must be removed or obliterated.

1.6.3 Freight containers as well as other packagings and overpacks used for the transport of radioactive material must not be used for the storage or transport of other goods unless decontaminated below the level of 0.4 Bq/cm<sup>2</sup> for beta and gamma emitters and low toxicity alpha emitters and 0.04 Bq/cm<sup>2</sup> for all other alpha emitters.

...

---

The following amendments are made in accordance with UN Model Regulations ST/SG/AC.10/42/Add.1, which introduced consistent use of the terms “mark” and “marking”. “Package” is removed from the chapter title for the sake of consistency with Chapter 3 (Labelling) and 5.2 of the UN Model Regulations.

---

## Chapter 2

### ~~PACKAGE MARKINGS~~ MARKING

...

#### 2.1 THE REQUIREMENT TO MARK

Unless otherwise provided in these Instructions, packages of dangerous goods and overpacks containing dangerous goods offered for transport by air must be marked as required by this Chapter.

#### 2.2 APPLICATION OF ~~MARKINGS~~ MARKS

2.2.1 All ~~markings marks~~ must be so placed on the packagings that they are not covered or obscured by any part of or attachment to the packaging or any other label or ~~marking mark~~.

---

UN Model Regulations, paragraph 5.2.1.2, ST/SG/AC.10/42/Add.1 and DGP/25-WP/3 (see paragraph 3.2.5.1)

---

2.2.2 All package ~~markings marks~~ required by 2.1:

- a) must be durable and printed or otherwise marked on, or affixed to, the external surface of the package;
- b) must be readily visible and legible;
- c) must be able to withstand open weather exposure without a substantial reduction in effectiveness;
- d) must be displayed on a background of contrasting colour; and
- e) must not be located with other package ~~markings marks~~ that could substantially reduce their effectiveness.

#### 2.3 PROHIBITED ~~MARKING~~ MARKS

Arrows for purposes other than indicating proper package orientation must not be displayed on a package containing liquid dangerous goods.

## 2.4 MARKING SPECIFICATIONS AND REQUIREMENTS

### 2.4.1 Marking with proper shipping name and UN or ID number

UN Model Regulations, paragraph 5.2.1.1, ST/SG/AC.10/42/Add.1 and DGP/25-WP/3 (see paragraph 3.2.5.1)

2.4.1.1 Unless otherwise provided in these Instructions, the proper shipping name of the dangerous goods (supplemented with the technical name(s) if appropriate, see Part 3, Chapter 1) and, when assigned, the corresponding UN number preceded by the letters "UN" or "ID", as appropriate, must be displayed on each package. The UN number and the letters "UN" or "ID" must be at least 12 mm high, except for packagings of 30 litres capacity or less or of 30 kg maximum net mass and for cylinders of 60 litres water capacity, when they must be at least 6 mm in height and except for packagings of 5 litres or 5 kg or less when they must be of an appropriate size. In the case of unpackaged articles, the marking mark must be displayed on the article, on its cradle or on its handling, storage or launching device. A typical package marking mark would be:

"Corrosive liquid, acidic, organic, n.o.s. (caprylyl chloride) UN 3265".

2.4.1.2 For solid substances, unless the word "molten" is already included in the proper shipping name, it must be added to the proper shipping name on the package when a substance is offered for air transport in the molten state (see Part 3, Chapter 1).

*Note.*— Additional descriptive text in the entries in column 1 of the Dangerous Goods List (Table 3-1) are not part of the proper shipping name but may be used in addition to the proper shipping name.

### 2.4.2 Shipper and consignee identification

The name and address of the person who offers the dangerous goods for transport by air and of the consignee must be provided on each package and should be located on the same surface of the package near the proper shipping name marking mark, if the package dimensions are adequate.

### 2.4.3 Special marking requirements for explosives

The proper shipping name required by 2.4.1 may be supplemented by additional descriptive text to indicate commercial or military names.

### 2.4.4 Packaging specification markings marks

2.4.4.1 Each outer or single packaging used for dangerous goods, for which specification packaging is required in Part 4, must bear the markings marks appropriate to the contents as specified in Part 6, Chapter 2.

2.4.4.2 MarkingsMarks must be stamped, printed or otherwise marked on the package to provide adequate permanency.

### 2.4.5 Special marking requirements for radioactive material

2.4.5.1 The marking of excepted packages of radioactive material of Class 7 must be as required by 1.2.4.1.

2.4.5.2 Each package of gross mass exceeding 50 kg must have its permissible gross mass legibly and durably marked on the outside of the packaging.

2.4.5.3 Each package which conforms to:

- a) a Type IP-1 package, a Type IP-2 package or a Type IP-3 package design must be legibly and durably marked on the outside of the packaging with "TYPE IP-1", "TYPE IP-2" or "TYPE IP-3" as appropriate;
- b) a Type A package design must be legibly and durably marked on the outside of the packaging with "TYPE A";
- c) a Type IP-2 package, a Type IP-3 package or a Type A package design must be legibly and durably marked on the outside of the packaging with the international vehicle registration code (VRI Code) of the country of origin of design and either the name of the manufacturer, or other identification of the packaging specified by the competent authority of the country of origin of design.

2.4.5.4 Each package which conforms to a design approved under one or more of 1.2.2.1, 6;7.21.1 to 6;7.21.4, 6;7.24.2.1 and 6.4.23.4 to 6.4.23.7 of the UN Model Regulations must be legibly and durably marked on the outside of the package with the following information:

- the identification mark allocated to that design by the competent authority;
- a serial number to uniquely identify each packaging which conforms to that design; and
- "Type B(U)", "Type B(M)" or "Type C" in the case of a Type B(U), Type B(M) or Type C package design.

*Note.— Empty Type B(U) or Type B(M) packages, as specified in the Note to 2;7.2.4.1.1.7, shipped as industrial packages Type IP-1 must bear the appropriate specification ~~marking marks~~ for a Type IP-1 in which case the appropriate specification ~~markings marks~~ specified in 2.4.5.4 must be obliterated.*

2.4.5.5 Each package which conforms to a Type B(U), Type B(M) or Type C package design must have the outside of the outermost receptacle which is resistant to the effects of fire and water plainly marked by embossing, stamping or other means resistant to the effects of fire and water with the trefoil symbol, as shown in Figure 5-1 below.

2.4.5.6 In all cases of international transport of packages requiring competent authority approval of design or shipment, for which different approval types apply in the different countries concerned by the shipment, the ~~marking mark~~ must be in accordance with the certificate of the country of origin of the design.

#### 2.4.6 Special marking requirements for refrigerated liquefied gas

The upright position of each package must be indicated prominently by either the "Package orientation" label (Figure 5-27) or pre-printed package orientation labels meeting the same specification as either Figure 5-27 or ISO Standard 780:1997. The label must be affixed to or printed on at least two opposite vertical sides of the package with the arrows pointing in the correct direction. The wording "KEEP UPRIGHT" must be placed at 120° intervals around the package or on each side. Packages must also be clearly marked "DO NOT DROP — HANDLE WITH CARE".

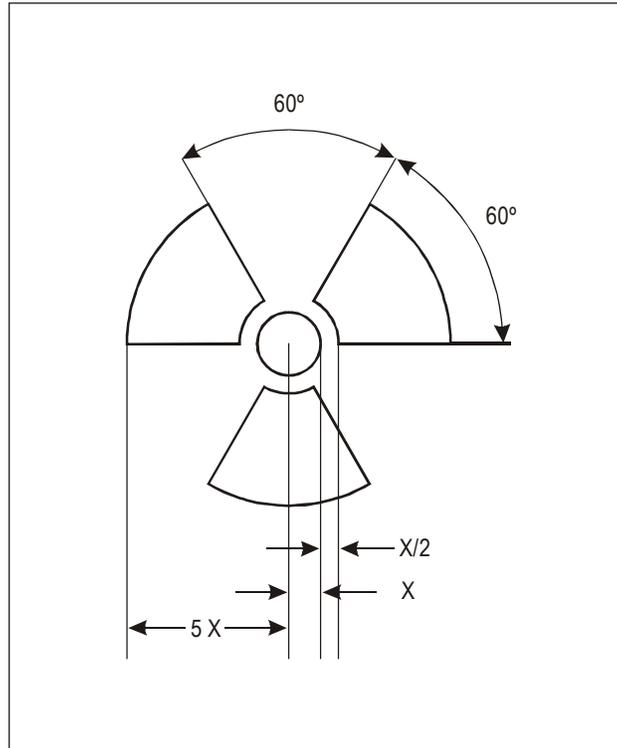


Figure 5-1. Basic trefoil symbol with proportions based on a central circle of radius X. The minimum allowable size of X must be 4 mm.

### 2.4.7 Special marking requirement for dry ice

The net mass of solid carbon dioxide (dry ice) must be marked on any package containing such substance.

### 2.4.8 Special marking requirement for biological substances, Category B

Packages containing biological substances, Category B packed in accordance with Packing Instruction 650 must be marked "Biological substance, Category B".

### 2.4.9 Special marking provisions for environmentally hazardous substances

2.4.9.1 Unless otherwise specified in these Instructions, packages containing environmentally hazardous substances meeting the criteria of 2.9.2.1 a) (UN Nos. 3077 and 3082) must be durably marked with the environmentally hazardous substance mark and the packages must also bear a Class 9 hazard label.

UN Model Regulations, paragraph 5.2.1.6.3, ST/SG/AC.10/42/Add.1 and DGP/25-WP/3 (see paragraph 3.2.5.1)

2.4.9.2 The environmentally hazardous substance mark must be located adjacent to the markings marks required by 2.4.1.1. The requirements of 2.2.2 must be met.

2.4.9.3 The environmentally hazardous substance mark must be as shown in Figure 5-2. The marking mark must be in the form of a square set at an angle of 45° (diamond-shaped). The symbol (fish and tree) must be black on white or suitable contrasting background. The minimum dimensions must be 100 mm × 100 mm and the minimum width of line forming the diamond must be 2 mm. If the size of the package so requires, the dimensions/line thickness may be reduced, provided the marking mark remains clearly visible. Where dimensions are not specified, all features must be in approximate proportion to those shown.

*Note.— The labelling provisions of 5.3 apply in addition to any requirement for packages to bear the environmentally hazardous substance mark.*



Figure 5-2. Symbol (fish and tree): black on white or suitable contrasting background

## 2.4.10 Marking of overpacks

UN Model Regulations, paragraph 5.1.2.1, ST/SG/AC.10/42/Add.1 and DGP/25-WP/3 (see paragraph 3.2.5.1)

2.4.10.1 Unless marks and labels representative of all dangerous goods in the overpack are visible, the overpack must be:

- a) marked with the word "OVERPACK". The lettering of the "OVERPACK" mark must be at least 12 mm high; and
- b) labelled and marked with the proper shipping name, UN number and other marks, as required for packages in accordance with this chapter and Chapter 3, for each item of dangerous goods contained in the overpack.

2.4.10.2 ~~Labelling of overpacks containing radioactive material must be in accordance with 3.2.6 and 3.5.1.1 h) to i). An overpack must be marked with the word "Overpack", with the proper shipping name, UN number, and special handling instructions appearing on interior packages for each item of dangerous goods contained in the overpack unless markings and labels representative of all dangerous goods in the overpack are visible, except as required in 3.2.6 and 3.5.1.1 h) to i).~~

2.4.10.3 Packaging specification ~~markings marks~~ must not be reproduced on the overpack.

The following amendment is made in accordance with UN Model Regulations ST/SG/AC.10/42/Add.1, which introduced consistent use of the terms "mark" and "marking".

2.4.10.4 When packages containing dangerous goods in limited quantities are placed in an overpack, the overpack must also be marked with the limited quantity marking shown in Figure 3-1 unless the ~~markings marks~~ representative of all dangerous goods in the overpack are visible. The lettering of the "Overpack" ~~marking mark~~ must be at least 12 mm high.

~~+ ——— Note. — The size requirement for the "Overpack" marking applies as from 1 January 2016.~~

### 2.4.11 Additional ~~markings marks~~ of packages containing dangerous goods in limited quantities

Provisions for the marking of packages containing dangerous goods in limited quantities are contained in 3;4.

### 2.4.12 Specific provisions for dangerous goods packed in excepted quantities

Provisions for the marking of packages containing dangerous goods in excepted quantities are contained in 3;5.

### 2.4.13 ~~MarkingsMarks~~ required by other modes of transport

The following amendment is made in accordance with UN Model Regulations ST/SG/AC.10/42/Add.1, which introduced consistent use of the terms "mark" and "marking".

~~Markings-Marks~~ required by other international or national transport regulations are permitted in addition to ~~markings marks~~ required by these Instructions, provided that they cannot be confused with or conflict with any ~~markings marks~~ prescribed by these Instructions, because of their colour, design or shape.

### 2.4.14 Special marking requirement for chemical oxygen generators

When chemical oxygen generators contained in protective breathing equipment (PBE) are being transported under Special Provision A144, the statement "Aircrew protective breathing equipment (smoke hood) in accordance with Special Provision A144" shall be marked adjacent to the proper shipping name on the package.

### 2.4.15 Marking requirements for IBCs used to transport UN 3077

Intermediate bulk containers must comply with the marking requirements applicable to other packagings, except that intermediate bulk containers of more than 450 L capacity must be marked with the proper shipping name and UN number, as required in 2.4.1, and the environmentally hazardous substance mark, on two opposite sides.

...

## 2.5 LANGUAGES TO BE USED

In addition to the languages which may be required by the State of Origin, English should be used.

...

## Chapter 3

### LABELLING

---

UN Model Regulations, paragraph 5.2.2.1, ST/SG/AC.10/42/Add.1 and DGP/25-WP/3 (see paragraph 3.2.5.1)

---

*Note 1.— These provisions relate essentially to danger labels. However, additional **marking marks** or symbols indicating precautions to be taken in handling or storing a package (e.g. a symbol representing an umbrella indicating that a package should be kept dry) may be displayed on a package as appropriate. For such purposes, it is preferable to use the symbols recommended by the International Organization for Standardization (ISO).*

*Note 2.— In 3.6 of this Chapter there are provisions concerning the placarding of large freight containers for radioactive material.*

*Note 3.— The provisions concerning the placarding of portable tanks are shown in the Supplement, Part S-4;12.4.*

#### 3.1 THE REQUIREMENT TO LABEL

3.1.1 Where articles or substances are specifically listed in the Dangerous Goods List (Table 3-1), a danger class label must be affixed for the hazard shown in column 3 of Table 3-1. A subsidiary risk label must also be affixed for any risk indicated by a class or division number in column 4 of Table 3-1. However, special provisions indicated in column 7 may also require a subsidiary risk label where no subsidiary risk is indicated in column 4 or may exempt from the requirement for a subsidiary risk label where such a risk is indicated in the Dangerous Goods List.

3.1.2 Labels identifying the primary and subsidiary risks of the dangerous goods must bear the class or division number as required in 3.5.1.

3.1.3 All labels must be able to withstand open weather exposure without a substantial reduction in effectiveness.

#### 3.2 APPLICATION OF LABELS

3.2.1 The labels required to be displayed on packages of dangerous goods are identified in the Dangerous Goods List for articles and substances specifically listed by name and for articles and substances not specifically listed by name which are covered by generic or n.o.s. entries.

3.2.2 Packages containing substances of Class 8 need not show a subsidiary risk label for Division 6.1 if the toxicity arises solely from the destructive effect on tissue. Substances of Division 4.2 need not show a subsidiary risk label for Division 4.1 if the substance is also a flammable solid.

3.2.3 Packages containing organic peroxides which meet the criteria for Class 8, Packing Group I or II must be labelled with a corrosive subsidiary risk label.

*Note.— Many liquid organic peroxide formulations are flammable; however, no subsidiary risk flammable label is required because the organic peroxide label itself is considered to imply that the product may be flammable.*

3.2.4 In addition to the primary hazard label (Figure **5-18 5-19**), infectious substances packages must bear any other label required by the nature of the contents. This is not required if a quantity of 30 ml or less of dangerous goods included in classes 3, 8 or 9 is packed in each primary receptacle containing infectious substances provided these substances meet the requirements of 3;5.1.2.

3.2.5 Packages containing radioactive material having additional hazardous characteristics must also be labelled to indicate those characteristics.

---

UN Model Regulations, paragraph 5.2.2.1.12.1, ST/SG/AC.10/42/Add.1 and DGP/25-WP/3  
(see paragraph 3.2.5.1)

---

3.2.6 Except when enlarged labels are used in accordance with 3.6, each package, overpack and freight container containing radioactive material must bear the labels conforming to Figures ~~5-19~~ 5-20, 5-2021 and 5-2422 according to the appropriate category. Labels must be affixed to two opposite sides on the outside of the package or overpack or on the outside of all four sides of a freight container. Each overpack containing radioactive material must bear at least two labels on opposite sides of the outside of the overpack. In addition, each package, overpack and freight container containing fissile material, other than fissile material excepted under the provisions of 2.7.2.3.5 must bear labels conforming to the model shown in Figure 5-2223; such labels, where applicable, must be affixed adjacent to the labels conforming to Figure 5-1920, 5-2021, or 5-2422, as applicable. Labels must not cover the ~~markings~~ ~~marks~~ specified in Chapter 2. Any labels which do not relate to the contents must be removed or covered.

3.2.7 Intermediate bulk containers must comply with the labelling requirements applicable to other packagings, except that intermediate bulk containers of more than 450 L capacity must be labelled on two opposite sides.

---

UN Model Regulations, paragraph 5.1.2.2.1.6 a) and b), ST/SG/AC.10/42/Add.1 and DGP/25-WP/3 (see paragraph 3.2.5.1). Amendment replacing reference to 3.5.1.1 d) with 3.5.1.1 b) was incorporated in 2015-2016 Edition by way of a corrigendum.

---

3.2.8 Except as provided in 3.5.1.1-~~db~~, each class hazard label must:

- a) be affixed to a background of contrasting colour or must have a dotted or solid line outer boundary;
- b) be located on the same surface of the package near the proper shipping name ~~marking~~ ~~mark~~, if the package dimensions are adequate;
- c) be so placed on the packaging that they are not covered or obscured by any part of or attachment to the packaging or any other label or ~~marking~~ ~~mark~~;
- d) when primary and subsidiary risk labels are required, be displayed next to each other; and
- e) be affixed at an angle of 45° (diamond shaped), unless the package dimensions are inadequate.

3.2.9 Labels must not be folded. Cylindrical packages must be of such dimensions that a label will not overlap itself. In the case of cylindrical packages containing radioactive materials, which require two identical labels, these labels must be centred on opposite points of the circumference and must not overlap each other. If the dimensions of the package are such that two identical labels cannot be affixed without overlapping each other, one label is acceptable provided it does not overlap itself.

3.2.10 Labels must be firmly affixed to or printed on the package of dangerous goods. Where a package is of such an irregular shape that a label cannot be affixed to or printed on a surface, it is acceptable to attach the label to the package by an adequately strong tag.

3.2.11 Since packages or consignments of magnetized material (Class 9) must bear the "Magnetized material" label (Figure 5-2527) as required by column 5 of Table 3-1, such packages or consignments do not need to bear the "Miscellaneous dangerous goods" label (Figure 5-2425).

3.2.12 In addition to the class hazard labels specified in 3.1, handling labels must also be affixed to packages of dangerous goods as follows:

- a) the "Cargo aircraft only" label (Figure 5-2628) must be affixed:
  - 1) when the package containing the dangerous goods may only be transported on a cargo aircraft. However, where the packing instruction number and the permitted quantity per package are identical for passenger and cargo aircraft, the "Cargo aircraft only" label should not be used;
  - 2) to each Type B(M) package of radioactive material and any freight container containing such a Type B(M) package;
  - 3) on the same surface of the package near the hazard labels;
- b) when required by the provisions of 4;1.1.13, either the "Package orientation" label (Figure 5-2729), or preprinted package orientation labels meeting the same specification as either Figure 5-2729 or ISO Standard 780:1997, must be affixed to or printed on at least two opposite vertical sides of the package with the arrows pointing in the correct direction. The words "Dangerous goods" may be inserted on the label below the line;
- c) for packages containing refrigerated liquefied gases, the "Cryogenic liquid" label (Figure 5-2931) must be affixed on

all packages;

- d) for packages containing self-reactive substances of Division 4.1 or Division 5.2 organic peroxides, the "Keep away from heat" label (Figure 5-~~3032~~) must be affixed on all packages. This label should be affixed on the same surface of the package near the hazard label(s);
- e) for excepted packages of radioactive material the "Radioactive material, excepted package" handling label (Figure 5-~~3133~~) must be affixed;
- f) be affixed to a background of contrasting colour or must have a dashed or solid line outer boundary;

The following amendment is made in accordance with UN Model Regulations ST/SG/AC.10/42/Add.1, which introduced consistent use of the terms "mark" and "marking".

- g) be so placed on the packaging that they are not covered or obscured by any part of or attachment to the packaging or any other label or marking mark.

3.2.13 Where a text is indicated in Figures 5-1 to 5-~~3233~~, an equivalent text in another language may be used.

3.2.14 Labels required by other international or national transport regulations are permitted in addition to labels required by these Instructions, provided that they cannot be confused with or conflict with any label prescribed by these Instructions, because of their colour, design or shape.

### 3.3 LABELLING OF OVERPACKS

3.3.1 An overpack must be labelled as required for packages by Chapter 3, for each item of dangerous goods contained in the overpack unless labels representative of all dangerous goods in the overpack are visible.

3.3.2 An overpack containing liquid dangerous goods in single packages packagings with end closures ~~containing liquid dangerous goods~~ must be labelled with either the "Package Orientation" label (Figure ~~5-27 5-29~~), or pre-printed package orientation labels meeting the same specification as either Figure ~~5-27 5-29~~ or ISO Standard 780:1997, unless such labels are affixed to the package and are visible from the outside of the overpack. Such labels must be affixed to or printed on at least two opposite vertical sides of the overpack with the arrows pointing in the direction required to indicate the orientation of the overpack required to ensure that end closures are upward, notwithstanding that such single packages may also have side closures.

### 3.4 PROHIBITED LABELLING

Arrows for purposes other than indicating proper package orientation must not be displayed on a package containing liquid dangerous goods.

### 3.5 LABEL SPECIFICATIONS

#### 3.5.1 Class hazard label specifications

3.5.1.1 Labels must satisfy the provisions of this section and conform, in terms of colour, symbols and general format, to the specimen labels shown in Figures ~~5-3 5-4~~ to ~~5-24 5-26~~.

*Note.— Where appropriate, labels in Figures ~~5-3 5-4~~ to ~~5-24 5-26~~ are shown with a dotted outer boundary as provided for in 3.5.1.1 a). This is not required when the label is applied on a background of contrasting colour.*

Class hazard labels must conform to the following specifications:

- a) Labels must be configured as described below (see Figure ~~5-3 5-4~~).
  - i) Labels must be displayed on a background of contrasting colour, or must have either a dotted or solid outer boundary line.
  - ii) The label must be in the form of a square set at an angle of 45° (diamond shaped). The minimum dimensions must be 100 mm × 100 mm and the minimum width of the line inside the edge forming the diamond must be 2 mm. The line inside the edge must be parallel and 5 mm from the outside of that line to the edge of the label. The line inside the edge on the upper half of the label must be the same colour as the symbol, and the line

inside the edge on the lower half of the label must be the same colour as the class or division number in the bottom corner. Where dimensions are not specified, all features must be in approximate proportion to those shown.

- iii) Labels of 50 mm × 50 mm may be used on packages containing infectious substances where the packages are of dimensions such that they can only bear smaller labels. The line inside the edge must remain 5 mm to the edge of the label. The minimum width of the line inside the edge must remain 2 mm. Dimensions for labels on cylinders must comply with 3.5.1.1 b).

*— Note. — The provisions of 3.5.1.1 a) from the 2013-2014 Edition of these Instructions may continue to be applied until 31 December 2016. When so applied, 3.5.1.1 a) i), ii) and iii) need not apply until 1 January 2017.*

UN Model Regulations, paragraph 5.2.2.2.1.2, ST/SG/AC.10/42/Add.1 and DGP/25-WP/3  
(see paragraph 3.2.5.1.1 a))

- b) Cylinders for Class 2 may, on account of their shape, orientation and securing mechanisms for transport, bear labels representative of those specified in this chapter, which have been reduced in size, according to ISO 7225:2005, for display on the non-cylindrical part (shoulder) of such cylinders. Labels may overlap to the extent provided for by ISO 7225:2005 "Gas cylinders — Precautionary labels"; however, in all cases the labels representing the primary hazard and the numbers appearing on any label must remain fully visible and the symbols recognizable.

*— Note. — When the diameter of the cylinder is too small to permit the display of the reduced size labels on the non-cylindrical upper part of the cylinder, the reduced sized labels may be displayed on the cylindrical part.*

- c) With the exception of labels for Divisions 1.4, 1.5 and 1.6 of Class 1, the upper half of the label must contain the pictorial symbol and the lower half must contain the class or, in the case of labels for Class 5, the division number, as appropriate. The lower half of the label must also contain the pictorial symbol on the Class 9 label for lithium cells and batteries (Figure 5-26). The label may include such text as the UN number, or words describing the hazard class (e.g. "flammable") in accordance with 3.5.1.1 e) provided that the text does not obscure or detract from the other required label elements.
- d) In addition, except for Divisions 1.4, 1.5 and 1.6, labels for Class 1 must show in the lower half, above the class number, the division number and compatibility group letter for the substance or article. Labels for Divisions 1.4, 1.5 and 1.6 must show in the upper half the division number and in the lower half the class number and the compatibility group letter.

UN Model Regulations, paragraph 5.2.2.2.1.5, ST/SG/AC.10/42/Add.1 and DGP/25-WP/3  
(see paragraph 3.2.5.1)

In addition to new text related to the Class 9 label for lithium batteries, further amendments to sub-paragraph e) are made for the sake of harmonization with the UN Model Regulations as shown below.

- e) Unless otherwise provided for in these Instructions, only text indicating the nature of the risk may be inserted in the lower half of the label (in addition to the class or division number or compatibility group) On labels other than those for material of Class 7, the insertion of any text (other than the class or division number or compatibility group) in the space below the symbol must be confined to particulars indicating the nature of the risk and precautions to be taken in handling. In the case of the Class 9 label for lithium cells and batteries (Figure 5-26), no text other than the class number must be included in the bottom part of the label.
- f) The symbols, texts and numbers must be shown in black on all labels except:
- 1) the Class 8 label, where the text (if any) and class number must appear in white;
  - 2) labels with entirely green, red or blue backgrounds, where they may be shown in white;
  - 3) the Division 5.2 label, where the symbol may be shown in white; and
  - 4) the Division 2.1 label displayed on cylinders and gas cartridges for liquefied petroleum gases, where they may be shown in the background colour of the receptacle if adequate contrast is provided.
- g) A label may contain form identification information, including the name of its maker, provided that information is printed outside of the solid line border in no larger than 10-point type.

## Labelling of radioactive material

- h) Each label conforming to the applicable Figure 5-~~1920~~, 5-~~2921~~ or 5-~~2422~~ must be completed with the following information:
- 1) Contents:
    - A) except for LSA-I material, the name(s) of the radionuclide(s) as taken from Table 2-12, using the symbols prescribed therein. For mixtures of radionuclides, the most restrictive nuclides must be listed to the extent the space on the line permits. The group of LSA or SCO must be shown following the name(s) of the radionuclide(s). The terms "LSA-II", "LSA-III", "SCO-I" and "SCO-II" must be used for this purpose;
    - B) for LSA-I material, the term "LSA-I" is all that is necessary; the name of the radionuclide is not necessary;
  - 2) Activity: The maximum activity of the radioactive contents during transport expressed in units of becquerels (Bq) with the appropriate SI prefix symbol. For fissile material, the total mass of fissile nuclides in units of grams (g), or multiples thereof, may be used in place of activity;
  - 3) For overpacks and freight containers the "contents" and "activity" entries on the label must bear the information required in 3.5.1.1 h) 1) A) and B), respectively, totalled together for the entire contents of the overpack or freight container except that on labels for overpacks or freight containers containing mixed loads of packages containing different radionuclides, such entries may read "See Transport Documents";
  - 4) Transport index: The number determined in accordance with 1.2.3.1.1 and 1.2.3.1.2. (No transport index entry is required for category I-WHITE.)
- i) Each label conforming to Figure 5-~~2223~~ must be completed with the criticality safety index (CSI) as stated in the certificate of approval applicable in the States through or into which the consignment is transported and issued by the competent authority.
- j) For overpacks and freight containers, the label conforming to Figure 5-~~2223~~ must bear the sum of the criticality safety indexes of all the packages contained therein.
- k) In all cases of international transport of packages requiring competent authority approval of design or shipment, for which different approval types apply in the different countries concerned by the shipment, the labelling must be in accordance with the certificate of the country of origin of design.

3.5.1.2 Illustrations of the class hazard labels, showing the approved symbols and colours, are given in Figures 5-~~4-5~~ to 5-~~24-26~~. The label descriptions used in column 5 of Table 3-1 are indicated in parentheses.

*Note 1.— The asterisk appearing in the bottom corner of the label indicates the location of the class or division number when the label is used to show the primary risk. See Figures 5-~~4-5~~ to 5-~~7-8~~ concerning the location of information on explosives labels.*

*Note 2.— Minor variations in the design of the symbol on labels or other differences such as the width of vertical lines on labels as shown in these Instructions or in regulations of other modes, which do not affect the obvious meaning of the label, are acceptable. For example the hand shown on the Class 8 label may be shown with or without shading, the extreme right and left vertical lines on the Division 4.1 and Class 9 label may extend to the edge of the label or there may be some white space at the edge, etc.*

### 3.5.2 Handling labels

#### 3.5.2.1 Handling label specifications

An illustration of each of the handling labels showing the approved design and colour is given in Figures 5-~~2527~~ to 5-~~2729~~ and Figures 5-~~2931~~ to 5-~~3233~~. The minimum label dimensions are shown in the figures. Where dimensions or features are not specified, these must be in approximate proportion to those shown; however:

- a) labels having dimensions not smaller than half of those indicated may be used on packages containing infectious substances when the packages are of dimensions such that they can only bear smaller labels; and
- b) orientation labels may meet the specification of either Figure 5-~~2729~~ or ISO Standard 780:1997.

...

### 3.6 PLACARDING OF LARGE FREIGHT CONTAINERS CONTAINING RADIOACTIVE MATERIAL

### 3.6.1 Special provisions for Class 7

3.6.1.1 Large freight containers carrying packages (other than excepted packages) and tanks must bear four placards which conform with Figure 5-2830. The placards must be affixed in a vertical orientation to each side wall and each end wall of the large freight container. Any placards which do not relate to the contents must be removed. Instead of using both labels and placards, it is permitted as an alternative to use enlarged labels only, as shown in Figures 5-1920, 5-2021 and 5-2422, and where appropriate Figure 5-2223, with dimensions as required for the placard in Figure 5-2830.

3.6.1.2 For Class 7, the placard must have minimum overall dimensions of 250 mm by 250 mm with a black line running 5 mm inside the edge and parallel with it, and must be otherwise as shown in Figure 5-2830. The number 7 must not be less than 25 mm high. The background colour of the upper half of the placard must be yellow and of the lower half white, the colour of the trefoil and the printing must be black. The use of the word "Radioactive" in the bottom half is optional to allow the use of this placard to display the appropriate United Nations number for the consignment.

...

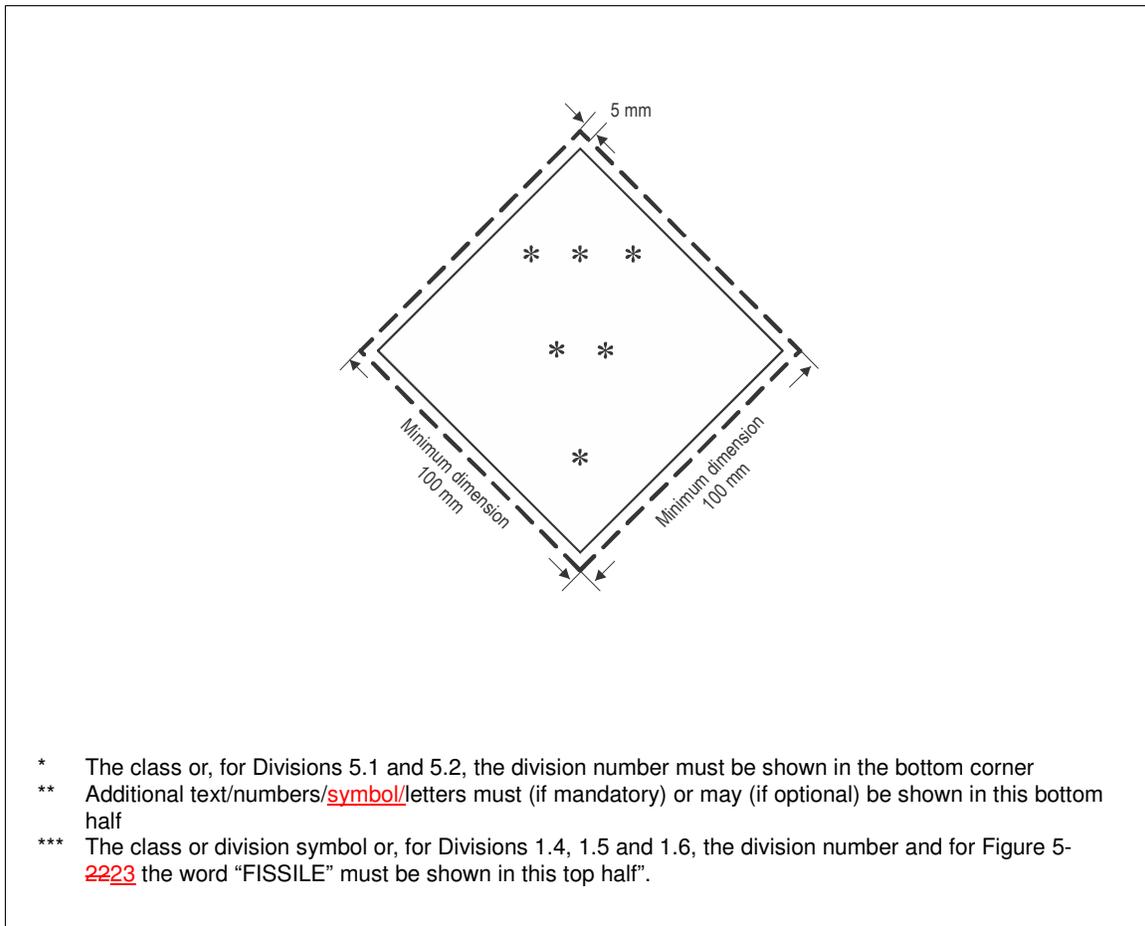


Figure 5-3 5-4. Class/division label

...

## Chapter 4

### DOCUMENTATION

...

---

DGP/25-WP/40 (see paragraph 6.4.1 of this report)

---

#### 4.1.4 Information required on the dangerous goods transport document

##### 4.1.4.1 Dangerous goods description

The dangerous goods transport document must contain the following information for each dangerous substance, material or article offered for transport:

- a) the UN or ID number preceded by the letters "UN" or "ID" as appropriate;
- b) the proper shipping name, as determined according to 3;1.2, including the technical name enclosed in parenthesis, as applicable (see 3;1.2.7);
- c) the primary hazard class or, when assigned, the division of the goods, including for Class 1 the compatibility group letter. The words "Class" or "Division" may be included preceding the primary hazard class or division numbers;
- d) subsidiary hazard class or division number(s) corresponding to the subsidiary risk label(s) required to be applied, when assigned, must be entered following the primary hazard class or division and must be enclosed in parenthesis. The words "Class" or "Division" may be included preceding the subsidiary hazard class or division numbers;
- e) where assigned, the packing group for the substance or article which may be preceded by "PG" (e.g. "PG II").

Note.— Until 31 March 2017, shippers may identify engines as Class 9, UN 3166 using the proper shipping names and Packing Instruction 950 or 951 as shown in the 2015-2016 Edition of these Instructions. In that instance the dangerous goods transport document must indicate the packing instruction number and the UN number and proper shipping name in effect, in the 2015-2016 Edition of these Instructions. The marks and labels applied, when required, must be consistent with the information shown on the dangerous goods transport document.

...

#### 4.1.5 Information required in addition to the dangerous goods description

...

---

DGP/25-WP/3 (see paragraph 3.2.5.1.1 d), UN Model Regulations, paragraph 5.4.1.5.12, ST/SG/AC.10/42/Add.1/Corr.1 and DGP/25-WP/34, Revised (see paragraph 2.3.4 of this report):

---

##### 4.1.5.8 Additional requirements

4.1.5.8.1 The dangerous goods transport document must also contain:

- a) except for radioactive material, the packing instruction applied. For shipments of lithium batteries prepared in accordance with Section IB of Packing Instruction 965 or Packing Instruction 968, the letters "IB" must be added following the packing instruction number;
- b) when applicable, reference to Special Provision A1, A2, A4 ~~or~~ A5, A51, A78, A190, A191, A201, A202, A208, A211 or A212;
- c) a statement indicating that the shipment is within the limitations prescribed for either passenger and cargo aircraft or cargo-only aircraft, as appropriate;

*Note.— To qualify as acceptable for transport aboard passenger aircraft, passenger aircraft packing instruction number(s) must be used, and the package must not bear the "Cargo aircraft only" label. To qualify as acceptable for transport aboard cargo-only aircraft, cargo aircraft packing instruction number(s) must be used, and the package must bear the "Cargo aircraft only" label; or passenger aircraft instruction number(s) must be shown and no "Cargo aircraft only" label applied. However, where the packing instruction number(s) and the permitted quantity per package are identical for passenger and cargo aircraft, the "Cargo aircraft only" label should not be used.*

- d) special handling information, when appropriate;

- e) an indication that an overpack has been used, when appropriate; and
- f) the “Q” value rounded up to the first decimal place, if substances are packed in accordance with 3;4.3.3 or 4;1.1.9 e).

---

DGP/25-WP/3 (see paragraph 3.2.5.4):

---

4.1.5.8.2 For explosive substances, where Packing Instruction 101 has been adopted by an appropriate national authority, the State’s distinguishing sign for motor vehicles in international traffic of the country for which the authority acts must be marked on the dangerous goods transport document as follows:

Packaging ~~authorized~~ approved by the competent authority of ...

*Note.— In this instance, the term “competent authority” is used for intermodal compatibility; it refers to the appropriate national authority.*

...

---

UN Model Regulations, paragraph 5.4.1.5.12, ST/SG/AC.10/42/Add.1 and DGP/25-WP/3 (see paragraph 3.2.5.1.1 d))

---

4.1.5.9 Classification where new data is available (see Part 2;1.2)

For transport in accordance with 2;1.2, a statement to this effect must be included on the dangerous goods transport document, as follows “Classified in accordance with 2;1.2 of the Technical Instructions”

...

## Part 6

# PACKAGING NOMENCLATURE, MARKING, REQUIREMENTS AND TESTS

...

## Chapter 2

# MARKING OF PACKAGINGS OTHER THAN INNER PACKAGINGS

---

UN Model Regulations, paragraph 6.1.3, ST/SG/AC.10/42/Add.1 and DGP/25-WP/3 (see paragraph 3.2.6.1)

---

### Introductory Notes

*Note 1.— The ~~marking marks indicates indicate~~ that the packaging which bears ~~# them~~ corresponds correspond to a successfully tested design type and that it complies with the provisions of Chapters 3 and 4 which are related to the manufacture, but not to the use, of the packaging. In itself, therefore, the marks ~~s-dees do~~ not necessarily confirm that the packaging may be used for any particular substance.*

*Note 2.— The ~~marking marks-is are~~ intended to be of assistance to packaging manufacturers, reconditioners, packaging users, operators and appropriate authorities. In relation to the use of a new packaging, the original ~~marking marks-is are~~ a means for its manufacturer(s) to identify the type and to indicate those performance test regulations that have been met.*

Note 3.— *The marking marks does do not always provide full details of the test levels, etc., and these may need to be taken further into account, e.g. by reference to a test certificate, test reports or register of successfully tested packagings. For example, a packaging having an X or Y-marking mark may be used for substances to which a packing group having a lesser degree of danger has been assigned with the relevant maximum permissible value of the relative density, determined by taking into account the factor 1.5 or 2.25 indicated in the test requirements for packagings in Chapter 4 as appropriate, i.e. a Packing Group I packaging tested for products with a relative density of 1.2 could be used as a Packing Group II packaging for products with a relative density of 1.8 or a Packing Group III packaging for products with a relative density of 2.7, provided of course that all the performance criteria can still be met with the higher relative density.*

## 2.1 MARKING REQUIREMENTS FOR PACKAGINGS OTHER THAN INNER PACKAGINGS

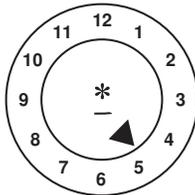
UN Model Regulations, paragraph 6.1.3.1, ST/SG/AC.10/42/Add.1 and DGP/25-WP/3 (see paragraph 3.2.6.1)

2.1.1 Each packaging intended for use according to these Instructions must bear **markings marks** which are durable, legible and placed in a location and of such a size relative to the packaging as to be readily visible. For packages with a gross mass of more than 30 kg the **markings marks**, or a duplicate thereof, must appear on the top or on a side of the packaging. Letters, numerals and symbols must be at least 12 mm high, except for packagings of 30 L or 30 kg capacity or less, when they must be at least 6 mm in height and for packagings of 5 L or 5 kg or less when they must be of an appropriate size. The **markings marks** must show:

- a) the United Nations packaging symbol 

This symbol must not be used for any purpose other than certifying that a packaging complies with the relevant requirements in Chapters 1 to 6. For embossed metal packagings the capital letters "UN" may be applied as the symbol;

- b) the code designating the type of packaging according to 1.2;
- c) a code in two parts:
- 1) a letter designating the packing group(s) for which the design type has been successfully tested:
    - X for Packing Groups I, II and III
    - Y for Packing Groups II and III
    - Z for Packing Group III only;
  - 2) A) for single packagings intended to contain liquids: the relative density, rounded off to the first decimal, for which the design type has been tested; this may be omitted when the relative density does not exceed 1.2;
    - B) for packagings intended to contain solids or inner packagings: the maximum gross mass, in kilograms, at which the design type has been tested;
- d) 1) for single packagings intended to contain liquids: the hydraulic test pressure which the packaging was shown to withstand, in kPa rounded down to the nearest 10 kPa;
- 2) for packagings intended to contain solids or inner packagings: the letter "S";
- e) the last two digits of the year during which the packaging was manufactured. Packagings of types 1H1, 1H2, 3H1 and 3H2 must also be appropriately marked with the month of manufacture; this may be marked on the packaging in a different place from the remainder of the **marking mark**. An appropriate method is:



- \* The last two digits of the year of manufacture may be displayed at that place. In such a case, the two digits of the year in the type approval **marking mark** and in the inner circle of the clock must be identical.

Note.— *Other methods that provide the minimum required information in a durable, visible and legible form are also acceptable.*

- f) the State authorizing the allocation of the mark, indicated by the distinguishing sign for motor vehicles in international traffic;

- g) the name of the manufacturer or other identification of the packaging specified by the appropriate national authority.

UN Model Regulations, paragraph 6.1.3.2 to 6.1.3.11, ST/SG/AC.10/42/Add.1 and DGP/25-WP/3 (see paragraph 3.2.6.1)

2.1.2 In addition to the durable ~~markings marks~~ prescribed in 2.1.1, every new metal drum of a capacity greater than 100 L must bear the marks described in 2.1.1. a) to e) on the bottom, with an indication of the nominal thickness of at least the metal used in the body (in mm, to 0.1 mm), in a permanent form (e.g. embossed). When the nominal thickness of either head of a metal drum is thinner than that of the body, the nominal thicknesses of the top head, body and bottom head must be marked on the bottom in a permanent form (e.g. embossed), for example "1.0-1.2-1.0" or "0.9-1.0-1.0". Nominal thicknesses of metal must be determined according to the appropriate ISO Standard, for example ISO 3574:1999 for steel. The marks indicated in 2.1.1 f) and g) must not be applied in a permanent form (e.g. embossed) except as provided for in 2.1.5.

2.1.3 Every packaging liable to undergo a reconditioning process other than those referred to in 2.1.2 must bear the marks indicated in 2.1.1 a) to e) in a permanent form. Marks are permanent if they are able to withstand the reconditioning process (e.g. embossed). For packagings other than metal drums of a capacity greater than 100 L, these permanent marks may replace the corresponding durable ~~markings marks~~ prescribed in 2.1.1.

2.1.4 For re-manufactured metal drums, if there is no change to the packaging type and no replacement or removal of integral structural components, the required ~~markings marks~~ need not be permanent (e.g. embossed). Every other re-manufactured metal drum must bear the ~~markings marks~~ indicated in 2.1.1 a) to e) in a permanent form (e.g. embossed) on the top head or side.

2.1.5 Metal drums made from materials (e.g. stainless steel) designed to be reused repeatedly may bear the ~~markings marks~~ indicated in 2.1.1 f) and g) in a permanent form (e.g. embossed).

2.1.6 Packagings manufactured with recycled plastic material as defined in 1;3 must be marked "REC". This mark must be placed near the ~~marking marks~~ prescribed in 2.1.1.

2.1.7 ~~MarkingMarks~~ must be applied in the sequence of the sub-paragraphs in 2.1.1; each ~~element of the marking mark~~ required in these sub-paragraphs and when appropriate sub-paragraphs h) to j) of 2.1.8 must be clearly separated, e.g. by a slash or space, so as to be easily identified; for examples see 2.1.10; ~~2.2.3; and 2.3 2.1.11; 2.1.12; and 2.1.13.~~ Any additional ~~markings marks~~ authorized by the appropriate national authority must still enable the ~~parts of the marking other marks required in 2.1.1~~ to be correctly identified ~~with reference to 2.1.1.~~

2.1.8 After reconditioning a packaging, the reconditioner must apply to it, in sequence, ~~a~~ durable ~~marking marks~~ showing:

- h) the State in which the reconditioning was carried out, indicated by the distinguishing sign for motor vehicles in international traffic;
- i) the name of the reconditioner or other identification of the packaging specified by the appropriate national authority;
- j) the year of reconditioning; the letter "R"; and for every packaging successfully passing the leakproofness test in 4.4, the additional letter "L".

2.1.9 When, after reconditioning, the ~~markings marks~~ required by 2.1.1 a) to d) no longer appear on the top head or the side of a metal drum, the reconditioner must apply them in a durable form followed by those required by 2.1.8. ~~The markings. These marks~~ must not identify a greater performance capability than that for which the original design type had been tested and marked.

2.1.10 Examples ~~of for~~ ~~markings for~~ NEW packagings:

*for a new fibreboard box*

 4G/Y145/S/02 as in 2.1.1 a), b), c)1), c)2)B), d)2) and e)  
NL/VL823 as in 2.1.1 f) and g)

*for a new steel drum to contain liquids*

 1A1/Y1.4/150/98 as in 2.1.1 a), b), c)1), c)2)A), d)1) and e)  
NL/VL824 as in 2.1.1 f) and g)

*for a new steel drum to contain solids, or inner packagings*

 1A2/Y150/S/01 as in 2.1.1 a), b), c)1), c)2)B), d)2) and e)  
NL/VL825 as in 2.1.1 f) and g)

for a new plastic box of equivalent specification

 4HW/Y136/S/98 as in 2.1.1 a), b), c)1), c)2)B), d)2) and e)  
NL/VL826 as in 2.1.1 f) and g)

for a remanufactured steel drum to contain liquids

 1A2/Y/100/01 as in 2.1.1 a), b), c)1), c)2)A), d)1) and e)  
USA/MM5 as in 2.1.1 f) and g)

2.1.11 Examples ~~of~~ for markings ~~for~~ RECONDITIONED packagings:

 1A1/Y1.4/150/97 as in 2.1.1 a), b), c)1), c)2)A), d)1) and e)  
NL/RB/01 RL as in 2.1.8 h), i) and j)

 1A2/Y150/S/99 as in 2.1.1 a), b), c)1), c)2)B), d)2) and e)  
USA/RB/00 R as in 2.1.8 h), i) and j)

...

DGP/25 agreed to delete paragraphs 2.2.1 and 2.2.2 for the sake of harmonization with the UN Model Regulations, recognizing that they were repeated in Part 6;6.4.2, and to renumbering and modifying paragraph 2.2.3 and 2.3 as shown below.

## **2.2 — PACKAGING MARKINGS FOR INFECTIOUS SUBSTANCES**

~~— 2.2.1 — Packagings for infectious substances, which meet the requirements of Packing Instruction 620 and Chapter 6 of this Part, must be marked with a packaging marking.~~

~~— 2.2.2 — The packaging marking consists of:~~

- ~~— a) — the United Nations packaging symbol;~~
- ~~— b) — the code designating the type of packaging according to the provisions of 1.3;~~
- ~~— c) — the text “CLASS 6.2”;~~
- ~~— d) — the last two digits of the year of manufacture of the packaging;~~
- ~~— e) — the State authorizing the allocation of the mark, indicated by the distinguishing sign for motor vehicles in international traffic;~~
- ~~— f) — the name of the manufacturer or other identification of the packaging specified by the appropriate national authority.~~

~~2.2.32.1.12 Example ~~of a~~ for marking ~~is~~ packagings for infectious substances:~~

 4G/CLASS 6.2/01 as in ~~2.2.2 6.4.2~~ a), b), c) and d)  
S/SP-9989-ERIKSSON as in ~~2.2.2 6.4.2~~ e) and f)

~~Each element of the marking applied in accordance with a) to f) must be clearly separated, e.g. by a slash or space, so as to be easily identifiable.~~

UN Model Regulations, paragraph 6.1.3.12, ST/SG/AC.10/42/Add.1 and DGP/25-WP/3 (see paragraph 3.2.6.1 a))

### **2.3 — PACKAGING MARKINGS FOR SALVAGE PACKAGINGS**

2.1.13 Example ~~of for~~ marking ~~for~~ SALVAGE packagings:

	1A2T/Y300/S/01	as in 2.1.1 a), b), c)2)B), d)2) and e)
	USA/abc	as in 2.1.1 f) and g)

DGP/25 agreed to move the provisions for intermediate bulk containers from this chapter to a new Part 6;8 for the sake of harmonization with the UN Model Regulations while keeping the example for marking intermediate bulk containers in this chapter as shown below.

The following example for marking of intermediate bulk containers is moved from 2.4.4 with minor revisions to the introductory text and the references.

2.1.14 Example for marking intermediate bulk containers:

	13H3/Z/03 01	as in as in 8.1.2 a), b),c), and d)
	F/Meunier1713/0/1000	as in 8.1.2 e), f), g) and h)

DGP/25 agreed to delete the last sentence of the note below for the sake of harmonization with the UN Model Regulations and on the basis that it was considered redundant based on the provisions in 6;2.1.7.

*Note.— ~~In the The marking, for which examples are given in 2.1.10, 2.1.11, 2.1.12 and 2.1.13 -2.2.3 and 2.3, the markings are shown, for convenience, in two lines; however, the markings can may be applied in a single line or in multiple lines provided they are given in the correct sequence is respected.-Additionally, the inclusion in the specification marking of the “/” symbol is optional.~~*

See note above new paragraph 2.1.14 above.

### **2.4 — PACKAGING MARKINGS FOR INTERMEDIATE BULK CONTAINERS**

~~— 2.4.1 — Intermediate bulk containers, which meet the requirements of Chapter 6.5 of the UN Recommendations, must be marked with a packaging marking.~~

~~— 2.4.2 — The packaging marking consists of:~~

~~— a) — the United Nations packaging symbol ~~

~~— For metal IBCs on which the marking is stamped or embossed, the capital letters “UN” may be applied instead of the symbol;~~

~~— b) — The code designating the type of IBC as shown in Packing Instruction 956 and as described in detail in Chapter 6.5 of the UN Model Recommendations;~~

~~— c) — A capital letter designating the packing group(s) for which the design type has been approved:~~

~~— 1) — X for Packing Groups I, II and III;~~

~~— 2) — Y for Packing Groups II and III;~~

~~— 3) — Z for Packing Group III only;~~

~~— d) — The month and year (last two digits) of manufacture;~~

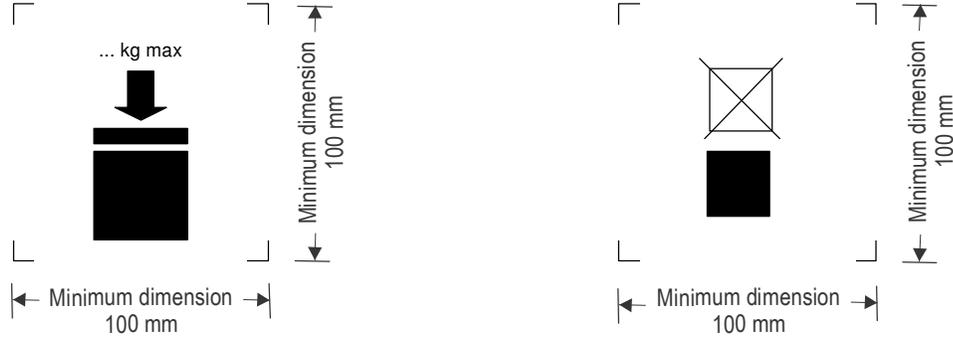
~~— e) — The State authorizing the allocation of the mark; indicated by the distinguishing sign for motor vehicles in international traffic;~~

~~— f) — The name or symbol of the manufacturer and other identification of the IBC, as specified by the appropriate national authority;~~

~~— g) — The stacking test load in kg. For IBCs not designed for stacking, the figure “0” must be shown;~~

~~h) The maximum permissible gross mass in kg.~~

~~2.4.3 The maximum permitted stacking load applicable when the IBC is in use must be displayed on a symbol as shown in Figure 6-1 or Figure 6-2. The symbol must be durable and clearly visible.~~



~~Figure 6-1. IBCs capable of being stacked~~ ~~Figure 6-2. IBCs not capable of being stacked~~

~~The minimum dimensions must be 100 mm x 100 mm. The letters and numbers indicating the mass must be at least 12 mm high. The area within the printer's marks indicated by the dimensional arrows must be square. Where dimensions are not specified, all features must be in approximate proportion to those shown. The mass marked above the symbol must not exceed the load imposed during the design type test (see 6.5.6.6.4 of the UN Model Regulations) divided by 1.8.~~

~~Note. The provisions of 2.4.3 must apply to all IBCs manufactured, repaired or remanufactured as from 1 January 2011. The provisions of 2.4.3 of the 2013-2014 Edition of these Instructions may continue to be applied to all IBCs manufactured, repaired or remanufactured between 1 January 2011 and 31 December 2016.~~

~~2.4.4 Example of a marking is:~~

~~1.319/Z/03 01 as in as in 2.4.2 a), b), c), and d)~~

~~FMounier1713/0/1000 as in 2.4.2 e), f), g) and h)~~

~~...~~

## Chapter 4

### PACKAGING PERFORMANCE TESTS

...

#### 4.1 PERFORMANCE AND FREQUENCY OF TESTS

...

---

UN Model Regulations, paragraph 6.1.5.1.6, ST/SG/AC.10/42/Add.1 and DGP/25-WP/3 (see paragraph 3.2.6.1)

---

4.1.6 Reserved.

*Note.* — For the conditions for assembling using different inner packagings in an outer packaging and permissible variations in inner packagings, see 4;1.1.10.1. These conditions do not limit the use of inner packagings when applying 4.1.7.

...

#### 4.5 INTERNAL PRESSURE (HYDRAULIC) TEST

4.5.1 Packagings to be tested: the internal pressure (hydraulic) test must be carried out on all design types of metal, plastic and composite packagings intended to contain liquids. This test is not required for the inner packagings of combination packagings. For the internal pressure requirements for inner packagings see 4;1.1.6.

4.5.2 Number of test samples: three test samples per design type and manufacturer.

---

UN Model Regulations, paragraph 6.1.5.5.4, ST/SG/AC.10/42/Add.1 and DGP/25-WP/3 (see paragraph 3.2.6.1)

---

4.5.3 Test method and pressure to be applied: metal packagings including their closures must be subjected to the test pressure for 5 minutes. Plastic packagings and composite packagings (plastic material) including their closures must be subjected to the test pressure for 30 minutes. This pressure is the one to be included in the marking mark required by 2.1.1 d). The manner in which the packagings are supported must not invalidate the test. The test pressure must be applied continuously and evenly: it must be kept constant throughout the test period. The hydraulic pressure (gauge) applied, as determined by any one of the following methods, must be:

- a) not less than the total gauge pressure measured in the packaging (i.e. the vapour pressure of the filling liquid and the partial pressure of the air or other inert gases minus 100 kPa) at 55 °C, multiplied by a safety factor of 1.5. This total gauge pressure must be determined on the basis of a maximum degree of filling in accordance with Part 4;1.1.5 and a filling temperature of 15 °C. The test pressure must be not less than 95 kPa (not less than 75 kPa for liquids in Packing Group III of Class 3 or Division 6.1); or
- b) not less than 1.75 times the vapour pressure at 50 °C of the liquid to be transported, minus 100 kPa but with a minimum test pressure of 100 kPa; or
- c) not less than 1.5 times the vapour pressure at 55 °C of the liquid to be transported, minus 100 kPa but with a minimum test pressure of 100 kPa.

...

## Chapter 5

### REQUIREMENTS FOR THE CONSTRUCTION AND TESTING OF CYLINDERS AND CLOSED CRYOGENIC RECEPTACLES, AEROSOL DISPENSERS AND SMALL RECEPTACLES CONTAINING GAS (GAS CARTRIDGES) AND FUEL CELL CARTRIDGES CONTAINING LIQUEFIED FLAMMABLE GAS

*Note 1.— Aerosol dispensers, small receptacles containing gas (gas cartridges) and fuel cell cartridges containing liquefied flammable gas are not subject to the requirements of 6;5.1 to 6;5.3.*

*Note 2.— For open cryogenic receptacles the requirements of Packing Instruction 202 must be met.*

#### 5.1 GENERAL REQUIREMENTS

##### 5.1.1 Design and construction

5.1.1.1 Cylinders and closed cryogenic receptacles and their closures must be designed, manufactured, tested and equipped in such a way as to withstand all conditions, including fatigue, to which they will be subjected during normal conditions of transport.

---

UN Model Regulations, paragraph 6.2.1.1.2, ST/SG/AC.10/42/Add.1 and DGP/25-WP/3 (see paragraph 3.2.6.1)

---

5.1.1.2 In recognition of scientific and technological advances, and recognizing that cylinders and closed cryogenic receptacles other than those that ~~are marked with a bear~~ "UN" certification ~~marking marks~~ may be used on a national or regional basis, cylinders and closed cryogenic receptacles conforming to requirements other than those specified in these Instructions may be used if approved by the appropriate national authorities in the countries of transport and use.

...

---

UN Model Regulations, paragraph 6.2.1.1.9, ST/SG/AC.10/42/Add.1, DGP/25-WP/3 (see paragraph 3.2.6.1) and DGP/25-WP/16 (see paragraph 2.6.1.1 a) of this report)

---

##### 5.1.1.9 Additional requirements for the construction of pressure receptacles for acetylene

Cylinders for UN 1001— **Acetylene, dissolved** and UN 3374 — **Acetylene, solvent free** must be filled with a porous mass, uniformly distributed, of a type that conforms to the requirements and testing specified by a standard or technical code recognized by the appropriate national authority and which:

- a) is compatible with the cylinder and does not form harmful or dangerous compounds either with the acetylene or with the solvent in the case of UN 1001; and
- b) is capable of preventing the spread of decomposition of the acetylene in the porous ~~mass material~~.

In the case of UN 1001, the solvent must be compatible with the cylinders.

...

---

UN Model Regulations, paragraph 6.2.1.5.1, ST/SG/AC.10/42/Add.1 and DGP/25-WP/3 (see paragraph 3.2.6.1)

---

### 5.1.5 Initial inspection and testing

5.1.5.1 New cylinders, other than closed cryogenic receptacles and metal hydride storage systems, must be subjected to inspection and testing during and after manufacture in accordance with the applicable design standards including the following:

On an adequate sample of cylinders:

- a) testing of the mechanical characteristics of the material of construction;
- b) verification of the minimum wall thickness;
- c) verification of the homogeneity of the material for each manufacturing batch;
- d) inspection of the external and internal conditions of the cylinders;
- e) inspection of the neck threads;
- f) verification of the conformance with the design standard;

For all cylinders:

- g) a hydraulic pressure test. Cylinders must ~~withstand the test pressure without expansion greater than that allowed in the design specifications~~ meet the acceptance criteria specified in the design and construction technical standard or technical code;

*Note.— With the agreement of the appropriate national authority, the hydraulic pressure test may be replaced by a test using a gas, where such an operation does not entail any danger.*

- h) inspection and assessment of manufacturing defects and either repairing them or rendering the cylinders unserviceable. In the case of welded cylinders, particular attention must be paid to the quality of the welds;
- i) an inspection of the ~~markings~~ marks on the cylinders;

---

DGP/25-WP/16 (see paragraph 2.6.1.1 a) of this report)

---

- j) in addition, cylinders intended for the transport of UN 1001 — **Acetylene, dissolved**, and UN 3374 — **Acetylene, solvent free**, must be inspected to ensure proper installation and condition of the porous ~~mass~~ material and, if applicable, the quantity of solvent.

...

---

UN Model Regulations, paragraph 6.2.1.6.1, ST/SG/AC.10/42/Add.1 and DGP/25-WP/3 (see paragraph 3.2.6.1)

---

### 5.1.6 Periodic inspection and testing

5.1.6.1 Refillable cylinders other than cryogenic receptacles must be subjected to periodic inspections and tests by a body authorized by the appropriate national authority, in accordance with the following:

- a) check of the external conditions of the cylinder and verification of the equipment and the external ~~markings~~ marks;
- b) check of the internal conditions of the cylinder (e.g. internal inspection, verification of minimum wall thickness);
- c) check of the threads if there is evidence of corrosion or if the fittings are removed;
- d) a hydraulic pressure test and, if necessary, verification of the characteristics of the material by suitable tests;

*Note 1.— With the agreement of the appropriate national authority, the hydraulic pressure test may be replaced by a test using a gas, where such an operation does not entail any danger.*

*Note 2.— With the agreement of the appropriate national authority, the hydraulic pressure test of cylinders may be replaced by an equivalent method based on acoustic emission testing or a combination of acoustic emission testing and ultrasound examination. ISO 16148:2006 may be used as a guide for acoustic emission testing procedures.*

*Note 3.— The hydraulic pressure test may be replaced by ultrasonic examination carried out in accordance with ISO 10461:2005 + A1:2006 for seamless aluminium alloy gas cylinders and in accordance with ISO 6406:2005 for seamless steel gas cylinders.*

- e) check of service equipment, other accessories and pressure-relief devices, if to be reintroduced into service.

*Note.— For the periodic inspection and test frequencies, see Packing Instruction 200 or, for a chemical under pressure, Packing Instruction 218.*

...

UN Model Regulations, paragraph 6.2.2.1, ST/SG/AC.10/42/Add.1 and DGP/25-WP/3 (see paragraphs 3.2.6.1 and 3.2.6.1 b))

### 5.2.1 Design, construction and initial inspection and testing

5.2.1.1 The following standards apply for the design, construction and initial inspection and test of UN cylinders, except that inspection requirements related to the conformity assessment system and approval must be in accordance with 5.2.5:

Reference	Title	Applicable for manufacture
ISO 9809-1:1999	Gas cylinders — Refillable seamless steel gas cylinders — Design, construction and testing — Part 1: Quenched and tempered steel cylinders with tensile strength less than 1 100 MPa.  <i>Note.— The note concerning the F factor in section 7.3 of this standard must not be applied for UN cylinders.</i>	Until 31 December 2018
ISO 9809-1:2010	Gas cylinders — Refillable seamless steel gas cylinders — Design, construction and testing — Part 1: Quenched and tempered steel cylinders with tensile strength less than 1 100 MPa.	Until further notice
ISO 9809-2:2000	Gas cylinders — Refillable seamless steel gas cylinders — Design, construction and testing — Part 2: Quenched and tempered steel cylinders with tensile strength greater than or equal to 1 100 MPa.	Until 31 December 2018
ISO 9809-2:2010	Gas cylinders — Refillable seamless steel gas cylinders — Design, construction and testing — Part 2: Quenched and tempered steel cylinders with tensile strength greater than or equal to 1 100 MPa.	Until further notice
ISO 9809-3:2000	Gas cylinders — Refillable seamless steel gas cylinders — Design, construction and testing — Part 3: Normalized steel cylinders.	Until 31 December 2018
ISO 9809-3:2010	Gas cylinders — Refillable seamless steel gas cylinders — Design, construction and testing — Part 3: Normalized steel cylinders.	Until further notice
<a href="#">ISO 9809-4:2014</a>	<a href="#">Gas cylinders — Refillable seamless steel gas cylinders — Design, construction and testing — Part 4: Stainless steel cylinders with an Rm value of less than 1 100 MPa</a>	<a href="#">Until further notice</a>
ISO 7866:1999	Gas cylinders — Refillable seamless aluminium alloy gas cylinders — Design, construction and testing.  <i>Note.— The note concerning the F factor in section 7.2 of this standard must not be applied for UN cylinders. Aluminium alloy 6351A — T6 or equivalent must not be authorized.</i>	<a href="#">Until further notice</a> <a href="#">Until 31 December 2020</a>
<a href="#">ISO ISO 7866: 2012+ Cor 1:2014</a>	<a href="#">Gas cylinders — Refillable seamless aluminium alloy gas cylinders — Design, construction and testing</a>  <i>Note.— Aluminium alloy 6351A or equivalent must not be used.</i>	<a href="#">Until further notice</a>
ISO 4706:2008	Gas cylinders — Refillable welded steel cylinders — Test pressure 60 bar and below.	Until further notice
ISO 18172-1:2007	Gas cylinders — Refillable welded stainless steel cylinders — Part 1: Test pressure 6 MPa and below.	Until further notice
ISO 20703:2006	Gas cylinders — Refillable welded aluminium-alloy cylinders — Design, construction and testing.	Until further notice
ISO 11118:1999	Gas cylinders — Non-refillable metallic gas cylinders — Specification and test methods.	Until further notice
ISO 11119-1:2002	Gas cylinders of composite construction — Specification and test methods — Part 1: Hoop wrapped composite gas cylinders.	<a href="#">Until further notice</a> <a href="#">Until 31 December 2020</a>
<a href="#">ISO 11119-1:2012</a>	<a href="#">Gas cylinders — Refillable composite gas cylinders and tubes — Design, construction and testing — Part 1: Hoop wrapped fibre reinforced composite gas cylinders and tubes up to 450 L</a>	<a href="#">Until further notice</a>

ISO 11119-2:2002	Gas cylinders of composite construction — Specification and test methods — Part 2: Fully wrapped fibre reinforced composite gas cylinders with load-sharing metal liners.	<u>Until further notice</u> <u>Until 31 December 2020</u>
<u>ISO 11119-2:2012 + Amd 1:2014</u>	<u>Gas cylinders — Refillable composite gas cylinders and tubes — Design, construction and testing — Part 2: Fully wrapped fibre reinforced composite gas cylinders and tubes up to 450 L with load-sharing metal liners</u>	<u>Until further notice</u>
ISO 11119-3:2002	Gas cylinders of composite construction — Specification and test methods — Part 3: Fully wrapped fibre reinforced composite gas cylinders with non-load-sharing metallic or non-metallic liners.	<u>Until further notice</u> <u>Until 31 December 2020</u>
<u>ISO 11119-3:2013</u>	<u>Gas cylinders — Refillable composite gas cylinders and tubes — Design, construction and testing — Part 3: Fully wrapped fibre reinforced composite gas cylinders and tubes up to 450 L with non-load-sharing metallic or non-metallic liners</u>	<u>Until further notice</u>

*Note 1.— In the above-referenced standards, composite cylinders must be designed for unlimited service life a design life of not less than fifteen years.*

*Note 2.— After the first 15 years of service, composite cylinders manufactured according to these standards, may be approved for extended service by the appropriate national authority which was responsible for the original approval of the cylinders and which will base its decision on the test information supplied by the manufacturer or owner or user. Composite cylinders with a design life longer than fifteen years must not be filled after fifteen years from the date of manufacture, unless the design has successfully passed a service life test programme. The programme must be part of the initial design type approval and must specify inspections and tests to demonstrate that cylinders manufactured accordingly remain safe to the end of their design life. The service life test programme and the results must be approved by the appropriate national authority of the country of approval that is responsible for the initial approval of the cylinder design. The service life of a composite cylinder must not be extended beyond its initial approved design life.*

...

5.2.1.3 The following standards apply for the design, construction and initial inspection and test of UN acetylene cylinders except that inspection requirements related to the conformity assessment system and approval must be in accordance with 5.2.5.

*Note.— The maximum of 1 000 L volume as mentioned in the ISO standard ISO 21029-1:2004 Cryogenic vessels, does not apply for refrigerated liquefied gases in closed cryogenic receptacles installed in apparatus ( e.g. MRI or cooling machines).*

...

UN Model Regulations, paragraph 6.2.2.1.3, ST/SG/AC.10/42/Add.1 and DGP/25-WP/3 (see paragraph 3.2.6.1)

For the porous mass in the cylinder:

Reference	Title	Applicable for manufacture
ISO 3807-1:2000	Cylinders for acetylene — Basic requirements — Part 1: Cylinders without fusible plugs.	<u>Until further notice</u> <u>Until 31 December 2020</u>
ISO 3807-2:2000	Cylinders for acetylene — Basic requirements — Part 2: Cylinders with fusible plugs.	<u>Until further notice</u> <u>Until 31 December 2020</u>
<u>ISO 3807:2013</u>	<u>Gas cylinders — Acetylene cylinders — Basic requirements and type testing</u>	<u>Until further notice</u>

...

UN Model Regulations, paragraph 6.2.2.2, ST/SG/AC.10/42/Add.1 and DGP/25-WP/3 (see paragraph 3.2.6.1)

### 5.2.2 Materials

In addition to the material requirements specified in the cylinder and closed cryogenic receptacle design and construction standards, and any restrictions specified in the applicable Packing Instruction for the gas(es) to be transported (e.g. Packing Instruction 200, Packing Instruction 202 or Packing Instruction 214), the following standards apply to material compatibility:

+	Reference	Title	Applicable for manufacture
≠	ISO 11114-1:2012	Gas cylinders — Compatibility of cylinder and valve materials with gas contents — Part 1: Metallic materials.	Until further notice
≠	ISO 11114-2: <del>2000</del> 2013	<del>Transportable gas</del> Gas cylinders — Compatibility of cylinder and valve materials with gas contents — Part 2: Non-metallic materials.	Until further notice

UN Model Regulations, paragraph 6.2.2.3, ST/SG/AC.10/42/Add.1 and DGP/25-WP/3 (see paragraph 3.2.6.1)

### 5.2.3 Service equipment

The following standards apply to closures and their protection:

+	Reference	Title	Applicable for manufacture
+	ISO 11117:1998	Gas cylinders — Valve protection caps and valve guards for industrial and medical gas cylinders — Design, construction and tests.	Until 31 December 2014
≠	ISO 11117:2008+ Cor 1:2009	Gas cylinders — Valve protection caps and valve guards — Design, construction and tests.	Until further notice
+	ISO 10297:1999	Gas cylinders – Refillable gas cylinder valves – Specification and type testing.	Until 31 December 2008
≠	ISO 10297:2006	Gas cylinders — Refillable gas cylinder valves — Specification and type testing.	Until further notice Until 31 December 2020
	<del>ISO 10297:2014</del>	<del>Gas cylinders — Cylinder valves — Specification and type testing</del>	Until further notice
≠	ISO 13340:2001	Transportable gas cylinders — Cylinder valves for non-refillable cylinders — Specification and prototype testing.	Until further notice

For UN metal hydride storage systems, the requirements specified in the following standard apply to closures and their protection:

+	Reference	Title	Applicable for manufacture
≠	ISO 16111:2008	Transportable gas storage devices — Hydrogen absorbed in reversible metal hydride.	Until further notice

UN Model Regulations, paragraph 6.2.2.4, ST/SG/AC.10/42/Add.1 and DGP/25-WP/3 (see paragraph 3.2.6.1)

### 5.2.4 Periodic inspection and test

The following standards apply to the periodic inspection and testing of UN cylinders and UN metal hydride storage systems:

+	Reference	Title	Applicable for manufacture
≠	ISO 6406:2005	Seamless steel gas cylinders — Periodic inspection and testing.	Until further notice
≠	ISO 10460:2005	Gas cylinders – Welded carbon-steel gas cylinders – Periodic inspection and testing.  <i>Note.— The repair of welds described in clause 12.1 of this standard must not be permitted. Repairs described in clause 12.2 require the approval of the appropriate national authority which approved the periodic inspection and test body in accordance with 5.2.6.</i>	Until further notice
≠	ISO 10461:2005/A1:2006	Seamless aluminium-alloy gas cylinders — Periodic inspection and testing.	Until further notice
≠	ISO 10462:2005	Transportable cylinders for dissolved acetylene — Periodic inspection and maintenance.	Until further notice Until 31 December 2018

	<a href="#">ISO 10462:2013</a>	<a href="#">Gas cylinders — Acetylene cylinders — Periodic inspection and maintenance.</a>	<a href="#">Until further notice</a>
+	ISO 11513:2011	Gas cylinders — Refillable welded steel cylinders containing materials for sub-atmospheric gas packaging (excluding acetylene) — Design, construction, testing, use and periodic inspection.	Until further notice
≠	ISO 11623:2002	Transportable gas cylinders — Periodic inspection and testing of composite gas cylinders.	Until further notice
≠	ISO 16111:2008	Transportable gas storage devices — Hydrogen absorbed in reversible metal hydride.	Until further notice

*Note.*— The repair of welds described in clause 12.1 of this standard must not be permitted. Repairs described in clause 12.2 require the approval of the appropriate national authority which approved the periodic inspection and test body in accordance with 5.2.6.

### 5.2.5 Conformity assessment system and approval for manufacture of cylinders and closed cryogenic receptacles

UN Model Regulations, paragraph 6.2.2.5.2.1, ST/SG/AC.10/42/Add.1 and DGP/25-WP/3 (see paragraph 3.2.6.1)

#### 5.2.5.2 General requirements

##### 5.2.5.2.1 Appropriate national authority

5.2.5.2.1.1 The appropriate national authority that approves the cylinder and closed cryogenic receptacle must approve the conformity assessment system for the purpose of ensuring that cylinders and closed cryogenic receptacles conform to the requirements of these Instructions. In instances where the appropriate national authority that approves a cylinder and closed cryogenic receptacle is not the appropriate national authority in the country of manufacture, the marks of the approval country and the country of manufacture must be indicated in the cylinder and closed cryogenic receptacle [marking marks](#) (see 5.2.7 and 5.2.8). The appropriate national authority of the country of approval must supply to its counterpart in a country of use, upon request, evidence demonstrating compliance to this conformity assessment system.

...

#### 5.2.5.5 Production inspection and certification

...

UN Model Regulations, paragraph 6.2.2.5.5, ST/SG/AC.10/42/Add.1 and DGP/25-WP/3 (see paragraph 3.2.6.1)

5.2.5.5.4 The manufacturer must, after approval by the inspection body, make a declaration of conformity with the certified design type. The application of the cylinder and closed cryogenic receptacle certification [marking marks](#) must be considered a declaration that the cylinder and closed cryogenic receptacle comply with the applicable cylinder and closed cryogenic receptacle standards, the requirements of this conformity assessment system and these Instructions. The inspection body must affix or delegate the manufacturer to affix the cylinder and closed cryogenic receptacle certification [marking marks](#) and the registered mark of the inspection body to each approved cylinder or closed cryogenic receptacle.

5.2.5.5.5 A certificate of compliance, signed by the inspection body and the manufacturer, must be issued before the cylinders and closed cryogenic receptacles are filled.

#### 5.2.5.6 Records

Design type approval and certificate of compliance records must be retained by the manufacturer and the inspection body for not less than 20 years.

### 5.2.6 Approval system for periodic inspection and test of cylinders and closed cryogenic receptacles

#### 5.2.6.1 Definitions

For the purposes of this section:

**Approval system:** means a system for the appropriate national authority approval of a body performing the periodic

inspection and test of cylinders and closed cryogenic receptacles (hereinafter referred to as "periodic inspection and test body"), including approval of that body's quality system.

UN Model Regulations, paragraph 6.2.2.6.2.1, ST/SG/AC.10/42/Add.1 and DGP/25-WP/3 (see paragraph 3.2.6.1)

#### 5.2.6.2 General requirements

##### 5.2.6.2.1 Appropriate national authority

5.2.6.2.1.1 The appropriate national authority must establish an approval system for the purpose of ensuring that the periodic inspection and test of cylinders and closed cryogenic receptacles conform to the requirements of these Instructions. In instances where the appropriate national authority that approves the body performing periodic inspection and test of a cylinder and closed cryogenic receptacle is not the appropriate national authority of the country approving the manufacture of the cylinder, the marks of the approval country of periodic inspection and test must be indicated in the cylinder and closed cryogenic receptacle marking marks (see 5.2.7).

...

UN Model Regulations, paragraph 6.2.2.6.5, ST/SG/AC.10/42/Add.1 and DGP/25-WP/3 (see paragraph 3.2.6.1)

#### 5.2.6.5 Periodic inspection and test and certification

5.2.6.5.1 The application of the periodic inspection and test marking marks to a cylinder and closed cryogenic receptacle must be considered a declaration that the cylinder and closed cryogenic receptacle complies with the applicable cylinder and closed cryogenic receptacle standards and the requirements of these Instructions. The periodic inspection and test body must affix the periodic inspection and test marking marks, including its registered mark, to each approved cylinder and closed cryogenic receptacle (see 5.2.7.8).

5.2.6.5.2 A record certifying that a cylinder and closed cryogenic receptacle have passed the periodic inspection and test must be issued by the periodic inspection and test body before the cylinder and closed cryogenic receptacle are filled.

...

UN Model Regulations, paragraph 6.2.2.7.4, ST/SG/AC.10/42/Add.1 and DGP/25-WP/3 (see paragraph 3.2.6.1)

5.2.7.4 The following manufacturing marks must be applied:

- m) Identification of the cylinder thread (e.g. 25E). ~~(This mark is not required for closed cryogenic receptacles);~~
- n) The manufacturer's mark registered by the appropriate national authority. When the country of manufacture is not the same as the country of approval, then the manufacturer's mark must be preceded by the character(s) identifying the country of manufacture, as indicated by the distinguishing signs of motor vehicles in international traffic. The country mark and the manufacturer's mark must be separated by a space or slash;
- o) The serial number assigned by the manufacturer;
- ≠ p) In the case of steel cylinders and closed cryogenic receptacles and composite cylinders and closed cryogenic receptacles with steel liner intended for the transport of gases with a risk of hydrogen embrittlement, the letter "H" showing compatibility of the steel (see ISO 11114-1:2012):
  - q) For composite cylinders having a limited design life, the letters "FINAL" followed by the design life shown as the year (four digits) followed by the month (two digits) separated by a slash (i.e. "Y/M");
  - r) For composite cylinders having a limited design life greater than fifteen years and for composite cylinders and tubes having non-limited design life, the letters "SERVICE" followed by the date fifteen years from the date of manufacture (initial inspection) shown as the year (four digits) followed by the month (two digits) separated by a slash (i.e. "Y/M").

Note — Once the initial design type has passed the service life test programme requirements in accordance with 5.2.1.1 Note 2, future production no longer requires this initial service life mark. The initial service life mark must be made unreadable on cylinders of a design type that has met the service life test programme requirements.

---

UN Model Regulations, paragraph 6.2.2.7.5, ST/SG/AC.10/42/Add.1 and DGP/25-WP/3 (see paragraph 3.2.6.1)

---

5.2.7.5 The above marks must be placed in three groups:

- a) Manufacturing marks must be the top grouping and must appear consecutively in the sequence given in 5.2.7.4 except for the marks described in 5.2.7.4 g) and r) which must be adjacent to the periodic inspection and test marks of 5.2.7.8;
- b) The operational marks in 5.2.7.3 must be the middle grouping and the test pressure f) which must be immediately preceded by the working pressure (i) when the latter is required;
- c) Certification marks must be the bottom grouping and must appear in the sequence given in 5.2.7.2.

The following is an example of ~~the~~ markings ~~applied to~~ a cylinder:

m) 25E	n) D MF	o) 765432	p) H		
i) PW200PH	f) 300BAR	g) 62.1KG	j) 50L	h) 5.8MM	
 a)	b) ISO 9809-1	c) F	d) IB	e) 2000/12	

5.2.7.6 Other marks are allowed in areas other than the side wall, provided they are made in low stress areas and are not of a size and depth that will create harmful stress concentrations. In the case of closed cryogenic receptacles, such marks may be on a separate plate attached to the outer jacket. Such marks must not conflict with required marks.

5.2.7.7 Cylinders of composite construction with limited life must be marked with the letters "FINAL" followed by the expiry date, the year (four digits) and the month (two digits).

---

UN Model Regulations, paragraph 6.2.2.7.7, ST/SG/AC.10/42/Add.1 and DGP/25-WP/3 (see paragraph 3.2.6.1)

---

5.2.7.8 In addition to the preceding marks, each refillable cylinder and closed cryogenic receptacle that meets the periodic inspection and test requirements of 5.2.4 must be marked indicating:

- a) the character(s) identifying the country authorizing the body performing the periodic inspection and test. This marking mark is not required if this body is approved by the appropriate national authority of the country approving manufacture;
- b) the registered mark of the body authorized by the appropriate national authority for performing the periodic inspection and test;
- c) the date of the periodic inspection and test, the year (two digits) followed by the month (two digits) separated by a slash (i.e. "/"). Four digits may be used to indicate the year.

The above marks must appear consecutively in the sequence given.

5.2.7.9 For acetylene cylinders, with the agreement of the national authority, the date of the most recent periodic inspection and the stamp of the body performing the periodic inspection and test may be engraved on a ring held on the cylinder by the valve. The ring must be configured so that it can be removed only by disconnecting the valve from the cylinder.

## 5.2.8 Marking of non-refillable UN cylinders and closed cryogenic receptacles

5.2.8.1 Non-refillable UN cylinders and closed cryogenic receptacles must be marked clearly and legibly with certification and gas or cylinder and closed cryogenic receptacle specific marks. These marks must be permanently affixed (e.g. stencilled, stamped, engraved or etched) on the cylinder. Except when stencilled, the marks must be on the shoulder, top end or neck of the cylinder and closed cryogenic receptacle or on a permanently affixed component of the cylinder and closed cryogenic receptacle (e.g. welded collar). Except for the "UN" mark and the "DO NOT REFILL" mark, the minimum size of the marks must be 5 mm for cylinders and closed cryogenic receptacles with a diameter greater than or equal to 140 mm and 2.5 mm and closed cryogenic receptacles for cylinders with a diameter less than 140 mm. The minimum size of the "UN" mark must be 10 mm for cylinders and closed cryogenic receptacles with a diameter greater than or equal to 140 mm and 5 mm for cylinders and closed cryogenic receptacles with a diameter less than 140 mm. The minimum size of the "DO NOT REFILL" mark must be 5 mm.

5.2.8.2 The marks listed in 5.2.7.2 to 5.2.7.4 must be applied with the exception of g), h) and m). The serial number o) may be replaced by the batch number. In addition, the words "DO NOT REFILL" in letters of at least 5 mm in height are required.

---

UN Model Regulations, paragraph 6.2.2.8.3, ST/SG/AC.10/42/Add.1 and DGP/25-WP/3 (see paragraph 3.2.6.1)

---

5.2.8.3 The requirements of 5.2.7.5 must apply.

*Note.— Non-refillable cylinders and closed cryogenic receptacles may, on account of their size, substitute ~~this marking~~ by a label a label for these permanent marks.*

5.2.8.4 Other marks are allowed provided they are made in low stress areas other than the side wall and are not of a size and depth that will create harmful stress concentrations. Such marks must not conflict with required marks.

### 5.2.9 Marking of UN metal hydride storage systems

...

5.2.9.3 Other marks are allowed in areas other than the side wall, provided they are made in low stress areas and are not of a size and depth that will create harmful stress concentrations. Such marks must not conflict with required marks.

---

UN Model Regulations, paragraph 6.2.2.9.4, ST/SG/AC.10/42/Add.1 and DGP/25-WP/3 (see paragraph 3.2.6.1)

---

5.2.9.4 In addition to the preceding marks, each metal hydride storage system that meets the periodic inspection and test requirements of 5.2.4 must be marked indicating:

- a) the character(s) identifying the country authorizing the body performing the periodic inspection and test, as indicated by the distinguishing sign of motor vehicles in international traffic. This ~~marking mark~~ is not required if this body is approved by the appropriate national authority of the country approving manufacture;
- b) the registered mark of the body authorized by the appropriate national authority for performing periodic inspection and test;
- c) the date of the periodic inspection and test, the year (two digits), followed by the month (two digits) and separated by a slash (i.e. "/"). Four digits may be used to indicate the year.

The above marks must appear consecutively in the sequence given.

...

## Chapter 6

### PACKAGINGS FOR INFECTIOUS SUBSTANCES OF CATEGORY A

...

#### 6.4 MARKING

UN Model Regulations, paragraph 6.3.4, ST/SG/AC.10/42/Add.1 and DGP/25-WP/3 (see paragraph 3.2.6.1)

Note 1.— ~~The marking marks~~ indicates that the packaging which bears ~~it them~~ corresponds to a successfully tested design type and that it complies with the provisions of this chapter which are related to the manufacture, but not to the use, of the packaging.

Note 2.— ~~The marking is marks are~~ intended to be of assistance to packaging manufacturers, reconditioners, packaging users, operators and appropriate authorities.

Note 3.— ~~The marking does marks do~~ not always provide full details of the test levels, etc., and these may need to be taken further into account, e.g. by reference to a test certificate, test reports or register of successfully tested packagings.

6.4.1 Each packaging intended for use according to these Instructions must bear ~~markings marks~~ which are durable, legible and placed in a location and of such a size relative to the packaging as to be readily visible. For packages with a gross mass of more than 30 kg the ~~markings marks~~, or a duplicate thereof, must appear on the top or on a side of the packaging. Letters, numerals and symbols must be at least 12 mm high, except for packagings of 30 L or 30 kg capacity or less, when they must be at least 6 mm in height and for packagings of 5 L or 5 kg or less, when they must be of an appropriate size.

6.4.2 A packaging that meets the requirements of this section and of 6.5 shall be marked with:

- a) the United Nations packaging symbol; 

This symbol must not be used for any purpose other than certifying that a packaging complies with the relevant requirements in Chapters 1 to 6;

- b) the code designating the type of packaging according to the requirements of 6;~~4.21.3~~;
- c) the text "CLASS 6.2";
- d) the last two digits of the year of manufacture of the packaging;
- e) the State authorizing the allocation of the mark, indicated by the distinguishing sign for motor vehicles in international traffic;
- f) the name of the manufacturer or other identification of the packaging specified by the competent authority; and
- g) for packagings meeting the requirements of 6.5.1.6, the letter "U", inserted immediately following the ~~marking mark~~ required in b) above.

6.4.3 ~~MarkingsMarks~~ must be applied in the sequence of the sub-paragraphs in 6.4.2; each ~~element of the marking mark~~ required in these sub-paragraphs must be clearly separated, e.g. by a slash or space, so as to be easily identified. For an example see 6.4.4. Any additional markings authorized by a competent authority must still enable the ~~parts of the marking marks required in 6.4.1~~ to be correctly identified ~~with reference to 6.4.1~~.

6.4.4 Example of a marking:

	4G/CLASS 6.2/06	as in 6.4.2 a), b), c) and d)
	S/SP-9989-ERIKSSON	as in 6.4.2 e) and f)

---

UN Model Regulations, paragraph 6.3.5, ST/SG/AC.10/42/Add.1 and DGP/25-WP/3 (see paragraph 3.2.6.1)

---

## 6.5 TEST REQUIREMENTS FOR PACKAGINGS

### 6.5.1 Performance and frequency of tests

...

6.5.1.6 Primary receptacles of any type may be assembled within a secondary packaging and transported without testing in the rigid outer packaging under the following conditions:

- a) The rigid outer packaging combination must have been successfully tested in accordance with 6.5.2.2 with fragile (e.g. glass) primary receptacles.
- b) The total combined gross mass of primary receptacles must not exceed one-half the gross mass of primary receptacles used for the drop test in a) above.
- c) The thickness of cushioning between primary receptacles and between primary receptacles and the outside of the secondary packaging must not be reduced below the corresponding thicknesses in the originally tested packaging; and if a single primary receptacle was used in the original test, the thickness of cushioning between primary receptacles must not be less than the thickness of cushioning between the outside of the secondary packaging and the primary receptacle in the original test. When either fewer or smaller primary receptacles are used (as compared to the primary receptacles used in the drop test), sufficient additional cushioning material must be used to take up the void spaces.
- d) The rigid outer packaging must have successfully passed the stacking test in 4.6 while empty. The total mass of identical packages must be based on the combined mass of packagings used in the drop test in a) above.
- e) For primary receptacles containing liquids, an adequate quantity of absorbent material to absorb the entire liquid content of the primary receptacles must be present.
- f) If the rigid outer packaging is intended to contain primary receptacles for liquids and is not leakproof, or is intended to contain primary receptacles for solids and is not siftproof, a means of containing any liquid or solid contents in the event of leakage must be provided in the form of a leakproof liner, plastic bag or other equally effective means of containment.
- g) In addition to the ~~markings marks~~ prescribed in 6.4.2 a) to f), packagings must be marked in accordance with 6.4.2 g).

...

### 6.5.4 Puncture test

#### 6.5.4.1 Packagings with a gross mass of 7 kg or less

Samples must be placed on a level, hard surface. A cylindrical steel rod with a mass of at least 7 kg, a diameter of 38 mm and the impact end edges of a radius not exceeding 6 mm (see Figure ~~6-3 6-1~~) must be dropped in a vertical free fall from a height of one metre measured from the impact end to the impact surface of the sample. One sample must be placed on its base. A second sample must be placed in an orientation perpendicular to that used for the first sample. In each instance, the steel rod must be aimed to impact the primary receptacle. Following each impact, penetration of the secondary packaging is acceptable, provided that there is no leakage from the primary receptacle(s).

#### 6.5.4.2 Packagings with a gross mass exceeding 7 kg

Samples are dropped onto the end of a cylindrical steel rod. The rod must be set vertically on a level, hard surface. It must have a diameter of 38 mm with the upper end edges of a radius not exceeding 6 mm (see Figure ~~6-3 6-1~~). The rod must protrude from the surface a distance at least equal to the distance between the centre of the primary receptacle(s) and the outer surface of the outer packaging, with a minimum protrusion of 200 mm. One sample is dropped with its top face lowermost in a vertical free fall from a height of 1 m, measured from the top of the steel rod. A second sample is dropped from the same height in an orientation perpendicular to that used for the first sample. In each instance, the packaging must be so orientated that the steel rod would be capable of penetrating the primary receptacle(s). Following each impact, penetration of the secondary packaging is acceptable provided that there is no leakage from the primary receptacle(s).

...

## Chapter 8

### REQUIREMENTS FOR INTERMEDIATE BULK CONTAINERS

#### 8.1 PACKAGING MARKINGS FOR INTERMEDIATE BULK CONTAINERS

8.1.1 Intermediate bulk containers, which meet the requirements of Chapter 6.5 of the UN Recommendations, must be marked with a packaging marking.

8.1.2 The packaging marking consists of:

a) the United Nations packaging symbol 

For metal IBCs on which the marking is stamped or embossed, the capital letters "UN" may be applied instead of the symbol;

b) The code designating the type of IBC as shown in Packing Instruction 956 and as described in detail in Chapter 6.5 of the UN Model Recommendations;

c) A capital letter designating the packing group(s) for which the design type has been approved:

1) X for Packing Groups I, II and III;

2) Y for Packing Groups II and III;

3) Z for Packing Group III only;

d) The month and year (last two digits) of manufacture;

e) The State authorizing the allocation of the mark; indicated by the distinguishing sign for motor vehicles in international traffic;

f) The name or symbol of the manufacturer and other identification of the IBC, as specified by the appropriate national authority;

g) The stacking test load in kg. For IBCs not designed for stacking, the figure "0" must be shown;

h) The maximum permissible gross mass in kg.

8.1.3 The maximum permitted stacking load applicable when the IBC is in use must be displayed on a symbol as shown in Figure 6-2 or Figure 6-3. The symbol must be durable and clearly visible.

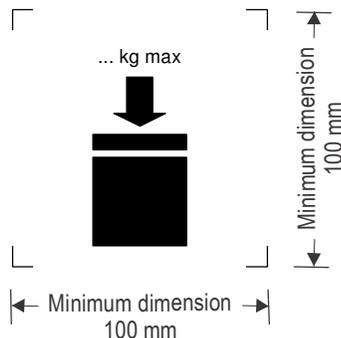


Figure 6-2. IBCs capable of being stacked

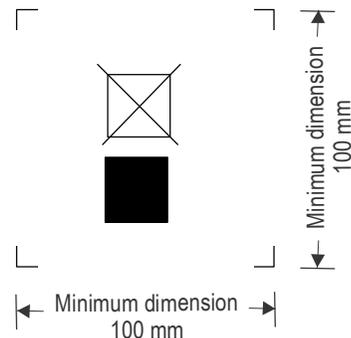


Figure 6-3. IBCs not capable of being stacked

The minimum dimensions must be 100 mm x 100 mm. The letters and numbers indicating the mass must be at least 12 mm high. The area within the printer's marks indicated by the dimensional arrows must be square. Where dimensions are not specified, all features must be in approximate proportion to those shown. The mass marked above the symbol must not exceed the load imposed during the design type test (see 6.5.6.6.4 of the UN Model Regulations) divided by 1.8.

~~Note.— The provisions of 8.1.3 apply to all IBCs manufactured, repaired or remanufactured as from 1 January 2011. The provisions of 8.1.3 of the 2013-2014 Edition of these Instructions may continue to be applied to all IBCs manufactured, repaired or remanufactured between 1 January 2011 and 31 December 2016.~~

8.1.4 Example of a marking is:

	13H3/Z/03 01	as in as in 8.1.2 a), b), c), and d)
	F/Meunier1713/0/1000	as in 8.1.2 e), f), g) and h)

...

## Part 7

### OPERATOR'S RESPONSIBILITIES

...

---

DGP/25-WP/2 (see paragraph 3.2.7.2)

---

#### Chapter 1

#### ACCEPTANCE PROCEDURES

...

##### 1.2 ACCEPTANCE OF DANGEROUS GOODS BY OPERATORS

1.2.1 An operator must not accept for transport aboard an aircraft a package or overpack containing dangerous goods or a freight container containing radioactive material or a unit load device ~~or other type of pallet~~ containing the dangerous goods as described in 1.4.1 b) and c) unless:

- a) it is accompanied by two copies of the dangerous goods transport document; or
- b) the information applicable to the consignment is provided in electronic form; or
- c) it is accompanied, where permitted, by alternative documentation.

...

##### 1.3 THE ACCEPTANCE CHECK

1.3.1 Before a consignment consisting of a package or overpack containing dangerous goods, a freight container containing radioactive material or a unit load device ~~or other type of pallet~~ containing dangerous goods as described in 1.4 is first accepted for carriage by air, the operator must, by use of a checklist, verify the following:

...

---

DGP/25-WP/28 (see paragraph 2.7.3 of this report)

---

##### 1.3.2 The operator must be able to identify the person who performed the acceptance check.

*Note 1.— Minor discrepancies, such as the omission of dots and commas in the proper shipping name appearing on the transport document or on package markings, or minor variations in hazard labels which do not affect the obvious meaning of the label, are not considered as errors if they do not compromise safety and should not be considered as reason for rejecting a consignment.*

*Note 2.— Where packages are contained in an overpack or freight container, as permitted by 1.4, the checklist should establish the correct marking and labelling of such an overpack ~~or other type of pallet~~ or freight container and not the individual packages contained in them. Where packages are contained in a unit load device, as permitted by 1.4.1, the checklist should not require the checking of packages individually for the correct marking and labelling.*

...

---

DGP/25-WP/2 (see paragraph 3.2.7.2) and DGP/25-WP/3 (see paragraph 3.2.7.4)

---

##### 1.4 ACCEPTANCE OF FREIGHT CONTAINERS AND UNIT LOAD DEVICES

1.4.1 An operator must not accept from a shipper a freight container or a unit load device containing dangerous goods other than:

- a) a freight container for radioactive material (see 6;7.1);

- b) a unit load device ~~or other type of pallet~~ containing consumer commodities prepared according to Packing Instruction Y963;
- c) a unit load device ~~or other type of pallet~~ containing dry ice used as a refrigerant for other than dangerous goods prepared according to Packing Instruction 954 [provided that the unit load device does not contain dangerous goods other than UN 3373, Biological substance, Category B or ID 8000, Consumer commodity or goods not subject to these Instructions](#); or
- d) a unit load device ~~or other type of pallet~~ containing magnetized material.

1.4.2 When an operator accepts a unit load device ~~or other type of pallet~~ containing consumer commodities or dry ice as permitted by 1.4.1, the operator must attach an identification tag as required by 2.8.1 to the unit load device.

...

DGP/25-WP/2 (see paragraph 3.2.7.2)

## Chapter 2

### STORAGE AND LOADING

...

#### 2.11 LOADING OF DRY ICE

...

2.11.2 Where dry ice is contained in a unit load device ~~or other type of pallet~~ prepared by a single shipper in accordance with Packing Instruction 954 and the operator, after acceptance, adds additional dry ice, then the operator must ensure that the information provided to the pilot-in-command reflects that revised quantity of dry ice.

*Note.— For arrangements between the shipper and operator see Packing Instruction 954.*

...

## Chapter 4

### PROVISION OF INFORMATION

...

#### 4.1 INFORMATION TO THE PILOT-IN-COMMAND

4.1.1 As early as practicable before departure of the aircraft, but in no case later than when the aircraft moves under its own power, the operator of an aircraft in which dangerous goods are to be carried must:

...

4.1.1.1 Except as otherwise provided, the information required by 4.1.1 must include the following:

...

DGP/25-WP/3 (see paragraph 3.2.7.3)

- f) the net quantity, or gross mass if applicable, of each package, except that this does not apply to radioactive material or other dangerous goods where the net quantity or gross mass is not required on the dangerous goods transport document (see 5;4.1.4) or, when applicable, alternative written documentation. For a consignment consisting of multiple packages containing dangerous goods bearing the same proper shipping name and UN number or ID number, only the total quantity and an indication of the quantity of the largest and smallest package at each loading location need to be provided. ~~For unit load devices or other types of pallets containing consumer commodities accepted from a single shipper, the number of packages and the average gross mass need to be provided. For consumer commodities, the information provided may be either the gross mass of each package or the average gross mass of the packages as shown on the dangerous goods transport document;~~

...

---

DGP/25-WP/42 (see paragraph 2.7.4 of this report)

---

#### 4.5 REPORTING OF UNDECLARED OR MISDECLARED DANGEROUS GOODS

An operator must report any occasion when undeclared or misdeclared dangerous goods are discovered in cargo or mail. Such a report must be made to the appropriate authorities of the State of the Operator and the State in which this occurred. An operator must also report any occasion when dangerous goods not permitted under 8.1.1.1 are discovered by the operator, or the operator is advised by the entity that discovers the dangerous goods, either in the baggage or on the person, of passengers or crew members. Such a report must be made to the appropriate authority of the State in which this occurred.

...

#### 4.11 RETENTION OF DOCUMENTS OR INFORMATION

---

DGP/25-WP/28 (see paragraph 2.7.3 of this report)

---

4.11.1 The operator must ensure that at least one copy of the documents or information appropriate to the transport by air of a consignment of dangerous goods is retained for a minimum period of three months after the flight on which the dangerous goods were transported. As a minimum, the documents or information which must be retained are the dangerous goods transport documents, the acceptance checklist (when this is in a form which requires ~~physical~~ completion), the identification of the person who performed the acceptance check and the written information to the pilot-in-command. These documents or the information must be made available to the appropriate national authority upon request.

---

DGP/25-WP/2 (see paragraph 3.2.7.2) and DGP/25-WP/28 (see paragraph 2.7.3 of this report)

---

4.11.2 For each package or overpack containing dangerous goods or freight container containing radioactive material or unit load device ~~or other type of pallet~~ containing dangerous goods as described in 1.4 that was not accepted by an operator due to an error or omission by the shipper in packaging, labelling, marking or documentation, a copy of the documentation as well as the acceptance checklist (when this is in a form which requires ~~physical~~ completion) and the identification of the person who performed the acceptance check should be retained for a minimum period of three months after the completion of the acceptance checklist.

*Note.— Where the documents or information are kept electronically or in a computer system, they should be capable of being reproduced in a printed manner.*

...

---

DGP/25-WP/27 (see paragraph 2.7.2)

---

## Chapter 5

### PROVISIONS CONCERNING PASSENGERS AND CREW

#### 5.1 INFORMATION TO PASSENGERS

5.1.1 ~~An operator must ensure that information on the types of dangerous goods which a passenger is forbidden to transport aboard an aircraft is presented at the point of ticket purchase or, if this is not practical, made available in another manner to passengers prior to the check-in process. Information provided via the Internet may be in text or pictorial form but must be such that ticket purchase cannot be completed until the passenger, or a person acting on their behalf, has been presented with this information and indicated that they have understood the restrictions on dangerous goods in baggage. Operators must inform passengers about dangerous goods that passengers are forbidden to transport aboard an aircraft. The notification system must be described in their operations manual and/or other appropriate manuals. The notification system must ensure that where the ticket purchase and/or boarding pass issuance can be completed by a passenger without the involvement of another person, the system must include an acknowledgement by the passenger that they have been presented with the information. The information must be provided to passengers:~~

- a) at the point of ticket purchase or, if this is not practical, made available in another manner to passengers prior to boarding pass issuance; and
- b) at boarding pass issuance, or when no boarding pass is issued, prior to boarding the aircraft.

*Note.— The information may be provided in text or pictorial form, electronically, or verbally, as described in the operator's manuals.*

5.1.2 An operator or the operator's handling agent and the airport operator must ensure that ~~notices warning passengers of information on~~ the types of dangerous goods which they are forbidden to transport aboard an aircraft ~~is communicated effectively to passengers. This information must be~~ are prominently displayed, in sufficient number, presented at each of the places at an airport where tickets are issued, ~~passengers are checked in, boarding passes are issued, passenger baggage is dropped off~~ and aircraft boarding areas are maintained, and at any other location where passengers are ~~checked in issued boarding passes and/or checked baggage is accepted. These notices. This information~~ must include visual examples of dangerous goods forbidden from transport aboard an aircraft.

5.1.3 An operator, of passenger aircraft, should have information on those dangerous goods which may be carried by passengers in accordance with 8;1.1.2 made available prior to the ~~check-in boarding pass issuance~~ process on their websites or other sources of information.

~~5.1.4 When provision is made for the check-in process to be completed remotely (e.g. via the Internet), the operator must ensure that information on the types of dangerous goods which a passenger is forbidden to transport aboard an aircraft is presented to passengers. Information may be in text or pictorial form but must be such that the check-in process cannot be completed until the passenger, or a person acting on their behalf, has been presented with this information and indicated that they have understood the restrictions on dangerous goods in baggage.~~

~~5.1.5 When provision is made for the check-in process to be completed at an airport by a passenger without the involvement of any other person (e.g. automated check-in facility), the operator or the airport operator must ensure that information on the types of dangerous goods which a passenger is forbidden to transport aboard an aircraft is presented to passengers. Information should be in pictorial form and must be such that the check-in process cannot be completed until the passenger has been presented with this information and indicated that they have understood the restrictions on dangerous goods in baggage.~~

DGP/25-WP/3 (see paragraphs 3.2.8.2 and 3.2.8.5)

New Item 19) was incorporated in 2015-2016 Edition through Addendum No. 1 to the 2015-2016 Edition of the Technical Instructions. Revisions to Item 8) were incorporated in the 2015-2016 Edition through Addendum/Corrigendum No. 2 to the 2015-2016 Edition of the Technical Instructions.

## Part 8

### PROVISIONS CONCERNING PASSENGERS AND CREW

...

**Table 8-1. Provisions for dangerous goods carried by passengers or crew**

Items or articles	Location			Approval of the operator(s) is required	The pilot-in-command must be informed	Restrictions
	Checked baggage	Carry-on baggage	On the person			

...

**Medical necessities**

...

DGP/25-WP/3 (see paragraphs 3.2.8.2 and 3.2.8.5)

Revisions to Item 8) were incorporated in the 2015-2016 Edition through Addendum/Corrigendum No. 2 to the 2015-2016 Edition of the Technical Instructions.

8) Portable medical electronic devices (automated external defibrillators (AED), nebulizer, continuous positive airway pressure (CPAP), etc.) containing lithium metal or lithium ion cells or batteries						
Portable medical electronic devices containing lithium metal cells or batteries not exceeding 2 grams or lithium ion cells or batteries not exceeding 100 Wh	Yes	Yes	Yes	No	No	a) carried by passengers for medical use; <u>and</u> b) <u>each installed or spare battery, batteries or cells</u> must be of a type which meets the requirements of each test in the UN <i>Manual of Tests and Criteria</i> , Part III, subsection 38.3; c) <del>spare batteries must be individually protected so as to prevent short circuits (by placement in original retail packaging or by otherwise insulating terminals, e.g. by taping over exposed terminals or placing each battery in a separate plastic bag or protective pouch); and</del> d) <del>no more than two spare batteries exceeding 2 grams lithium content for lithium metal or a watt-hour rating exceeding 100 Wh for lithium ion may be carried by a passenger.</del>

Items or articles	Location			Approval of the operator(s) is required	The pilot-in-command must be informed	Restrictions
	Checked baggage	Carry-on baggage	On the person			
Spare batteries for portable medical electronic devices containing lithium metal cells or batteries not exceeding 2 grams or lithium ion cells or batteries not exceeding 100 Wh	No	Yes	Yes	No	No	<p>a) <u>carried by passengers for medical use;</u></p> <p>b) <u>batteries or cells must be of a type which meets the requirements of each test in the UN Manual of Tests and Criteria, Part III, subsection 38.3; and</u></p> <p>c) <u>must be individually protected so as to prevent short circuits (by placement in original retail packaging or by otherwise insulating terminals, e.g. by taping over exposed terminals or placing each battery in a separate plastic bag or protective pouch).</u></p>
Portable medical electronic devices containing lithium metal batteries exceeding 2 grams but not exceeding 8 grams or lithium ion batteries exceeding 100 Wh but not exceeding 160 Wh	Yes	Yes	Yes	Yes	No	<p>a) <u>carried by passengers for medical use; and</u></p> <p>b) <u>batteries or cells must be of a type which meets the requirements of each test in the UN Manual of Tests and Criteria, Part III, subsection 38.3.</u></p>
Spare batteries for portable medical electronic devices containing lithium metal batteries exceeding 2 grams but not exceeding 8 grams or lithium ion batteries exceeding 100 Wh but not exceeding 160 Wh	No	Yes	Yes	Yes	No	<p>a) <u>carried by passengers for medical use;</u></p> <p>b) <u>batteries or cells must be of a type which meets the requirements of each test in the UN Manual of Tests and Criteria, Part III, subsection 38.3;</u></p> <p>c) <u>must be individually protected so as to prevent short circuits (by placement in original retail packaging or by otherwise insulating terminals, e.g. by taping over exposed terminals or placing each battery in a separate plastic bag or protective pouch); and</u></p> <p>d) <u>no more than two spare batteries exceeding 2 grams lithium content for lithium metal or a watt-hour rating exceeding 100 Wh for lithium ion may be carried</u></p>

## DGP/25-WP/4 (see paragraphs 2.8.2 of this report)

9)	Small medical or clinical thermometer which contains mercury	Yes	<del>Yes</del> No	<del>Yes</del> No	No	No	<p>a) no more than one per person;</p> <p>b) must be for personal use; and</p> <p>c) must be in its protective case.</p>
----	--	-----	-------------------	-------------------	----	----	--

## Consumer articles

...

## DGP/25-WP/3 (see paragraphs 3.2.8.2 and 3.2.8.5)

New Item 19) was incorporated in 2015-2016 Edition through Addendum No. 1 to the 2015-2016 Edition of the Technical Instructions

Items or articles	Location			Approval of the operator(s) is required	The pilot-in-command must be informed	Restrictions
	Checked baggage	Carry-on baggage	On the person			
19) <a href="#">Battery powered portable electronic smoking devices (e.g. e-cigarettes, e-cigs, e-cigars, e-pipes, personal vaporizers, electronic nicotine delivery systems)</a>	No	Yes	Yes	No	No	<p>a) <a href="#">carried by passengers or crew for personal use;</a></p> <p>b) <a href="#">spare batteries must be individually protected so as to prevent short circuits (by placement in original retail packaging or by otherwise insulating terminals, e.g. by taping over exposed terminals or placing each battery in a separate plastic bag or protective pouch);</a></p> <p>c) <a href="#">each battery must not exceed the following:</a></p> <p>— <a href="#">for lithium metal batteries, a lithium content of not more than 2 grams; or</a></p> <p>— <a href="#">for lithium ion batteries, a Watt-hour rating of not more than 100 Wh;</a></p> <p>d) <a href="#">each lithium battery must be of a type which meets the requirements of each test in the UN Manual of Tests and Criteria, Part III, subsection 38.3; and</a></p> <p>e) <a href="#">recharging of the devices and/or batteries on board the aircraft is not permitted.</a></p>
4920) Portable electronic devices (such as watches, calculating machines, cameras, cellular phones, laptop computers, camcorders, <a href="#">electronic baggage tags</a> )						
Portable electronic devices <a href="#">(including medical devices)</a> containing lithium metal or lithium ion cells or batteries (articles containing lithium metal or lithium ion cells or batteries the primary purpose of which is to provide power to another device must be carried as spare batteries in accordance with the item below)	Yes	Yes	Yes	No	No	<p>a) carried by passengers or crew for personal use;</p> <p>b) should be carried as carry-on baggage;</p> <p>c) each battery must not exceed the following:</p> <p>— for lithium metal batteries, a lithium content of <a href="#">not more than</a> 2 grams; or</p> <p>— for lithium ion batteries, a Watt-hour rating of <a href="#">not more than</a> 100 Wh;</p> <p>d) if devices are carried in checked baggage, measures must be taken to prevent unintentional activation; and</p> <p>e) <a href="#">if devices are carried outside the baggage, e.g. electronic baggage tags, the device must provide adequate protection for the battery fitted inside the device;</a></p>

Items or articles	Location			Approval of the operator(s) is required	The pilot-in-command must be informed	Restrictions
	Checked baggage	Carry-on baggage	On the person			
						<p>f) <u>devices such as electronic baggage tags and data loggers, which are not capable of generating a dangerous evolution of heat, may be transported when intentionally active. Active devices must meet defined standards for electromagnetic radiation to ensure that the operation of the device does not interfere with aircraft systems. The device must not be capable of emitting disturbing signals (such as buzzing alarms, strobe lights, etc.) during transport. Active devices in or on checked baggage must be designed with a minimum of two independent means to turn off completely, turn off cellular or mobile functions, or a combination of both when airborne. Each battery must not exceed the following:</u></p> <ul style="list-style-type: none"> <li>— <u>for lithium metal batteries, a lithium metal content of 1.0 gram; or</u></li> <li>— <u>for lithium ion batteries, a Watt-hour rating of 2.7 Wh;</u></li> </ul> <p>eg) batteries and cells must be of a type which meets the requirements of each test in the UN <i>Manual of Tests and Criteria</i>, Part III, subsection 38.3.</p>
Spare batteries for portable electronic devices <del>(including medical devices)</del> containing lithium metal or lithium ion cells or batteries	No	Yes	Yes	No	No	<p>a) carried by passengers or crew for personal use;</p> <p>b) must be individually protected so as to prevent short circuits (by placement in original retail packaging or by otherwise insulating terminals, e.g. by taping over exposed terminals or placing each battery in a separate plastic bag or protective pouch);</p> <p>c) each battery must not exceed the following:</p> <ul style="list-style-type: none"> <li>— for lithium metal batteries, a lithium content of <del>not more than</del> 2 grams; or</li> <li>— for lithium ion batteries, a Watt-hour rating of <del>not more than</del> 100 Wh; and</li> </ul> <p>d) batteries and cells must be of a type which meets the requirements of each test in the UN <i>Manual of Tests and Criteria</i>, Part III, subsection 38.3.</p>
Portable electronic devices containing lithium ion batteries exceeding a Watt-hour rating of 100 Wh but not exceeding 160 Wh	Yes	Yes	Yes	Yes	No	<p>a) carried by passengers or crew for personal use;</p> <p>b) should be carried as carry-on baggage; and</p> <p>c) batteries and cells must be of a type which meets the requirements of each test in the UN <i>Manual of Tests and Criteria</i>, Part III, subsection 38.3.</p>

<i>Items or articles</i>	<i>Location</i>			<i>Approval of the operator(s) is required</i>	<i>The pilot-in-command must be informed</i>	<i>Restrictions</i>
	<i>Checked baggage</i>	<i>Carry-on baggage</i>	<i>On the person</i>			
Spare batteries for portable electronic devices containing lithium ion batteries exceeding a Watt-hour rating of 100 Wh but not exceeding 160 Wh	No	Yes	Yes	Yes	No	<ul style="list-style-type: none"> <li>a) carried by passengers or crew for personal use;</li> <li>b) no more than two individually protected spare batteries per person;</li> <li>c) must be individually protected so as to prevent short circuits (by placement in original retail packaging or by otherwise insulating terminals, e.g. by taping over exposed terminals or placing each battery in a separate plastic bag or protective pouch); and</li> <li>d) batteries and cells must be of a type which meets the requirements of each test in the UN <i>Manual of Tests and Criteria</i>, Part III, subsection 38.3.</li> </ul>

### الإضافة (أ)

#### التعديلات المقترحة إدخالها على الجدول 3-1 - ترتيب أرقام الأمم المتحدة

فيما يلي نسق عرض التعديلات المقترحة إدخالها على الجدول 3-1:

#### الإدخالات المعدلة

- طباعة كل من الإدخال الأصلي والمعدّل؛
- طباعة كل من الخانات المعدلة وغير المعدلة؛
- طباعة الإدخال الأصلي داخل إطار مظلل مع وضع رمز النجمة في الهامش الأيسر؛
- طباعة مربعات التأشير فوق الخانات التي تم تعديلها؛
- إظهار الإدخال المعدّل دون تظليل أسفل الإدخال الأصلي؛
- طباعة الرمز "≠" في الهامش الأيسر.

#### الإدخالات المحذوفة

- عرض الإدخالات المحذوفة داخل إطار مظلل مع وضع رمز النجمة في الهامش الأيسر؛
- إظهار مربعات التأشير فوق كل خانة؛
- عرض الرمز ">" في الهامش الأيسر أسفل الإطار المظلل للإشارة إلى أنه سيجري حذف هذا الإدخال.

#### الإدخالات الجديدة

إظهار الإدخالات الجديدة دون تظليل مع وضع الرمز "+" في الهامش الأيسر.



**Table 3-1. Dangerous Goods List**

Name	UN No.	Class or division	Subsidiary risk	Labels	State variations	Special provisions	UN packing group	Excepted quantity	Passenger and cargo aircraft		Cargo aircraft only	
									Packing instruction	Max. net quantity per package	Packing instruction	Max. net quantity per package
1	2	3	4	5	6	7	8	9	10	11	12	13
+ Catecholborane						A210						
+ 1, 3, 2-Benzodioxaborole						A210						
+ Nitrogen dioxide contained in gas cartridges for use in sterilization devices, see <b>Gas cartridges</b> (toxic, oxidizing & corrosive) without a release device, non-refillable (UN No. 2037) or <b>Receptacles, small, containing gas</b> (toxic, oxidizing & corrosive) without a release device, non-refillable (UN No. 2037)												
+ Nitric oxide, compressed contained in gas cartridges for use in sterilization devices, see <b>Gas cartridges</b> (toxic, oxidizing & corrosive) without a release device, non-refillable (UN No. 2037) or <b>Receptacles, small, containing gas</b> (toxic, oxidizing & corrosive) without a release device, non-refillable (UN No. 2037)												
* <b>Propellant, solid</b>	0501	1.4C							FORBIDDEN		✓	✓
≠ <b>Propellant, solid</b>	0501	1.4C		Explosive 1.4					FORBIDDEN		114	75 kg
+ <b>Rocket motors †</b>	0510	1.4C		Explosive 1.4				E0	FORBIDDEN		130	75 kg
* <b>Argon, compressed</b>	1006	2.2		Gas non-flammable		✓ A69		E1	200	75 kg	200	150 kg
≠ <b>Argon, compressed</b>	1006	2.2		Gas non-flammable		A69 A202		E1	200	75 kg	200	150 kg
* <b>Butadienes, stabilized</b>	1010	2.1		Gas flammable	AU 1 CA 7 IR 3 NL 1 US 3	✓ A1		E0	FORBIDDEN		200	150 kg
≠ <b>Butadienes, stabilized</b>	1010	2.1		Gas flammable	AU 1 CA 7 IR 3 NL 1 US 3	A1 A209		E0	FORBIDDEN		200	150 kg

## Chapter 2

## 3-2-4

Name	UN No.	Class or division	Subsidiary risk	Labels	State variations	Special provisions	UN packing group	Excepted quantity	Passenger and cargo aircraft		Cargo aircraft only		
									Packing instruction	Max. net quantity per package	Packing instruction	Max. net quantity per package	
1	2	3	4	5	6	7	8	9	10	11	12	13	
* <b>Butadienes and hydrocarbon mixture, stabilized</b> , containing more than 40% butadienes	1010	2.1		Gas flammable	AU 1 CA 7 IR 3 NL 1 US 3	A1			E0	FORBIDDEN	200	150 kg	
≠ <b>Butadienes and hydrocarbon mixture, stabilized</b> , containing more than 40% butadienes	1010	2.1		Gas flammable	AU 1 CA 7 IR 3 NL 1 US 3	A1 A209			E0	FORBIDDEN	200	150 kg	
* <b>Carbon dioxide</b>	1013	2.2		Gas non-flammable					E1	200	75 kg	200	150 kg
≠ <b>Carbon dioxide</b>	1013	2.2		Gas non-flammable		A202			E1	200	75 kg	200	150 kg
* <b>Helium, compressed</b>	1046	2.2		Gas non-flammable		A69			E1	200	75 kg	200	150 kg
≠ <b>Helium, compressed</b>	1046	2.2		Gas non-flammable		A69 A202			E1	200	75 kg	200	150 kg
* <b>Hydrogen cyanide, stabilized</b> containing less than 3% water	1051	6.1	3							FORBIDDEN		FORBIDDEN	
≠ <b>Hydrogen cyanide, stabilized</b> containing less than 3% water	1051	6.1	3			A209				FORBIDDEN		FORBIDDEN	
* <b>Krypton, compressed</b>	1056	2.2		Gas non-flammable		A69			E1	200	75 kg	200	150 kg
≠ <b>Krypton, compressed</b>	1056	2.2		Gas non-flammable		A69 A202			E1	200	75 kg	200	150 kg
* <b>Methylacetylene and propadiene mixture, stabilized †</b>	1060	2.1		Gas flammable	AU 1 CA 7 IR 3 NL 1 US 3	A1			E0	FORBIDDEN	200	150 kg	
≠ <b>Methylacetylene and propadiene mixture, stabilized †</b>	1060	2.1		Gas flammable	AU 1 CA 7 IR 3 NL 1 US 3	A1 A209			E0	FORBIDDEN	200	150 kg	

## 3-2-5

## Part 3

Name	UN No.	Class or division	Subsidiary risk	Labels	State variations	Special provisions	UN packing group	Excepted quantity	Passenger and cargo aircraft		Cargo aircraft only	
									Packing instruction	Max. net quantity per package	Packing instruction	Max. net quantity per package
									10	11	12	13
* Neon, compressed	1065	2.2		Gas non-flammable		✓ A69		E1	200	75 kg	200	150 kg
≠ Neon, compressed	1065	2.2		Gas non-flammable		A69 A202		E1	200	75 kg	200	150 kg
* Nitrogen, compressed	1066	2.2		Gas non-flammable		✓ A69		E1	200	75 kg	200	150 kg
≠ Nitrogen, compressed	1066	2.2		Gas non-flammable		A69 A202		E1	200	75 kg	200	150 kg
* Tetrafluoroethylene, stabilized	1081	2.1		Gas flammable	AU 1 CA 7 IR 3 NL 1 US 3	✓ A1		E0	FORBIDDEN		200	150 kg
≠ Tetrafluoroethylene, stabilized	1081	2.1		Gas flammable	AU 1 CA 7 IR 3 NL 1 US 3	A1 A209		E0	FORBIDDEN		200	150 kg
* Trifluorochloroethylene, stabilized	1082	2.3	2.1		AU 1 CA 7 IR 3 NL 1 US 3	✓ A2			FORBIDDEN		FORBIDDEN	
≠ Trifluorochloroethylene, stabilized	1082	2.3	2.1		AU 1 CA 7 IR 3 NL 1 US 3	A2 A209			FORBIDDEN		FORBIDDEN	
* Refrigerant gas R 1113	1082	2.3	2.1		AU 1 CA 7 IR 3 NL 1 US 3	✓ A2			FORBIDDEN		FORBIDDEN	
≠ Refrigerant gas R 1113	1082	2.3	2.1		AU 1 CA 7 IR 3 NL 1 US 3	A2 A209			FORBIDDEN		FORBIDDEN	

## Chapter 2

## 3-2-6

Name	UN No.	Class or division	Subsidiary risk	Labels	State variations	Special provisions	UN packing group	Excepted quantity	Passenger and cargo aircraft		Cargo aircraft only	
									Packing instruction	Max. net quantity per package	Packing instruction	Max. net quantity per package
1	2	3	4	5	6	7	8	9	10	11	12	13
						✓						
* Vinyl bromide, stabilized	1085	2.1		Gas flammable	AU 1 CA 7 IR 3 NL 1 US 3	A1		E0	FORBIDDEN		200	150 kg
≠ Vinyl bromide, stabilized	1085	2.1		Gas flammable	AU 1 CA 7 IR 3 NL 1 US 3	A1 A209		E0	FORBIDDEN		200	150 kg
						✓						
* Vinyl chloride, stabilized	1086	2.1		Gas flammable	AU 1 CA 7 IR 3 NL 1 US 3 US 4	A1		E0	FORBIDDEN		200	150 kg
≠ Vinyl chloride, stabilized	1086	2.1		Gas flammable	AU 1 CA 7 IR 3 NL 1 US 3 US 4	A1 A209		E0	FORBIDDEN		200	150 kg
						✓						
* Vinyl methyl ether, stabilized	1087	2.1		Gas flammable	AU 1 CA 7 IR 3 NL 1 US 3	A1		E0	FORBIDDEN		200	150 kg
≠ Vinyl methyl ether, stabilized	1087	2.1		Gas flammable	AU 1 CA 7 IR 3 NL 1 US 3	A1 A209		E0	FORBIDDEN		200	150 kg
						✓						
* Acrolein, stabilized	1092	6.1	3						FORBIDDEN		FORBIDDEN	
≠ Acrolein, stabilized	1092	6.1	3			A209			FORBIDDEN		FORBIDDEN	
						✓						
* Acrylonitrile, stabilized	1093	3	6.1	Liquid flammable & Toxic			I	E0	FORBIDDEN		361	30 L
≠ Acrylonitrile, stabilized	1093	3	6.1	Liquid flammable & Toxic		A209	I	E0	FORBIDDEN		361	30 L

## 3-2-7

## Part 3

Name	UN No.	Class or division	Subsidiary risk	Labels	State variations	Special provisions	UN packing group	Excepted quantity	Passenger and cargo aircraft		Cargo aircraft only	
									Packing instruction	Max. net quantity per package	Packing instruction	Max. net quantity per package
1	2	3	4	5	6	7	8	9	10	11	12	13
						☑						
* Crotonaldehyde, stabilized	1143	6.1	3		AU 1 CA 7 IR 3 NL 1 US 3 US 4	A2			FORBIDDEN		FORBIDDEN	
≠ Crotonaldehyde, stabilized	1143	6.1	3		AU 1 CA 7 IR 3 NL 1 US 3 US 4	A2 A209			FORBIDDEN		FORBIDDEN	
* Crotonaldehyde	1143	6.1	3		AU 1 CA 7 IR 3 NL 1 US 3 US 4	☑ A2			FORBIDDEN		FORBIDDEN	
≠ Crotonaldehyde	1143	6.1	3		AU 1 CA 7 IR 3 NL 1 US 3 US 4	A2 A209			FORBIDDEN		FORBIDDEN	
* Divinyl ether, stabilized	1167	3		Liquid flammable		☑	I	E3	351	1 L	361	30 L
≠ Divinyl ether, stabilized	1167	3		Liquid flammable		☑ A209	I	E3	351	1 L	361	30 L
* Ethyleneimine, stabilized	1185	6.1	3			☑			FORBIDDEN		FORBIDDEN	
≠ Ethyleneimine, stabilized	1185	6.1	3			☑ A209			FORBIDDEN		FORBIDDEN	
* Isoprene, stabilized	1218	3		Liquid flammable		☑	I	E3	351	1 L	361	30 L
≠ Isoprene, stabilized	1218	3		Liquid flammable		☑ A209	I	E3	351	1 L	361	30 L
* Methanol	1230	3	6.1	☑ Liquid flammable		☑ A104 A113	II	E2	352 Y341	1 L 1 L	364	60 L
≠ Methanol	1230	3	6.1	Liquid flammable & Toxic		☑ A113	II	E2	352 Y341	1 L 1 L	364	60 L

## Chapter 2

## 3-2-8

Name	UN No.	Class or division	Subsidiary risk	Labels	State variations	Special provisions	UN packing group	Excepted quantity	Passenger and cargo aircraft		Cargo aircraft only	
									Packing instruction	Max. net quantity per package	Packing instruction	Max. net quantity per package
1	2	3	4	5	6	7	8	9	10	11	12	13
* Methyl isopropenyl ketone, stabilized	1246	3		Liquid flammable		✓	II	E2	353 Y341	5 L 1 L	364	60 L
≠ Methyl isopropenyl ketone, stabilized	1246	3		Liquid flammable		A209	II	E2	353 Y341	5 L 1 L	364	60 L
* Methyl methacrylate monomer, stabilized	1247	3		Liquid flammable		✓	II	E2	353 Y341	5 L 1 L	364	60 L
≠ Methyl methacrylate monomer, stabilized	1247	3		Liquid flammable		A209	II	E2	353 Y341	5 L 1 L	364	60 L
* Methyl vinyl ketone, stabilized	1251	6.1	3 8			✓			FORBIDDEN		FORBIDDEN	
≠ Methyl vinyl ketone, stabilized	1251	6.1	3 8			A209			FORBIDDEN		FORBIDDEN	
* Vinyl acetate, stabilized	1301	3		Liquid flammable		✓	II	E2	353 Y341	5 L 1 L	364	60 L
≠ Vinyl acetate, stabilized	1301	3		Liquid flammable		A209	II	E2	353 Y341	5 L 1 L	364	60 L
* Vinyl ethyl ether, stabilized	1302	3		Liquid flammable		✓	I	E3	351	1 L	361	30 L
≠ Vinyl ethyl ether, stabilized	1302	3		Liquid flammable		A209	I	E3	351	1 L	361	30 L
* Vinylidene chloride, stabilized	1303	3		Liquid flammable		✓	I	E3	351	1 L	361	30 L
≠ Vinylidene chloride, stabilized	1303	3		Liquid flammable		A209	I	E3	351	1 L	361	30 L
* Vinyl isobutyl ether, stabilized	1304	3		Liquid flammable		✓	II	E2	353 Y341	5 L 1 L	364	60 L
≠ Vinyl isobutyl ether, stabilized	1304	3		Liquid flammable		A209	II	E2	353 Y341	5 L 1 L	364	60 L
* Allyl isothiocyanate, stabilized	1545	6.1	3	Toxic & Liquid flammable	AU 1 CA 7 IR 3 NL 1 US 3	✓ A1	II	E0	FORBIDDEN		661	60 L
≠ Allyl isothiocyanate, stabilized	1545	6.1	3	Toxic & Liquid flammable	AU 1 CA 7 IR 3 NL 1 US 3	A1 A209	II	E0	FORBIDDEN		661	60 L

## 3-2-11

## Part 3

Name	UN No.	Class or division	Subsidiary risk	Labels	State variations	Special provisions	UN packing group	Excepted quantity	Passenger and cargo aircraft		Cargo aircraft only	
									Packing instruction	Max. net quantity per package	Packing instruction	Max. net quantity per package
1	2	3	4	5	6	7	8	9	10	11	12	13
* Cyanogen chloride, stabilized	1589	2.3	8		AU 1 CA 7 IR 3 NL 1 US 3	✓ A2				FORBIDDEN	FORBIDDEN	
≠ Cyanogen chloride, stabilized	1589	2.3	8		AU 1 CA 7 IR 3 NL 1 US 3	A2 A209				FORBIDDEN	FORBIDDEN	
* Hydrogen cyanide, stabilized containing less than 3% water and absorbed in a porous inert material	1614	6.1				✓				FORBIDDEN	FORBIDDEN	
≠ Hydrogen cyanide, stabilized containing less than 3% water and absorbed in a porous inert material	1614	6.1				A209				FORBIDDEN	FORBIDDEN	
* Allyltrichlorosilane, stabilized	1724	8	3	Corrosive & Liquid flammable	AU 1 CA 7 IR 3 NL 1 US 3	✓ A1	II	E0		FORBIDDEN	876	30 L
≠ Allyltrichlorosilane, stabilized	1724	8	3	Corrosive & Liquid flammable	AU 1 CA 7 IR 3 NL 1 US 3	A1 A209	II	E0		FORBIDDEN	876	30 L
* Sulphur trioxide, stabilized	1829	8			AU 1 CA 7 IR 3 NL 1 US 3	✓ A2				FORBIDDEN	FORBIDDEN	
≠ Sulphur trioxide, stabilized	1829	8			AU 1 CA 7 IR 3 NL 1 US 3	A2 A209				FORBIDDEN	FORBIDDEN	

## Chapter 2

## 3-2-10

Name	UN No.	Class or division	Subsidiary risk	Labels	State variations	Special provisions	UN packing group	Excepted quantity	Passenger and cargo aircraft		Cargo aircraft only	
									Packing instruction	Max. net quantity per package	Packing instruction	Max. net quantity per package
									10	11	12	13
						✓						
* Vinyl fluoride, stabilized	1860	2.1		Gas flammable	AU 1 CA 7 IR 3 NL 1 US 3	A1		E0	FORBIDDEN		200	150 kg
≠ Vinyl fluoride, stabilized	1860	2.1		Gas flammable	AU 1 CA 7 IR 3 NL 1 US 3	A1 A209		E0	FORBIDDEN		200	150 kg
						✓						
* Ethyl acrylate, stabilized	1917	3		Liquid flammable			II	E2	353 Y341	5 L 1 L	364	60 L
≠ Ethyl acrylate, stabilized	1917	3		Liquid flammable		A209	II	E2	353 Y341	5 L 1 L	364	60 L
						✓						
* Methyl acrylate, stabilized	1919	3		Liquid flammable			II	E2	353 Y341	5 L 1 L	364	60 L
≠ Methyl acrylate, stabilized	1919	3		Liquid flammable		A209	II	E2	353 Y341	5 L 1 L	364	60 L
						✓						
* Propyleneimine, stabilized	1921	3	6.1	Liquid flammable & Toxic	US 4		I	E0	FORBIDDEN		361	30 L
≠ Propyleneimine, stabilized	1921	3	6.1	Liquid flammable & Toxic	US 4	A209	I	E0	FORBIDDEN		361	30 L
									✓		✓	
* Aerosols, non-flammable	1950	2.2		Gas non-flammable		A98 A145 A167		E0	203 or 204 Y203 or Y204	75 kg 30 kg G	203 or 204	150 kg
≠ Aerosols, non-flammable	1950	2.2		Gas non-flammable		A98 A145 A167		E0	203 Y203	75 kg 30 kg G	203	150 kg
											✓	
* Aerosols, non-flammable (tear gas devices)	1950	2.2	6.1	Gas non-flammable & Toxic	AU 1 CA 7 IR 3 NL 1 US 3	A1 A145 A167		E0	FORBIDDEN		212	50 kg
≠ Aerosols, non-flammable (tear gas devices)	1950	2.2	6.1	Gas non-flammable & Toxic	AU 1 CA 7 IR 3 NL 1 US 3	A1 A145 A167		E0	FORBIDDEN		203	50 kg

## 3-2-11

## Part 3

Name	UN No.	Class or division	Subsidiary risk	Labels	State variations	Special provisions	UN packing group	Excepted quantity	Passenger and cargo aircraft		Cargo aircraft only	
									Packing instruction	Max. net quantity per package	Packing instruction	Max. net quantity per package
									10	11	12	13
* <b>Compressed gas, n.o.s.*</b>	1956	2.2		Gas non-flammable		✓		E1	200	75 kg	200	150 kg
≠ <b>Compressed gas, n.o.s.*</b>	1956	2.2		Gas non-flammable		A202		E1	200	75 kg	200	150 kg
* <b>Chloroprene, stabilized</b>	1991	3	6.1	Liquid flammable & Toxic		✓	I	E0	FORBIDDEN		361	30 L
≠ <b>Chloroprene, stabilized</b>	1991	3	6.1	Liquid flammable & Toxic		A209	I	E0	FORBIDDEN		361	30 L
* <b>Celluloid, in blocks, rods, rolls, sheets, tubes, etc. (except scrap)</b>	2000	4.1		Solid flammable		✓	III	E1	456	25 kg	456	100 kg
≠ <b>Celluloid, in blocks, rods, rolls, sheets, tubes, etc. (except scrap)</b>	2000	4.1		Solid flammable		A3 A48 A205	III	E1	456	25 kg	456	100 kg
* <b>Nitric acid, other than red fuming, with more than 20% and less than 65% nitric acid</b>	2031	8		Corrosive		✓	II	E0	FORBIDDEN		855	30 L
≠ <b>Nitric acid, other than red fuming, with more than 20% and less than 65% nitric acid</b>	2031	8		Corrosive		A212	II	E0	FORBIDDEN		855	30 L
* <b>Xenon</b>	2036	2.2		Gas non-flammable		✓		E1	200	75 kg	200	150 kg
≠ <b>Xenon</b>	2036	2.2		Gas non-flammable		A69 A202		E1	200	75 kg	200	150 kg
* <b>Gas cartridges (toxic, oxidizing &amp; corrosive) without a release device, non-refillable</b>	2037	2.3	5.1 8		AU 1 CA 7 IR 3 NL 1 US 3	✓			FORBIDDEN		FORBIDDEN	
≠ <b>Gas cartridges (toxic, oxidizing &amp; corrosive) without a release device, non-refillable</b>	2037	2.3	5.1 8		AU 1 CA 7 IR 3 NL 1 US 3	A2 A211			FORBIDDEN		FORBIDDEN	

## Chapter 2

## 3-2-12

Name	UN No.	Class or division	Subsidiary risk	Labels	State variations	Special provisions	UN packing group	Excepted quantity	Passenger and cargo aircraft		Cargo aircraft only	
									Packing instruction	Max. net quantity per package	Packing instruction	Max. net quantity per package
1	2	3	4	5	6	7	8	9	10	11	12	13
* Receptacles, small, containing gas (toxic, oxidizing & corrosive) without a release device, non-refillable	2037	2.3	5.1 8		AU 1 CA 7 IR 3 NL 1 US 3	✓ A2				FORBIDDEN	FORBIDDEN	
≠ Receptacles, small, containing gas (toxic, oxidizing & corrosive) without a release device, non-refillable	2037	2.3	5.1 8		AU 1 CA 7 IR 3 NL 1 US 3	A2 A211				FORBIDDEN	FORBIDDEN	
* Styrene monomer, stabilized	2055	3		Liquid flammable		✓	III	E1	355 Y344	60 L 10 L	366	220 L
≠ Styrene monomer, stabilized	2055	3		Liquid flammable		A209	III	E1	355 Y344	60 L 10 L	366	220 L
* Propadiene, stabilized	2200	2.1		Gas flammable	AU 1 CA 7 IR 3 NL 1 US 3	✓ A1		E0	FORBIDDEN		200	150 kg
≠ Propadiene, stabilized	2200	2.1		Gas flammable	AU 1 CA 7 IR 3 NL 1 US 3	A1 A209		E0	FORBIDDEN		200	150 kg
* Polymeric beads, expandable, evolving flammable vapour †	2211	9		Miscellaneous		✓ A38	III	E1	957	100 kg	957	200 kg
≠ Polymeric beads, expandable, evolving flammable vapour †	2211	9		Miscellaneous		A204	III	E1	957	100 kg	957	200 kg
* Paraformaldehyde	2213	4.1		Solid flammable		✓	III	E1	446 Y443	25 kg 10 kg	449	100 kg
≠ Paraformaldehyde	2213	4.1		Solid flammable		A3	III	E1	446 Y443	25 kg 10 kg	449	100 kg

## 3-2-13

## Part 3

Name	UN No.	Class or division	Subsidiary risk	Labels	State variations	Special provisions	UN packing group	Excepted quantity	Passenger and cargo aircraft		Cargo aircraft only	
									Packing instruction	Max. net quantity per package	Packing instruction	Max. net quantity per package
1	2	3	4	5	6	7	8	9	10	11	12	13
* Acrylic acid, stabilized	2218	8	3	Corrosive & Liquid flammable		✓	II	E2	851 Y840	1 L 0.5 L	855	30 L
≠ Acrylic acid, stabilized	2218	8	3	Corrosive & Liquid flammable		A209	II	E2	851 Y840	1 L 0.5 L	855	30 L
* n-Butyl methacrylate, stabilized	2227	3		Liquid flammable		✓	III	E1	355 Y344	60 L 10 L	366	220 L
≠ n-Butyl methacrylate, stabilized	2227	3		Liquid flammable		A209	III	E1	355 Y344	60 L 10 L	366	220 L
* Bicyclo [2.2.1] hepta-2-5-diene, stabilized	2251	3		Liquid flammable		✓	II	E2	353 Y341	5 L 1 L	364	60 L
≠ Bicyclo [2.2.1] hepta-2-5-diene, stabilized	2251	3		Liquid flammable		A209	II	E2	353 Y341	5 L 1 L	364	60 L
* 2,5-Norbornadiene, stabilized	2251	3		Liquid flammable		✓	II	E2	353 Y341	5 L 1 L	364	60 L
≠ 2,5-Norbornadiene, stabilized	2251	3		Liquid flammable		A209	II	E2	353 Y341	5 L 1 L	364	60 L
* Ethyl methacrylate, stabilized	2277	3		Liquid flammable		✓	II	E2	353 Y341	5 L 1 L	364	60 L
≠ Ethyl methacrylate, stabilized	2277	3		Liquid flammable		A209	II	E2	353 Y341	5 L 1 L	364	60 L
* Isobutyl methacrylate, stabilized	2283	3		Liquid flammable		✓	III	E1	355 Y344	60 L 10 L	366	220 L
≠ Isobutyl methacrylate, stabilized	2283	3		Liquid flammable		A209	III	E1	355 Y344	60 L 10 L	366	220 L
* Butyl acrylates, stabilized	2348	3		Liquid flammable		✓	III	E1	355 Y344	60 L 10 L	366	220 L
≠ Butyl acrylates, stabilized	2348	3		Liquid flammable		A209	III	E1	355 Y344	60 L 10 L	366	220 L
* Butyl vinyl ether, stabilized	2352	3		Liquid flammable		✓	II	E2	353 Y341	5 L 1 L	364	60 L
≠ Butyl vinyl ether, stabilized	2352	3		Liquid flammable		A209	II	E2	353 Y341	5 L 1 L	364	60 L

## Chapter 2

3-2-14

Name	UN No.	Class or division	Subsidiary risk	Labels	State variations	Special provisions	UN packing group	Excepted quantity	Passenger and cargo aircraft		Cargo aircraft only	
									Packing instruction	Max. net quantity per package	Packing instruction	Max. net quantity per package
1	2	3	4	5	6	7	8	9	10	11	12	13
* Dipropylamine	2383	3	8	Liquid flammable & Corrosive		✓	II	E2	352 Y340	1 L 0.5 L	363	5 L
≠ Dipropylamine	2383	3	8	Liquid flammable & Corrosive		A209	II	E2	352 Y340	1 L 0.5 L	363	5 L
* Methacrylaldehyde, stabilized	2396	3	6.1	Liquid flammable & Toxic		✓	II	E2	352 Y341	1 L 1 L	364	60 L
≠ Methacrylaldehyde, stabilized	2396	3	6.1	Liquid flammable & Toxic		A209	II	E2	352 Y341	1 L 1 L	364	60 L
* Ethylacetylene, stabilized	2452	2.1		Gas flammable	AU 1 CA 7 IR 3 NL 1 US 3	✓ A1		E0	FORBIDDEN		200	150 kg
≠ Ethylacetylene, stabilized	2452	2.1		Gas flammable	AU 1 CA 7 IR 3 NL 1 US 3	A1 A209		E0	FORBIDDEN		200	150 kg
* Diketene, stabilized	2521	6.1	3			✓			FORBIDDEN		FORBIDDEN	
≠ Diketene, stabilized	2521	6.1	3			A209			FORBIDDEN		FORBIDDEN	
* Isobutyl acrylate, stabilized	2527	3		Liquid flammable		✓	III	E1	355 Y344	60 L 10 L	366	220 L
≠ Isobutyl acrylate, stabilized	2527	3		Liquid flammable		A209	III	E1	355 Y344	60 L 10 L	366	220 L
* Methacrylic acid, stabilized	2531	8		Corrosive		✓	II	E2	851 Y840	1 L 0.5 L	855	30 L
≠ Methacrylic acid, stabilized	2531	8		Corrosive		A209	II	E2	851 Y840	1 L 0.5 L	855	30 L
* Acrolein dimer, stabilized	2607	3		Liquid flammable		✓	III	E1	355 Y344	60 L 10 L	366	220 L
≠ Acrolein dimer, stabilized	2607	3		Liquid flammable		A209	III	E1	355 Y344	60 L 10 L	366	220 L

## 3-2-15

## Part 3

Name	UN No.	Class or division	Subsidiary risk	Labels	State variations	Special provisions	UN packing group	Excepted quantity	Passenger and cargo aircraft		Cargo aircraft only	
									Packing instruction	Max. net quantity per package	Packing instruction	Max. net quantity per package
1	2	3	4	5	6	7	8	9	10	11	12	13
* <b>Vinyltoluenes, stabilized</b>	2618	3		Liquid flammable		✓	III	E1	355 Y344	60 L 10 L	366	220 L
≠ <b>Vinyltoluenes, stabilized</b>	2618	3		Liquid flammable		A209	III	E1	355 Y344	60 L 10 L	366	220 L
* <b>N-Aminoethylpiperazine</b>	2815	8	✓	✓ Corrosive			III	E1	852 Y841	5 L 1 L	856	60 L
≠ <b>N-Aminoethylpiperazine</b>	2815	8	6.1	Corrosive & Toxic			III	E1	852 Y841	5 L 1 L	856	60 L
* <b>Vinyl butyrate, stabilized</b>	2838	3		Liquid flammable		✓	II	E2	353 Y341	5 L 1 L	364	60 L
≠ <b>Vinyl butyrate, stabilized</b>	2838	3		Liquid flammable		A209	II	E2	353 Y341	5 L 1 L	364	60 L
* <b>Radioactive material, uranium hexafluoride, fissile</b>	2977	7	✓	✓ Radioactive & Corrosive					See Part 2;7 and Part 4;9			
≠ <b>Radioactive material, uranium hexafluoride, fissile</b>	2977	7	6.1 8	Radioactive & Toxic & Corrosive					See Part 2;7 and Part 4;9			
* <b>Radioactive material, uranium hexafluoride, non-fissile or fissile excepted</b>	2978	7	✓	✓ Radioactive & Corrosive	CA 1	A139			See Part 2;7 and Part 4;9			
≠ <b>Radioactive material, uranium hexafluoride, non-fissile or fissile excepted</b>	2978	7	6.1 8	Radioactive & Toxic & Corrosive	CA 1	A139			See Part 2;7 and Part 4;9			
* <b>1,2-Butylene oxide, stabilized</b>	3022	3		Liquid flammable		✓	II	E2	353 Y341	5 L 1 L	364	60 L
≠ <b>1,2-Butylene oxide, stabilized</b>	3022	3		Liquid flammable		A209	II	E2	353 Y341	5 L 1 L	364	60 L
* <b>Vinylpyridines, stabilized</b>	3073	6.1	3 8	Toxic & Liquid flammable & Corrosive		✓	II	E4	653 Y640	1 L 0.5 L	660	30 L
≠ <b>Vinylpyridines, stabilized</b>	3073	6.1	3 8	Toxic & Liquid flammable & Corrosive		A209	II	E4	653 Y640	1 L 0.5 L	660	30 L

## Chapter 2

## 3-2-16

Name	UN No.	Class or division	Subsidiary risk	Labels	State variations	Special provisions	UN packing group	Excepted quantity	Passenger and cargo aircraft		Cargo aircraft only	
									Packing instruction	Max. net quantity per package	Packing instruction	Max. net quantity per package
									10	11	12	13
* <b>Methacrylonitrile, stabilized</b>	3079	6.1	3			✓				FORBIDDEN		FORBIDDEN
≠ <b>Methacrylonitrile, stabilized</b>	3079	6.1	3			A209				FORBIDDEN		FORBIDDEN
* <b>Lithium metal batteries</b> (including lithium alloy batteries) †	3090	9		✓ Miscellaneous	US 2 US 3	✓ A88 A99 A154 A164 A183 A201		E0		FORBIDDEN		See 968
≠ <b>Lithium metal batteries</b> (including lithium alloy batteries) †	3090	9		Miscellaneous — Lithium batteries	US 2 US 3	A88 A99 A154 A164 A183 A201 A206		E0		FORBIDDEN		See 968
* <b>Lithium metal batteries contained in equipment</b> (including lithium alloy batteries) †	3091	9		✓ Miscellaneous	US 2 US 3	✓ A48 A99 A154 A164 A181 A185		E0	970	5 kg	970	35 kg
≠ <b>Lithium metal batteries contained in equipment</b> (including lithium alloy batteries) †	3091	9		Miscellaneous — Lithium batteries	US 2 US 3	A48 A88 A99 A154 A164 A181 A185 A206		E0	970	5 kg	970	35 kg
* <b>Lithium metal batteries packed with equipment</b> (including lithium alloy batteries) †	3091	9		✓ Miscellaneous	US 2 US 3	✓ A99 A154 A164 A181 A185		E0	969	5 kg	969	35 kg
≠ <b>Lithium metal batteries packed with equipment</b> (including lithium alloy batteries) †	3091	9		Miscellaneous — Lithium batteries	US 2 US 3	A88 A99 A154 A164 A181 A185 A206		E0	969	5 kg	969	35 kg

3-2-19

Part 3

Name	UN No.	Class or division	Subsidiary risk	Labels	State variations	Special provisions	UN packing group	Excepted quantity	Passenger and cargo aircraft		Cargo aircraft only	
									Packing instruction	Max. net quantity per package	Packing instruction	Max. net quantity per package
1	2	3	4	5	6	7	8	9	10	11	12	13
+ Halogenated monomethyldiphenylmethanes, liquid	3151	9		Miscellaneous		A11 A95	II	E2	964	100 L	964	220 L
+ Halogenated monomethyldiphenylmethanes, solid	3152	9		Miscellaneous		A11 A95	II	E2	956	100 kg	956	200 kg
						✓						
* Vehicle, flammable gas powered	3166	9		Miscellaneous		A67 A70 A87 A118 A120 A134		E0	FORBIDDEN		951	No limit
≠ Vehicle, flammable gas powered	3166	9		Miscellaneous		A67 A70 A87 A118 A120 A134 A203 A207		E0	FORBIDDEN		951	No limit
						✓						
* Vehicle, flammable liquid powered	3166	9		Miscellaneous		A67 A70 A87 A118 A120 A134		E0	950	No limit	950	No limit
≠ Vehicle, flammable liquid powered	3166	9		Miscellaneous		A67 A70 A87 A118 A120 A134 A203 A207		E0	950	No limit	950	No limit

## Chapter 2

3-2-18

Name	UN No.	Class or division	Subsidiary risk	Labels	State variations	Special provisions	UN packing group	Excepted quantity	Passenger and cargo aircraft		Cargo aircraft only	
									Packing instruction	Max. net quantity per package	Packing instruction	Max. net quantity per package
									10	11	12	13
* Vehicle, fuel cell, flammable gas powered †	3166	9		Miscellaneous		✓ A67 A70 A87 A118 A120 A134 A176		E0	FORBIDDEN		951	No limit
≠ Vehicle, fuel cell, flammable gas powered †	3166	9		Miscellaneous		A67 A70 A87 A118 A120 A134 A176 A203 A207		E0	FORBIDDEN		951	No limit
* Vehicle, fuel cell, flammable liquid powered †	3166	9		Miscellaneous		✓ A67 A70 A87 A118 A120 A134 A176		E0	950	No limit	950	No limit
≠ Vehicle, fuel cell, flammable liquid powered †	3166	9		Miscellaneous		A67 A70 A87 A118 A120 A134 A176 A203 A207		E0	950	No limit	950	No limit
✓ * Polyester resin kit †	3269	3		Liquid flammable		A66 A163	II III	E0 E0	370 Y370 370 Y370	5 kg 1 kg 10 kg 5 kg	370 370	5 kg 10 kg
≠ Polyester resin kit , liquid base material †	3269	3		Liquid flammable		A66 A163	II III	E0 E0	370 Y370 370 Y370	5 kg 1 kg 10 kg 5 kg	370 370	5 kg 10 kg

3-2-19

Part 3

Name	UN No.	Class or division	Subsidiary risk	Labels	State variations	Special provisions	UN packing group	Excepted quantity	Passenger and cargo aircraft		Cargo aircraft only	
									Packing instruction	Max. net quantity per package	Packing instruction	Max. net quantity per package
1	2	3	4	5	6	7	8	9	10	11	12	13
* Nitroglycerin mixture, desensitized, liquid, n.o.s.* with not more than 30% nitroglycerin, by mass	3357	3			BE 3	✓				FORBIDDEN	FORBIDDEN	
≠ Nitroglycerin mixture, desensitized, liquid, n.o.s.* with not more than 30% nitroglycerin, by mass	3357	3			BE 3	A17				FORBIDDEN	FORBIDDEN	
				✓		✓						
* Lithium ion batteries (including lithium ion polymer batteries)	3480	9		Miscellaneous	US 3	A88 A99 A154 A164 A183		E0	See 965		See 965	
≠ Lithium ion batteries (including lithium ion polymer batteries)	3480	9		Miscellaneous — Lithium batteries	US 3	A88 A99 A154 A164 A183 A206		E0	See 965		See 965	
* Lithium ion batteries contained in equipment (including lithium ion polymer batteries)	3481	9		Miscellaneous	US 3	A48 A99 A154 A164 A181 A185		E0	967	5 kg	967	35 kg
≠ Lithium ion batteries contained in equipment (including lithium ion polymer batteries)	3481	9		Miscellaneous — Lithium batteries	US 3	A48 A88 A99 A154 A164 A181 A185 A206		E0	967	5 kg	967	35 kg

## Chapter 2

3-2-20

Name	UN No.	Class or division	Subsidiary risk	Labels	State variations	Special provisions	UN packing group	Excepted quantity	Passenger and cargo aircraft		Cargo aircraft only	
									Packing instruction	Max. net quantity per package	Packing instruction	Max. net quantity per package
1	2	3	4	5	6	7	8	9	10	11	12	13
* <b>Lithium ion batteries packed with equipment</b> (including lithium ion polymer batteries)	3481	9		Miscellaneous	US 3	A88 A99 A154 A164 A181 A185		E0	966	5 kg	966	35 kg
≠ <b>Lithium ion batteries packed with equipment</b> (including lithium ion polymer batteries)	3481	9		Miscellaneous — Lithium batteries	US 3	A88 A99 A154 A164 A181 A185 A206		E0	966	5 kg	966	35 kg
* <b>Uranium hexafluoride, radioactive material, excepted package</b> , less than 0.1 kg per package, non-fissile or fissile-excepted	3507	8	7	Corrosive		A139 A194	I	E0	See 877		See 877	
≠ <b>Uranium hexafluoride, radioactive material, excepted package</b> , less than 0.1 kg per package, non-fissile or fissile-excepted	3507	6.1	7 8	Toxic & Corrosive		A139 A194	I	E0	See 603		See 603	
+ <b>Polyester resin kit, solid base material</b>	3527	4.1		Solid flammable		A66 A163	II III	E0 E0	450 Y450 450 Y450	5 kg 1 kg 10 kg 5 kg	450 450	5 kg 10 kg
* <b>Engine, internal combustion, flammable liquid powered</b>	3166	9		Miscellaneous		A67 A70 A87 A134		E0	950	No limit	950	No limit
≠ <b>Engine, internal combustion, flammable liquid powered</b>	3528	3		Liquid flammable		67 A70 A87 A208		E0	378	No limit	378	No limit

## 3-2-21

## Part 3

Name	UN No.	Class or division	Subsidiary risk	Labels	State variations	Special provisions	UN packing group	Excepted quantity	Passenger and cargo aircraft		Cargo aircraft only	
									Packing instruction	Max. net quantity per package	Packing instruction	Max. net quantity per package
									10	11	12	13
* Engine, fuel cell, flammable liquid powered †	3166	9		Miscellaneous		A67 A70 A87 A134 A176		E0	950	No limit	950	No limit
≠ Engine, fuel cell, flammable liquid powered †	3528	3		Liquid flammable		A67 A70 A87 A176 A208		E0	378	No limit	378	No limit
+ Machinery, internal combustion, flammable liquid powered	3528	3		Liquid flammable		A67 A70 A87 A208		E0	378	No limit	378	No limit
+ Machinery, fuel cell, flammable liquid powered	3528	3		Liquid flammable		A67 A70 A87 A176 A208		E0	378	No limit	378	No limit
* Engine, internal combustion, flammable gas powered	3166	9		Miscellaneous		A67 A70 A87 A134		E0	FORBIDDEN		951	No limit
≠ Engine, internal combustion, flammable gas powered	3529	2.1		Gas flammable		A67 A70 A87 A208		E0	FORBIDDEN		220	No limit
* Engine, fuel cell, flammable gas powered †	3166	9		Miscellaneous		A67 A70 A87 A134 A176		E0	FORBIDDEN		951	No limit
≠ Engine, fuel cell, flammable gas powered †	3529	2.1		Gas flammable		A67 A70 A87 A208		E0	FORBIDDEN		220	No limit
+ Machinery, internal combustion, flammable gas powered	3529	2.1		Gas flammable		A67 A70 A87 A208		E0	FORBIDDEN		220	No limit

## Chapter 2

3-2-22

Name	UN No.	Class or division	Subsidiary risk	Labels	State variations	Special provisions	UN packing group	Excepted quantity	Passenger and cargo aircraft		Cargo aircraft only	
									Packing instruction	Max. net quantity per package	Packing instruction	Max. net quantity per package
1	2	3	4	5	6	7	8	9	10	11	12	13
+ Machinery, fuel cell, flammable gas powered	3529	2.1		Gas flammable		A67 A70 A87 A208		E0	FORBIDDEN		220	No limit
+ Engine, internal combustion	3530	9		Miscellaneous		A208		E0	972	No limit	972	No limit
+ Machinery, internal combustion	3530	9		Miscellaneous		A208		E0	972	No limit	972	No limit
+ Polymerizing substance, solid, stabilized, n.o.s.*	3531	4.1		Solid flammable		A209	III	E0	459	10 kg	459	25 kg
+ Polymerizing substance, liquid, stabilized, n.o.s.*	3532	4.1		Solid flammable		A209	III	E0	459	10 L	459	25 L
+ Polymerizing substance, solid, temperature controlled, n.o.s.*	3533	4.1				A209		E0	FORBIDDEN		FORBIDDEN	FORBIDDEN
+ Polymerizing substance, liquid, temperature controlled, n.o.s.*	3534	4.1				A209		E0	FORBIDDEN		FORBIDDEN	FORBIDDEN

**الإضافة (ب)****التعديلات المقترحة إدخالها على الجدول 3-1 - الترتيب الأبجدي**

فيما يلي نسق عرض التعديلات المقترحة إدخالها على الجدول 3-1:

**الإدخالات المعدلة**

- طباعة كل من الإدخال الأصلي والمعدّل؛
- طباعة كل من الخانات المعدّلة وغير المعدّلة؛
- طباعة الإدخال الأصلي داخل إطار مظلل مع وضع رمز النجمة في الهامش الأيسر؛
- طباعة مربعات التأشير فوق الخانات التي تم تعديلها؛
- إظهار الإدخال المعدّل دون تظليل أسفل الإدخال الأصلي؛
- طباعة الرمز "≠" في الهامش الأيسر.

**الإدخالات المحذوفة**

- عرض الإدخالات المحذوفة داخل إطار مظلل مع وضع رمز النجمة في الهامش الأيسر؛
- إظهار مربعات التأشير فوق كل خانة؛
- عرض الرمز ">" في الهامش الأيسر أسفل الإطار المظلل للإشارة إلى أنه سيجري حذف هذا الإدخال.

**الإدخالات الجديدة**

إظهار الإدخالات الجديدة دون تظليل مع وضع الرمز "+" في الهامش الأيسر.

Table 3-1. Dangerous Goods List

Name	UN No.	Class or division	Subsidiary risk	Labels	State variations	Special provisions	UN packing group	Excepted quantity	Passenger and cargo aircraft		Cargo aircraft only	
									Packing instruction	Max. net quantity per package	Packing instruction	Max. net quantity per package
1	2	3	4	5	6	7	8	9	10	11	12	13
* Acrolein dimer, stabilized	2607	3		Liquid flammable		✓	III	E1	355 Y344	60 L 10 L	366	220 L
≠ Acrolein dimer, stabilized	2607	3		Liquid flammable		A209	III	E1	355 Y344	60 L 10 L	366	220 L
* Acrolein, stabilized	1092	6.1	3			✓			FORBIDDEN		FORBIDDEN	
≠ Acrolein, stabilized	1092	6.1	3			A209			FORBIDDEN		FORBIDDEN	
* Acrylic acid, stabilized	2218	8	3	Corrosive & Liquid flammable		✓	II	E2	851 Y840	1 L 0.5 L	855	30 L
≠ Acrylic acid, stabilized	2218	8	3	Corrosive & Liquid flammable		A209	II	E2	851 Y840	1 L 0.5 L	855	30 L
* Acrylonitrile, stabilized	1093	3	6.1	Liquid flammable & Toxic		✓	I	E0	FORBIDDEN		361	30 L
≠ Acrylonitrile, stabilized	1093	3	6.1	Liquid flammable & Toxic		A209	I	E0	FORBIDDEN		361	30 L
* Aerosols, non-flammable	1950	2.2		Gas non-flammable				E0	✓ 203 or 204 Y203 or Y204	75 kg 30 kg G	✓ 203 or 204	150 kg
≠ Aerosols, non-flammable	1950	2.2		Gas non-flammable		A98 A145 A167		E0	203 Y203	75 kg 30 kg G	203	150 kg
* Aerosols, non-flammable (tear gas devices)	1950	2.2	6.1	Gas non-flammable & Toxic	AU 1 CA 7 IR 3 NL 1 US 3	A1 A145 A167		E0	FORBIDDEN		✓ 212	50 kg
≠ Aerosols, non-flammable (tear gas devices)	1950	2.2	6.1	Gas non-flammable & Toxic	AU 1 CA 7 IR 3 NL 1 US 3	A1 A145 A167		E0	FORBIDDEN		203	50 kg

Name	UN No.	Class or division	Subsidiary risk	Labels	State variations	Special provisions	UN packing group	Excepted quantity	Passenger and cargo aircraft		Cargo aircraft only	
									Packing instruction	Max. net quantity per package	Packing instruction	Max. net quantity per package
1	2	3	4	5	6	7	8	9	10	11	12	13
* Allyl isothiocyanate, stabilized	1545	6.1	3	Toxic & Liquid flammable	AU 1 CA 7 IR 3 NL 1 US 3	✓ A1	II	E0	FORBIDDEN		661	60 L
≠ Allyl isothiocyanate, stabilized	1545	6.1	3	Toxic & Liquid flammable	AU 1 CA 7 IR 3 NL 1 US 3	A1 A209	II	E0	FORBIDDEN		661	60 L
* Allyltrichlorosilane, stabilized	1724	8	3	Corrosive & Liquid flammable	AU 1 CA 7 IR 3 NL 1 US 3	✓ A1	II	E0	FORBIDDEN		876	30 L
≠ Allyltrichlorosilane, stabilized	1724	8	3	Corrosive & Liquid flammable	AU 1 CA 7 IR 3 NL 1 US 3	A1 A209	II	E0	FORBIDDEN		876	30 L
* N-Aminoethylpiperazine	2815	8	✓	✓ Corrosive			III	E1	852 Y841	5 L 1 L	856	60 L
≠ N-Aminoethylpiperazine	2815	8	6.1	Corrosive & Toxic			III	E1	852 Y841	5 L 1 L	856	60 L
* Argon, compressed	1006	2.2		Gas non-flammable		✓ A69		E1	200	75 kg	200	150 kg
≠ Argon, compressed	1006	2.2		Gas non-flammable		A69 A202		E1	200	75 kg	200	150 kg
+ 1, 3, 2-Benzodioxaborole						A210						
* Bicyclo [2.2.1] hepta-2-5-diene, stabilized	2251	3		Liquid flammable		✓	II	E2	353 Y341	5 L 1 L	364	60 L
≠ Bicyclo [2.2.1] hepta-2-5-diene, stabilized	2251	3		Liquid flammable		A209	II	E2	353 Y341	5 L 1 L	364	60 L

## Part 3

## 3-2-5

Name	UN No.	Class or division	Subsidiary risk	Labels	State variations	Special provisions	UN packing group	Excepted quantity	Passenger and cargo aircraft		Cargo aircraft only	
									Packing instruction	Max. net quantity per package	Packing instruction	Max. net quantity per package
1	2	3	4	5	6	7	8	9	10	11	12	13
* Butadienes and hydrocarbon mixture, stabilized, containing more than 40% butadienes	1010	2.1		Gas flammable	AU 1 CA 7 IR 3 NL 1 US 3	✓ A1			E0	FORBIDDEN	200	150 kg
≠ Butadienes and hydrocarbon mixture, stabilized, containing more than 40% butadienes	1010	2.1		Gas flammable	AU 1 CA 7 IR 3 NL 1 US 3	A1 A209			E0	FORBIDDEN	200	150 kg
* Butadienes, stabilized	1010	2.1		Gas flammable	AU 1 CA 7 IR 3 NL 1 US 3	✓ A1			E0	FORBIDDEN	200	150 kg
≠ Butadienes, stabilized	1010	2.1		Gas flammable	AU 1 CA 7 IR 3 NL 1 US 3	A1 A209			E0	FORBIDDEN	200	150 kg
* Butyl acrylates, stabilized	2348	3		Liquid flammable		✓	III	E1	355 Y344	60 L 10 L	366	220 L
≠ Butyl acrylates, stabilized	2348	3		Liquid flammable		A209	III	E1	355 Y344	60 L 10 L	366	220 L
* 1,2-Butylene oxide, stabilized	3022	3		Liquid flammable		✓	II	E2	353 Y341	5 L 1 L	364	60 L
≠ 1,2-Butylene oxide, stabilized	3022	3		Liquid flammable		A209	II	E2	353 Y341	5 L 1 L	364	60 L
* n-Butyl methacrylate, stabilized	2227	3		Liquid flammable		✓	III	E1	355 Y344	60 L 10 L	366	220 L
≠ n-Butyl methacrylate, stabilized	2227	3		Liquid flammable		A209	III	E1	355 Y344	60 L 10 L	366	220 L
* Butyl vinyl ether, stabilized	2352	3		Liquid flammable		✓	II	E2	353 Y341	5 L 1 L	364	60 L
≠ Butyl vinyl ether, stabilized	2352	3		Liquid flammable		A209	II	E2	353 Y341	5 L 1 L	364	60 L

## 3-2-6

Name	UN No.	Class or division	Subsidiary risk	Labels	State variations	Special provisions	UN packing group	Excepted quantity	Passenger and cargo aircraft		Cargo aircraft only	
									Packing instruction	Max. net quantity per package	Packing instruction	Max. net quantity per package
1	2	3	4	5	6	7	8	9	10	11	12	13
* Carbon dioxide	1013	2.2		Gas non-flammable		✓		E1	200	75 kg	200	150 kg
≠ Carbon dioxide	1013	2.2		Gas non-flammable		A202		E1	200	75 kg	200	150 kg
+ Catecholborane						A210						
* Celluloid, in blocks, rods, rolls, sheets, tubes, etc. (except scrap)	2000	4.1		Solid flammable		✓ A3 A48	III	E1	456	25 kg	456	100 kg
≠ Celluloid, in blocks, rods, rolls, sheets, tubes, etc. (except scrap)	2000	4.1		Solid flammable		A3 A48 A205	III	E1	456	25 kg	456	100 kg
* Chloroprene, stabilized	1991	3	6.1	Liquid flammable & Toxic		✓	I	E0	FORBIDDEN		361	30 L
≠ Chloroprene, stabilized	1991	3	6.1	Liquid flammable & Toxic		A209	I	E0	FORBIDDEN		361	30 L
* Compressed gas, n.o.s.*	1956	2.2		Gas non-flammable		✓		E1	200	75 kg	200	150 kg
≠ Compressed gas, n.o.s.*	1956	2.2		Gas non-flammable		A202		E1	200	75 kg	200	150 kg
* Crotonaldehyde	1143	6.1	3		AU 1 CA 7 IR 3 NL 1 US 3 US 4	✓ A2			FORBIDDEN		FORBIDDEN	
≠ Crotonaldehyde	1143	6.1	3		AU 1 CA 7 IR 3 NL 1 US 3 US 4	A2 A209			FORBIDDEN		FORBIDDEN	

## Part 3

## 3-2-7

Name	UN No.	Class or division	Subsidiary risk	Labels	State variations	Special provisions	UN packing group	Excepted quantity	Passenger and cargo aircraft		Cargo aircraft only	
									Packing instruction	Max. net quantity per package	Packing instruction	Max. net quantity per package
1	2	3	4	5	6	7	8	9	10	11	12	13
						✓						
* Crotonaldehyde, stabilized	1143	6.1	3		AU 1 CA 7 IR 3 NL 1 US 3 US 4	A2			FORBIDDEN		FORBIDDEN	
≠ Crotonaldehyde, stabilized	1143	6.1	3		AU 1 CA 7 IR 3 NL 1 US 3 US 4	A2 A209			FORBIDDEN		FORBIDDEN	
* Cyanogen chloride, stabilized	1589	2.3	8		AU 1 CA 7 IR 3 NL 1 US 3	A2			FORBIDDEN		FORBIDDEN	
≠ Cyanogen chloride, stabilized	1589	2.3	8		AU 1 CA 7 IR 3 NL 1 US 3	A2 A209			FORBIDDEN		FORBIDDEN	
* Diketene, stabilized	2521	6.1	3			✓			FORBIDDEN		FORBIDDEN	
≠ Diketene, stabilized	2521	6.1	3			A209			FORBIDDEN		FORBIDDEN	
* Dipropylamine	2383	3	8	Liquid flammable & Corrosive		✓	II	E2	352 Y340	1 L 0.5 L	363	5 L
≠ Dipropylamine	2383	3	8	Liquid flammable & Corrosive		A209	II	E2	352 Y340	1 L 0.5 L	363	5 L
* Divinyl ether, stabilized	1167	3		Liquid flammable		✓	I	E3	351	1 L	361	30 L
≠ Divinyl ether, stabilized	1167	3		Liquid flammable		A209	I	E3	351	1 L	361	30 L

Name	UN No.	Class or division	Subsidiary risk	Labels	State variations	Special provisions	UN packing group	Excepted quantity	Passenger and cargo aircraft		Cargo aircraft only		
									Packing instruction	Max. net quantity per package	Packing instruction	Max. net quantity per package	
									1	2	3	4	5
* Engine, fuel cell, flammable gas powered †	3166	9		Miscellaneous		A67 A70 A87 A134 A176		E0		FORBIDDEN		951	No limit
≠ Engine, fuel cell, flammable gas powered †	3529	2.1		Gas flammable		A67 A70 A87 A208		E0		FORBIDDEN		220	No limit
* Engine, fuel cell, flammable liquid powered †	3166	9		Miscellaneous		A67 A70 A87 A134 A176		E0	950	No limit	950	No limit	
≠ Engine, fuel cell, flammable liquid powered †	3528	3		Liquid flammable		A67 A70 A87 A176 A208		E0	378	No limit	378	No limit	
+ Engine, internal combustion	3530	9		Miscellaneous		A208		E0	972	No limit	972	No limit	
* Engine, internal combustion, flammable gas powered	3166	9		Miscellaneous		A67 A70 A87 A134		E0	FORBIDDEN		951	No limit	
≠ Engine, internal combustion, flammable gas powered	3529	2.1		Gas flammable		A67 A70 A87 A208		E0	FORBIDDEN		220	No limit	
* Engine, internal combustion, flammable liquid powered	3166	9		Miscellaneous		A67 A70 A87 A134		E0	950	No limit	950	No limit	
≠ Engine, internal combustion, flammable liquid powered	3528	3		Liquid flammable		67 A70 A87 A208		E0	378	No limit	378	No limit	

## Part 3

## 3-2-9

Name	UN No.	Class or division	Subsidiary risk	Labels	State variations	Special provisions	UN packing group	Excepted quantity	Passenger and cargo aircraft		Cargo aircraft only	
									Packing instruction	Max. net quantity per package	Packing instruction	Max. net quantity per package
1	2	3	4	5	6	7	8	9	10	11	12	13
						✓						
* Ethylacetylene, stabilized	2452	2.1		Gas flammable	AU 1 CA 7 IR 3 NL 1 US 3	A1		E0	FORBIDDEN		200	150 kg
≠ Ethylacetylene, stabilized	2452	2.1		Gas flammable	AU 1 CA 7 IR 3 NL 1 US 3	A1 A209		E0	FORBIDDEN		200	150 kg
						✓						
* Ethyl acrylate, stabilized	1917	3		Liquid flammable			II	E2	353 Y341	5 L 1 L	364	60 L
≠ Ethyl acrylate, stabilized	1917	3		Liquid flammable		A209	II	E2	353 Y341	5 L 1 L	364	60 L
						✓						
* Ethyleneimine, stabilized	1185	6.1	3						FORBIDDEN		FORBIDDEN	
≠ Ethyleneimine, stabilized	1185	6.1	3			A209			FORBIDDEN		FORBIDDEN	
						✓						
* Ethyl methacrylate, stabilized	2277	3		Liquid flammable			II	E2	353 Y341	5 L 1 L	364	60 L
≠ Ethyl methacrylate, stabilized	2277	3		Liquid flammable		A209	II	E2	353 Y341	5 L 1 L	364	60 L
						✓						
* Gas cartridges (toxic, oxidizing & corrosive) without a release device, non-refillable	2037	2.3	5.1 8		AU 1 CA 7 IR 3 NL 1 US 3	A2			FORBIDDEN		FORBIDDEN	
≠ Gas cartridges (toxic, oxidizing & corrosive) without a release device, non-refillable	2037	2.3	5.1 8		AU 1 CA 7 IR 3 NL 1 US 3	A2 A211			FORBIDDEN		FORBIDDEN	
+ Halogenated monomethyldiphenylmethanes, liquid	3151	9		Miscellaneous		A11 A95	II	E2	964	100 L	964	220 L
+ Halogenated monomethyldiphenylmethanes, solid	3152	9		Miscellaneous		A11 A95	II	E2	956	100 kg	956	200 kg

## 3-2-10

## Chapter 2

Name	UN No.	Class or division	Subsidiary risk	Labels	State variations	Special provisions	UN packing group	Excepted quantity	Passenger and cargo aircraft		Cargo aircraft only	
									Packing instruction	Max. net quantity per package	Packing instruction	Max. net quantity per package
									10	11	12	13
* Helium, compressed	1046	2.2		Gas non-flammable		✓ A69		E1	200	75 kg	200	150 kg
≠ Helium, compressed	1046	2.2		Gas non-flammable		A69 A202		E1	200	75 kg	200	150 kg
* Hydrogen cyanide, stabilized containing less than 3% water	1051	6.1	3			✓			FORBIDDEN		FORBIDDEN	
≠ Hydrogen cyanide, stabilized containing less than 3% water	1051	6.1	3			A209			FORBIDDEN		FORBIDDEN	
* Hydrogen cyanide, stabilized containing less than 3% water and absorbed in a porous inert material	1614	6.1				✓			FORBIDDEN		FORBIDDEN	
≠ Hydrogen cyanide, stabilized containing less than 3% water and absorbed in a porous inert material	1614	6.1				A209			FORBIDDEN		FORBIDDEN	
* Isobutyl acrylate, stabilized	2527	3		Liquid flammable		✓	III	E1	355 Y344	60 L 10 L	366	220 L
≠ Isobutyl acrylate, stabilized	2527	3		Liquid flammable		A209	III	E1	355 Y344	60 L 10 L	366	220 L
* Isobutyl methacrylate, stabilized	2283	3		Liquid flammable		✓	III	E1	355 Y344	60 L 10 L	366	220 L
≠ Isobutyl methacrylate, stabilized	2283	3		Liquid flammable		A209	III	E1	355 Y344	60 L 10 L	366	220 L
* Isoprene, stabilized	1218	3		Liquid flammable		✓	I	E3	351	1 L	361	30 L
≠ Isoprene, stabilized	1218	3		Liquid flammable		A209	I	E3	351	1 L	361	30 L
* Krypton, compressed	1056	2.2		Gas non-flammable		✓ A69		E1	200	75 kg	200	150 kg
≠ Krypton, compressed	1056	2.2		Gas non-flammable		A69 A202		E1	200	75 kg	200	150 kg

## Part 3

## 3-2-11

Name	UN No.	Class or division	Subsidiary risk	Labels	State variations	Special provisions	UN packing group	Excepted quantity	Passenger and cargo aircraft		Cargo aircraft only	
									Packing instruction	Max. net quantity per package	Packing instruction	Max. net quantity per package
1	2	3	4	5	6	7	8	9	10	11	12	13
* Lithium ion batteries (including lithium ion polymer batteries)	3480	9		Miscellaneous ✓	US 3	A88 A99 A154 A164 A183		E0	See 965		See 965	
≠ Lithium ion batteries (including lithium ion polymer batteries)	3480	9		Miscellaneous — Lithium batteries	US 3	A88 A99 A154 A164 A183 A206		E0	See 965		See 965	
* Lithium ion batteries contained in equipment (including lithium ion polymer batteries)	3481	9		Miscellaneous ✓	US 3	A48 A99 A154 A164 A181 A185		E0	967	5 kg	967	35 kg
≠ Lithium ion batteries contained in equipment (including lithium ion polymer batteries)	3481	9		Miscellaneous — Lithium batteries	US 3	A48 A88 A99 A154 A164 A181 A185 A206		E0	967	5 kg	967	35 kg
* Lithium ion batteries packed with equipment (including lithium ion polymer batteries)	3481	9		Miscellaneous ✓	US 3	A88 A99 A154 A164 A181 A185		E0	966	5 kg	966	35 kg
≠ Lithium ion batteries packed with equipment (including lithium ion polymer batteries)	3481	9		Miscellaneous — Lithium batteries	US 3	A88 A99 A154 A164 A181 A185 A206		E0	966	5 kg	966	35 kg

Name	UN No.	Class or division	Subsidiary risk	Labels	State variations	Special provisions	UN packing group	Excepted quantity	Passenger and cargo aircraft		Cargo aircraft only	
									Packing instruction	Max. net quantity per package	Packing instruction	Max. net quantity per package
1	2	3	4	5	6	7	8	9	10	11	12	13
* <b>Lithium metal batteries</b> (including lithium alloy batteries) †	3090	9		☑ Miscellaneous	US 2 US 3	☑ A88 A99 A154 A164 A183 A201		E0	FORBIDDEN		See 968	
≠ <b>Lithium metal batteries</b> (including lithium alloy batteries) †	3090	9		Miscellaneous — Lithium batteries	US 2 US 3	A88 A99 A154 A164 A183 A201 A206		E0	FORBIDDEN		See 968	
* <b>Lithium metal batteries contained in equipment</b> (including lithium alloy batteries) †	3091	9		☑ Miscellaneous	US 2 US 3	☑ A48 A99 A154 A164 A181 A185		E0	970	5 kg	970	35 kg
≠ <b>Lithium metal batteries contained in equipment</b> (including lithium alloy batteries) †	3091	9		Miscellaneous — Lithium batteries	US 2 US 3	A48 A88 A99 A154 A164 A181 A185 A206		E0	970	5 kg	970	35 kg
* <b>Lithium metal batteries packed with equipment</b> (including lithium alloy batteries) †	3091	9		☑ Miscellaneous	US 2 US 3	☑ A99 A154 A164 A181 A185		E0	969	5 kg	969	35 kg
≠ <b>Lithium metal batteries packed with equipment</b> (including lithium alloy batteries) †	3091	9		Miscellaneous — Lithium batteries	US 2 US 3	A88 A99 A154 A164 A181 A185 A206		E0	969	5 kg	969	35 kg
+ <b>Machinery, fuel cell, flammable gas powered</b>	3529	2.1		Gas flammable		A67 A70 A87 A208		E0	FORBIDDEN		220	No limit

## Part 3

## 3-2-13

Name	UN No.	Class or division	Subsidiary risk	Labels	State variations	Special provisions	UN packing group	Excepted quantity	Passenger and cargo aircraft		Cargo aircraft only	
									Packing instruction	Max. net quantity per package	Packing instruction	Max. net quantity per package
1	2	3	4	5	6	7	8	9	10	11	12	13
+ Machinery, fuel cell, flammable liquid powered	3528	3		Liquid flammable		A67 A70 A87 A176 A208		E0	378	No limit	378	No limit
+ Machinery, internal combustion	3530	9		Miscellaneous		A208		E0	972	No limit	972	No limit
+ Machinery, internal combustion, flammable gas powered	3529	2.1		Gas flammable		A67 A70 A87 A208		E0	FORBIDDEN		220	No limit
+ Machinery, internal combustion, flammable liquid powered	3528	3		Liquid flammable		A67 A70 A87 A208		E0	378	No limit	378	No limit
* Methacrylaldehyde, stabilized	2396	3	6.1	Liquid flammable & Toxic		✓	II	E2	352 Y341	1 L 1 L	364	60 L
≠ Methacrylaldehyde, stabilized	2396	3	6.1	Liquid flammable & Toxic		A209	II	E2	352 Y341	1 L 1 L	364	60 L
* Methacrylic acid, stabilized	2531	8		Corrosive		✓	II	E2	851 Y840	1 L 0.5 L	855	30 L
≠ Methacrylic acid, stabilized	2531	8		Corrosive		A209	II	E2	851 Y840	1 L 0.5 L	855	30 L
* Methacrylonitrile, stabilized	3079	6.1	3			✓			FORBIDDEN		FORBIDDEN	
≠ Methacrylonitrile, stabilized	3079	6.1	3			A209			FORBIDDEN		FORBIDDEN	
* Methanol	1230	3	6.1	Liquid flammable		✓ A104 A113	II	E2	352 Y341	1 L 1 L	364	60 L
≠ Methanol	1230	3	6.1	Liquid flammable & Toxic		A113	II	E2	352 Y341	1 L 1 L	364	60 L

Name	UN No.	Class or division	Subsidiary risk	Labels	State variations	Special provisions	UN packing group	Excepted quantity	Passenger and cargo aircraft		Cargo aircraft only	
									Packing instruction	Max. net quantity per package	Packing instruction	Max. net quantity per package
									1	2	3	4
* <b>Methylacetylene and propadiene mixture, stabilized †</b>	1060	2.1		Gas flammable	AU 1 CA 7 IR 3 NL 1 US 3	✓ A1		E0	FORBIDDEN		200	150 kg
≠ <b>Methylacetylene and propadiene mixture, stabilized †</b>	1060	2.1		Gas flammable	AU 1 CA 7 IR 3 NL 1 US 3	A1 A209		E0	FORBIDDEN		200	150 kg
* <b>Methyl acrylate, stabilized</b>	1919	3		Liquid flammable		✓	II	E2	353 Y341	5 L 1 L	364	60 L
≠ <b>Methyl acrylate, stabilized</b>	1919	3		Liquid flammable		A209	II	E2	353 Y341	5 L 1 L	364	60 L
* <b>Methyl isopropenyl ketone, stabilized</b>	1246	3		Liquid flammable		✓	II	E2	353 Y341	5 L 1 L	364	60 L
≠ <b>Methyl isopropenyl ketone, stabilized</b>	1246	3		Liquid flammable		A209	II	E2	353 Y341	5 L 1 L	364	60 L
* <b>Methyl methacrylate monomer, stabilized</b>	1247	3		Liquid flammable		✓	II	E2	353 Y341	5 L 1 L	364	60 L
≠ <b>Methyl methacrylate monomer, stabilized</b>	1247	3		Liquid flammable		A209	II	E2	353 Y341	5 L 1 L	364	60 L
* <b>Methyl vinyl ketone, stabilized</b>	1251	6.1	3 8			✓			FORBIDDEN		FORBIDDEN	
≠ <b>Methyl vinyl ketone, stabilized</b>	1251	6.1	3 8			A209			FORBIDDEN		FORBIDDEN	
* <b>Neon, compressed</b>	1065	2.2		Gas non-flammable		✓ A69		E1	200	75 kg	200	150 kg
≠ <b>Neon, compressed</b>	1065	2.2		Gas non-flammable		A69 A202		E1	200	75 kg	200	150 kg
* <b>Nitric acid, other than red fuming, with more than 20% and less than 65% nitric acid</b>	2031	8		Corrosive		✓	II	E0	FORBIDDEN		855	30 L
≠ <b>Nitric acid, other than red fuming, with more than 20% and less than 65% nitric acid</b>	2031	8		Corrosive		A212	II	E0	FORBIDDEN		855	30 L

## Part 3

## 3-2-15

Name	UN No.	Class or division	Subsidiary risk	Labels	State variations	Special provisions	UN packing group	Excepted quantity	Passenger and cargo aircraft		Cargo aircraft only	
									Packing instruction	Max. net quantity per package	Packing instruction	Max. net quantity per package
1	2	3	4	5	6	7	8	9	10	11	12	13
+ Nitric oxide, compressed contained in gas cartridges for use in sterilization devices, see <b>Gas cartridges</b> (toxic, oxidizing & corrosive) without a release device, non-refillable (UN No. 2037) or <b>Receptacles, small, containing gas</b> (toxic, oxidizing & corrosive) without a release device, non-refillable (UN No. 2037)												
* <b>Nitrogen, compressed</b>	1066	2.2		Gas non-flammable		✓ A69		E1	200	75 kg	200	150 kg
≠ <b>Nitrogen, compressed</b>	1066	2.2		Gas non-flammable		A69 A202		E1	200	75 kg	200	150 kg
+ Nitrogen dioxide contained in gas cartridges for use in sterilization devices, see <b>Gas cartridges</b> (toxic, oxidizing & corrosive) without a release device, non-refillable (UN No. 2037) or <b>Receptacles, small, containing gas</b> (toxic, oxidizing & corrosive) without a release device, non-refillable (UN No. 2037)												
* <b>Nitroglycerin mixture, desensitized, liquid, n.o.s.*</b> with not more than 30% nitroglycerin, by mass	3357	3			BE 3	✓			FORBIDDEN		FORBIDDEN	
≠ <b>Nitroglycerin mixture, desensitized, liquid, n.o.s.*</b> with not more than 30% nitroglycerin, by mass	3357	3			BE 3	A17			FORBIDDEN		FORBIDDEN	
* <b>2,5-Norbornadiene, stabilized</b>	2251	3		Liquid flammable		✓	II	E2	353 Y341	5 L 1 L	364	60 L
≠ <b>2,5-Norbornadiene, stabilized</b>	2251	3		Liquid flammable		A209	II	E2	353 Y341	5 L 1 L	364	60 L
* <b>Paraformaldehyde</b>	2213	4.1		Solid flammable		✓	III	E1	446 Y443	25 kg 10 kg	449	100 kg
≠ <b>Paraformaldehyde</b>	2213	4.1		Solid flammable		A3	III	E1	446 Y443	25 kg 10 kg	449	100 kg

Name	UN No.	Class or division	Subsidiary risk	Labels	State variations	Special provisions	UN packing group	Excepted quantity	Passenger and cargo aircraft		Cargo aircraft only	
									Packing instruction	Max. net quantity per package	Packing instruction	Max. net quantity per package
1	2	3	4	5	6	7	8	9	10	11	12	13
<input checked="" type="checkbox"/> * Polyester resin kit †	3269	3		Liquid flammable		A66 A163	II III	E0 E0	370 Y370 370 Y370	5 kg 1 kg 10 kg 5 kg	370 370	5 kg 10 kg
≠ Polyester resin kit , liquid base material †	3269	3		Liquid flammable		A66 A163	II III	E0 E0	370 Y370 370 Y370	5 kg 1 kg 10 kg 5 kg	370 370	5 kg 10 kg
+ Polyester resin kit, solid base material	3527	4.1		Solid flammable		A66 A163	II III	E0 E0	450 Y450 450 Y450	5 kg 1 kg 10 kg 5 kg	450 450	5 kg 10 kg
<input checked="" type="checkbox"/> * Polymeric beads, expandable, evolving flammable vapour †	2211	9		Miscellaneous		A38	III	E1	957	100 kg	957	200 kg
≠ Polymeric beads, expandable, evolving flammable vapour †	2211	9		Miscellaneous		A204	III	E1	957	100 kg	957	200 kg
+ Polymerizing substance, liquid, stabilized, n.o.s.*	3532	4.1		Solid flammable		A209	III	E0	459	10 L	459	25 L
+ Polymerizing substance, liquid, temperature controlled, n.o.s.*	3534	4.1		Solid flammable		A209		E0	FORBIDDEN		FORBIDDEN	
+ Polymerizing substance, solid, stabilized, n.o.s.*	3531	4.1		Solid flammable		A209	III	E0	459	10 kg	459	25 kg
+ Polymerizing substance, solid, temperature controlled, n.o.s.*	3533	4.1		Solid flammable		A209		E0	FORBIDDEN		FORBIDDEN	
<input checked="" type="checkbox"/> * Propadiene, stabilized	2200	2.1		Gas flammable	AU 1 CA 7 IR 3 NL 1 US 3	A1		E0	FORBIDDEN		200	150 kg
≠ Propadiene, stabilized	2200	2.1		Gas flammable	AU 1 CA 7 IR 3 NL 1 US 3	A1 A209		E0	FORBIDDEN		200	150 kg
<input checked="" type="checkbox"/> * Propellant, solid	0501	1.4C							FORBIDDEN		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
≠ Propellant, solid	0501	1.4C		Explosive 1.4					FORBIDDEN		114	75 kg

## Part 3

## 3-2-16

Name	UN No.	Class or division	Subsidiary risk	Labels	State variations	Special provisions	UN packing group	Excepted quantity	Passenger and cargo aircraft		Cargo aircraft only	
									Packing instruction	Max. net quantity per package	Packing instruction	Max. net quantity per package
1	2	3	4	5	6	7	8	9	10	11	12	13
* Propyleneimine, stabilized	1921	3	6.1	Liquid flammable & Toxic	US 4	✓	I	E0	FORBIDDEN		361	30 L
≠ Propyleneimine, stabilized	1921	3	6.1	Liquid flammable & Toxic	US 4	A209	I	E0	FORBIDDEN		361	30 L
* Radioactive material, uranium hexafluoride, non-fissile or fissile excepted	2978	7	8	Radioactive & Corrosive	CA 1	A139				See Part 2;7 and Part 4;9		
≠ Radioactive material, uranium hexafluoride, non-fissile or fissile excepted	2978	7	6.1 8	Radioactive & Toxic & Corrosive	CA 1	A139				See Part 2;7 and Part 4;9		
* Radioactive material, uranium hexafluoride, fissile	2977	7	8	Radioactive & Corrosive						See Part 2;7 and Part 4;9		
≠ Radioactive material, uranium hexafluoride, fissile	2977	7	6.1 8	Radioactive & Toxic & Corrosive						See Part 2;7 and Part 4;9		
* Receptacles, small, containing gas (toxic, oxidizing & corrosive) without a release device, non-refillable	2037	2.3	5.1 8		AU 1 CA 7 IR 3 NL 1 US 3	✓ A2			FORBIDDEN		FORBIDDEN	
≠ Receptacles, small, containing gas (toxic, oxidizing & corrosive) without a release device, non-refillable	2037	2.3	5.1 8		AU 1 CA 7 IR 3 NL 1 US 3	A2 A211			FORBIDDEN		FORBIDDEN	
* Refrigerant gas R 1113	1082	2.3	2.1		AU 1 CA 7 IR 3 NL 1 US 3	✓ A2			FORBIDDEN		FORBIDDEN	
≠ Refrigerant gas R 1113	1082	2.3	2.1		AU 1 CA 7 IR 3 NL 1 US 3	A2 A209			FORBIDDEN		FORBIDDEN	

Name	UN No.	Class or division	Subsidiary risk	Labels	State variations	Special provisions	UN packing group	Excepted quantity	Passenger and cargo aircraft		Cargo aircraft only	
									Packing instruction	Max. net quantity per package	Packing instruction	Max. net quantity per package
1	2	3	4	5	6	7	8	9	10	11	12	13
+ Rocket motors †	0510	1.4C		Explosive 1.4				E0	FORBIDDEN		130	75 kg
* Styrene monomer, stabilized	2055	3		Liquid flammable		☑	III	E1	355 Y344	60 L 10 L	366	220 L
≠ Styrene monomer, stabilized	2055	3		Liquid flammable		A209	III	E1	355 Y344	60 L 10 L	366	220 L
* Sulphur trioxide, stabilized	1829	8			AU 1 CA 7 IR 3 NL 1 US 3	☑ A2			FORBIDDEN		FORBIDDEN	
≠ Sulphur trioxide, stabilized	1829	8			AU 1 CA 7 IR 3 NL 1 US 3	A2 A209			FORBIDDEN		FORBIDDEN	
* Tetrafluoroethylene, stabilized	1081	2.1		Gas flammable	AU 1 CA 7 IR 3 NL 1 US 3	☑ A1		E0	FORBIDDEN		200	150 kg
≠ Tetrafluoroethylene, stabilized	1081	2.1		Gas flammable	AU 1 CA 7 IR 3 NL 1 US 3	A1 A209		E0	FORBIDDEN		200	150 kg
* Trifluorochloroethylene, stabilized	1082	2.3	2.1		AU 1 CA 7 IR 3 NL 1 US 3	☑ A2			FORBIDDEN		FORBIDDEN	
≠ Trifluorochloroethylene, stabilized	1082	2.3	2.1		AU 1 CA 7 IR 3 NL 1 US 3	A2 A209			FORBIDDEN		FORBIDDEN	

## Part 3

3-2-18

Name	UN No.	Class or division	Subsidiary risk	Labels	State variations	Special provisions	UN packing group	Excepted quantity	Passenger and cargo aircraft		Cargo aircraft only	
									Packing instruction	Max. net quantity per package	Packing instruction	Max. net quantity per package
									10	11	12	13
* Uranium hexafluoride, radioactive material, excepted package, less than 0.1 kg per package, non-fissile or fissile-excepted	3507	8	7	Corrosive		A139 A194	I	E0	See 877		See 877	
≠ Uranium hexafluoride, radioactive material, excepted package, less than 0.1 kg per package, non-fissile or fissile-excepted	3507	6.1	7 8	Toxic & Corrosive		A139 A194	I	E0	See 603		See 603	
* Vehicle, flammable gas powered	3166	9		Miscellaneous		A67 A70 A87 A118 A120 A134		E0	FORBIDDEN		951	No limit
≠ Vehicle, flammable gas powered	3166	9		Miscellaneous		A67 A70 A87 A118 A120 A134 A203 A207		E0	FORBIDDEN		951	No limit
* Vehicle, flammable liquid powered	3166	9		Miscellaneous		A67 A70 A87 A118 A120 A134		E0	950	No limit	950	No limit
≠ Vehicle, flammable liquid powered	3166	9		Miscellaneous		A67 A70 A87 A118 A120 A134 A203 A207		E0	950	No limit	950	No limit

Name	UN No.	Class or division	Subsidiary risk	Labels	State variations	Special provisions	UN packing group	Excepted quantity	Passenger and cargo aircraft		Cargo aircraft only	
									Packing instruction	Max. net quantity per package	Packing instruction	Max. net quantity per package
									10	11	12	13
* Vehicle, fuel cell, flammable gas powered †	3166	9		Miscellaneous		✓ A67 A70 A87 A118 A120 A134 A176		E0	FORBIDDEN		951	No limit
≠ Vehicle, fuel cell, flammable gas powered †	3166	9		Miscellaneous		A67 A70 A87 A118 A120 A134 A176 A203 A207		E0	FORBIDDEN		951	No limit
* Vehicle, fuel cell, flammable liquid powered †	3166	9		Miscellaneous		✓ A67 A70 A87 A118 A120 A134 A176		E0	950	No limit	950	No limit
≠ Vehicle, fuel cell, flammable liquid powered †	3166	9		Miscellaneous		A67 A70 A87 A118 A120 A134 A176 A203 A207		E0	950	No limit	950	No limit
* Vinyl acetate, stabilized	1301	3		Liquid flammable		✓	II	E2	353 Y341	5 L 1 L	364	60 L
≠ Vinyl acetate, stabilized	1301	3		Liquid flammable		A209	II	E2	353 Y341	5 L 1 L	364	60 L

## Part 3

3-2-20

Name	UN No.	Class or division	Subsidiary risk	Labels	State variations	Special provisions	UN packing group	Excepted quantity	Passenger and cargo aircraft		Cargo aircraft only	
									Packing instruction	Max. net quantity per package	Packing instruction	Max. net quantity per package
									10	11	12	13
* Vinyl bromide, stabilized	1085	2.1		Gas flammable	AU 1 CA 7 IR 3 NL 1 US 3	A1			E0	FORBIDDEN	200	150 kg
≠ Vinyl bromide, stabilized	1085	2.1		Gas flammable	AU 1 CA 7 IR 3 NL 1 US 3	A1 A209			E0	FORBIDDEN	200	150 kg
* Vinyl butyrate, stabilized	2838	3		Liquid flammable				II	E2	353 Y341	5 L 1 L	364 60 L
≠ Vinyl butyrate, stabilized	2838	3		Liquid flammable		A209		II	E2	353 Y341	5 L 1 L	364 60 L
* Vinyl chloride, stabilized	1086	2.1		Gas flammable	AU 1 CA 7 IR 3 NL 1 US 3 US 4	A1			E0	FORBIDDEN	200	150 kg
≠ Vinyl chloride, stabilized	1086	2.1		Gas flammable	AU 1 CA 7 IR 3 NL 1 US 3 US 4	A1 A209			E0	FORBIDDEN	200	150 kg
* Vinyl ethyl ether, stabilized	1302	3		Liquid flammable				I	E3	351	1 L	361 30 L
≠ Vinyl ethyl ether, stabilized	1302	3		Liquid flammable		A209		I	E3	351	1 L	361 30 L
* Vinyl fluoride, stabilized	1860	2.1		Gas flammable	AU 1 CA 7 IR 3 NL 1 US 3	A1			E0	FORBIDDEN	200	150 kg
≠ Vinyl fluoride, stabilized	1860	2.1		Gas flammable	AU 1 CA 7 IR 3 NL 1 US 3	A1 A209			E0	FORBIDDEN	200	150 kg

## 3-2-21

## Chapter 2

Name	UN No.	Class or division	Subsidiary risk	Labels	State variations	Special provisions	UN packing group	Excepted quantity	Passenger and cargo aircraft		Cargo aircraft only	
									Packing instruction	Max. net quantity per package	Packing instruction	Max. net quantity per package
1	2	3	4	5	6	7	8	9	10	11	12	13
* Vinylidene chloride, stabilized	1303	3		Liquid flammable		✓	I	E3	351	1 L	361	30 L
≠ Vinylidene chloride, stabilized	1303	3		Liquid flammable		A209	I	E3	351	1 L	361	30 L
* Vinyl isobutyl ether, stabilized	1304	3		Liquid flammable		✓	II	E2	353 Y341	5 L 1 L	364	60 L
≠ Vinyl isobutyl ether, stabilized	1304	3		Liquid flammable		A209	II	E2	353 Y341	5 L 1 L	364	60 L
* Vinyl methyl ether, stabilized	1087	2.1		Gas flammable	AU 1 CA 7 IR 3 NL 1 US 3	✓ A1		E0	FORBIDDEN		200	150 kg
≠ Vinyl methyl ether, stabilized	1087	2.1		Gas flammable	AU 1 CA 7 IR 3 NL 1 US 3	A1 A209		E0	FORBIDDEN		200	150 kg
* Vinylpyridines, stabilized	3073	6.1	3 8	Toxic & Liquid flammable & Corrosive		✓	II	E4	653 Y640	1 L 0.5 L	660	30 L
≠ Vinylpyridines, stabilized	3073	6.1	3 8	Toxic & Liquid flammable & Corrosive		A209	II	E4	653 Y640	1 L 0.5 L	660	30 L
* Vinyltoluenes, stabilized	2618	3		Liquid flammable		✓	III	E1	355 Y344	60 L 10 L	366	220 L
≠ Vinyltoluenes, stabilized	2618	3		Liquid flammable		A209	III	E1	355 Y344	60 L 10 L	366	220 L
* Xenon	2036	2.2		Gas non-flammable		✓ A69		E1	200	75 kg	200	150 kg
≠ Xenon	2036	2.2		Gas non-flammable		A69 A202		E1	200	75 kg	200	150 kg

**المرفق (ب)**

التعديل المقترح إدخاله على التعليمات الفنية الموصى بإدراجه في  
طبعة 2015-2016 من التعليمات الفنية عن طريق الإضافة

DGP/25-WP/47 (see paragraph 2.3.6 of this report)

**Part 3**

**DANGEROUS GOODS LIST,  
SPECIAL PROVISIONS AND  
LIMITED AND EXCEPTED QUANTITIES**

...

**Chapter 2**

**ARRANGEMENT OF THE  
DANGEROUS GOODS LIST (TABLE 3-1)**

...

Name	UN No.	Class or division	Subsidiary risk	Labels	State variations	Special provisions	UN packing group	Excepted quantity	Passenger and cargo aircraft		Cargo aircraft only	
									Packing instruction	Max. net quantity per package	Packing instruction	Max. net quantity per package
1	2	3	4	5	6	7	8	9	10	11	12	13
<a href="#">Catecholborane</a>						A210						
<a href="#">1.3.2-Benzodioxaborole</a>						A210						

...

**Chapter 3****SPECIAL PROVISIONS**

...

Table 3-2. Special provisions

...

[A210](#)

This substance is forbidden for transport by air. It may be transported on cargo aircraft only with the prior approval of the appropriate authority of the State of Origin and the State of the Operator under the written conditions established by those authorities.

-----

البند 3 من جدول الأعمال: إعداد توصيات لتعديل الإضافة للتعليمات الفنية للنقل الآمن للبضائع الخطرة بطريق الجو (DOC 9284SU) لإدخالها في طبعة 2017 - 2018.

### 1-3 مشروع التعديلات على التعليمات الفنية بحيث تتوافق مع توصيات الأمم المتحدة (DGP/25-WP/19)

1-1-3 استعرض الاجتماع التعديلات على الإضافة إلى التعليمات الفنية كي تعكس القرارات الصادرة عن لجنة الخبراء التابعة للأمم المتحدة في دورتها السابعة (جنيف، 2014/12/12). وتعكس هذه التعديلات أيضاً الاقتراحات التي وافق عليها الفريق العامل التابع لفريق خبراء البضائع الخطرة في اجتماعه (DGP-WG/15).

2-1-3 أُضيف إلى اللائحة النموذجية للأمم المتحدة بند خاص مخصص للتصنيف UN1005 - الأيونيا اللامائية، والتصنيف UN3516 - الغاز الممتز، السام، الأكال، غير المنصوص عليه بطريقة أخرى، ويوفر هذا البند استثناءً من اللائحة بأكملها عند استيفاء شروط معينة. ومع التسليم بأنه لا يسمح بنقل كلا المادتين جواً إلا على طائرات البضائع بمقتضى البند الخاص A2، فقد تم الاتفاق على إضافة الشروط الواردة في اللائحة النموذجية للاسترشاد بها في الإضافة في البند الخاص الجديد A329 الذي يمكن للدول الارتكاز عليه في منح الموافقات.

3-1-3 أُدرج في البند الخاص الجديد A330 نصاً في الأحكام الجديدة من أجل الغازات المحظورة ضمن الفئة 2، والمواد المحظورة ضمن الفئة 3، بالشعبة 1-6 والفئة 8، وذلك فيما يتعلق بالتحكم في درجة الحرارة. واستند النص إلى البند الخاص 386 لدى الأمم المتحدة، الذي يتضمن أحكاماً لتحقيق الاستقرار الكيميائي والتحكم في درجة الحرارة. ومع التسليم بحظر النقل الجوي للمواد التي تتطلب التحكم في درجة الحرارة، فقد أُدرجت أحكام للتحكم في درجة الحرارة في الإضافة وليس في التعليمات الفنية.

4-1-3 تم تخصيص تعليمات تعبئة جديدة معنية بالتصنيفات UN3090 و UN3091 و UN3480 و UN3481، وتضمنت أحكاماً للتعبئة لدورات الإنتاج تتكون من 100 خلية وبطارية أو أقل، ونماذج ما قبل الإنتاج من الخلايا والبطاريات عند نقلها للاختبار. وتم نقل العديد من الأحكام الواردة في تعليمات التعبئة الجديدة من البند الخاص A88 في التعليمات الفنية. وقد وافق الاجتماع على الإبقاء على بعض المتطلبات الأكثر تقييداً في البند الخاص A88.

5-1-3 تم الاتفاق على التعديلات.

### 2-3 تعليمات التعبئة رقم (212) (DGP/25-WP/6)

1-2-3 اتفق الفريق العامل التابع لفريق خبراء البضائع في اجتماعه (DGP-WG/14) على تعديل التعليمات الفنية للحد من تعدد تعليمات التعبئة للهباء الجوي (انظر الفقرة 7-1 من هذا التقرير). وقد أدى هذا التعديل إلى تخفيض عدد تعليمات التعبئة المطبقة على التصنيف UN1950 من 5 إلى 2، وأسفر ذلك عن استيعاب أحكام التعبئة المطبقة في تعليمات التعبئة 204، و Y204، و 212 ضمن تعليمات التعبئة 203، و Y203. وقد أُغفل الاجتماع (DGP-WG/14)، عن غير قصد، عن حقيقة أن تعليمات التعبئة 203 و 212 قد أُدرجت أيضاً ضمن الإضافة. ولذلك فقد اقترح تعديل يقضي بإزالة تعليمات التعبئة 212، ومواءمة تعليمات التعبئة 203 الموجودة في الإضافة مع تعليمات التعبئة 203 المنقحة الموجودة في التعليمات الفنية.

2-2-3 وخلال استعراض الأحكام المتعلقة بالهباء الجوي، لوحظ أن الكمية القصوى الصافية الموصى بها من أجل العبوة الواحدة من الهباء الجوي غير القابل للاشتعال (أجهزة الغازات المسيلة للدموع) المصنفة ضمن الشعبة 2-2 ذات الخطر الإضافي من الرتبة 1-6 كانت 75 كغم، بما يتعدى حد الخمسين كيلوغراماً المسموح بها على متن طائرات البضائع. وبالتالي

فقد اقترح تعديل قائمة البضائع الخطرة من الفئة 2 الواردة في الإضافة (الجدول S-3-1) لخفض الكمية المسموحة الموصى بها على متن طائرة الركاب إلى 25 كجم.

3-2-3 تم الاتفاق على التعديلات.

### 3-3 الحيوانات الحيّة المصابة بأمراض (DGP/25-WP/45)

1-3-3 أثير في اجتماع الفريق العامل (DGP-WG/15)، فيما يتعلق بأحكام نقل الحيوانات الحيّة المصابة بأمراض، موضوع التضارب القائم بين التعليمات الفنية والإضافة الملحق بها، حيث كانت التعليمات الفنية تسمح بنقلها وفقاً لأحكام وشروط الموافقة التي تمنحها السلطة الوطنية المختصة، بينما تشير الإضافة إلى منح الإعفاء من قبل جميع الدول المعنية.

2-3-3 طُلبت تعليمات من منظمة الصحة العالمية (WHO)، والمنظمة العالمية لصحة الحيوان (OIE)، ومنظمة الأغذية والزراعة (الفاو)، وذلك من أجل تحديد آلية لضمان الاتساق بين الوثيقتين. وأسفر ذلك عن إعداد التعديلات المقترحة على الجزء 2؛ 6-3-6 من التعليمات الفنية والجزء S-1؛ 2 من الإضافة (القيود على البضائع الخطرة على الطائرات - الحيوانات الحيّة المصابة).

3-3-3 تم تنقيح التعليمات الفنية للإلزام بالحصول على موافقات دول المنشأ والعبور والمقصد والمشغل الجوي وفقاً لأحكام المنقحة الواردة في الإضافة. وقد وافق فريق الخبراء، بالتنسيق مع الفاو والمنظمة العالمية لصحة الحيوان ومنظمة الصحة العالمية، على إضافة بند إلى الإضافة من أجل السلطات المختصة لكي تُدرج، كحد أدنى، الصحة العامة، و/أو السلطات البيطرية، و/أو غيرها من السلطات المختصة، حسب الاقتضاء، بغرض تطبيق نهج قائم على المخاطر، بناءً على فئة تصنيف المادة المصابة بالمرض، وعلى رقم التصنيف (UNxxxx) الذي أدرج ضمنه عند النظر في طلبات الموافقة. كما تضمنت التعديلات على الإضافة توضيحاً بشأن الوثائق ومتطلبات وضع العلامات والبطاقات اللاصقة وإشارة إلى مواد إرشادية بشأن المعايير الدولية لتصدير واستيراد الحيوانات الحيّة.

4-3-3 اتُفق كذلك على تعديل التعليمات الفنية للتمييز بوضوح بين الحيوانات الحيّة المصابة والمواد الحيوانية المصابة.

5-3-3 خلال استعراض الأحكام، تم اكتشاف وجود عدم اتساق مع اللائحة النموذجية للأمم المتحدة فيما يتعلق بتصنيف المواد الحيوانية حيث حذفت من التعليمات الفنية الأحكام المعنية بالمواد الحيوانية المتأثرة بمسببات أمراض من الفئة B. وكانت الأحكام قد أضيفت إلى التعليمات الفنية. كما اقترح الاستعاضة عن مصطلح "متأثرة" بمصطلح "مصابة"، وأنه ينبغي تعديل الأحكام المتعلقة بالمواد الحيوانية "المتأثرة" بمسببات أمراض من الفئة (أ) في كلا الوثيقتين للإشارة إلى أن تعبير المواد الحيوانية "المتأثرة" يعني المواد الحيوانية المأخوذة عمداً من حيوانات "مصابة" لغرض نشر مسببات الأمراض. وقد وضعت تعديلات على هذه الأحكام بالتعاون مع ممثل منظمة الصحة العالمية والتشاور عبر البريد الإلكتروني مع ممثلين عن منظمة الأغذية والزراعة والمنظمة العالمية لصحة الحيوان. وإن الأمين يود إبلاغ اللجنة الفرعية للأمم المتحدة بالتغييرات وبميرر إدخال هذه التغييرات.

## 4-3 التوصية

1-4-3 في ضوء المناقشات الآتفة الذكر، أصدر الاجتماع التوصية التالية:

التوصية 1/3- تعديل الإضافة للتعليمات الفنية للنقل الآمن  
للضائع الخطرة بطريق الجو (DOC 9284SU) لإدخالها في طبعة  
2018 - 2017

تُعدّل الإضافة إلى التعليمات الفنية على النحو المشار إليه في  
المرفق بالتقرير بشأن هذا البند من جدول الأعمال.

-----

## APPENDIX

PROPOSED AMENDMENTS TO THE SUPPLEMENT TO THE  
TECHNICAL INSTRUCTIONS

## Part S-1

## GENERAL

...

## Chapter 2

LIMITATION OF DANGEROUS GOODS ON  
AIRCRAFT — INFECTED LIVE ANIMALS

DGP/25-WP/45 (see paragraph 3.3 of this report)

2.1 The use of live animals must only be considered for the transport of an infectious substance when the substance cannot be shipped by any other means. Infected animals may only be transported ~~when an exemption is granted by the States concerned~~ under the terms and conditions of an approval granted by the appropriate authorities of the States of Origin, Transit, Destination and Operator. Such authorities must include at a minimum public health, veterinary, and/or other appropriate authorities when applicable.

2.2 A risk based approach, dependent on whether the infectious substance is classified as Category A or Category B and on whether it is assigned to UN 2814, UN 2900 or UN 3373 , must be used when considering a request for such an approval.

2.3 Such intentionally infected animals must be shipped in germ-tight packaging at least as secure as that used in the air transport of germ-free animals. These consignments must be declared and ~~labelled~~ marked as "Infected live animals" ~~"Live Animal"~~ and marked and labelled in accordance with Part 4:8, Part 5:2 and Part 5:3 as applicable ~~as "Infectious Substance"~~.

2.24 When an empty receptacle is to be returned to the shipper it must be properly disinfected/sterilized before shipment. Moreover, all marks and labels required in accordance with 2.3 (~~"Live Animal" and "Infectious Substance" labels~~) must be removed, obliterated or otherwise made no longer visible. (See also Part S-6:6)

Note. — Guidance on the international standards for export / import of live animals is given in the OIE Terrestrial Animal Health Code (<http://www.oie.int/en/international-standard-setting/terrestrial-code/access-online/>) and the OIE Aquatic Animal Health Code (<http://www.oie.int/en/international-standard-setting/aquatic-code/access-online/>).

...

## Part S-3

# DANGEROUS GOODS LIST, SPECIAL PROVISIONS AND QUANTITY LIMITATIONS

## (ADDITIONAL INFORMATION FOR PART 3 OF THE TECHNICAL INSTRUCTIONS)

...

---

See the attachment for proposed changes to Table S-3-1

---

...

## Chapter 6

### SPECIAL PROVISIONS

...

#### Table S-3-4. Special Provisions

*Supplementary special provisions*

...

---

DGP/25-WP/3 (see paragraph 3.2.3.1)

---

A302

For the purpose of providing life support for aquatic animals during transport, the appropriate authority of the States of Origin, ~~of Destination~~ and of the Operator may approve the carriage of cylinders containing oxygen compressed, UN 1072 and air, compressed UN 1002, with the valve(s) open to supply a controlled quantity of oxygen or air through a regulator into water containing the aquatic animals. The cylinder or cylinder valve must be fitted with a self-sealing device to prevent uncontrolled release of oxygen or air should the regulator malfunction or be broken or damaged. The oxygen or air cylinder must meet those parts of Packing Instruction 200 which apply, except for the need for valves to be closed. In addition, the following conditions apply as a minimum:

- a) the water container with the attached oxygen and/or air cylinder (transportation unit) must be engineered and constructed to withstand all anticipated loads. No more than two cylinders of which a maximum is one cylinder of oxygen are permitted;
- b) the water container must be tilt-tested at an angle of 45° in four directions from the upright for a 10-minute minimum duration in each direction with the oxygen supply operating, without leakage of water;
- c) the oxygen or air cylinder and regulator must be restrained and protected within the equipment;
- d) the oxygen or air regulator used must have a maximum flow rate of not more than five litres per minute;
- e) the oxygen or air flow rate to the container must be limited to that sufficient to provide life support to the aquatic animals;
- f) the quantity of oxygen or air provided must not exceed 150 per cent of the oxygen or air required for the normal duration of air transport; and

- g) only one cylinder may be carried for each 15 cubic metres of gross cargo hold volume. In no circumstances may the rate of oxygen or air flow from the cylinder exceed one litre per minute per five cubic metres of gross cargo hold volume.
- ...

A324 For the purpose of transporting a symbolic flame, the appropriate authority of the States of Origin, of destination and of the Operator may approve the carriage of lamps fuelled by UN 1223 — **Kerosene**, or UN 3295 — **Hydrocarbons, liquid, n.o.s.**, carried by a passenger as carry-on baggage only. Lamps must be of a "Davy" type or similar apparatus. In addition, the following conditions apply as a minimum:

- a) no more than four lamps may be carried on board the aircraft;
  - b) lamps may contain no more fuel than the quantity adequate for the duration of the flight and the fuel must be contained in a leakproof reservoir;
  - c) lamps must be adequately secured;
  - d) while on board the aircraft, the lamps must be under the constant supervision of an accompanying person, who must not be a member of the operating crew;
  - e) lamps may be lit by the accompanying person, but must not be refilled on board the aircraft;
  - f) at least one fire extinguisher must be kept within reach of the accompanying person at all times. The accompanying person must be trained in the use of the extinguisher;
  - g) the crew members of the aircraft must be given a verbal briefing about the carriage of the lamps and the pilot-in-command must be provided with a copy of the approval; and
  - h) Part 7;4.1.1.1 b), c), e), 4.3, 4.4 and 4.8 of the Technical Instructions must apply.
- ...

---

UN Model Regulations, SP 370, ST/SG/AC.10/42/Add.1 and DGP/25-WP/3 (see paragraph 3.3.1.2)

---

A326 (370) This entry applies to:

- ammonium nitrate with more than 0.2% combustible substances, including any organic substance calculated as carbon, to the exclusion of any added substance; and
- ammonium nitrate with not more than 0.2% combustible substances, including any organic substance calculated as carbon, to the exclusion of any added substance, ~~that are not too sensitive for acceptance into Class 1~~ gives a positive result when tested in accordance with Test Series 2 (see UN *Manual of Tests and Criteria*, Part I). See also UN 1942.

---

The substances that Special Provision A329 is assigned to (UN 1005 — **Ammonia, anhydrous** and UN 3516 — **Adsorbed gas, toxic, corrosive, n.o.s.**) are forbidden from transport by air on passenger and cargo aircraft. They may be transported on cargo aircraft through an approval (Special Provision A2). Special Provision A329 is based on SP 379 of the UN Model Regulations. The UN Model Regulations provide an exception from the regulations provided the conditions in SP 379 are observed. Because the substances are only permitted on cargo aircraft with the prior approval, DGP/25 agreed to modify the UN special provision by removing the exception and requiring that the conditions in the special provision be met in addition to the conditions established by the authorities.

---

A329 (379) Anhydrous ammonia adsorbed or absorbed on a solid contained in ammonia dispensing systems or cylinders intended to form part of such systems may be transported on cargo aircraft only with the prior approval of the appropriate authority of the State of Origin and the State of the Operator under the written conditions established by those authorities in addition to the following:

- a) the adsorption or absorption presents the following properties:
  - 1) the pressure at a temperature of 20 °C in the cylinder is less than 0.6 bar;
  - 2) the pressure at a temperature of 35 °C in the cylinder is less than 1 bar;
  - 3) the pressure at a temperature of 85 °C in the cylinder is less than 12 bar.
- b) the adsorbent or absorbent material must not have dangerous properties listed in Classes 1 to 8;

- c) the maximum contents of a cylinder must be 10 kg of ammonia; and
- d) cylinders containing adsorbed or absorbed ammonia must meet the following conditions:
  - 1) cylinders must be made of a material compatible with ammonia as specified in ISO 11114-1:2012;
  - 2) cylinders and their means of closure must be hermetically sealed and able to contain the generated ammonia;
  - 3) each cylinder must be able to withstand the pressure generated at 85°C with a volumetric expansion no greater than 0.1%;
  - iv) each cylinder must be fitted with a device that allows for gas evacuation once pressure exceeds 15 bar without violent rupture, explosion or projection; and
  - v) each cylinder must be able to withstand a pressure of 20 bar without leakage when the pressure relief device is deactivated.

UN Model Regulations, Chapter 3.3, ST/SG/AC.10/42/Add.1 and DGP/25-WP/3  
(see paragraph 3.2.1.1) and ST/SG/AC.10/42/Add.1/Corr.1

UN text: “when transported” changed to “when offered for transport” in line with what was done for A202 of the Technical Instructions (DGP/25-WP/13) (see DGP/25-WP/3, paragraph 3.2.3.2.1 j))

When offered for transport in an ammonia dispenser, the cylinders must be connected to the dispenser in such a way that the assembly is guaranteed to have the same strength as a single-cylinder.

The properties of mechanical strength mentioned in this special provision must be tested using a prototype of a cylinder and/or dispenser filled to nominal capacity, by increasing the temperature until the specified pressures are reached.

The test results must be documented, must be traceable and must be communicated to the relevant authorities upon request.

UN Model Regulations, Chapter 3.3, ST/SG/AC.10/42/Add.1, DGP/25-WP/3 (see paragraph 3.2.1.1), ST/SG/AC.10/42/Add.1/Corr.1 and DGP/25-WP/19 (see paragraph 3.1.3 of this report)

A330 (~386) When chemical stabilization is employed, the person offering the packaging for transport must ensure that the level of stabilization is sufficient to prevent the substance in the packaging from dangerous polymerization at a bulk mean temperature of 50°C. Where chemical stabilization becomes ineffective at lower temperatures within the anticipated duration of transport, temperature control is required and the substances are forbidden for transport by air unless exempted (see 1.1.2 of the Technical Instructions). In making this determination, factors to be taken into consideration include, but are not limited to, the capacity and geometry of the packaging and the effect of any insulation present, the temperature of the substance when offered for transport, the duration of the journey and the ambient temperature conditions typically encountered in the journey (considering also the season of year), the effectiveness and other properties of the stabilizer employed, applicable operational controls imposed by regulation (e.g. requirements to protect from sources of heat, including other cargo carried at a temperature above ambient) and any other relevant factors.

...

## Part S-4

### PACKING INSTRUCTIONS

#### (ADDITIONAL INFORMATION FOR PART 4 OF THE TECHNICAL INSTRUCTIONS)

...

#### Chapter 3

#### CLASS 1 — EXPLOSIVES

UN Model Regulations, P112(c), PP48, ST/SG/AC.10/42/Add.1 and DGP/25-WP/3 (see paragraph 3.3.1.2)

The text of UN PP48 did not appear in Packing Instruction 112 c) of the Technical Instructions. ST/SG/AC.10/42/Add.1 added a second sentence to PP48. The provision, including the new second sentence, was added to the Technical Instructions for the sake of alignment with the UN Model Regulations.

112	PACKING INSTRUCTION 112		112
...			
c) for solid dry powder 1.1D			
<i>Inner packagings</i>	<i>Intermediate packagings</i>	<i>Outer packagings</i>	
Bags paper, multiwall, water-resistant plastics woven plastics	Bags (for 1050 only) paper, multiwall, water-resistant with inner lining plastics	Boxes fibreboard (4G) natural wood, ordinary (4C1) natural wood, with sift-proof walls (4C2) other metal (4N) plywood (4D) reconstituted wood (4F) solid plastics (4H2) steel (4A)	
Receptacles fibreboard metal plastics wood	Receptacles metal plastics wood	Drums aluminium (1B1, 1B2) fibre (1G) other metal (1N1, 1N2) steel (1A1, 1A2)	

**PARTICULAR PACKING REQUIREMENTS OR EXCEPTIONS:**

- For UN 0004, 0076, 0078, 0154, 0216, 0219 and 0386, packagings must be lead-free.
- For UN 0209, bags, sift-proof (5H2) are recommended for flake or prilled TNT in the dry state and a maximum net mass of 30 kg.
- For UN 0504, metal packagings must not be used. Packagings of other material with a small amount of metal, for example metal closures or other metal fittings such as those mentioned in 6.3, are not considered metal packagings.
- Inner packagings are not required if drums are used as the outer packaging.
- These packages must be sift-proof.

...

DGP/25-WP/6 (see paragraph 3.2 of this report)

**Chapter 4****CLASS 2 — GASES**

...

**Packing Instruction 203**

Passenger and cargo aircraft for UN 1950 and 2037 only

The general packing requirements of 4;1 must be met.

For the purposes of this packing instruction, a receptacle is considered to be an inner packaging.

*Note.— "Receptacle" has the same meaning as set out in 1;3. Any reference in this packing instruction to receptacle will include "aerosols" of UN 1950 and "receptacles, small, containing gas" and "gas cartridges" of UN 2037.*

**Metal aerosols (IP.7, IP.7A, IP.7B) and non-refillable receptacles containing gas (gas cartridges)**

Non-refillable metal aerosols and non-refillable receptacles containing gas (gas cartridges) must not exceed 1 000 mL capacity.

The following conditions must be met:

- a) the pressure in the receptacle must not exceed 1 500 kPa at 55°C and each receptacle must be capable of withstanding without bursting a pressure of at least 1.5 times the equilibrium pressure of the contents at 55°C;
- b) if the pressure in the receptacle exceeds 970 kPa at 55°C but does not exceed 1 105 kPa at 55°C, an IP.7, IP.7A or IP.7B metal receptacle must be used;
- c) if the pressure in the receptacle exceeds 1 105 kPa at 55°C but does not exceed 1 245 kPa at 55°C, an IP.7A or IP.7B metal receptacle must be used;
- d) if the pressure in the receptacle exceeds 1 245 kPa at 55°C, an IP.7B metal receptacle must be used;
- e) IP.7B metal receptacles having a minimum burst pressure of 1 800 kPa may be equipped with an inner capsule charged with a non-flammable, non-toxic compressed gas to provide the propellant function. In this case, the pressures indicated in a), b), c) or d) do not apply to the pressure within the capsule for an aerosol. The quantity of gas contained in the capsule must be so limited such that the minimum burst pressure of the receptacle would not be exceeded if the entire gas content of the capsule were released into the outer metal receptacle;
- f) the liquid content must not completely fill the closed receptacle at 55°C;
- g) each receptacle exceeding 120 mL capacity must have been heated until the pressure in the receptacle is equivalent to the equilibrium pressure of the contents at 55°C, without evidence of leakage, distortion or other defect.

**Plastic aerosols (IP.7C)**

Non-refillable plastic aerosols must not exceed 120 mL capacity, except when the propellant is a non-flammable, non-toxic gas and the contents are not dangerous goods in accordance with the provisions of the Technical Instructions, in which case the quantity must not exceed 500 mL.

The following conditions must be met:

- the contents must not completely fill the closed receptacle at 55°C;
- the pressure in the receptacle may not exceed 970 kPa at 55°C; and
- each receptacle must be leak tested in accordance with the provisions of 6;3.2.8.1.6 of the Technical Instructions.

DGP/25-WP/6 (see paragraph 3.2 of this report)

**Non-flammable aerosols containing medical preparations or biological products**

Aerosols, non-flammable, containing only a non-toxic substance or substances and biological products or a medical preparation which will be deteriorated by a heat test, are acceptable in inner non-refillable receptacles not exceeding 575 mL capacity each, providing all the following conditions are met:

- the pressure in the aerosol must not exceed 970 kPa at 55°C;
- the liquid contents must not completely fill the closed receptacle at 55°C;
- one aerosol out of each lot of 500 or less must be heated until the pressure in the aerosol is equivalent to the equilibrium pressure of the contents at 55°C, without evidence of leakage, distortion or other defect;
- the valves must be protected by a cap or other suitable means during transport.

<u>UN number and name</u>	<u>Net quantity per package</u>	
	<u>Passenger</u>	<u>Cargo</u>
<u>UN 1950 Aerosols, flammable</u>	<u>75 kg</u>	<u>150 kg</u>
<u>UN 1950 Aerosols, flammable (engine starting fluid)</u>	<u>(75 kg)</u>	<u>150 kg</u>
<u>UN 1950 Aerosols, non-flammable</u>	<u>75 kg</u>	<u>150 kg</u>
<u>UN 1950 Aerosols, non-flammable (tear gas devices)</u>	<u>(25 kg)</u>	<u>50 kg</u>
<u>UN 2037 Gas cartridges</u>	<u>1 kg</u>	<u>15 kg</u>
<u>UN 2037 Receptacles, small, containing gas</u>	<u>1 kg</u>	<u>15 kg</u>

**ADDITIONAL PACKING REQUIREMENTS**

- Packagings must meet Packing Group II performance requirements.
- Release valves on aerosols must be protected by a cap or other suitable means to prevent inadvertent release of the contents during normal conditions of air transport.
- Receptacles must be tightly packed, so as to prevent movement.

**UN 1950 Aerosols, non-flammable (tear gas devices) — Cargo Aircraft Only**

- Only metal receptacles, IP.7, IP.7A, IP.7B are permitted. The aerosols must be individually placed into spiral wound tubes fitted with metal ends or a double-faced fibreboard box with suitable padding before being packed into the outer packaging.

**OUTER PACKAGINGS (see 6;3.1)**

<i>Boxes</i>	<i>Drums</i>
Aluminium (4B)	Aluminium (1B2)
Fibreboard (4G)	Fibre (1G)
Natural wood (4C1, 4C2)	Other metal (1N2)
Other metal (4N)	Plastics (1H2)
Plastics (4H1, 4H2)	Plywood (1D)
Plywood (4D)	Steel (1A2)
Reconstituted wood (4F)	
Steel (4A)	

...

**Packing Instruction 212**

The general packing requirements of 4;1 must be met.

~~Aerosols, non-flammable, which are tear gas devices are permitted in inner non-refillable metal receptacles not exceeding 1 000 mL capacity each providing all the following conditions are met:~~

- ~~a) the pressure in the aerosol must not exceed 1 500 kPa at 55°C and each receptacle must be capable of withstanding without bursting a pressure of at least 1.5 times the equilibrium pressure of the contents at 55°C;~~
- ~~b) if the pressure in the aerosol does not exceed 1 105 kPa at 55°C, an IP.7, IP.7A or IP.7B metal receptacle must be used;~~
- ~~c) if the pressure in the aerosol exceeds 1 105 kPa at 55°C but does not exceed 1 245 kPa at 55°C, an IP.7A or IP.7B metal receptacle must be used;~~
- ~~d) if the pressure in the aerosol exceeds 1 245 kPa at 55°C, an IP.7B metal receptacle must be used;~~
- ~~e) IP.7B metal receptacles having a minimum burst pressure of 1 800 kPa may be equipped with an inner capsule charged with a non-flammable, non-toxic compressed gas to provide the propellant function. In this case, the pressures indicated in a), b), c) or d) do not apply to the pressure within the capsule. The quantity of gas contained in the capsule must be so limited such that the minimum burst pressure of the receptacle would not be exceeded if the entire gas content of the capsule were released into an aerosol;~~
- ~~f) the liquid content must not completely fill the closed receptacle at 55°C;~~
- ~~g) each aerosol must have been heated until the pressure in the aerosol is equivalent to the equilibrium pressure of the contents at 55°C, without evidence of leakage, distortion or other defect;~~
- ~~h) the valves must be protected by a cap or other suitable means during transport;~~
- ~~i) aerosols must be individually placed into spiral wound tubes fitted with metal ends or a double faced fibreboard box with suitable padding, which must be tightly packed in wooden boxes (4C1, 4C2), plywood boxes (4D), reconstituted wood boxes (4F), fibreboard boxes (4G) or plastic boxes (4H1, 4H2) of Packing Group II. Maximum net quantity per package is 50 kg.~~

**Chapter 11****CLASS 9 — MISCELLANEOUS DANGEROUS GOODS**

UN Model Regulations, packing instruction P910, ST/SG/AC.10/42/Add.1, DGP/25-WP/3 (see paragraph 3.2.3.2.1 f) and DGP/25-WP/19 (see paragraph 3.1.4 of this report)

**Packing Instruction 910**

Cargo aircraft only

**Introduction**

This instruction applies to UN Nos. 3090, 3091, 3480 and 3481 production runs consisting of not more than 100 cells and batteries and to pre-production prototypes of cells and batteries when these prototypes are transported for testing.

**General requirements**

Part 4, Chapter 1 requirements must be met.

**ADDITIONAL PACKING REQUIREMENTS**

DGP/25 agreed to require the packaging to meet the Packing Group I criteria as this was what had been required in the Technical Instructions in Special Provision A88

- Packagings must meet the Packing Group I performance requirements.
- Cells and batteries must be protected against short circuit. Protection against short circuits includes, but is not limited to,
  - individual protection of the battery terminals;
  - inner packaging to prevent contact between cells and batteries;
  - batteries with recessed terminals designed to protect against short circuits, or
  - the use of a non-conductive and non-combustible cushioning material to fill empty space between the cells or batteries in the packaging.

Cells and batteries, including when packed with equipment

- 1) Batteries and cells, including equipment, of different sizes, shapes or masses must be packaged in an outer packaging of a tested design type listed below provided the total gross mass of the package does not exceed the gross mass for which the design type has been tested;
- 2) Each cell or battery must be individually packed in an inner packaging and placed inside an outer packaging;
- 3) Each inner packaging must be completely surrounded by sufficient non-combustible and non-conductive thermal insulation material to protect against a dangerous evolution of heat;
- 4) Appropriate measures must be taken to minimize the effects of vibration and shocks and prevent movement of the cells or batteries within the package that may lead to damage and a dangerous condition during transport. Cushioning material that is non-combustible and non-conductive may be used to meet this requirement;
- 5) Non-combustibility must be assessed according to a standard recognized in the State where the packaging is designed or manufactured;
- 6) A cell or battery with a net mass of more than 30 kg must be limited to one cell or battery per outer packaging.

Cells and batteries contained in equipment

- 1) Equipment of different sizes, shapes or masses must be packed in an outer packaging of a tested design type listed below provided the total gross mass of the package does not exceed the gross mass for which the design type has been tested;
- 2) The equipment must be constructed or packaged in such a manner as to prevent accidental operation during transport;
- 3) Appropriate measures must be taken to minimize the effects of vibration and shocks and prevent movement of the equipment within the package that may lead to damage and a dangerous condition during transport. When cushioning material is used to meet this requirement it must be non-combustible and non-conductive; and
- 4) Non-combustibility must be assessed according to a standard recognized in the State where the packaging is designed or manufactured.

Equipment or batteries not subject to Part 6 of these Instructions

Lithium batteries with a mass of 12 kg or greater and having a strong, impact resistant outer casing, or assemblies of such batteries, may be packed in strong outer packagings or protective enclosures not subject to the requirements of Part 6 of these Instructions under conditions specified by the appropriate national authority. Additional conditions that may be considered in the approval process include, but are not limited to:

- 1) The equipment or the battery must be strong enough to withstand the shocks and loadings normally encountered during transport, including trans-shipment between cargo transport units and between cargo transport units and warehouses as well as any removal from a pallet for subsequent manual or mechanical handling; and
- 2) The equipment or the battery must be fixed in cradles or crates or other handling devices in such a way that it will not become loose during normal conditions of transport.

DGP/25 agreed to maintain packagings that were required under Special Provision A88 (i.e. metal, plastic or plywood drum or a metal, plastic or wooden box)

**OUTER PACKAGINGS**Boxes

Aluminium (4B)  
Fibreboard (4G)  
Natural wood (4C1, 4C2)  
Other metal (4N)  
Plywood (4D)  
Reconstituted wood (4F)  
Plastics (4H1, 4H2)  
Steel (4A)

Drums

Aluminium (1B2)  
Fibre (1G)  
Other metal (1N2)  
Plastics (1H2)  
Plywood (1D)  
Steel (1A2)

Jerricans

Aluminium (3B2)  
Plastics (3H2)  
Steel (3A2)

...

---

DGP/25-WP/43 (see paragraph 2.4.3 of this report)

---

## **Chapter 13**

### **LARGE PACKAGINGS**

*Note.— This Chapter has no corresponding Chapter in the Technical Instructions.*

#### **13.1 GENERAL**

13.1.1 Large packagings may be used for the transport of articles in accordance with the provisions of this chapter only when the following conditions are met:

- a) transport is on cargo aircraft only;
- b) approval of the appropriate authority of the State of Origin and the State of the Operator is obtained;
- c) the value indicated in column 13 of Table 3.1 of the Technical Instructions shows “no limit”.

#### **13.2 DESIGN, CONSTRUCTION, APPROVAL AND MARKING**

##### **13.2.1 General**

13.2.1.1 Each large packaging must be designed, constructed, approved, tested and marked in accordance with the requirements of the UN Model Regulations, Chapter 6.6 and as provided in the Technical Instructions and this Supplement.

13.2.1.2 Only rigid large packagings of UN code “50” are permitted.

#### **13.3 OTHER REQUIREMENTS**

13.3.1 The applicable requirements of Part 4.1 of the Technical Instructions must be met when articles are transported in large packagings.

13.3.2 Large packagings must be marked and labelled as required by Part 5.2 and 5.3 of the Technical Instructions except that large packagings must bear the marks required by Part 5.2.4.1, the hazard label and the “Cargo aircraft only” label (Figure 5-28) applied to two opposite sides.

#### **13.4 ADDITIONAL DOCUMENTATION**

The requirements concerning the dangerous goods transport document in Part 5.4.1 of the Technical Instructions must be met. When articles are shipped in large packagings under the approval of the appropriate authority of the State of Origin and the State of the Operator, the consignment must be accompanied by a copy of the documents of approval showing all relevant transport conditions.

#### **13.5 SPECIAL RESPONSIBILITIES OF THE OPERATOR IN ACCEPTING ARTICLES IN LARGE PACKAGINGS**

Articles may not be accepted for transport in large packagings before advance arrangements have been made between the shipper and the operator. Before accepting the consignment, the operator must ensure that all applicable requirements of Part 7 of the Technical Instructions can be satisfied, particularly those in 7.2.4.2 relating to the securing of packages containing dangerous goods, and that the required approval for the transport has been issued.

...

---

DGP/25-WP/27 (see paragraph 2.7.2 of this report)

---

## Part S-7

# STATE'S RESPONSIBILITIES WITH RESPECT TO OPERATORS

...

### Chapter 5

## PROVISIONS CONCERNING PASSENGERS AND CREW

### 5.1 BACKGROUND

5.1.1 The purpose of this guidance is to provide States with a model for use in approving an operator's operations manual content on the provision of information to passengers as required by Part 7:5.1 of the Technical Instructions. The provisions of Part 7:5.1 of the Technical Instructions are intended to ensure that operators provide information to passengers on dangerous goods that passengers are forbidden to have in checked, carry-on baggage or on their person.

5.1.2 This guidance is intended to serve as a template for the design of operator systems for passenger notification of dangerous goods restrictions. Use of this applicable guidance constitutes one means of compliance with Part 7:5.1 of the Technical Instructions. Other equivalent approaches may also be used to achieve compliance.

### 5.2 APPLICABILITY AND SCOPE

5.2.1 This guidance is applicable to all States that approve an operator's air operator certificate in accordance with Annex 6 and Annex 18 to the Convention on International Civil Aviation. Use of this guidance may also be beneficial to passenger aircraft operators to assist them in the development of a passenger notification system that meets the requirements set out in Part 7:5.1 of the Technical Instructions.

5.2.2 This guidance primarily contains methods for passenger notification and acknowledgement, when required, of dangerous goods that passengers are forbidden to transport aboard an aircraft and which must be communicated to passengers during passenger ticket purchase, boarding pass issuance, acceptance of checked baggage and aircraft boarding. Additional guidance is given on airport signage notification with a view that such notification will play a role in an operator's overall passenger notification strategy.

### 5.3 MANUAL AND TRAINING REQUIREMENTS

5.3.1 Each State must ensure that information is presented to passengers in such a manner that passengers are made aware of the types of dangerous goods that passengers are forbidden from transporting aboard an aircraft as provided for in the Technical Instructions.

5.3.2 Each operator must ensure that all policies, procedures, and systems for notifying passengers about dangerous goods that are forbidden from transport aboard aircraft are documented in an appropriate operations manual and approved by a national authority of the State of the Operator. At a minimum, the operations manual must include information on how passengers will be notified and acknowledge, when required, of the restriction on the carriage of dangerous goods before, at during, and after ticketing/booking, boarding pass issuance and check-in processes.

5.3.3 Dangerous goods information provided to a passenger or a person acting on their behalf, via the Internet, during the ticketing/booking process must be presented in a manner that promotes understanding. Before completion of the ticketing/booking process an acknowledgement of understanding of the dangerous goods must be obtained from the passenger or a person acting on their behalf.

5.3.4 Each employee who interfaces with a passenger in the process of ticket purchase, boarding pass issuance, acceptance of checked baggage and aircraft boarding must be trained in the operator's policies and procedures. Employees

with a function identified in Tables 1-4 and 1-5 must also be trained on the passenger provisions contained in Part 8:1.1 of the Technical Instructions.

#### **5.4 HOW TO USE THIS GUIDANCE**

5.4.1 This guidance is intended to serve as a template for the type of passenger notification information that should be included, documented, and approved in an operator's operations manual(s). Each section gives guidance on common methods for ticketing/booking and check-in, information delivery, and acknowledgement. This guidance is based on how passengers commonly purchase their tickets or check in. It is recognized that some operators may not provide all options for ticketing/ booking, check-in, or may provide other options than those mentioned in this guidance. This guidance may be used in whole or in part with the approval of the State of the Operator.

5.4.2 The State should utilize its normal method to notify operators (e.g. information bulletins, advisory circulars) on specific information or guidance necessary to implement a passenger notification system in their operations manual in alignment with the provisions in the Technical Instructions and this Supplement.

#### **5.5 INFORMATION TO PASSENGERS**

5.5.1 Part 7:5.1 of the Technical Instructions sets out the requirements for provision of dangerous goods information to passengers. These provisions are written to be outcome-based, i.e. the method for the operator to provide the required information to passengers is not prescribed; instead the actual method is left for the operator to determine to allow for operator innovation and to provide flexibility recognizing that not all operators have the same capabilities.

5.5.2 The information provided to passengers should use pictorial images that represent common items of dangerous goods that are forbidden in passenger baggage.

#### **5.6 METHODS BY WHICH INFORMATION MAY BE PROVIDED TO PASSENGERS**

##### **5.6.1 Ticket issuance**

The operator is required to provide information as to the types of dangerous goods that the passengers are forbidden from carrying on board an aircraft to the passenger at the point of ticket purchase or, if this is not practical, made available in another manner to passengers prior to boarding pass issuance. Methods of providing this information to the passenger include:

- a) notices prominently displayed, in sufficient number, at each of the places at an airport or off-airport where tickets are issued;
- b) as part of the physical ticket receipt / itinerary;
- c) by email with the ticket receipt / itinerary;
- d) on the airline website in text or pictorial form. When provided in this manner the process must be such that ticket purchase cannot be completed until the passenger, or a person acting on their behalf, has been presented with this information and indicated that they have understood the restrictions on dangerous goods in baggage;
- e) notices prominently displayed, in sufficient number, at self-service ticket purchase kiosks;
- f) on a screen within a ticket purchase kiosk. When provided in this manner the process must be such that ticket purchase cannot be completed until the passenger, or a person acting on their behalf, has been presented with this information and indicated that they have understood the restrictions on dangerous goods in baggage.

##### **5.6.2 Boarding pass issuance**

The operator must provide passengers with information as to the types of dangerous goods that they are forbidden from carrying on board an aircraft in association with the issuance of the boarding pass. Methods of providing this information to the passenger include:

- a) notices prominently displayed, in sufficient number, at each of the places at an airport or off-airport where boarding passes are issued;
- b) electronic displays;

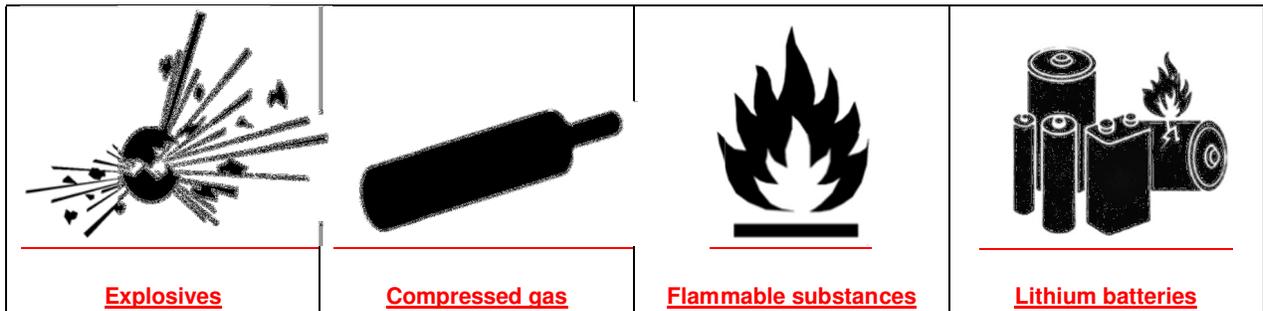
- c) notices prominently displayed, in sufficient number, at self-service boarding pass issue kiosks;
- d) on a screen within a boarding pass issue kiosk. When provided in this manner the process must be such that the boarding pass issue process cannot be completed until the passenger, or a person acting on their behalf, has been presented with this information and indicated that they have understood the restrictions on dangerous goods in baggage;
- e) included with the boarding pass that may be issued with the ticket receipt;
- f) by email with the boarding pass;
- g) on the airline website in text or pictorial form. When provided in this manner the process must be such that the boarding pass issue process cannot be completed until the passenger, or a person acting on their behalf, has been presented with this information and indicated that they have understood the restrictions on dangerous goods in baggage;
- h) displayed on mobile applications that allow the passenger to generate their boarding pass. When provided in this manner the process must be such that the boarding pass issue process cannot be completed until the passenger has been presented with this information and indicated that they have understood the restrictions on dangerous goods in baggage; and
- i) where the operator does not issue a physical or electronic boarding pass in advance of the passenger boarding the aircraft, the operator must implement a process such that the passengers are presented with a notice or other information prior to boarding the aircraft.

### **5.7 PASSENGER INFORMATION NOTIFICATION ELEMENTS**

5.7.1 The method used by the operator to convey to passengers information about dangerous goods that passengers are not permitted to carry aboard an aircraft, in checked or carry-on baggage or on their person should use pictorial images or graphics that don't rely on the use of language to communicate the type of common but higher risk items of dangerous goods. Examples of these include:

- a) explosives/fireworks;
- b) compressed gases/flammable gas (butane, camping gas);
- c) flammable liquids, such as gasoline, paint and lighter fluid;
- d) oxidizers, such as pool chemicals;
- e) corrosives, such as wet cell batteries, bleach and household cleaners;
- f) radioactive materials; and
- g) lithium batteries.

5.7.2 The pictorial images or graphics used should also make use of the standard pictograms to indicate dangerous goods. Inclusion of these pictograms into the pictorial information is recommended to enhance the overall effectiveness of the passenger notification. Examples of these include:



			
<p><u>Corrosive substances</u></p>	<p><u>Toxic substances</u></p>	<p><u>Oxidizers</u></p>	<p><u>Radioactive materials</u></p>

...

DGP/25-WP/3 (see paragraph 3.2.1.3)

---

## Chapter ~~5~~ 6

### INSPECTIONS

...

---

*Renumber all paragraph numbers to reflect new Chapter number 6.*

---

#### ~~5~~6.6 TRAINING PROGRAMMES

~~5~~6.6.1 The Technical Instructions require that the operator's training programmes for all staff be approved by the State of the Operator. The inspection is to confirm that training meets the requirements of the Technical Instructions.

...

-----

ATTACHMENT

PROPOSED AMENDMENTS TO TABLE S-3-1



Table S-3-1. Supplementary Dangerous Goods List - DRAFT

Name	UN No.	Class or division	Subsidiary risk	Labels	State variations	Special provisions	UN packing group	Excepted quantity	Passenger and cargo aircraft		Cargo aircraft only	
									Packing instruction	Max. net quantity per package	Packing instruction	Max. net quantity per package
1	2	3	4	5	6	7	8	9	10	11	12	13
<b>A</b>												
≠ Acrolein dimer, stabilized	2607	3		Liquid flammable		A209 A330						
≠ Acrolein, stabilized	1092	6.1	3	Toxic & Liquid flammable		A209 A323 A330	I		FORBI	DEN	FORBI	DEN
≠ Acrylic acid, stabilized	2218	8	3	Corrosive & Liquid flammable		A209 A330						
≠ Acrylonitrile, stabilized	1093	3	6.1	Liquid flammable & Toxic		A209 A330	I	E0	FORBIDDEN		361	30 L
≠ Adsorbed gas, toxic, corrosive, n.o.s.*	3516	2.3	8	Gas toxic & Corrosive	AU 1 CA 7 IR 3 NL 1 US 3	A2 A329		E0	see 210		see 210	
≠ Aerosols, non-flammable (tear gas devices)	1950	2.2	6.1	Gas non-flammable & Toxic	AU 1 CA 7 IR 3 NL 1 US 3	A1 A145 A167		E0	203	(25 kg)	203	50 kg
≠ Allyl isothiocyanate, stabilized	1545	6.1	3	Toxic & Liquid flammable	AU 1 CA 7 IR 3 NL 1 US 3	A1 A209 A330	II	E0	654	(5 L)	661	60 L
≠ Allyltrichlorosilane, stabilized	1724	8	3	Corrosive & Liquid flammable	AU 1 CA 7 IR 3 NL 1 US 3	A1 A209 A330	II	E0	876	(1 L)	876	30 L
≠ Ammonia, anhydrous	1005	2.3	8	Gas toxic & Corrosive	AU 1 CA 7 IR 3 NL 1 US 3	A2 A329			See 210		See 210	
<b>B</b>												
≠ Bicyclo [2.2.1] hepta-2-5-diene, stabilized	2251	3		Liquid flammable		A209 A330						

## Chapter 2

## S-3-2-2

Name	UN No.	Class or division	Subsidiary risk	Labels	State variations	Special provisions	UN packing group	Excepted quantity	Passenger and cargo aircraft		Cargo aircraft only	
									Packing instruction	Max. net quantity per package	Packing instruction	Max. net quantity per package
≠ <b>Butadienes and hydrocarbon mixture, stabilized</b> , containing more than 40% butadienes	1010	2.1		Gas flammable	AU 1 CA 7 IR 3 NL 1 US 3	A1 A209 A330		E0	FORBIDDEN		200	150 kg
≠ <b>Butadienes, stabilized</b>	1010	2.1		Gas flammable	AU 1 CA 7 IR 3 NL 1 US 3	A1 A209 A330		E0	200	(5 kg)	200	150 kg
≠ <b>Butyl acrylates, stabilized</b>	2348	3		Liquid flammable		A209 A330						
≠ <b>1,2-Butylene oxide, stabilized</b>	3022	3		Liquid flammable		A209 A330						
≠ <b>n-Butyl methacrylate, stabilized</b>	2227	3		Liquid flammable		A209 A330						
≠ <b>Butyl vinyl ether, stabilized</b>	2352	3		Liquid flammable		A209 A330						
<b>C</b>												
≠ <b>Chloroprene, stabilized</b>	1991	3	6.1	Liquid flammable & Toxic		A209 A330	I	E0	FORBIDDEN		361	30 L
≠ <b>Crotonaldehyde</b>	1143	6.1	3	Toxic & Liquid flammable	AU 1 CA 7 IR 3 NL 1 US 3 US 4	A2 A209 A319 A330	I		FORBIDDEN		FORBIDDEN	
≠ <b>Crotonaldehyde, stabilized</b>	1143	6.1	3	Toxic & Liquid flammable	AU 1 CA 7 IR 3 NL 1 US 3 US 4	A2 A209 A323 A330	I		FORBIDDEN		FORBIDDEN	
≠ <b>Cyanogen chloride, stabilized</b>	1589	2.3	8	Gas toxic & Corrosive	AU 1 CA 7 IR 3 NL 1 US 3	A2 A209 A330			See 210		See 210	
<b>D</b>												
≠ <b>Diketene, stabilized</b>	2521	6.1	3	Toxic & Liquid flammable		A209 A323 A330	I		FORBIDDEN		FORBIDDEN	

Name	UN No.	Class or division	Subsidiary risk	Labels	State variations	Special provisions	UN packing group	Excepted quantity	Passenger and cargo aircraft		Cargo aircraft only	
									Packing instruction	Max. net quantity per package	Packing instruction	Max. net quantity per package
1	2	3	4	5	6	7	8	9	10	11	12	13
≠ Dipropylamine	2383	3	8	Liquid flammable & Corrosive		A209 A330						
≠ Divinyl ether, stabilized	1167	3		Liquid flammable		A209 A330						
<b>E</b>												
≠ Engine, fuel cell, flammable gas powered †	3529	2.1		Gas flammable		A67 A70 A87 A208		E0	FORBIDDEN		220	No limit
≠ Engine, internal combustion, flammable gas powered	3529	2.1		Gas flammable		A67 A70 A87 A208		E0	FORBIDDEN		220	No limit
≠ Ethylacetylene, stabilized	2452	2.1		Gas flammable	AU 1 CA 7 IR 3 NL 1 US 3	A1 A209 A330		E0	200	(5 kg)	200	150 kg
≠ Ethyl acrylate, stabilized	1917	3		Liquid flammable		A209 A330						
≠ Ethyleneimine, stabilized	1185	6.1	3	Toxic & Liquid flammable		A209 A323 A330	I		FORBIDDEN		FORBIDDEN	
≠ Ethyl methacrylate, stabilized	2277	3		Liquid flammable		A209 A330						
<b>G</b>												
≠ Gas cartridges (toxic, oxidizing & corrosive) without a release device, non-refillable	2037	2.3	5.1 8	Gas toxic & Oxidizer & Corrosive	AU 1 CA 7 IR 3 NL 1 US 3	A2 A211			See 210		See 210	
<b>H</b>												
≠ Hydrogen cyanide, stabilized containing less than 3% water	1051	6.1	3	Toxic & Liquid flammable		A209 A323 A330	I		FORBIDDEN		FORBIDDEN	
≠ Hydrogen cyanide, stabilized containing less than 3% water and absorbed in a porous inert material	1614	6.1		Toxic		A209 A330	I		FORBIDDEN		FORBIDDEN	

Name	UN No.	Class or division	Subsidiary risk	Labels	State variations	Special provisions	UN packing group	Excepted quantity	Passenger and cargo aircraft		Cargo aircraft only	
									Packing instruction	Max. net quantity per package	Packing instruction	Max. net quantity per package
1	2	3	4	5	6	7	8	9	10	11	12	13
<b>I</b>												
≠ Isobutyl acrylate, stabilized	2527	3		Liquid flammable		A209 A330						
≠ Isobutyl methacrylate, stabilized	2283	3		Liquid flammable		A209 A330						
≠ Isoprene, stabilized	1218	3		Liquid flammable		A209 A330						
<b>L</b>												
≠ Lithium ion batteries (including lithium ion polymer batteries)	3480	9		Miscellaneous — Lithium batteries	US 3	A88 A99 A154 A164 A183 A206 A331						
≠ Lithium metal batteries (including lithium alloy batteries) †	3090	9		Miscellaneous — Lithium batteries	US 2 US 3	A88 A99 A154 A164 A183 A201 A206		E0	FORBIDDEN		See 968	
<b>M</b>												
+ Machinery, fuel cell, flammable gas powered	3529	2.1		Gas flammable		A67 A70 A87 A208		E0	FORBIDDEN		220	No limit
+ Machinery, internal combustion, flammable gas powered	3529	2.1		Gas flammable		A67 A70 A87 A208		E0	FORBIDDEN		220	No limit
≠ Methacrylaldehyde, stabilized	2396	3	6.1	Liquid flammable & Toxic		A209 A330						
≠ Methacrylic acid, stabilized	2531	8		Corrosive		A209 A330						
≠ Methacrylonitrile, stabilized	3079	6.1	3	Toxic & Liquid flammable		A209 A323 A330	I		FORBI DEN		FORBI DEN	

Name	UN No.	Class or division	Subsidiary risk	Labels	State variations	Special provisions	UN packing group	Excepted quantity	Passenger and cargo aircraft		Cargo aircraft only	
									Packing instruction	Max. net quantity per package	Packing instruction	Max. net quantity per package
1	2	3	4	5	6	7	8	9	10	11	12	13
≠ <b>Methylacetylene and propadiene mixture, stabilized †</b>	1060	2.1		Gas flammable	AU 1 CA 7 IR 3 NL 1 US 3	A1 A209 A330		E0	200	(5 kg)	200	150 kg
≠ <b>Methyl acrylate, stabilized</b>	1919	3		Liquid flammable		A209 A330						
≠ <b>Methyl isopropenyl ketone, stabilized</b>	1246	3		Liquid flammable		A209 A330						
≠ <b>Methyl methacrylate monomer, stabilized</b>	1247	3		Liquid flammable		A209 A330						
≠ <b>Methyl vinyl ketone, stabilized</b>	1251	6.1	3 8	Toxic & Liquid flammable & Corrosive		A209 A323 A330	I		FORBIDDEN		FORBIDDEN	
<b>N</b>												
≠ <b>Nitric acid, other than red fuming, with more than 20% and less than 65% nitric acid</b>	2031	8		Corrosive		A212	II	E0	851	(1 L)	855	30 L
≠ <b>Nitroglycerin mixture, desensitized, liquid, n.o.s.* with not more than 30% nitroglycerin, by mass</b>	3357	3		Liquid flammable	BE 3	A17 A304	II		FORBIDDEN		FORBIDDEN	
≠ <b>2,5-Norbornadiene, stabilized</b>	2251	3		Liquid flammable		A209 A330						
<b>P</b>												
+ <b>Polymerizing substance, liquid, stabilized, n.o.s.*</b>	3532	4.1		Solid flammable		A209 A330						
+ <b>Polymerizing substance, liquid, temperature controlled, n.o.s.*</b>	3534	4.1		Solid flammable		A209 A330	III	E0	FORBIDDEN		FORBIDDEN	
+ <b>Polymerizing substance, solid, stabilized, n.o.s.*</b>	3531	4.1		Solid flammable		A209 A330						
+ <b>Polymerizing substance, solid, temperature controlled, n.o.s.*</b>	3533	4.1		Solid flammable		A209 A330	III	E0	FORBIDDEN		FORBIDDEN	
≠ <b>Propadiene, stabilized</b>	2200	2.1		Gas flammable	AU 1 CA 7 IR 3 NL 1 US 3	A1 A209 A330		E0	200	(5 kg)	200	150 kg
≠ <b>Propellant, solid</b>	0501	1.4C		Explosive 1.4					FORBIDDEN (114 b))		114	75 kg
≠ <b>Propyleneimine, stabilized</b>	1921	3	6.1	Liquid flammable & Toxic	US 4	A209 A330	I	E0	FORBIDDEN		361	30 L

Name	UN No.	Class or division	Subsidiary risk	Labels	State variations	Special provisions	UN packing group	Excepted quantity	Passenger and cargo aircraft		Cargo aircraft only	
									Packing instruction	Max. net quantity per package	Packing instruction	Max. net quantity per package
1	2	3	4	5	6	7	8	9	10	11	12	13
<b>R</b>												
≠ Receptacles, small, containing gas (toxic, oxidizing & corrosive) without a release device, non-refillable	2037	2.3	5.1 8	Gas toxic & Oxidizer & Corrosive	AU 1 CA 7 IR 3 NL 1 US 3	A2 A211			See 210		See 210	
≠ Refrigerant gas R 1113	1082	2.3	2.1	Gas toxic & Gas flammable	AU 1 CA 7 IR 3 NL 1 US 3	A2 A209 A330			FORBIDDEN		FORBI DEN	
+ Rocket motors †	0510	1.4C		Explosive 1.4				E0	FORBIDDEN		130	75 kg
<b>S</b>												
≠ Styrene monomer, stabilized	2055	3		Liquid flammable		A209 A330						
≠ Sulphur trioxide, stabilized	1829	8		Corrosive	AU 1 CA 7 IR 3 NL 1 US 3	A2 A209 A323 A330	I		858	(1 kg)	862	(25 kg)
<b>T</b>												
≠ Tetrafluoroethylene, stabilized	1081	2.1		Gas flammable	AU 1 CA 7 IR 3 NL 1 US 3	A1 A209 A330		E0	200	(5 kg)	200	150 kg
≠ Trifluorochloroethylene, stabilized	1082	2.3	2.1	Gas toxic & Gas flammable	AU 1 CA 7 IR 3 NL 1 US 3	A2 A209 A330			See 210		See 210	
<b>V</b>												
≠ Vehicle, flammable gas powered	3166	9		Miscellaneous		A67 A70 A87 A118 A120 A134 A203 A207		E0	FORBIDDEN		951	No limit

Name	UN No.	Class or division	Subsidiary risk	Labels	State variations	Special provisions	UN packing group	Excepted quantity	Passenger and cargo aircraft		Cargo aircraft only	
									Packing instruction	Max. net quantity per package	Packing instruction	Max. net quantity per package
1	2	3	4	5	6	7	8	9	10	11	12	13
≠ Vehicle, fuel cell, flammable gas powered †	3166	9		Miscellaneous		A67 A70 A87 A118 A120 A134 A176 A203 A207		E0	FORBIDDEN		951	No limit
≠ Vinyl acetate, stabilized	1301	3		Liquid flammable		A209 A330						
≠ Vinyl bromide, stabilized	1085	2.1		Gas flammable	AU 1 CA 7 IR 3 NL 1 US 3	A1 A209 A330		E0	200	(5 kg)	200	150 kg
≠ Vinyl butyrate, stabilized	2838	3		Liquid flammable		A209 A330						
≠ Vinyl chloride, stabilized	1086	2.1		Gas flammable	AU 1 CA 7 IR 3 NL 1 US 3 US 4	A1 A209 A330		E0	200	(5 kg)	200	150 kg
≠ Vinyl ethyl ether, stabilized	1302	3		Liquid flammable		A209 A330						
≠ Vinyl fluoride, stabilized	1860	2.1		Gas flammable	AU 1 CA 7 IR 3 NL 1 US 3	A1 A209 A330		E0	200	(5 kg)	200	150 kg
≠ Vinylidene chloride, stabilized	1303	3		Liquid flammable		A209 A330						
≠ Vinyl isobutyl ether, stabilized	1304	3		Liquid flammable		A209 A330						
≠ Vinyl methyl ether, stabilized	1087	2.1		Gas flammable	AU 1 CA 7 IR 3 NL 1 US 3	A1 A209 A330		E0	200	(5 kg)	200	150 kg
≠ Vinylpyridines, stabilized	3073	6.1	3 8	Toxic & Liquid flammable & Corrosive		A209 A330						
≠ Vinytoluenes, stabilized	2618	3		Liquid flammable		A209 A330						



البند 4 من جدول الأعمال: إعداد توصيات لتعديل وثيقة إرشادات التعامل مع حالات الطوارئ المرتبطة بحوادث الطائرات الناتجة عن البضائع الخطرة (DOC 9481) لإدراجها في طبعة 2017 - 2018.

1-4 مشروع التعديلات على إرشادات الطوارئ لمعالجة الأحداث الناتجة عن البضائع الخطرة على متن الطائرات (DGP/25-WP/20)

1-1-4 استعرض الاجتماع التعديلات المقترحة إدخالها على وثيقة إرشادات التعامل مع حالات الطوارئ المرتبطة بحوادث الطائرات الناتجة عن البضائع الخطرة (Doc 9481) كي تعكس القرارات الصادرة عن لجنة الخبراء التابعة للأمم المتحدة في دورتها السابعة (جنيف، 2014/12/12)، وكذلك التعديلات التي وافق عليها الفريق العامل التابع لفريق خبراء البضائع الخطرة في اجتماعه (DGP-WG/15). وقد أُنقِص على هذه التعديلات.

2-4 التوصية

1-2-4 في ضوء المناقشات الآتية الذكر، أصدر الاجتماع التوصية التالية:

التوصية 1/4- تعديل وثيقة إرشادات التعامل مع حالات الطوارئ المرتبطة بحوادث الطائرات الناتجة عن البضائع الخطرة (DOC 9481) لإدراجها في طبعة 2017 - 2018.

تُعدّل وثيقة إرشادات التعامل مع حالات الطوارئ المرتبطة بحوادث الطائرات الناتجة عن البضائع الخطرة (DOC 9481) على النحو المشار إليه في مرفق التقرير بشأن هذا البند من جدول الأعمال.

-----





## المرفق

التعديلات المقترحة إدخالها على إرشادات الطوارئ لمعالجة  
الأحداث الناتجة عن البضائع الخطرة على متن الطائرات

## Section 4

### CHART OF DRILLS AND LIST OF DANGEROUS GOODS WITH DRILL REFERENCE NUMBERS

DGP/25-WP/3 (see paragraph 3.4.1.1) and DGP/25-WP/20 (see paragraph 4.1 of this report)

Amend Tables 4-2 and 4-3 as indicated:

<i>UN No.</i>	<i>Drill Code</i>	<i>Proper shipping name</i>
0510	1L	Rocket motors
2815	8L8P	N-Aminoethylpiperazine
2977	7C7CP	Radioactive material, uranium hexafluoride, fissile
2978	7C7CP	Radioactive material, uranium hexafluoride
3507	8L6C	Uranium hexafluoride, radioactive material, excepted package
31663528	9L3L	Engine, internal combustion, flammable liquid powered
31663528	9L3L	Engine, fuel cell, flammable liquid powered
3528	3L	Machinery, fuel cell, flammable liquid powered
3528	3L	Machinery, internal combustion, flammable liquid powered
31663529	9L10L	Engine, internal combustion, flammable gas powered
31663529	9L10L	Engine, fuel cell, flammable gas powered
3529	10L	Machinery, fuel cell, flammable gas powered
3529	10L	Machinery, internal combustion, flammable gas powered
3530	9L	Machinery, internal combustion
3530	9L	Engine, internal combustion
3531	3L	Polymerizing substance, solid, stabilized, n.o.s.*
3532	3L	Polymerizing substance, liquid, stabilized, n.o.s.*
3533	3L	Polymerizing substance, solid, temperature controlled, n.o.s.*
3534	3L	Polymerizing substance, <u>liquid, temperature controlled, n.o.s.*</u>

البند رقم 5: وضع استراتيجية شاملة للتخفيف من المخاطر المرتبطة بنقل بطاريات الليثيوم بما في ذلك وضع معايير للتغليف قائمة على الأداء وجهود لتيسير الامتثال

### 1-5 تقرير الاجتماع الدولي التنسيق الثالث المتعدد التخصصات بشأن نقل بطاريات الليثيوم (DGP/25-WP/8)

1-1-5 عرض على فريق الخبراء تقرير الاجتماع الدولي الثالث المتعدد التخصصات بشأن تنسيق نقل بطاريات الليثيوم الذي عُقد في مونتريال من 28 إلى 2015/7/30، ذلك الاجتماع الذي حضره خبراء في مجالات البضائع الخطرة، والعمليات، وصلاحية الطائرات للطيران، وأنظمة إدارة السلامة، والأبحاث والتطوير في مجال السلامة من الحريق لطائرات البضائع، وممثلون عن أوساط صناعة هياكل الطائرات وبطاريات الليثيوم. وأفيد أن اثنين من كبار مصنعي هياكل الطائرات قدما، قبل انعقاد الاجتماع، إخطارين إلى المشغلين تحذره من احتمال نشوب حرائق مرتبطة ببطاريات الليثيوم عالية الكثافة بما يتجاوز قدرة نظم مكافحة الحريق الموجودة في مقصورة البضائع بالطائرات. وأشار الإخطاران إلى أن ممثلي كلا المصنعين يؤيدان التوصيات الصادرة عن المجلس التنسيق الدولي لاتحادات صناعات الطيران والفضاء، وعن الاتحاد الدولي لرابطات طياري الخطوط الجوية المقدمة إلى الفريق العامل التابع لفريق خبراء البضائع الخطرة (DGP-WG/15)، تلك التوصيات التي تضمنت حظر نقل عبوات بطاريات وخلايا أيون الليثيوم عالية الكثافة على متن طائرات الركاب حتى يحين الوقت الذي يجري فيه اتباع طرق نقل أكثر أمناً. وأوصى كلا المصنعين في إخطارهما المشغلين الذين يودون نقل بطاريات الليثيوم كبضائع بإجراء تقييم لمخاطر السلامة. واستجاب عدة من كبار المشغلين لهذه الإخطارات بعمل حظر على نقل بطاريات أيون الليثيوم. وإدراكاً بأن الهدف النهائي هو السماح بنقلها جواً، فقد اتفق الاجتماع المتعدد التخصصات على ضرورة وضع معايير قائمة على الأداء، بما في ذلك معايير التغليف، كجزء من استراتيجية شاملة للتخفيف من المخاطر المرتبطة بنقل بطاريات الليثيوم.

2-1-5 وقد ركز الاجتماع المتعدد التخصصات اهتمامه على وضع معايير أداء رفيع المستوى كأساس لمعايير أكثر تفصيلاً للتخفيف من المخاطر المرتبطة بنشوب حريق داخل عبوة تتضمن بطاريات أو خلايا الليثيوم، وقرر أنه يمكن تلبيتها إما على مستوى العبوة أو البطارية/الخلية. وترد معايير الأداء رفيع المستوى في المرفق (د) بالتقرير عن هذا البند من جدول الأعمال. وقد أُفيد أن الاجتماع المتعدد التخصصات لم يتوصل إلى توافق في الآراء بشأن ما إذا كان ينبغي النظر في آثار نشوب حريق خارجي على العبوة. وأعرب بعض المشاركين عن اعتقادهم بأن نتائج الاختبار الذي أجراه المركز التقني التابع لإدارة الطيران الاتحادية (FAA)، الدالة على أن التدخل المباشر في حال نشوب حريق بسبب شحنة أخرى خلاف بطاريات/خلايا الليثيوم أو الحرارة الناتجة عن إخماد حريق خارجي يمكن أن تسبب انبعاث غازات قابلة للاشتعال قد تتجمع وتشتعل فتسبب في انفجار داخل الحاوية المغلقة، وهي نتائج جعلت من الضروري النظر فيها. واعتقد آخرون أن وضع معيار معني بالحريق الخارجي سيكون غير عملي من ناحية التنفيذ، واقترحوا أنه لا توجد سابقة لمثل هذا المعيار بشأن أي أنواع أخرى من البضائع الخطرة في التعليمات الفنية، وبالتالي فلا يوجد مبرر له. وأوصى الاجتماع المتعدد التخصصات بأن يقوم فريق خارجي بإعداد معايير أداء مفصلة. وأبلغ الأمين فريق خبراء البضائع الخطرة أنه قد طُلب من جمعية مهندسي المحركات الدولية معالجة هذه المسألة. واعتبر أن هذه الجمعية هي الأنسب لتولي هذه المهمة، حيث إنها جمعية تقنية لا تمارس ضغطاً، وتتمتع بحضور عالمي. وستكون المشاركة مفتوحة لجميع الأطراف المعنية.

3-1-5 ومع التسليم بأن وضع معايير الأداء سيستغرق وقتاً، فقد أصدر الاجتماع المتعدد التخصصات توصيات مؤقتة (انظر المرفق (د) بالتقرير عن هذا البند من جدول الأعمال). وشمل ذلك توصية للمشغلين بإجراء تقييمات لمخاطر

السلامة من أجل تحديد مدى قدرتهم على إدارة المخاطر المرتبطة بنقل بطاريات الليثيوم على متن الطائرات بمستوى مقبول من السلامة، ونقل بطاريات أيون الليثيوم بمستوى شحن منخفض، ووضع ضوابط لتحميل البضائع مثل الحد من عدد البطاريات التي يجري تحميلها في مكان واحد، وعزلها عن البضائع الخطرة الأخرى. وأوصى الاجتماع المتعدد التخصصات أيضاً بإعداد مواد إرشادية بشأن كيفية إجراء تقييم لمخاطر السلامة من أجل المشغلين والمنظمين.

## 2-5 موقف فريق خبراء عمليات الطيران من نقل بطاريات الليثيوم (DGP/25-WP/51)

1-2-5 أفاد أمين فريق خبراء عمليات الطيران بشأن المناقشات المتعلقة ببطاريات الليثيوم التي دارت في الاجتماع الثاني له (2/FLTOPS، مونتريال، من 12 إلى 16/10/2015). وكان الفريق قد أخطر بنتائج الاجتماعات الثلاثة المتعددة التخصصات بشأن تنسيق نقل بطاريات الليثيوم، وقدم معلومات أساسية بشأن مقترحات فريق خبراء البضائع الخطرة (DGP/25) بحظر نقل بطاريات أيون الليثيوم على طائرات الركاب، وإزالة القسم الثاني من الأحكام من تعليمات التعبئة 965 و 968. كما أخطر فريق خبراء عمليات الطيران بتقرير عن الوضع أعده المجلس التنسيقي الدولي لاتحادات صناعات الطيران والفضاء بشأن تنسيق الجهود بين فريق خبراء البضائع الخطرة، وفريق خبراء صلاحية الطائرات للطيران، والمجموعات الأخرى المعنية بالسلامة الجوية، وذلك فيما يتعلق بما لديهم من شواغل بشأن القدرات على مكافحة الحريق في مقصورة البضائع في حال نشوب حريق مرتبط ببطاريات ليثيوم عالية الكثافة. وقد أعد فريق خبراء الطيران في اجتماعه الثاني بيان موقف محور حول التشغيل الآمن للطائرات، وطلب تقديمه إلى فريق خبراء البضائع الخطرة (DGP/25) للنظر فيه خلال مناقشاته حول بطاريات الليثيوم. وأكد أمين فريق خبراء عمليات الطيران على ضرورة التعاون بين الفريقين في هذه القضية، واقتبس عبارة من مقدمة الجزء الأول من الملحق 6، تشير إلى أحد العناصر الجوهرية للسلامة التشغيلية للطائرة، وهو مستوى صلاحيتها للطيران. وذكر فريق خبراء البضائع الخطرة بالقواعد القياسية المعنية بعملية تحويل المسار الممتدة زمنياً (EDTO) الواردة في الملحق 6، وأشار بأنه من الضروري أن تكون نظم إخماد حريق البضائع قادرة على إخماد الحريق قبل الوصول إلى المطار والهبوط بالطائرة بأمان. فإذا لم يكن ذلك ممكناً، فلا بد من أعمال البدائل القائمة على المخاطر، التي وافقت عليها دولة المشغل. وسيكون المسؤول في نهاية المطاف عن تقييم المخاطر هو الشخص المسؤول المعني بهذا الشأن لدى المشغل.

## 2-2-5 جاء البيان الذي أعده فريق خبراء عمليات الطيران على النحو التالي:

"يرى فريق خبراء عمليات الطيران أنه ينبغي نقل بطاريات وخلايا الليثيوم على متن الطائرات العاملة في عمليات النقل الجوي التجاري كطائرات بضائع فقط إذا كان من الممكن تحديد معايير مقبولة للاضطلاع بأنشطة مناسبة لإدارة مخاطر السلامة، وذلك من أجل ضمان النقل الآمن لبطاريات وخلايا الليثيوم.

ينبغي أن تشمل هذه المعايير ما يلي كحد أدنى:

- (أ) قدرات المشغل؛
- (ب) نوع العملية (أي نقل ركاب أم بضائع)؛
- (ج) القدرة الشاملة للطائرة وأنظمتها؛
- (د) التعبئة والتغليف، وكمية البطاريات والخلايا؛
- (هـ) خصائص الاحتواء لحاويات التحميل (ULDs)؛

(و) المخاطر المعينة ومخاطر السلامة المرتبطة بكل نوع بطارية وخلية يتعين حملها منفردة أو مجتمعة؛

(ز) التركيب الكيميائي للبطاريات والخلايا."

3-2-5 أكد أمين فريق خبراء عمليات الطيران أنه في حين تم التوصل إلى البيان بتوافق الآراء، فقد رأى عدد من أعضاء أنه يجب فرض حظر تام على نقل بطاريات الليثيوم كبضائع على طائرات الركاب إلى أن يحدن وضع طريقة آمنة للنقل.

4-2-5 وأشار أعضاء فريق خبراء البضائع الخطرة إلى أنه سيكون من المستحيل للمشغلين تحديد العنصرين الأخيرين في قائمة المعايير أعلاه (الفقرتين الفرعيتين 2-2-5 و(و) و(ز) أعلاه). وأفيد أن فريق خبراء عمليات الطيران، مع التسليم بأن نتائج الاختبار أظهرت أن اثنين من المتغيرات التي ساهمت في نشوب حريق بطارية ليثيوم كانت نوع التركيب الكيميائي للبطارية، قد رأى أن هذه المعلومات تشكل عنصراً ضرورياً لتقييم المخاطر بشكل فعّال، ومن الضروري أن يؤخذ غيابها في الحسبان.

5-2-5 وفيما يتعلق بضرورة إجراء تقييم لمخاطر السلامة، فقد أفاد أمين فريق خبراء الطيران أن الفريق رأى أنه من الضروري أن يشارك، إلى جانب أفرقة لخبراء ذات الصلة، في تطوير أي معايير لأنشطة إدارة مخاطر السلامة. وأوصى أن يأخذ فريق عمل متعدد التخصصات مشترك على عاتقه مهمة تطوير المعايير.

6-2-5 كما أبلغ أمين فريق خبراء عمليات الطيران المجتمعين بمشروع البند الجديد في الجزء الأول من الملحق 6، الذي تم إرساله مؤخراً إلى الدول للتعليق عليه (SL AN 11/1.1.30-15/9)، مع التوصية بأنه يتعين ألا يتجاوز الوقت اللازم لتحويل المسار إلى مطار حيث يمكن الهبوط الآمن فيه الوقت اللازم للتمكن من إخماد الحريق في مقصورة بضائع الطائرة مع تخفيضه بهامش سلامة تحده دولة المشغل. وأشار إلى أن فترة خمس عشرة دقيقة كانت هامش السلامة التشغيلي المتبع عادة لهذا الغرض. وذكر المجتمعين بالتأثير المحتمل لنقل بطاريات الليثيوم على الترخيص بعمليات تحويل المسار الممتدة زمنياً، وأوضح أنه يتعين تطبيق البند الجديد على جميع العمليات.

7-2-5 اتفق المجتمعون على ضرورة اضطلاع المشغلين بأنشطة مناسبة لإدارة مخاطر السلامة لتحديد مدى قدرتهم على ضمان النقل الآمن لبطاريات وخلايا الليثيوم. ولوحظ أن التعليمات الفنية لا تتضمن أي أحكام تتعلق بمسؤولية المشغل عن إجراء تقييم لمخاطر السلامة. وعلى الرغم من الجهود التي اتخذت خلال فترة السنتين السابقتين لتعزيز العلاقة بين الملاحق 6 و18 و19، وأسفرت عن إضافة ملاحظات جديدة في الفصل 8 من الملحق 18 تشير إلى الملحق 19 وتنص على أن نقل البضائع الخطرة قد أدرج في نطاق نظام إدارة السلامة لدى المشغل، فلم يتم إضافة أي من هذه الأحكام إلى التعليمات الفنية. وأشار إلى أنه ينبغي إدراج هذه الملاحظات في التعليمات الفنية، وإلى ضرورة تسليط الضوء على أهمية قيام المشغلين بإجراء تقييم لمخاطر السلامة عند نقل البضائع الخطرة كجزء من نظامهم لإدارة السلامة. وأيد المجتمعون بشكل كامل هذا النهج، واتفق على تعديل الجزء 7 من التعليمات الفنية بإدخال مثل هذه الأحكام.

### 3-5 نقل بطاريات أيونات الليثيوم كبضائع على متن الطائرات (DGP/25-WP/24)

1-3-5 قُدم اقتراح بمنع نقل بطاريات أيون الليثيوم على طائرات الركاب. وقد جاء هذا الاقتراح نتيجة لمناقشات دارت خلال اجتماع الفريق العامل التابع لفريق خبراء البضائع الخطرة (DGP-WG/15) بشأن ورقة مشتركة مقدمة من المجلس

التسقي الدولي لاتحادات صناعات الطيران والفضاء والاتحاد الدولي لرابطات طياري الخطوط الجوية أثارت مخاوف من نشوب حريق مرتبط ببطاريات الليثيوم عالية الكثافة بما قد يتجاوز قدرة نظم مكافحة الحريق الموجودة في مقصورة البضائع بالطائرة. وأوصت فيها المنظمات بحظر نقل عبوات بطاريات وخلايا أيون الليثيوم عالية الكثافة على متن طائرات الركاب حتى يحين الوقت الذي يجري فيه اتباع طرق نقل أكثر أمناً. وعلى الرغم من أن الفريق العامل (DGP-WG/15) كانت لديه المخاوف ذاتها بشأن المخاطر التي تشكلها هذه القضية، فإنه رأى أن أفضل وسيلة للمضي قدماً ليست الحظر، وإنما وضع معايير قائمة على الأداء. وأثير في اجتماع (DGP-WG/15) الحاجة إلى وضع تعريف لشحنات بطاريات الليثيوم ذات الكثافة العالية، بيد أنه ارتبى أن تحديد قياس كمي واحد للكثافة العالية أمر غير ممكن بسبب آثار تغيير كيمياء البطارية، وخصائص مقصورة البضائع، وتكوينات التحميل، على احتمال ودرجة الانتشار الحراري. وعلى هذا النحو، فإن كميات بطاريات أو خلايا الليثيوم العالية الكثافة يمكن أن تكون أي عدد من البطاريات أو الخلايا بما يفوق قدرة مقصورة البضائع على الحماية من الحرائق. ولوحظ أن نتائج الاختبارات التي أجراها مؤخراً المركز التقني التابع لإدارة الطيران الاتحادية (FAA) قد أثبتت أن ما لا يزيد على ثلاث خلايا كانت قادرة على توليد ما يكفي من الغاز للتسبب في انفجار وتقويض نظام مكافحة الحريق على متن الطائرة. كما أن تحديد ما يمكن اعتباره كثافة عالية أمر معقد بسبب عدم وجود أي آلية في التعليمات الفنية للحد من عدد من عبوات بطاريات أيون الليثيوم المحملة في حاوية الشحن الواحدة.

5-3-2 وبينما أيد مقدم الاقتراح النهج القائم على الأداء نحو تخفيف المخاطر الناجمة عن بطاريات الليثيوم، فإنه لم يؤيد الاستمرار في نقل بطاريات أيون الليثيوم على طائرات ركاب إلى أن يحين الوقت الذي توضع وتتخذ فيه معايير أداء مفصلة. وبناءً على ذلك، فقد اقترح تعديل الإدخال المعني بتصنيف الأمم المتحدة UN3480 - بطاريات أيون الليثيوم في التعليمات الفنية لحظر النقل على طائرات الركاب. وأشار مقدم الاقتراح إلى أنه يؤيد الحظر على طائرات الشحن أيضاً، غير أنه لم يدرج ذلك ضمن اقتراحه بسبب عدم دعم الاجتماعات السابقة لمثل هذا الحظر.

5-3-3 دعم عدد من أعضاء فريق الخبراء هذا الاقتراح للأسباب المذكورة أعلاه. ورأوا الحظر كإجراء مؤقت لحين وضع وتنفيذ معايير ملائمة قائمة على الأداء. وهم يعتقدون أنه في غياب مثل هذه المعايير، سيكون الحظر هو السبيل الوحيد لتحقيق مستوى مقبول من السلامة. وعلى الرغم من عدم إدراج ذلك في الاقتراح، إلا أنهم أيدوا الأحكام المعنية بعملية الموافقة في حالة عدم إتاحة طائرة شحن.

5-3-4 رأى أغلبية أعضاء الفريق أن تدابير التخفيف البديلة التي وضعها المجتمعون (خفض مستوى شحن البطاريات (انظر الفقرة 5-4)، بما يحد من عدد الطرود المصنفة ضمن القسم الثاني إلى واحد لكل شحنة واحدة وغللاف خارجي واحد (انظر الفقرة 5-5)) من شأنها أن تنقل المخاطر إلى مستوى مقبول، وأن هذه التدابير لن تكون ذات تأثير ضار على الطلب والتجارة على نطاق العالم خلافاً للحظر. كما رأوا أن الحظر من شأنه أن يؤدي إلى زيادة الشحنات غير المعلنة، مما يشكل خطراً على السلامة. ورأى معارضو الحظر كذلك أن الأمر يرجع إلى كل مشغل لتحديد مدى قدرته على التخفيف من المخاطر إلى مستوى مقبول على أساس تقييمه المنفرد الخاص به.

5-3-5 لم يوافق أولئك المؤيدون للحظر على أن اتخاذ التدابير البديلة التي وضعها المجتمعون يؤدي إلى تحقيق مستوى مقبول من السلامة (انظر الفقرتين 5-4 و 5-5). واقترح أحد الأعضاء أن ترك الأمر للمشغل لتحديد ما إذا كان بمقدوره التخفيف من حدة المخاطر إلى مستوى مقبول يعاكس فلسفة التعليمات الفنية التي تحظر نقل أصناف أو مواد محددة، أسماؤها مدرجة في الجدول 3-1 ما لم توجد تعليمات تحدد المستوى المقبول من السلامة. وعلى الرغم من ذلك، فكانت هناك مخاوف أخرى حول ما إذا كان جميع المشغلين في وضع يمكنهم من إجراء تقييم للمخاطر بشكل فعال دون إرشادات سليمة.

ولوحظ أن الاجتماع متعدد التخصصات الثالث قد أوصى بوضع مواد إرشادية للمشغلين والمنظمين حول كيفية إجراء تقييم لمخاطر سلامة، ولكن هذا لم يتم إعداد ذلك بعد.

6-3-5 لم يؤيد غالبية أعضاء فريق الخبراء الحظر. وبالتالي لم يتم الاتفاق على التعديل.

#### 4-5 الحالة فيما يخص شروط الشحن ضمن إرساليات بطاريات أيونات الليثيوم (رقم الأمم المتحدة 3480) (DGP/25-WP/22)

1-4-5 اقترح تعديل تعليمات التعبئة 965 الذي يلزم بشحن المواد المدرجة في التصنيف UN3480 - بطاريات أيون الليثيوم بنسبة شحن شاملة تتراوح بين 15 و30 في المائة. وأشار مقدم الاقتراح إلى التوصيات التي قدمها الاجتماع الدولي الثاني المتعدد التخصصات بشأن تنسيق نقل بطاريات الليثيوم (كولونيا، ألمانيا، من 9 إلى 11/9/2014) للحد من شحن البطاريات بما لا يتجاوز نسبة 30 في المائة خلال النقل. وتم تحديد هذا الحد بناءً على نتائج الاختبار والتي أظهرت أن انتشار التسرب الحراري يمكن تقليصه أو القضاء عليه إلى حد كبير عند هذا المستوى. ومع ذلك، فقد جادل الممثلون عن أوساط صناعة البطاريات ضد تحديد نسبة 30 في المائة، وأشاروا إلى أن انخفاض جهد البطارية لمدة طويلة بسبب تفريغ شحنها يمكن أن يؤدي إلى آثار غير مرغوب فيها ويقوض أداء الخلية. وأشاروا إلى أن هذا ممكن في حوالي 10 دولة المائة من حالات الشحن. واقترح ممثلو أوساط صناعة البطاريات حداً للشحن بنسبة 55 في المائة لمعالجة الحاجة إلى تخزين الخلايا بعد النقل الجوي لفترات طويلة، كما أشاروا إلى أن معدل التفريغ المعتاد يبلغ نسبة 2 في المائة في الشهر. ومع الاعتراف بأن الاختبارات التي أجريت أثبتت وجود انتشار للتسرب الحراري في الخلايا المشحونة بنسبة 50 في المائة، إلا أن مقدم الاقتراح لم يدعم حد 55 في المائة، وجادل بأنه سيكون من مسؤولية شركات الشحن التأكد من عدم إدخال الخلايا المتدهورة إلى نظام النقل. واقترح بالسماح بحد أدنى للشحن بنسبة 15 في المائة لمعالجة مخاوف ممثلي صناعة البطاريات عن طريق ضمان بقاء مستوى شحن خلايا أيون الليثيوم فوق نسبة 10 في المائة أثناء النقل.

2-4-5 قدم أحد أعضاء أوساط صناعة البطاريات معلومات للدلالة على أن مختلف أنواع بطاريات الليثيوم تشكل مخاطر مختلفة في النقل، وأنه من غير المناسب أن يجري تحديد مستوى شحن واحد ملزم لكل البطاريات المطلوب نقلها. وأشار إلى أن بعض البطاريات لديها سلاسل توريد لوجستية طويلة، ويلزم شحنها إلى مستوى أعلى لكي تكون قابلة للتشغيل بمجرد وصولها إلى وجهتها. وأشار في تقديراته إلى أن أكثر من نصف البطاريات المنتجة يمكن شحنها بنسبة 30 في المائة، ولكن هذا يحتاج إلى آلية للسماح بنسب شحن أعلى من أجل البقية.

3-4-5 بينما وافق خبراء الأبحاث والتطوير في مجال السلامة من الحريق لطائرات البضائع من المركز التقني التابع لإدارة الطيران الاتحادية على أن مستوى الشحن الآمن يعتمد على نوع البطارية، فقد أشاروا أن اختباراتهم قد أظهرت أن انتشار التسرب الحراري لم يحدث لغالبية الخلايا التي شملها الفحص عندما تم تخفيض مستوى الشحن إلى 30 في المائة. وشددوا على صحة ذلك لغالبية الخلايا، ولكن يمكن لمستوى الشحن أن يرتفع أو ينخفض اعتماداً على نوع البطارية. واقترحوا أيضاً أنه في حين تم اعتبار أن نسبة 30 في المائة تعتبر معدل آمن لغالبية الخلايا اليوم، فليس هناك ما يضمن أن يظل ذلك ثابتاً في المستقبل مع تطور تكنولوجيا البطاريات.

4-4-5 بينما اتفق جميع أعضاء الفريق على أن تحديد نسبة الشحن بقيمة 30 في المائة من شأنه أن يعزز السلامة بشكل كبير، وأن هذا هو الحد الذي ينبغي الإلزام به، فلم ير البعض أن هذا الإجراء يزيل الخطر، تسليماً بأن هذا الحد

لن يقضي على احتمال الانتشار الحراري لجميع أنواع الخلايا والبطاريات. وقد حذر أحد الأعضاء بأن ذلك لن يزيل أيضاً الخطر الناجم عن تأثير نشوب حريق خارجي على بطاريات الليثيوم واحتمال تنفيس هذه البطاريات لغازات قابلة للاشتعال، والتهيئة لأجواء ناسفة. ومع الإشارة إلى أن عدم الامتثال قد شوهد في أحيان كثيرة كأمر واقع فيما يتعلق بنقل بطاريات الليثيوم، فقد أعربوا عن مخاوفهم أيضاً من احتمال تجاهل الشاحنين إما عن قصد وإما عن غير قصد للشروط بينما لا يوجد لدى المشغل وسيلة للتحقق. ولم يدعم البعض الآخر هذه الحجة على أساس أن الشاحنين قد وقعوا على إعلان الامتثال، وأن النقل الآمن للبضائع الخطرة يعتمد دائماً على وجود درجة من الثقة عبر مراحل سلسلة النقل.

5-4-5 أعرب بعض الأعضاء عن اعتقادهم بأنه إذا كان بمقدور الشاحن البرهنة على تحقيق السلامة مع معدلات شحن أعلى، فينبغي أن يكون بوسعه النقل مع هذه المعدلات، بينما عارض آخرون ذلك على أساس أنه لا يوجد نهج متسق لتحديد المعدل الآمن. وأيد معظم أعضاء الفريق اقتراحاً يقضي بإدراج أحكام لمستوى أعلى من الشحن بموجب موافقة الدولة.

5-4-6 وبعد الكثير من النقاش، اتفق فريق الخبراء على وضع حد للشحن بنسبة 30 في المائة، والسماح لنسب شحن أعلى بموافقة دولة المنشأ ودولة المشغل. وقام مقدم اقتراح الحد الأدنى من الشحن بنسبة 15 في المائة بسحب اقتراحه نظراً لأن الاتفاق على أن الشواغل التي أثارها أوساط صناعة البطاريات فيما يتعلق بتدهور الخلية كانت قضية تسهيل من الضروري أن تكون تحت سيطرة الشاحن.

5-4-7 كانت القضايا التالية التي يتعين النظر فيها تدور حول ما إذا كان ينبغي أن ينطبق ذلك على طائرات الركاب أم البضائع، وما إذا كان ينبغي أن ينطبق ذلك على جميع أقسام تعليمات التعبئة 965. وقد أبدى البعض معارضة شديدة لقصر الشحن على طائرات البضائع، كما أشاروا أن ذلك من شأنه أن يحظر بشكل فعال من النقل الجوي لبعض بطاريات أيون الليثيوم أيون التي يجب نقلها وهي مشحونة بنسب شحن أعلى. وأيدت الأغلبية الكبيرة فرض الحد على جميع الطائرات اعترافاً بتعزيز السلامة، وتسليماً أيضاً بالتعقيد الإضافي الذي يفرضه وضع حد لطائرات الركاب وليس لطائرات البضائع.

5-4-8 وفيما يتعلق بالأجزاء التي ينبغي تطبيق الحدود عليها، فقد كان هناك اتفاق على تطبيق الحد على القسمين الأول (ألف) والأول (باء). وفي ضوء أن الفريق قد قرر عدم حذف القسم الثاني من تعليمات التعبئة 965 و 968 (انظر الفقرة 5-5)، فإن الشأن المتعلق بما إذا كان ينبغي تطبيق الحد على القسم الثاني أم لا قد استأثر بالكثير من المناقشة. واعترافاً بالفائدة الكبيرة التي تتحقق في مجال السلامة بتحديد نسبة الشحن عند 30 في المائة، فلم يكن بمقدور الكثير من أعضاء الفريق تبرير السماح بالبطاريات من القسم الثاني المطلوب نقلها دون تحديد نسب شحنها. بينما اعتقد البعض الآخر أن وضع قيود إضافية (انظر الفقرة 5-5) تحد من عدد العبوات في الشحنة الواحدة، والسماح بعبوة واحدة فقط من البطاريات من القسم الثاني بعد وضعها داخل مغلف خارجي من شأنه أن يحقق مستوى مقبول من السلامة، وأن الحد من نسبة الشحن كان مغالاً فيه.

5-4-9 اتفق الفريق في نهاية المطاف على وضع حد للشحن بنسبة 30 في المائة للبطاريات والخلايا المنقولة على طائرات الركاب أو البضائع بغض النظر عما إذا كانت مغلفة بموجب القسم الأول (ألف) أو القسم الأول (باء) من تعليمات التعبئة 965. كما اتفق الفريق على الأحكام التي تسمح للشاحن بشحن بطاريات أيون الليثيوم أيون عند نسبة شحن أعلى بموافقة السلطات المختصة في الدولة المنشأ ودولة المشغل. وقد أدرجت معايير الأداء الرفيع المستوى التي وضعها الاجتماع الدولي الثالث المتعدد التخصصات بشأن تنسيق نقل بطاريات الليثيوم في الإضافة الملحقة بالتعليمات الفنية كمواد إرشادية

للدول التي تنظر في طلبات الحصول على الموافقات (انظر المرفق (ج) بالتقرير عن هذا البند من جدول الأعمال). واقترح ممثل صناعة البطاريات بالأبدا يُدرج في المواد الإرشادية معيار الأداء الرفيع المستوى الذي يهدف إلى منع نبضات الضغط الناجم عن تنفيس الغازات بدرجة تؤدي إلى كسر قنوات الضغط الزائد في حاوية الشحن أو التسبب في إتلاف حاوية البضائع، كما أنه لا يعتقد أن هيئات الطيران المدني لديها الخبرة اللازمة لإصدار موافقة على أساس هذا المعيار. ولكن هذا القول قوبل برأي مفاده أنه من الأهمية بمكان الإبقاء على هذا العنصر لأنه عالج أحدث نتائج اختبار إدارة الطيران الاتحادية التي أثبتت احتمال تجمع الغازات القابلة للاشتعال المنبعثة من تنفيس الخلايا، واشتعالها مما يؤدي إلى انفجار حاويات الشحن المغلقة وتعطيل تركيزات غاز الهالون المطلوبة لإخماد الحريق. وأشار إلى أنه من مسؤولية هيئة الطيران المدني أن تتشاور مع يلزم من الخبراء قبل إصدار الموافقات. وتم الإبقاء على هذا العنصر.

5-5 القسم الثاني من تعليمات التغليف رقم 965 (رقم الأمم المتحدة 3480)  
وتعليمات التغليف رقم 968 (رقم الأمم المتحدة 3090) (DGP/25- WP/29)

1-5-5 قدم مقترحاً لحذف الاستثناءات المنصوص عليها في التصنيفين UN3480 - بطاريات أيون الليثيوم، وUN3090 - بطاريات معدن الليثيوم في القسم الثاني من تعليمات التعبئة 965 و968. وأشار إلى أن هذا من شأنه أن يدعم البيانات والتوصيات التالية التي وضعتها إدارة الطيران الاتحادية الأمريكية (FAA)، وشركتي بوينغ وإيرباص، والاجتماع الدولي الثالث المتعدد التخصصات بشأن تنسيق نقل بطاريات الليثيوم:

(أ) أصدرت إدارة الطيران الاتحادية في عام 2010 تنبيهاً في مجال السلامة من أجل المشغلين، وأوصت فيه المشغلين بتحميل الشحنات السائبة من البطاريات من القسم الثاني في حاويات شحن جوي من الفئة (ج) أو في أماكن بها وسيلة بديلة لإخماد الحريق؛

(ب) أصدرت شركة بوينغ في عام 2015 رسالة إلى مشغلين متعددين، أسدت فيها النصح للمشغلين الذين يقومون بنقل بطاريات الليثيوم بإجراء تقييم لمخاطر السلامة يأخذ بعين الاعتبار، ضمن عوامل أخرى، أنواع وكميات بطاريات الليثيوم المنقولة، والكمية في الرحلة الواحدة، وموقعها داخل حاوية الشحن، وقربها من البضائع الخطرة الأخرى؛

(ج) أصدرت شركة إيرباص في عام 2015 مقالاً معنياً بمعلومات الخدمة، أسدت فيه النصح للمشغلين الذين يقومون بنقل بطاريات الليثيوم بإجراء تقييم لمخاطر السلامة يأخذ بعين الاعتبار، ضمن عوامل أخرى، معلومات عن أنواع وكمية وكثافة بطاريات الليثيوم المطلوب نقلها. وأوصت إيرباص أيضاً بأن يتم تحديد جميع الشحنات من بطاريات الليثيوم ووسمها، واتباع سياسة لإبلاغ طاقم الطائرة بجميع شحنات بطاريات الليثيوم الموجودة؛

(د) أصدر الاجتماع الدولي الثالث المتعدد التخصصات بشأن تنسيق نقل بطاريات الليثيوم توصيات مؤقتة (انظر الفقرة 3-1-5، والمرفق (أ) بالتقرير عن هذا البند من جدول الأعمال) بما في ذلك تقييم مخاطر السلامة الذي يجريه المشغلون الراغبون في نقل بطاريات الليثيوم التي تتطلب النظر في المعلومات المتعلقة بالأنواع والكميات من بطاريات وخلايا الليثيوم التي يجري نقلها.

2-5-5 أشار الاقتراح الأول إلى أن تخفيف المتطلبات التي يحددها القسم الثاني من معلومات التعبئة 965 و968 - بما في ذلك المتطلبات التي تقضي بتقديم وثيقة نقل البضائع الخطرة، وإجراء المشغل لفحص القبول، وإخطار قائد الطائرة بالشحنة - يجعل من المستحيل للمشغلين إجراء تحليل لمخاطر السلامة بشكل فعّال. وبالإضافة إلى ذلك، فليس من سبيل أمام

المشغلين للتحكم في عدد عبوات البطاريات من القسم الثاني المحمولة على متن الطائرة، مما يجعل من الصعب على المشغلين الذين قبلوا بنقل بطاريات الليثيوم تطبيق التخفيف الفعّال للمخاطر. أما الاقتراح الثاني فقد أشار أيضاً إلى أن الهيكل التنظيمي متعدد المستويات لبطاريات الليثيوم، لا سيما تعليمات التعبئة 965 و 968 التي تتضمن ثلاثة مستويات (الأقسام: الأول (ألف)، والأول (باء)، والثاني)، لا تفتأ تتزايد تعقيداً مما يصعب على الشاحنين والمشغلين المداومة عليها. وقد حذفت التعديلات من القسم الثاني أحكاماً من تعليمات التعبئة 965 و 968، كما تضمن الاقتراح الأول ضم القسمين الأول (ألف) والأول (باء) في تعليمات تعبئة واحدة. ولكن لم يحظ اقتراح ضم القسمين بتأييد يذكر نظراً للشعور بأنه قد تكون له آثار متعددة الأنماط دون إحراز أي تحسينات كبيرة في مجال السلامة. وبالتالي فقد تم سحب هذا الجزء من التعديل.

5-5-3 أيد عدة أعضاء من الفريق حذف القسم الثاني للأسباب ذاتها التي حددها مقدمو الاقتراح. ولم يروا جدوى من الحصول على معلومات تتعلق بأنواع وكميات بطاريات وخلايا الليثيوم التي يجري نقلها كبضائع بموجب القسم الثاني، وتم إدراج هذه المعلومات كمكونات أساسية للتقييم الفعّال لمخاطر السلامة من قبل جميع الأطراف التي أوصت بإجرائه (انظر الفقرة 5-5-1). وأوضح أحد المشاركين، العملية كثيفة العمالة اليدوية التي اعتمدها شركة الطيران التي يمثلها لتحديد كميات وأنواع البطاريات كجزء من تقييم مخاطر السلامة الذي تجريه، ولكن رأى آخرون أن هذا لن يكون ممكناً من الناحية العملية بالنسبة لمعظم المشغلين. وعلاوة على ذلك، فسوف يحتاج المشغلون باستمرار إلى توافر معلومات بشأن أنواع وكميات بطاريات وخلايا الليثيوم لكي يتسنى لهم التطبيق بشكل فعّال لتدابير تخفيف تشغيلية لمنع تحميل عبوات كثافة عالية من البطاريات في حاوية الشحن، وأن الاضطلاع بهذا النوع من العمليات اليدوية سيصعب استمراره، إن لم يكن مستحيلًا. وأشار إلى أنه حتى إذا كان من الممكن الحصول على المعلومات من خلال عملية فحص يدوية عند نقطة بدء القبول بواسطة المشغل الأول، فسيكون من الصعب الحصول عليها باستمرار طيلة دورة النقل، لا سيما في حالة تداول عبوات من القسم الثاني فيما بين المشغلين.

5-5-4 لم يؤيد أعضاء آخرون من الفريق إزالة البطاريات من القسم الثاني. وذلك إدراكاً منهم لحاجة الأفراد وتجار التجزئة إلى نقل "قطعة أو اثنين" من البطاريات خلال التجارة الإلكترونية، ورأوا أن هذه الكميات الصغيرة تشكل الحد الأدنى من المخاطر، وبالتالي فلا ينبغي إخضاعها للوائح الكاملة. وبينما وافقوا على الطريقة التي يجب وضعها لضمان عدم إساءة الشاحنين لفوائد التخفيف من الخضوع للوائح الكاملة من خلال دمج عدة عبوات في شحنة واحدة، فقد أعربوا عن خشيتهم من أن تؤدي إزالة الاستثناءات إلى زيادة الشحنات غير المعلنة. وافترضوا أن وجود نهج بديل لمنع الشحنات من البطاريات عالية الكثافة سيكون أكثر ملاءمة. وبناء على ذلك، فقد تم وضع تعديل بديل أبقى على القسم الثاني مع الحد من عدد العبوات لكل شحنة واحدة، مع السماح بوضع عبوة واحدة فقط من البطاريات من القسم الثاني في مغلف خارجي. وكان ذلك إضافة إلى المتطلبات المطبقة على بطاريات أيون الليثيوم التي أعدها اجتماع الشاحنين للحد من نسبة شحن البطاريات إلى 30 في المائة (انظر الفقرة 5-4).

5-5-5 دار نقاش واسع حول ما إذا كان حظر استخدام المغلفات الخارجية لعبوات بطاريات الليثيوم أكثر فعالية من قصر الاستخدام على عبوة واحدة من بطاريات الليثيوم من القسم الثاني. وجادل بعض الأعضاء ضد السماح بوضع أي عبوات من البطاريات من القسم الثاني في مغلف خارجي خشية إفساح المجال أمام الشاحنين لإساءة استخدام البند. ورأى آخرون أن حظر استخدام المغلفات الخارجية للبطاريات من القسم الثاني كان غير مناسب، مشيرين إلى أن عبوات البطاريات كثيراً ما تكون مصحوبة بسلع غير خطيرة مثل الكتيبات وغيرها من المواد المرتبطة ببطاريات موضوعة في مغلف خارجي. كما أشاروا إلى أن المغلف الخارجي يمكن أن يوفر مصدراً إضافياً لحماية البطارية، لا سيما في حالات العبوات الصغيرة. وقالوا

إنهم يعتقدون أن الصيغة المقترحة للحد من المغلفات الخارجية إلى عبوة واحدة من القسم الثاني من شأنها أن تقضي على احتمال قيام الشاحن بضم عدة عبوات في شحنة واحدة من البطاريات من القسم الثاني. ومع ذلك، فقد أضحى واضحاً أثناء المناقشات أن هناك تفسيرات مختلفة لما يمكن اعتباره مغلفاً خارجياً فيما يتعلق بالبطاريات من القسم الثاني، مع التسليم بأنه من المرجح أن تحدث هذه التفسيرات المختلفة بين الشاحنين كذلك؛ وبالتالي فقد اقترحت ملاحظة توضح ما هو المقصود بمصطلح "مغلف خارجي" لإدراجها ضمن القيود المقترحة على المغلف الخارجي. وأعرب أغلب الأعضاء عن اعتقادهم بأن القيد على المغلف الخارجي إلى جانب هذه الملاحظة سيقضي على احتمال تعدد عبوات بطاريات الليثيوم التي سيجري ضمها في شحنة واحدة.

5-5-6 دار نقاش حول التخفيض أيضاً من كمية الخلايا أو البطاريات المسموح بها في عبوة واحدة من ثماني خلايا/بطاريتين إلى أربع خلايا/بطارية واحدة. وعلى الرغم من وجود بعض التأييد لهذا الخفض، إلا أن الغالبية رأيت أن القيود الحالية مناسبة نظراً للتحسينات الكبيرة في مجال السلامة التي تم توفيرها عن طريق الحد من نسبة شحن بطاريات أيون الليثيوم (انظر الفقرة 5-4). وبينما هناك اتفاق بأن الحد من نسبة شحن بطاريات أيون الليثيوم كان إجراء تخفيف له أهميته، فإن أولئك الداعمين لخفض عدد الخلايا أو البطاريات في العبوة جادلوا بأن تدابير التخفيف الإضافية كانت ضرورية في ضوء عدم وجود ما يضمن أن الحد من نسبة الشحن سيكون آمناً لجميع الخلايا والبطاريات، كما أنه لا يوجد ما يضمن أن جميع الخلايا والبطاريات سيجري شحنها تحت هذا الحد من الناحية الفعلية، مع التسليم بأن الشاحنين للبطاريات من القسم الثاني لا يخضعون لمقتضيات التدريب الكاملة من التعليمات الفنية. وكانت هناك أيضاً مخاوف من قيام المشغلين، عن غير قصد، بتحميل شحنات متعددة من بطاريات الليثيوم من القسم الثاني من شاحنين مختلفين في مكان واحد، وأن الحد من العدد المسموح به في عبوة واحدة من شأنه أن يقلل من هذه المخاطر. وعلاوة على ذلك، فإن الحد من نسبة الشحن ينطبق فقط على بطاريات أيون الليثيوم وليس بطاريات معدن الليثيوم، التي وإن منع نقلها على طائرات الركاب، إلا أنه مسموح بنقلها على طائرات البضائع.

5-5-7 أشار عدة أعضاء من الفريق بأن حذف القسم الثاني كان النهج الأنسب. فهم لم يشعروا بارتياح إلى أن فرض مزيد من القيود من شأنه أن يزيل احتمال تحميل بطاريات عالية الكثافة في موقع واحد من حاوية الشحن. وقد شكل ذلك مصدر قلق خاص عند النظر فيما أثبتته المركز التقني لإدارة الطيران الاتحادية بشأن أن نشوب حريق يرتبط بما لا يزيد عن ثلاث من بطاريات الليثيوم يمكن أن يعطل نظام الحماية من الحريق في الطائرة. وكن لديهم كذلك مخاوف من الاكتفاء بالزام شاحني البطاريات من القسم الثاني بالحصول على "تعليمات كافية" دون تعريف لتلك المعلومات الكافية، كما أنهم لا يخضعون لمتطلبات التدريب الكاملة الواردة في التعليمات الفنية. وتساءلوا عما إذا سيكون بوسع الشاحنين الذين لديهم "تعليمات كافية" فقط الامتثال التام لأحكام القسم الثاني، بما في ذلك الشرط الجديد بتحديد نسبة الشحن بمقدار 30 في المائة (انظر الفقرة 5-4). وأعرب هؤلاء الأعضاء عن عدم اعتقادهم بأن فرض قيود إضافية سيقضي على المخاطر المرتبطة ببطاريات الليثيوم، ويرون أن ذلك لن يحقق المستوى المقبول من السلامة.

5-5-8 اتفق جميع أعضاء الفريق على أن الحد من عدد العبوات لكل شحنة، مع السماح بوضع عبوة واحدة فقط من البطاريات من القسم الثاني داخل مغلف خارجي إلى جانب شرط تخفيض نسبة الشحن لبطاريات أيون الليثيوم (انظر الفقرة 5-4) كان أكثر أماناً بشكل كبير مما توفره شروط النقل الحالية. واتفق الأعضاء بالأغلبية على التعديل المنقح الذي أبقى على القسم الثاني مع قيود إضافية.

9-5-5 اتفق فريق الخبراء على أنه ينبغي إدراج التعديلات التي أدخلت على القسم الثاني مع اشتراط خفض نسبة الشحنة كإضافة إلى الطبعة الحالية من التعليمات الفنية، وذلك لأنها تعالج مخاطر خاصة بالسلامة. وفي حال موافقة المجلس على التعديلات، فسوف يناقش الفريق مسألة تحديد موعد التنفيذ الملائم. ورأى البعض أن التنفيذ الفوري أمرٌ ضروريٌّ، معتبرين أن هناك حالياً مخاطر يتعين تخفيفها. وعرض ممثلو صناعة البطاريات العملية المعقدة التي يجب القيام بها في جميع أنحاء سلسلة التوريد لجعل البطاريات متوافقة مع الأحكام الجديدة، لا سيما فيما يتعلق بخفض نسبة شحن البطاريات. بيد أن أعضاء الفريق لم يؤيدوا تأخير تنفيذ هذه التدابير الهامة في مجال السلامة استجابة لاحتياجات الصناعة. واتفق جميع أعضاء الفريق على وجوب تطبيق التعديلات في أقرب وقت ممكن بعد موافقة المجلس عليها. واتفقوا على أن مدة تسعين يوماً تلي موافقة المجلس ولكن ليس قبل حلول 2016/4/1 تعد مناسبة. وأكد ممثلو صناعة البطاريات أن اعتماد هذا التاريخ للتنفيذ لن يحقق النجاح لأي جانب. ولاحظ أعضاء الفريق أن الشاحنين الذين لن يتمكنوا من الامتثال للأحكام المنقحة سيتوجب عليهم إيجاد وسائل بديلة للنقل كما كان الحال بالنسبة لأي بند من بنود البضائع الخطرة الذي لا يمكن إعداده للنقل بموجب اللوائح المعمول بها. وأكدت الأمانة أنها ستنتقل توصية الفريق بأن يكون تاريخ التطبيق هو 2016/4/1 إلى لجنة الملاحاة الجوية وإلى المجلس، بيد أن الأمر سيكون متروكاً في نهاية المطاف للمجلس لاتخاذ قرار بشأن تحديد تاريخ التطبيق.

## 6-5 تدابير التخفيف من حدة الآثار الناجمة عن نقل بطاريات الليثيوم على متن طائرات الشحن الخالص (DGP/25-WP/23)

1-6-5 اقترح إدراج قيود إضافية على تحميل بطاريات معدن الليثيوم المدرجة ضمن التصنيف UN3090 - بطاريات معدن الليثيوم، والمدرجة تحت التصنيف UN3480 - بطاريات أيون الليثيوم، وذلك في الجزء 7؛ 2 من التعليمات الفنية. وأقر هذا الاقتراح بأنه مع وجود حظر على نقل بطاريات معدن الليثيوم على متن طائرات الركاب إلى جانب القيود الإضافية لبطاريات أيون الليثيوم على طائرات الركاب الموجودة قيد الدراسة، فإنه لا يمكن تجاهل المخاطر الناجمة عن بطاريات الليثيوم على متن طائرات الشحن. إذ أنه يجري نقل كميات كبيرة من كلا النوعين من البطاريات على جميع طائرات البضائع، وتلك الطائرات تحمل عموماً البطاريات في حاويات البضائع بكميات أكبر مما تحمله طائرات الركاب، دون أن تحتوي بالضرورة على القدرة ذاتها على إخماد الحرائق كذلك المتاحة على معظم طائرات الركاب. وعلى أساس عدم دعم المقترحات السابقة التي تحظر نقل بطاريات معدن الليثيوم وبطاريات أيون الليثيوم كبضائع على جميع طائرات البضائع، وإقراراً بأن تطوير معايير قائمة على الأداء سيستغرق بعض الوقت، فقد اقترحت تدابير مؤقتة للتخفيف من المخاطر، انتظاراً للتوصل إلى حل شامل. وتضمنت هذه المتطلبات أن يجري تحميل البطاريات في حاوية شحن جوي من الفئة (ج)، أو حاوية ذات النظام الأكثر قدرة على إخماد الحرائق، مع العزل عن البضائع الخطرة الأخرى، والفصل عن شحنات بطارية الليثيوم الأخرى في محاولة للحد من كثافة البطاريات في مكان واحد.

2-6-5 نظراً للمناقشات المستفيضة والمطولة التي كرسها لوضع تدابير تخفيف للتصدي للمخاطر المرتبطة بنقل بطاريات أيون الليثيوم كبضائع على متن طائرات الركاب، فكان الوقت المخصص محدوداً لمناقشة هذا المقترح مناقشة شاملة. ومع ثبات مقدم هذا الاقتراح على موقفه بأن فرض حظر على نقل بطاريات أيون الليثيوم كبضائع على متن طائرات الركاب كان هو تدبير التخفيف الوحيد الذي من شأنه أن يحقق مستوى مقبول من السلامة لطائرات الركاب، وأقر بأن التدابير التي اتفق عليها فريق الخبراء من شأنها أن تحسن السلامة وأنه تشجع لتطبيقها أيضاً على طائرات الشحن. غير أنه أعرب عن اعتقاده بأن التدابير الإضافية لمعالجة طائرات الشحن يجب أن تأخذ في اعتبارها الكميات الكبيرة التي يجري نقلها والقدرات المتاحة على هذه الطائرات لإخماد الحريق.

3-6-5 بينما كان هناك تأييد قوي للأحكام الجديدة المقترح إدراجها في الجزء 7؛ 2 من حيث المبدأ، فإن فريق الخبراء أعرب عن اعتقاده بأنه ينبغي أن تكون تلك الأحكام أقل تقييداً وأكثر استناداً إلى الأداء، وذلك لإتاحة المرونة في تحقيق المقصود منها. واعترف بأن مختلف المشغلين سيكون متاح لديهم أدوات تخفيف مختلفة على أساس حجم عملياتهم، وأنواع حاويات البضائع، وأنظمة إخماد الحريق المتاحة على طائراتهم. ومن الضروري كذلك أن توفر هذه الأحكام المرونة الكافية للسماح باستخدام أغشية احتواء الحريق، والحاويات المقاومة للحريق، والحاويات النموذجية، التي يمكنها أن تحتوي أو تخمد الحريق المرتبط ببطارية الليثيوم. ولوحظ أن القدرة على تقليل كثافة البطاريات في أي موقع واحد ستكون صعبة إن لم تكن مستحيلة عندما يتعلق الأمر بشحنات من بطاريات الليثيوم المستثناة (القسم الثاني) لأنها لم تكن خاضعة لفحص القبول الذي يجريه المشغل. وعلى الرغم من تأييد العزل عن البضائع الخطرة الأخرى، فقد اقترح أن هذه الأحكام يجب أن تتماشى مع متطلبات البضائع الخطرة الأخرى في الجزء 7؛ 2-2. وأشار كذلك إلى أن بعض الضوابط التشغيلية من أجل تحميل بطاريات الليثيوم تخرج عن نطاق اختصاص فريق خبراء البضائع الخطرة، وأنه ينبغي التشاور مع أفرقة خبراء أخرى بشأن هذه المسألة.

4-6-5 لم يُتخذ قرار باعتماد التعديل نظراً لضيق الوقت المتاح لمعالجة الملاحظات التي أثارها أعضاء الفريق. وسيتعين استمرار المناقشات خلال فترة السنتين القادمتين.



### 7-5 توضيحات بشأن إسناد أرقام الأمم المتحدة إلى المركبات التي تعمل ببطاريات الليثيوم (DGP/25-WP/25)

1-7-5 لوحظ أن تعليمات التعبئة 950 (تصنيف الأمم المتحدة UN3166 المخصص للمركبات التي تعمل بالوقود السائل القابل للاشتعال (على النحو المقترح في (DGP/25-WP/13))، وتعليمات التعبئة 951 (تصنيف الأمم المتحدة UN3166 المخصص للمركبات التي تعمل بالغاز القابل للاشتعال (على النحو المقترح في (DGP/25-WP/13))، و تعليمات التعبئة 952 (تصنيف UN3171 المخصص للمركبات والمعدات التي تعمل بالبطاريات (على النحو المقترح في (DGP/25-WP/13))، قد أشارت إلى أن بطاريات الليثيوم المثبتة في مركبات أو آلات أو معدات يجب أن تستوفي الأحكام الواردة في الجزء 2؛ 9-3. بيد أن الصياغة الواردة في النص التمهيدي من الجزء 2؛ 9-3 قد أشارت إلى أن بطاريات الليثيوم من أي تكوين يجب أن تكون مدرجة ضمن التصنيف UN3090 - بطاريات معدن الليثيوم، أو التصنيف UN3091 - بطاريات معدن الليثيوم المعبأة مع معدة أو الموجودة بداخل معدة، أو التصنيف UN3480 - بطاريات أيون الليثيوم، أو التصنيف UN3481 - بطاريات أيون الليثيوم أيون المعبأة مع معدة أو الموجودة بداخل معدة، دون أي ذكر للتصنيفين UN3166 و UN3177. وقد اتفق على تعديل لتعليمات التعبئة حذف الإشارة إلى النص التمهيدي من الجزء 2؛ 9-3، وركز على الفقرات الفرعية للأحكام.

### 8-5 تنقيح البند الخاص رقم A181 (DGP/25-WP/26)

1-8-5 لوحظ أن البند الخاص A181 قد حدد العلامة المطلوب وضعها على العبوات التي تحتوي على كل من بطاريات الليثيوم المعبأة مع المعدات وبطاريات الليثيوم الموجودة بداخل المعدات، وكذلك العلامة المطلوب وضعها على عبوات كل من بطاريات معدن الليثيوم وبطاريات أيون الليثيوم. بيد أن هذا البند الخاص لم يحدد الوصف المطلوب تضمينه في وثيقة نقل البضائع الخطرة، أو الجزء الذي يتعين تطبيقه من تعليمات التعبئة، أو الحدود المطبقة على الكميات. واقترح نص جديد لإدراجه في البند الخاص A181 لمعالجة هذا الأمر. ومع الإقرار بأن البطاريات المعبأة وفقا للقسم الثاني من تعليمات التعبئة 966 لبطاريات أيون الليثيوم المعبأة مع المعدات، وتعليمات التعبئة 969 لبطاريات معدن الليثيوم المعبأة مع المعدات لا تخضع لأي أجزاء أخرى من التعليمات، وبالتالي فلا ينطبق عليها البند الخاص A181. وقد اقترح نص مماثل لإدراجه في كل من تعليمات التعبئة لكل منها.

2-8-5 اتفق على أن الأحكام الجديدة التي تشير إلى أن الطرود التي تحتوي على كل من بطاريات معدن الليثيوم وبطاريات أيون الليثيوم كانت خاضعة لمتطلبات القيمة "Q" في الجزأين: 4؛ 1-1-9 و 5؛ 4.1.5.8 كانت زائدة عن الحاجة. واتفق على التعديل بحذف كل ما يشير إلى متطلبات القيمة "Q".

### 9-5 بطاقات الأمتعة النشطة المزودة ببطاريات الليثيوم (DGP/25-WP/31)

1-9-5 اقترح تعديل أحكام الركاب في الجدول 1-8 التي تشير تحديداً إلى بطاقات الأمتعة الإلكترونية في الإدخال المعني بالأجهزة الإلكترونية المحمولة. وقد اقتضت طبيعة بعض هذه الأجهزة أن تكون نشطة خلال النقل، وغالباً ما كانت تستخدم بطاريات الليثيوم لهذا الغرض. ولوحظ أن القسم الثاني من تعليمات التعبئة 967 و 970 يسمح للأجهزة التي تعمل ببطاريات الليثيوم وتفي بمعايير الصناعة أن تظل نشطة أثناء النقل، ولكن لم يكن ذلك السماح متاحاً في أحكام الركاب. واستند

التعديل المقترح إلى الأحكام القائمة من تعليمات التعبئة 967 و970، وتضمن كذلك شرط أن يكون الجهاز مرخص وفقاً لمعيار محدد أو المعيار الوطني المعادل له.

5-9-2 كان هناك اتفاق حول اثنين من القضايا التي يجب معالجتها. واحدة تتعلق بأحكام الركاب والطاقم في الجزء 8 من التعليمات الفنية، والأخرى ذات صلة بالتداخل (التشويش) الإلكتروني مع أنظمة الطائرات.

5-9-3 فيما يتعلق بأحكام الركاب، علق عدة أعضاء من فريق الخبراء على الجهود المبذولة للابتعاد عن إدخال قوائم مطولة من المواد في الجدول 8-1، والقيام بدلاً من ذلك بإعادة تنظيم القائمة بتجميع المواد بشكل أكثر عموماً. وكان الاقتراح يقتضي إضافة إدخال آخر للجدول حتى وإن كان هناك بالفعل إدخال يعالج بطاريات الليثيوم. ومن ناحية أخرى، كانت هذه المواد فريدة من حيث أن أحكام الركاب وطاقم الطائرة سمحت بالبضائع الخطرة في الأمتعة المسجلة، والأمتعة اليدوية، والأغراض الشخصية، بينما كان القصد من بطاقات الأمتعة النشطة هو تعليقها خارج العبوة. مما يجعل من احتمال وقوع ضرر للبطارية مصدراً للقلق. وعلى الرغم من التسليم بأن حجم البطاريات صغيراً للغاية، وأنه من غير المرجح أن تشكل خطراً في حال تلفها، فإنه من المستحيل توقع مسار تطور التكنولوجيا، وما إذا كان حجم وخصائص البطاريات سيتغيران أم لا. وعلى الرغم من التأييد من حيث المبدأ لشرط أن يكون الجهاز مرخصاً، فقد أُفيد بأن هناك بالفعل تقنيات مختلفة ومعايير مختلفة في جميع أنحاء العالم، وسيكون من الصعب اشتراط معيار واحد ينطبق على كل الأجهزة. وكان هناك تفهم لجاذبية وجود مثل هذا الجهاز، نظراً لأن فقدان الأمتعة يعد أمراً واقعاً في سياق السفر، وكان هذا الجهاز وسيلة فعالة لمنع حدوث ذلك.

5-9-4 وفيما يتعلق باحتمالات التداخل الإلكتروني، فقد تم الاتفاق على أن التصدي لهذه المشكلة يقع خارج نطاق اختصاص فريق خبراء البضائع الخطرة، وستقوم أمانة الاجتماع بإخطار أمين فريق خبراء عمليات الطيران ولجنة الملاحه الجوية بالقضايا التي أثّرت ورفع تقرير بذلك إلى فريق خبراء البضائع الخطرة.

5-9-5 اجتمع الفريق العامل المخصص لمعالجة الملاحظات التي أثّرت خلال المناقشة. وقام الفريق بوضع اقتراح معدل استعاض عن الإشارة إلى معيار محدد بالإشارة بشكل أكثر عموماً إلى معايير محددة للإشعاع الكهرومغناطيسي لضمان أن تشغيل الجهاز لا يحدث تداخلاً مع أنظمة الطائرات. واستند البند إلى الأحكام الموجودة في تعليمات التعبئة 967 و970 لأجهزة نشطة مثل بطاقات تحديد الترددات الراديوية التي تشير أيضاً إلى معايير محددة للإشعاع الكهرومغناطيسي. كما زاد الاقتراح المعدل من حد المحتوى من معدن الليثيوم الوارد في الاقتراح الأصلي (0.3 غرام) إلى 1 غرام مع الاعتراف بأن هناك منتجات موجودة في الأسواق تحتوي على هذه الكميات الكبيرة، وكان 1 غرام أقل من مما هو مسموح به حالياً للركاب الذين يحملون أجهزة إلكترونية محمولة تحتوي على بطاريات معدن الليثيوم.

5-9-6 تم الاتفاق على تعديل المنقح.

5-10 مراجعة معنى البند "المعدات" لأغراض بطاريات الليثيوم  
المعبأة مع المعدات والتي تشكل جزءاً منها  
(DGP/25-WP/33)

5-10-1 ثمة التباس فيما يتعلق بما يمكن اعتباره معدة بغية تحديد ما إذا كان ينبغي اعتبار المادة بطارية تدرج تحت التصنيف UN3090 - بطاريات معدن الليثيوم، أم التصنيف UN3480 - بطاريات أيون ليثيوم، أم أنها معدة تدرج تحت التصنيف UN3091 - بطاريات معدن الليثيوم مع معدة أو موجودة داخل معدة. ولوحظ أن شواحن بطاريات أيون الليثيوم كانت تدرج في كثير من الأحيان تحت التصنيف N3481 - بطاريات أيون الليثيوم مع المعدة، وأشار إلى أن ذلك أمرٌ غير مناسب. واقترح إدخال تعديل على تعليمات التعبئة 966، و967، و969، و970 لتوضيح أن المادة يجب أن تعمل ببطاريات الليثيوم الموجودة بداخلها أو المعبأة معها لكي يمكن إدراجها ضمن التصنيف UN3091 أو UN3481. وقد أدرج النص الجديد المقترح في الجزء التمهيدي من تعليمات التعبئة بحيث ينطبق على جميع الأقسام.

5-10-2 بينما كان هناك اعتراض على الاقتراح التي أثاره ممثل صناعة البطاريات، فلم يُثر أي اعتراض من جانب أعضاء الفريق. ولوحظ أنه قد تم تقديم ورقة غير رسمية إلى الدورة 47 للجنة الفرعية للأمم المتحدة وحظيت بقبول طيب، وقدم اقتراح رسمي إلى الدورة 48 للجنة. ومع الإقرار بأن انتظار صدور قرار من لجنة خبراء الأمم المتحدة يعني أن التعديل في التعليمات الفنية لن يكون واجب التطبيق إلا في طبعة 2019-2020، فقد اتفق فريق الخبراء على اعتماد التعديل قبل نظر الأمم المتحدة فيه. ولم ير الفريق غضاضة في ذلك نظراً لأن التعديل لم يتطلب إدخال أي متطلبات جديدة، وإنما مجرد أنه أوضح القصد مما هو قائم. وتم الاتفاق على التعديل.

#### 5-11 أجهزة تحديد الموقع في حالات الطوارئ التي يحملها الركاب (DGP/25-WP/38)

5-11-1 اقترح استحداث إدخال فرعي جديد تحت عنوان "الأجهزة الإلكترونية المحمولة" للسماح بأجهزة تحديد الموقع في حالة الطوارئ التي يحملها الركاب وتعمل بخلايا أو بطاريات معدن الليثيوم بما يتجاوز حدود محتوى الليثيوم المفروضة على الأجهزة الإلكترونية المحمولة الأخرى. وأشار إلى أن هذا البند الجديد له ما يبرره على أساس أنه جهاز منقذ للحياة، وكان هناك أسبقية للسماح بالمزيد من محتوى الليثيوم للأجهزة الأخرى المنقذة للحياة تحت إدخال "الأجهزة الطبية الإلكترونية المحمولة التي تحتوي على خلايا أو بطاريات معدن الليثيوم". كما أدرجت أحكام الأجهزة الأخرى المنقذة للحياة مع أحكام الركاب مثل حزم الإنقاذ من الانهيار الجليدي وسترات النجاة القابلة للنفخ. ولوحظ أن الركاب يحملون حالياً أجهزة شخصية تعمل ببطاريات معدن الليثيوم لتحديد الموقع في حالة الطوارئ، مع محتوى من الليثيوم يتجاوز مقدار 2 غرام المفروضة كحد أقصى على الأجهزة الإلكترونية المحمولة. وأعرب مقدم الاقتراح عن اعتقاده بأن التمكين من النقل الجائر قانوناً للأجهزة بطريقة تمكن المشغلين من مراقبة المخاطر سيكون أمراً مفيداً للسلامة. ووفقاً لذلك، فقد تضمن النص المقترح شرط موافقة المشغل وتقييد النقل للأجهزة المعدة للاستعمال الشخصي. ولم تدرج أحكام لبطاريات احتياطية، تسليماً بأن أجهزة تحديد المواقع في حالات الطوارئ مصممة بحيث تدوم بطايرتها طويلاً.

5-11-2 لم يحظ هذا الاقتراح سوى بدعم ضئيل. وعلى الرغم من الإقرار بالسماح بحدود أعلى لبطاريات الليثيوم لتلبية الاحتياجات الطبية، فإن فريق الخبراء لم يوافق على أن هناك مبرراً لتصنيف هذا الجهاز بالطريقة ذاتها لأنه غير ضروري للصحة. وأكد أعضاء الفريق على أهمية التقنين على أساس اعتبارات السلامة وليس احتياجات السوق. وعلى أية حال، فإن نتائج البحوث التي أجريت في إحدى الدول على أنواع أجهزة تحديد الموقع في حالات الطوارئ المتاحة في الأسواق اليوم أشارت إلى أن محتوى معظمها من معدن الليثيوم يقع ضمن الحدود الحالية للأجهزة الإلكترونية المحمولة.

3-11-5 كرر فريق الخبراء تأكيد موقفه المتمثل في الابتعاد عن محاولة خلق قائمة شاملة للبضائع الخطرة المسموح للركاب وأفراد الطاقم بحملها في الجدول 8-1، وإنما إعادة تنظيمها من خلال تجميع مزيد من المواد بشكل أكثر عموماً.

4-11-5 لم يتم الاتفاق على التعديل.

## 12-5 خلايا معدن الليثيوم القُرصية (DGP/25-WP/39)

1-12-5 دُعِيَ المجتمعون للنظر في طرق للتمييز بين خلايا معدن الليثيوم القُرصية والأنواع أخرى من خلايا معدن الليثيوم. ولوحظ أن نتائج الاختبار قد برهنت أن خلايا معدن الليثيوم القُرصية الصغيرة التي تحتوي على ما يصل إلى 0.3 غرام من معدن الليثيوم لا تفرض مستوى المخاطر ذاته الذي تفرضه البطاريات الأخرى الأكبر حجماً نظراً لأن التسرب الحراري لا ينتشر من خلية قُرصية إلى الخلية التالية لها خلافاً للحال مع الخلايا الأكبر حجماً. وقد خلص الاجتماع الدولي الثاني المتعدد التخصصات بشأن تنسيق نقل بطاريات الليثيوم إلى أن هذه الخلايا القُرصية قد لا تشكل خطراً كبيراً عند نقلها، وأوصى باستحداث وسيلة للتمييز بين خلايا معدن الليثيوم القُرصية والأنواع أخرى من خلايا معدن الليثيوم (التوصية 14/14).

2-12-5 أُثير الطلب من فريق خبراء الأمم المتحدة (UNCLO) بأن ينظر في استحداث إدخال جديد في قائمة البضائع الخطرة من أجل خلايا معدن الليثيوم القُرصية باعتباره وسيلة محتملة لخلق مزيد من التفاصيل للتمييز بين الخلايا التي شكلت مخاطر مختلفة في الاجتماعات الماضية لفريق خبراء البضائع الخطرة. وقيل، مع ذلك، أن اعتماد ذلك سيحتاج إلى فترة زمنية طويلة نسبياً، وأنه يمكن تطبيق نهج بديل يجري بمقتضاه إضافة نص إضافي بخط خفيف إلى اسم الشحن الصحيح في التعليمات الفنية بالطريقة ذاتها المطبقة في إدخالات عبوات الهباء الجوي. ومع التسليم بأن نتائج الاختبار التي تثبت عدم وجود انتشار حراري بين الخلايا تنطبق على الخلايا التي تقل عن 0.3 غرام من محتوى الليثيوم، فقد اقترح كذلك أن يتم تحديد هذا الحد بقيمة 0.3 غرام داخل النص الإضافي بالخط الخفيف. وأشار إلى أن تحديد صافي الكمية القصوى لكل عبوة بمقدار 35 كلغ على طائرات الشحن و5 كلغ على طائرات ركاب يعد مناسباً.

3-12-5 تم إعداد بند خاص لاستثناء خلايا معدن الليثيوم القُرصية من التعليمات الفنية للعبوات التي لا يزيد صافي كميتها القصوى للعبوة الواحدة عن كيلوغرام واحد. وطُلب من المجتمعين أيضاً النظر فيما إذا كان من المناسب عدم إخضاع أحكام كميات الحد الأدنى من خلايا معدن الليثيوم القُرصية للتعليمات الفنية. ومع التسليم بأن الأحكام الحالية لكميات الحد الأدنى استندت إلى رموز كمية مستثناة وأن أحكام تلك الكمية المستثناة لا تنطبق على المواد، وقد تم إعداد قسم منفصل في الجزء 3؛ 5-6 استناداً إلى الأحكام الحالية للحد الأدنى لينظر فيه الفريق.

4-12-5 مع الإقرار بأن أي طريقة للتمييز بين خلايا معدن الليثيوم القُرصية وأي أنواع أخرى من خلايا معدن الليثيوم ستطلب فهم ما يمكن اعتباره خلية قُرصية، واقترح إدراج تعريف الخلية القُرصية المنصوص عليه في المادة 38-3 من دليل الأمم المتحدة للاختبارات والمعايير في الجزء 1؛ 3 من التعليمات الفنية.

5-12-5 على الرغم من وجود تأييد من حيث المبدأ لوضع آلية لتمييز خلايا معدن الليثيوم القُرصية الصغيرة التي يثبت أنها تفرض مستوى المخاطر ذاته الذي تفرضه البطاريات الأخرى، فكان التأييد ضعيفاً للنهج المتبع في ورقة العمل. وقد وجد عدة أعضاء مستويات متفاوتة من اللوائح بالغة التعقيد، وعارض بعضهم بشدة الأحكام التي تستثني كميات صغيرة من

هذه البطاريات من التعليمات. وبينما أيد بعض الأعضاء، في نهاية المطاف، اعتماد الأحكام التي من شأنها أن تسمح بنقل هذه البطاريات على متن طائرات الركاب إلى أن تصبح اللوائح التنظيمية لجميع البطاريات أكثر استقراراً، فإنهم أعربوا عن اعتقادهم بأنه لا ينبغي النظر في هذه الأحكام إلا بعد وضع معايير للتعبئة والتغليف قائمة على الأداء. وأشار إلى أنه من المرجح أن تسمح معايير التغليف القائمة على الأداء بنقل الخلايا القوسية دون الحاجة إلى معالجتها بشكل منفرد.

6-12-5 بينما أثير الطلب من اللجنة الفرعية للأمم المتحدة بأن تستحدث رقم تصنيف جديد (UNxxxx) للخلايا القوسية في قائمة البضائع الخطرة كنهج لتمييز الخلايا القوسية عن البطاريات والخلايا السابقة، فقد أشار بأن اللجنة الفرعية ربما لا تؤيد مثل هذا النهج لأنها كانت تتوخى الحذر عادة عند استحداث إدخالات جديدة. وأعرب رئيس اللجنة الفرعية للأمم المتحدة أيضاً عن توحى الحذر عند تقديم أي مقترحات إلى اللجنة لاستحداث إدخالات جديدة بهدف تفادي خلق مزيد من الاستثناءات في لوائح النقل.

7-12-5 يتعين أخذ التعليقات التي أثيرت أثناء مناقشة بعين الاعتبار وإدراجها في اقتراح رسمي خلال فترة السنتين القادمتين.

### 13-5 حوادث البضائع الخطرة المرتبطة ببطاريات الليثيوم (DGP/25-IP/1)

1-13-5 أبلغ المجتمعون بحدث البضائع الخطرة المرتبط ببطاريات أيون الليثيوم وأسفر عن نشوب حريق. حيث تم الكشف عن الدخان بعد تفريغ الحمولة من الطائرة بينما كان يجري وضعها على المنصة الخشبية النقالة. وبدأ الانبعاث من أحد الصناديق الموجود داخل كيس من البلاستيك المنسوج الذي كان واحداً من عدة من شحنة موجودة على المنصة النقالة للطائرة.

2-13-5 كشف التحقيق في هذا الحادث عن النقاط التالية:

(أ) تبين زيف الوثائق التي تشير إلى أن البطارية كانت من النوع الذي خضع للاختبارات المحددة في دليل الأمم المتحدة للاختبارات والمعايير. وأشار إلى أن ذلك يبين أنه من المستبعد أن تكون البطارية من هذا النوع قد خضعت للاختبارات المطلوبة؛

(ب) أشارت وثيقة الشحن الجوي بالخطأ إلى أن الشحنة الواردة تضمنت بطاريات أيون الليثيوم معبأة مع معدات، بينما كانت في حقيقة الأمر معبأة بشكل منفرد. وكان المشغل التي حمل البطاريات يحظر نقل بطاريات أيون الليثيوم المعبأة بشكل منفرد. وأشار إلى أن البيان المكتوب على وثيقة الشحن الجوي ربما كان متعمداً تقادياً للحظر الذي يطبقه المشغل؛

(ج) بطاقات مناولة بطاريات الليثيوم الملصقة من الخارج على الأكياس البلاستيكية المنسوجة تضمنت مواصفات غير صحيحة، ولم تتضمن المعلومات المطلوبة؛

(د) من المرجح أن سبب اشتعال البطارية يرجع إلى طريقة مناولتها. وأشار إلى أن المناولة لم تكن من النوع الذي يتوقع أن يتسبب في نشوب حريق مرتبط ببطارية من النوع الذي اجتاز الاختبارات المطلوبة.

5-13-2-1 أعرب فريق الخبراء عن تقديره لتلقي المعلومات الواردة عن هذا الحادث. ولاحظ الأعضاء أن تعمد عدم الامتثال كان مصدر قلق مستمر يجب معالجته من خلال التطبيق الفعّال. وتجدر الإشارة إلى أن تعقيد سلسلة التوريد لبطاريات الليثيوم يجعل من الرقابة الفعّالة وإنفاذ التدابير المناسبة أمراً يصعب تحقيقه. وكان هناك العديد من الكيانات التي يجب أن يكون لها دور في تحقيق الامتثال، بما في ذلك الشركات المصنعة للخلايا، والشركات المصنعة للبطاريات، وجميع جهات التصنيع التي تستخدم هذه الخلايا أو البطاريات. ومن المحتمل أن تكون هذه الجهات من دول مختلفة، وكثيراً ما تخرج عن نطاق المسؤوليات الرقابية لهيئات الطيران المدني. وأثارت الأمانة الشاغل المتعلق بمستوى المسؤولية الذي كان الأعضاء من أوساط صناعة البطاريات ينتظرونه من سلطات الطيران المدني، والتسليم بأن سلطات الطيران لا تملك عادة أي سلطة رقابية على كيانات التصنيع في دولها. ومع الإقرار بأهمية عملية التصنيع للسلامة، فإن ضمان قيام الجهات المختصة بممارسة دورها في الرقابة الفعّالة أمرٌ يجب معالجته. وأشارت إلى أنه في حين تم التركيز كثيراً على الامتثال للاختبارات المعمول بها في دليل الاختبارات والمعايير، فلم تكن هناك آلية للكيانات عبر سلسلة التوريد للتأكد من الوفاء بمتطلبات الاختبار هذه.

5-13-2-2 لاحظ أحد ممثلي أوساط صناعة البطاريات أن أعضاء منظمته شديدي الحساسية لمسألة عدم الامتثال، واتخذوا تدابير لضمان استبعاد الكيانات غير المتوافقة من سلسلة التوريد الخاصة بهم. وأشار إلى أن منظمته قد شرعت في إعداد قائمة لتوثيق الشاحنين الذين يبدو أنهم ينتهكون عمداً لوائح البضائع الخطرة. وأشار إلى أن الإبلاغ الفعّال كان حاسماً في هذه العملية، ورحب أعضاء الفريق بالإبلاغ عن حالات عدم الامتثال لمنظمته.

#### 14-5 التوصيات

5-14-1 بالنظر إلى ما سبق من مناقشات، أعد المجتمعون التوصية أدناه:

#### توصية 1/5 - وضع معايير التغليف القائمة على الأداء للنقل الآمن لبطاريات الليثيوم كبضائع بطريق الجو

يتم تطوير تلك المعايير المعنية بالتعبئة القائمة على الأداء للنقل الآمن لبطاريات الليثيوم كبضائع بطريق الجو كمسألة ذات أولوية من قبل منظمة خارجية لوضع المعايير بمشاركة خبراء في مجالات البضائع الخطرة، وعمليات الطيران، وصلاحية الطائرات للطيران، وتقنيات بطاريات الليثيوم.

#### توصية 2/5 - تطوير مواد إرشادية للمشغلين والمنظمين حول كيفية إجراء تقييم لمخاطر السلامة المرتبطة بنقل بطاريات الليثيوم بطريق الجو

أن يتم إنشاء مجموعة عمل مشتركة تتألف من خبراء في مجالات البضائع الخطرة، وعمليات الطيران، وصلاحية الطائرات للطيران، وإدارة السلامة، وتكليفه بإعداد مواد إرشادية للمشغلين والمنظمين بشأن إجراء تقييم لمخاطر السلامة المرتبطة بنقل بطاريات الليثيوم بطريق الجو.

#### توصية 3/5 - تعديل الأحكام المتعلقة ببطاريات الليثيوم لإدراجها في الطبعة 2017-2018 من وثيقة التعليمات الفنية للنقل الآمن للبضائع الخطرة بطريق الجو (Doc 9284)

أن يتم تعديل الأحكام المتعلقة ببطاريات الليثيوم في التعليمات الفنية على النحو المبين في المرفق (أ) بالتقرير عن هذا البند من جدول الأعمال.

توصية 4/5 - تعديل الأحكام المتعلقة ببطاريات الليثيوم لإدراجها في الطبعة 2015-2016 من وثيقة  
التعليمات الفنية للنقل الآمن للبضائع الخطرة بطريق الجو (Doc 9284) لمعالجة المخاوف العاجلة  
المتعلقة بالسلامة

أن يتم تعديل الأحكام المتعلقة ببطاريات الليثيوم على النحو المبين في المرفق (ب) بالتقرير عن هذا البند  
من جدول الأعمال وإدراجها في الطبعة 2015-2016 من التعليمات الفنية عن طريق إضافة.

-----

## المرفق (أ)

التعديلات المقترحة إدخالها على الأحكام المتعلقة ببطاريات الليثيوم  
في التعليمات الفنية للنقل الآمن للبضائع الخطرة بطريق الجو

## Part 3

## DANGEROUS GOODS LIST, SPECIAL PROVISIONS AND LIMITED AND EXCEPTED QUANTITIES

...

Table 3-2. Special provisions

TIs UN

...

UN Model Regulations, SP 310, ST/SG/AC.10/42/Add.1, DGP/25-WP/3 (see paragraph 3.2.3.2.1 f) and DGP/25-WP/13 (see paragraph 2.3.1.1 c) of this report

A88

Pre-production ~~Prototypes of lithium batteries or cells, when these prototypes are transported for testing,~~ or low production ~~runs~~ (i.e. annual production runs consisting of not more than 100 lithium batteries ~~or and~~ cells) ~~of~~ lithium batteries or cells that have not been tested to the requirements in ~~Part III,~~ subsection 38.3 of the UN *Manual of Tests and Criteria* may be transported aboard cargo aircraft if approved by the appropriate authority of the State of Origin and the ~~following~~ requirements ~~in Packing Instruction 910 of the Supplement~~ are met:

- ~~a) except as provided in paragraph c), cells or batteries must be transported in an outer packaging that is a metal, plastic or plywood drum or a metal, plastic or wooden box and that meets the criteria for Packing Group I packagings;~~
- ~~b) except as provided in paragraph c), each cell or battery must be individually packed in an inner packaging inside an outer packaging and surrounded by cushioning material that is non-combustible, and non-conductive. Cells or batteries must be protected against short-circuiting;~~
- ~~c) lithium batteries with a mass of 12 kg or greater and having a strong, impact resistant outer casing, or assemblies of such batteries, may be packed in strong outer packagings or protective enclosures not subject to the requirements of Part 6 of these Instructions. The batteries or battery assemblies must be protected against short-circuiting; and~~
- d) ~~a~~ A copy of the document of approval ~~showing including~~ the quantity limitations must accompany the consignment. Transport in accordance with this special provision must be noted on the dangerous goods transport document.

Irrespective of the limit specified in column 13 of Table 3-1, the battery or battery assembly as prepared for transport may have a mass exceeding 35 kg ~~G~~.

---

TIs UN

---

...

---

UN Model Regulations, SP 384, ST/SG/AC.10/42/Add.1, DGP/25-WP/3 (see paragraph 3.2.3.2.1 k) and DGP/25-WP/13

---

A206 (384) The [hazard label must conform to the model shown in Figure 5-26. Figure 5-25 may continue to be used until 31 December 2018.](#)

---

DGP/25-WP/26 (see paragraph 5.8 of this report)

---

A181 [When a package contains a combination of lithium batteries contained in equipment and lithium batteries packed with equipment, the following requirements apply:](#)

- a) [the shipper must ensure that all applicable parts of both packing instructions are met. The total mass of lithium batteries contained in any package must not exceed the limits for passenger aircraft or cargo aircraft, as applicable;](#)
- b) [the package must be marked UN 3091 \*\*Lithium metal batteries packed with equipment\*\*, or UN 3481 \*\*Lithium ion batteries packed with equipment\*\*, as appropriate. If a package contains both lithium metal batteries and lithium ion batteries \[packed with and contained in equipment\]\(#\), the package must be marked as required for both battery types. However, button cell batteries installed in equipment \(including circuit boards\) need not be considered;](#)
- c) [the dangerous goods transport document must indicate UN 3091 \*\*Lithium metal batteries packed with equipment\*\* or UN 3481 \*\*Lithium ion batteries packed with equipment\*\*, as appropriate. If a package contains both lithium metal batteries and lithium ion batteries \[packed with and contained in equipment\]\(#\), then the dangerous goods transport document must indicate both UN 3091 \*\*Lithium metal batteries packed with equipment\*\* and UN 3481 \*\*Lithium ion batteries packed with equipment\*\*.](#)

...

**Part 4****PACKING INSTRUCTIONS**

...

**Chapter 11****CLASS 9 — MISCELLANEOUS DANGEROUS GOODS**

...

---

DGP/25-WP/25 (see paragraph 5.7 of this report)

---

**Packing Instruction 950**

Passenger and cargo aircraft for UN 3166 only  
(See Packing Instruction 951 for flammable gas-powered vehicles and engines or  
Packing Instruction 952 for battery-powered equipment and vehicles)

*Batteries*

All batteries must be installed and securely fastened in the battery holder of the vehicle, machine or equipment and must be protected in such a manner so as to prevent damage and short circuits. In addition:

- 1) if spillable batteries are installed, and it is possible for the vehicle, machine or equipment to be handled in such a way that batteries would not remain in their intended orientation, they must be removed and packed according to Packing Instruction 492 or 870 as applicable;
- 2) if lithium batteries are installed, they must meet the provisions of [subparagraphs a\) to e\) of Part 2;9.3.1](#), unless otherwise approved by the appropriate authority of the State of Origin, must be securely fastened in the vehicle, machine or equipment and must be protected in such a manner so as to prevent damage and short circuits; and
- 3) if sodium batteries are installed they must conform to the requirements of Special Provision A94.

**Packing Instruction 951**

Cargo aircraft only for UN 3166 only  
(See Packing Instruction 950 for flammable liquid-powered vehicles and engines or  
Packing Instruction 952 for battery-powered equipment and vehicles)

...

**ADDITIONAL PACKING REQUIREMENTS**

...

*Batteries*

All batteries must be installed and securely fastened in the battery holder of the vehicle, machine or equipment and must be protected in such a manner so as to prevent damage and short circuits. In addition:

- 1) if spillable batteries are installed, and it is possible for the vehicle, machine or equipment to be handled in such a way that batteries would not remain in their intended orientation, they must be removed and packed according to Packing Instruction 492 or 870 as applicable;
- 2) if lithium batteries are installed, they must meet the provisions of [subparagraphs a\) to e\) of Part 2;9.3.1](#), unless otherwise approved by the appropriate authority of the State of Origin, must be securely fastened in the vehicle, machinery or equipment and must be protected in such a manner so as to prevent damage and short circuits; and
- 3) if sodium batteries are installed they must conform to the requirements of Special Provision A94.

...

**Packing Instruction 952**

Passenger and cargo aircraft for UN 3171 only  
(See Packing Instruction 950 for flammable liquid-powered vehicles and engines or  
Packing Instruction 951 for flammable gas-powered vehicles and engines)

...

**ADDITIONAL PACKING REQUIREMENTS***Batteries*

All batteries must be installed and securely fastened in the battery holder of the vehicle, machine or equipment and must be protected in such a manner so as to prevent damage and short circuits. In addition:

- 1) if spillable batteries are installed, and it is possible for the vehicle, machine or equipment to be handled in such a way that batteries would not remain in their intended orientation, they must be removed and packed according to Packing Instruction 492 or 870 as applicable;
- 2) if lithium batteries are installed in a vehicle, they must meet the provisions of [subparagraphs a\) to e\) of Part 2;9.3.1](#), unless otherwise approved by the appropriate authority of the State of Origin, must be securely fastened in the vehicle and must be protected in such a manner so as to prevent damage and short circuits; and
- 3) if sodium batteries are installed they must conform to the requirements of Special Provision A94.

...

...

## Packing Instruction 965

Passenger and cargo aircraft for UN 3480

UN Model Regulations, SP 188, ST/SG/AC.10/42/Add.1 and DGP/25-WP/3 (see paragraph 3.2.4.1.1 d))

### 1. Introduction

This entry applies to lithium ion or lithium polymer batteries. This packing instruction is structured as follows:

- Section IA applies to lithium ion cells with a Watt-hour rating in excess of 20 Wh and lithium ion batteries with a Watt-hour rating in excess of 100 Wh, which must be assigned to Class 9 and are subject to all of the applicable requirements of these Instructions;
- Section IB applies to lithium ion cells with a Watt-hour rating not exceeding 20 Wh and lithium ion batteries with a Watt-hour rating not exceeding 100 Wh packed in quantities that exceed the allowance permitted in Section II, Table 965-II; and
- Section II applies to lithium ion cells with a Watt-hour rating not exceeding 20 Wh and lithium ion batteries with a Watt-hour rating not exceeding 100 Wh packed in quantities not exceeding the allowance permitted in Section II, Table 965-II.

A single cell battery as defined in Part III, sub-section 38.3.2.3 of the UN Manual of Tests and Criteria is considered a "cell" and must be transported according to the requirements for "cells" for the purpose of this packing instruction.

### 2. Lithium batteries forbidden from transport

The following applies to all lithium ion cells and batteries in this packing instruction:

Cells and batteries, identified by the manufacturer as being defective for safety reasons, or that have been damaged, that have the potential of producing a dangerous evolution of heat, fire or short circuit are forbidden for transport (e.g. those being returned to the manufacturer for safety reasons).

Waste lithium batteries and lithium batteries being shipped for recycling or disposal are forbidden from air transport unless approved by the appropriate national authority of the State of Origin and the State of the Operator.

### IA. SECTION IA

Each cell or battery must meet all the provisions of 2;9.3.

#### 1AIA.1 General requirements

- Part 4;1 requirements must be met.
- Lithium ion cells and batteries must be offered for transport at a state of charge not exceeding 30 per cent of their rated capacity. Cells and/or batteries at a state of charge greater than 30 per cent of their rated capacity may only be shipped with the approval of the State of Origin and the State of the Operator under the written conditions established by those authorities.

Note.— Guidance and methodology for determining the rated capacity can be found in sub-section 38.3.2.3 of the UN Manual of Tests and Criteria.

**Table 965-IA**

UN number and proper shipping name	Net quantity per package	
	Passenger	Cargo
UN 3480 <b>Lithium ion batteries</b>	5 kg	35 kg

#### IA.2 Additional requirements

### Packing Instruction 965

- Lithium ion cells and batteries must be protected against short circuits.
- Lithium ion cells and batteries must be placed in inner packagings that completely enclose the cell or battery then placed in an outer packaging. The completed package for the cells or batteries must meet the Packing Group II performance requirements.
- Lithium ion batteries with a mass of 12 kg or greater and having a strong, impact-resistant outer casing, or assemblies of such batteries, may be transported when packed in strong outer packagings or protective enclosures (e.g. in fully enclosed or wooden slatted crates) not subject to the requirements of Part 6 of these Instructions, if approved by the appropriate authority of the State of Origin. A copy of the document of approval must accompany the consignment.
- Batteries manufactured after 31 December 2011 must be marked with the Watt-hour rating on the outside case.

#### IA.3 Outer packagings

##### *Boxes*

Aluminium (4B)  
Fibreboard (4G)  
Natural wood (4C1, 4C2)  
Other metal (4N)  
Plastics (4H1, 4H2)  
Plywood (4D)  
Reconstituted wood (4F)  
Steel (4A)

##### *Drums*

Aluminium (1B2)  
Fibre (1G)  
Other metal (1N2)  
Plastics (1H2)  
Plywood (1D)  
Steel (1A2)

##### *Jerricans*

Aluminium (3B2)  
Plastics (3H2)  
Steel (3A2)

Editorial amendment in first paragraph under IB was incorporated in 2015-2016 Edition by way of corrigendum

#### IB. SECTION IB

Quantities of lithium ion cells or batteries that exceed the allowance permitted in Section II, Table 965-II are subject to all of the applicable provisions of these Instructions (including the requirements in paragraph 2 of this packing instruction and of this section) except for the ~~the~~ provisions of Part 6.

Lithium ion cells or batteries shipped in accordance with the provisions of Section IB must be described on a dangerous goods transport document as set in Part 5;4. The packing instruction number "965" required by 5;4.1.5.8.1 a) must be supplemented with "IB". All other applicable provisions of Part 5;4 apply.

Lithium ion cells and batteries may be offered for transport provided that each cell and battery meets the provisions of 2;9.3.1 a) and e) and the following:

- 1) for lithium ion cells, the Watt-hour rating (see the Glossary of Terms in Attachment 2) is not more than 20 Wh;
- 2) for lithium ion batteries, the Watt-hour rating is not more than 100 Wh;
  - the Watt-hour rating must be marked on the outside of the battery case except for those batteries manufactured before 1 January 2009;

## Packing Instruction 965

### IB.1 General requirements

- Cells and batteries must be packed in strong outer packagings that conform to Part 4;1.1.1, 1.1.3.1 and 1.1.10 (except 1.1.10.1).
- Lithium ion cells and batteries must be offered for transport at a state of charge not exceeding 30 per cent of their rated capacity. Cells and/or batteries at a state of charge greater than 30 per cent of their rated capacity may only be shipped with the approval of the State of Origin and the State of the Operator under the written conditions established by those authorities.

*Note.*— Guidance and methodology for determining the rated capacity can be found in sub-section 38.3.2.3 of the UN Manual of Tests and Criteria.

Table 965-IB

Contents	Net quantity per package	
	Passenger	Cargo
Lithium ion cells and batteries	10 kg	10 kg

### IB.2 Additional requirements

- Cells and batteries must be packed in inner packagings that completely enclose the cell or battery then placed in a strong rigid outer packaging.
- Cells and batteries must be protected so as to prevent short circuits. This includes protection against contact with conductive materials within the same packaging that could lead to a short circuit.
- Each package must be capable of withstanding a 1.2 m drop test in any orientation without:
  - damage to cells or batteries contained therein;
  - shifting of the contents so as to allow battery to battery (or cell to cell) contact;
  - release of contents.

UN Model Regulations, SP 188 f), ST/SG/AC.10/42/Add.1 and DGP/25-WP/3 (see paragraphs 3.2.5.1.1 b) and c))

- Each package must be labelled marked with a the appropriate lithium battery handling label mark (Figure 5-32 5-3) in addition to the appropriate Class 9 hazard label.

*Note.*— Figure 5-32 and the provisions for a lithium battery handling label as contained in the 2015-2016 Edition of these Instructions may continue to be used until 31 December 2018.

UN Model Regulations, SP 188 g), ST/SG/AC.10/42/Add.1 and DGP/25-WP/3 (see paragraph 3.2.4.1.1)

- ~~Each consignment must be accompanied with a document with an indication that:~~
  - ~~the package contains lithium ion cells or batteries;~~
  - ~~the package must be handled with care and that a flammability hazard exists if the package is damaged;~~
  - ~~special procedures must be followed in the event the package is damaged, to include inspection and repacking if necessary; and~~
  - ~~a telephone number for additional information.~~

*Note.*— ~~This information may be provided on the dangerous goods transport document.~~

### Packing Instruction 965

#### IB.3 Outer packagings

##### Boxes

Aluminium  
Fibreboard  
Natural wood  
Other metal  
Plastics  
Plywood  
Reconstituted wood  
Steel

##### Drums

Aluminium  
Fibre  
Other metal  
Plastics  
Plywood  
Steel

##### Jerricans

Aluminium  
Plastics  
Steel

Strong outer packagings

DGP/25-WP/3 (see paragraphs 3.5.1.4.1 and paragraph 3.5.1.1.1)

#### II. SECTION II

~~With the exception of Part 1;2.3 (General — Transport of dangerous goods by post), 7;4.4 (Operator's responsibilities — Reporting of dangerous goods accidents and incidents), 8;1.1 (Provisions concerning passengers and crew — Dangerous goods carried by passengers or crew) and paragraph 2 of this packing instruction, lithium ion cells and batteries offered for transport are not subject to other additional requirements of these Instructions if they meet the requirements of this section. Lithium ion cells and batteries, when complying with Section II of this Packing Instruction, are only subject to the following additional provisions of these Instructions:~~

- ~~— Part 1;2.3 (General — Transport of dangerous goods by post);~~
- ~~— Part 5;1.1 g) and i) (Shipper's responsibilities — General requirements);~~
- ~~— Part 7;4.4 (Operator's responsibilities — Reporting of dangerous goods accidents and incidents);~~
- ~~— Part 8;1.1 (Provisions concerning passengers and crew — Dangerous goods carried by passengers or crew); and~~
- ~~— Paragraphs 1 and 2 of this packing instruction.~~

Lithium ion cells and batteries may be offered for transport provided that each cell and battery meets the provisions of 2;9.3.1 a) and e) and the following:

- 1) for lithium ion cells, the Watt-hour rating (see the Glossary of Terms in Attachment 2) is not more than 20 Wh;
- 2) for lithium ion batteries, the Watt-hour rating is not more than 100 Wh;
  - the Watt-hour rating must be marked on the outside of the battery case except for those batteries manufactured before 1 January 2009.

#### II.1 General requirements

- Cells and batteries must be packed in strong outer packagings that conform to Part 4;1.1.1, 1.1.3.1 and 1.1.10 (except 1.1.10.1).
- ~~— Lithium ion cells and batteries must be offered for transport at a state of charge not exceeding 30 per cent of their rated capacity.~~

*Note.— Guidance and methodology for determining the rated capacity can be found in sub-section 38.3.2.3 of the UN Manual of Tests and Criteria.*

Table 965-II

### Packing Instruction 965

Contents	Lithium ion cells and/or batteries with a Watt-hour rating not more than 2.7 Wh	Lithium ion cells with a Watt-hour rating more than 2.7 Wh, but not more than 20 Wh	Lithium ion batteries with a Watt-hour rating more than 2.7 Wh, but not more than 100 Wh
1	2	3	4
Maximum number of cells / batteries per package	No limit	8 cells	2 batteries
Maximum net quantity (mass) per package	2.5 kg	n/a	n/a

The limits specified in columns 2, 3 and 4 of Table 965-II must not be combined in the same package.

UN Model Regulations, SP 188 f), ST/SG/AC.10/42/Add.1 and DGP/25-WP/3 (see paragraphs 3.5.1.1.1, 3.2.4.1, 3.2.5.1.1 b) and c)) and

#### II.2 Additional requirements

- Cells and batteries must be packed in inner packagings that completely enclose the cell or battery then placed in a strong rigid outer packaging.
- Cells and batteries must be protected so as to prevent short circuits. This includes protection against contact with conductive materials within the same packaging that could lead to a short circuit.
- Each package must be capable of withstanding a 1.2 m drop test in any orientation without:
  - damage to cells or batteries contained therein;
  - shifting of the contents so as to allow battery to battery (or cell to cell) contact;
  - release of contents.
- ~~Each package must be labelled marked with a the appropriate lithium battery handling label mark (Figure 5-32 5-3).~~
- ~~the package must be of such size that there is adequate space to affix the mark on one side without the mark being folded.~~

Note.— Figure 5-32 and the provisions for a lithium battery handling label as contained in the 2015-2016 Edition of these Instructions may continue to be used until 31 December 2018.

UN Model Regulations, SP 188 g), ST/SG/AC.10/42/Add.1 and DGP/25-WP/3 (see paragraph 3.2.4.1)

- ~~Each consignment must be accompanied with a document with an indication that:~~
- ~~the package contains lithium ion cells or batteries;~~
- ~~the package must be handled with care and that a flammability hazard exists if the package is damaged;~~
- ~~special procedures must be followed in the event the package is damaged, to include inspection and repacking if necessary; and~~
- ~~a telephone number for additional information.~~
- ~~A shipper is not permitted to offer for transport more than one package prepared according to this section in any single consignment.~~
- The words "lithium ion batteries, in compliance with Section II of PI965" must be placed on the air waybill, when an air waybill is used.

DGP/25-WP/3 (see paragraph 3.5.1.1.1)

- ~~Packages and overpacks of lithium ion batteries prepared in accordance with the provisions of Section II must be offered to the operator separately from cargo which is not subject to these Instructions and must not be loaded into a unit load device before being offered to the operator.~~
- Any person preparing or offering cells or batteries for transport must receive adequate instruction on these requirements commensurate with their responsibilities.

### Packing Instruction 965

DGP/25-WP/3 (see paragraph 3.5.1.1.1)

#### II.3 Outer packagings

<i>Boxes</i>	<i>Drums</i>	<i>Jerricans</i>
Aluminium	Aluminium	Aluminium
Fibreboard	Fibre	Plastics
Natural wood	Other metal	Steel
Other metal	Plastics	
Plastics	Plywood	
Plywood	Steel	
Reconstituted wood		
Steel		

Strong outer packagings

DGP/25-WP/3 (see paragraph 3.5.1.1.1) (pending outcome of working group on performance standards) and DGP/25-WP/3 (see paragraph 3.2.5.1.1 b))

#### II.4 Overpacks

Not more than one package prepared in accordance with this section may be placed into an overpack. When the packages ~~are~~ is placed in an overpack, the lithium battery ~~handling label mark~~ label mark required by this packing instruction must either be clearly visible or the ~~label mark~~ label mark must be affixed on the outside of the overpack and the overpack must be marked with the word "Overpack".

Note.— For the purpose of Section II, an overpack is an enclosure used by a single shipper that contains no more than one package prepared in accordance with this section. For shipments prepared in accordance with Section IA and/or IB, this limit of one package of Section II batteries per overpack still applies.

## Packing Instruction 966

Passenger and cargo aircraft for UN 3481 (packed with equipment) only

UN Model Regulations, SP 188, ST/SG/AC.10/42/Add.1 and DGP/25-WP/3 (see paragraph 3.2.4.1.1 d))

### 1. Introduction

This entry applies to lithium ion or lithium polymer batteries packed with equipment.

Section I of this packing instruction applies to lithium ion and lithium polymer cells and batteries that are assigned to Class 9. Certain lithium ion and lithium polymer cells and batteries offered for transport and meeting the requirements of Section II of this packing instruction, subject to paragraph 2 below, are not subject to other additional requirements of these Instructions.

A single cell battery as defined in Part III, sub-section 38.3.2.3 of the [UN Manual of Tests and Criteria is considered a "cell" and must be transported according to the requirements for "cells" for the purpose of this packing instruction.](#)

DGP/25-WP/33 (see paragraph 5.10 of this report)

For the purpose of this packing instruction, "equipment" means apparatus for which the lithium cells or batteries will provide electrical power for its operation.

### 2. Lithium batteries forbidden from transport

The following applies to all lithium ion cells and batteries in this packing instruction:

Cells and batteries, identified by the manufacturer as being defective for safety reasons, or that have been damaged, that have the potential of producing a dangerous evolution of heat, fire or short circuit are forbidden for transport (e.g. those being returned to the manufacturer for safety reasons).

### I. SECTION I

Each cell or battery must meet all the provisions of 2;9.3.

#### I.1 General requirements

Part 4;1 requirements must be met.

UN number and proper shipping name	Package quantity (Section I)	
	Passenger	Cargo
UN 3481 <b>Lithium ion batteries packed with equipment</b>	5 kg of lithium ion cells or batteries	35 kg of lithium ion cells or batteries

## Packing Instruction 966

### I.2 Additional requirements

- Lithium ion cells and batteries must be protected against short circuits.
- Lithium ion cells or batteries must:
  - be placed in inner packagings that completely enclose the cell or battery then placed in an outer packaging. The completed package for the cells or batteries must meet the Packing Group II performance requirements; or
  - be placed in inner packagings that completely enclose the cell or battery, then placed with equipment in a packaging that meets the Packing Group II performance requirements.
- The equipment must be secured against movement within the outer packaging and must be equipped with an effective means of preventing accidental activation.
- ~~The number of cells or batteries in each package must not exceed the appropriate number for the equipment's operation, plus two spares.~~
- For the purpose of this packing instruction, "equipment" means apparatus requiring the lithium ion batteries with which it is packed for its operation.
- Batteries manufactured after 31 December 2011 must be marked with the Watt-hour rating on the outside case.

### I.3 Outer packagings

#### *Boxes*

Aluminium (4B)  
Fibreboard (4G)  
Natural wood (4C1, 4C2)  
Other metal (4N)  
Plastics (4H1, 4H2)  
Plywood (4D)  
Reconstituted wood (4F)  
Steel (4A)

#### *Drums*

Aluminium (1B2)  
Fibre (1G)  
Other metal (1N2)  
Plastics (1H2)  
Plywood (1D)  
Steel (1A2)

#### *Jerricans*

Aluminium (3B2)  
Plastics (3H2)  
Steel (3A2)

---

DGP/25-WP/3 (see paragraph 3.5.1.4.1)

---

## II. SECTION II

~~With the exception of Part 1;2.3 (Transport of dangerous goods by post), 7;4.4 (Reporting of dangerous goods accidents and incidents), 8;1.1 (Dangerous goods carried by passengers or crew) and paragraph 2 of this packing instruction, lithium ion cells and batteries packed with equipment offered for transport are not subject to other additional requirements of these Instructions if they meet the requirements of this section. Lithium ion cells and batteries packed with equipment, when complying with Section II of this packing instruction, are only subject to the following additional provisions of these Instructions:~~

- ~~Part 1;2.3 (General — Transport of dangerous goods by post);~~
- ~~Part 7;4.4 (Operator's responsibilities — Reporting of dangerous goods accidents and incidents);~~
- ~~Part 8;1.1 (Provisions concerning passengers and crew — Dangerous goods carried by passengers or crew); and~~
- ~~Paragraphs 1 and 2 of this packing instruction.~~

Lithium ion cells and batteries may be offered for transport provided that each cell and battery meets the provisions of 2;9.3.1 a) and e) and the following:

- 1) for lithium ion cells, the Watt-hour rating (see the Glossary of Terms in Attachment 2) is not more than 20 Wh;
- 2) for lithium ion batteries, the Watt-hour rating is not more than 100 Wh;
  - the Watt-hour rating must be marked on the outside ~~of the battery~~ case except for those batteries manufactured before 1 January 2009.

### II.1 General requirements

### Packing Instruction 966

Cells and batteries must be packed in strong outer packagings that conform to Part 4;1.1.1, 1.1.3.1 and 1.1.10 (except 1.1.10.1).

Contents	Package quantity (Section II)	
	Passenger	Cargo
Net quantity of lithium ion cells or batteries per package	5 kg	5 kg

DGP/25-WP/3 (see paragraph 3.5.1.1.1) and UN Model Regulations, SP 188 f), ST/SG/AC.10/42/Add.1 and DGP/25-WP/3 (see paragraphs 3.2.4.1 and 3.2.5.1.1 b and c)

#### II.2 Additional requirements

- Lithium ion cells and batteries must:
  - be placed in inner packagings that completely enclose the cell or battery, then placed in a strong rigid outer packaging; or
  - be placed in inner packagings that completely enclose the cell or battery, then placed with the equipment in a strong rigid outer packaging.
- Cells and batteries must be protected so as to prevent short circuits. This includes protection against contact with conductive materials within the same packaging that could lead to a short circuit.
- The equipment must be secured against movement within the outer packaging and must be equipped with an effective means of preventing accidental activation.
- The number of cells or batteries in each package must not exceed the appropriate number for the equipment's operation, plus two spares.
- Each package of cells or batteries, or the completed package, must be capable of withstanding a 1.2 m drop test in any orientation without:
  - damage to cells or batteries contained therein;
  - shifting of the contents so as to allow battery to battery (or cell to cell) contact;
  - release of contents.
- Each package must be labelled marked with a the appropriate lithium battery handling label mark (Figure 5-32 5-3).
  - the package must be of such size that there is adequate space to affix the mark on one side without the mark being folded.

*Note.— Figure 5-32 and the provisions for a lithium battery handling label as contained in the 2015-2016 Edition of these Instructions may continue to be used until 31 December 2018.*

UN Model Regulations, SP 188 g), ST/SG/AC.10/42/Add.1 and DGP/25-WP/3 (see paragraph 3.2.4.1)

- ~~Each consignment must be accompanied with a document with an indication that:~~
  - ~~the package contains lithium ion cells or batteries;~~
  - ~~the package must be handled with care and that a flammability hazard exists if the package is damaged;~~
  - ~~special procedures must be followed in the event the package is damaged, to include inspection and repacking if necessary; and~~
  - ~~a telephone number for additional information.~~
- The words "lithium ion batteries, in compliance with Section II of PI966" must be placed on the air waybill, when an air waybill is used.

DGP/25-WP/26 (see paragraph 5.8 of this report)

- Where a package contains a combination of lithium batteries contained in equipment and lithium batteries packed with equipment that meet the limits for lithium cells or batteries of Section II, the following additional requirements apply:
  - the shipper must ensure that all applicable parts of both packing instructions are met. The total mass of lithium batteries contained in any package must not exceed 5 kg;
  - the words "lithium ion batteries, in compliance with Section II of PI966" must be placed on the air waybill, when an air waybill is used.
- Any person preparing or offering cells or batteries for transport must receive adequate instruction on these requirements commensurate with their responsibilities.

### Packing Instruction 966

DGP/25-WP/3 (see paragraph 3.5.1.1.1):

#### II.3 Outer packagings

<i>Boxes</i>	<i>Drums</i>	<i>Jerricans</i>
<a href="#">Aluminium</a> <a href="#">Fibreboard</a> <a href="#">Natural wood</a> <a href="#">Other metal</a> <a href="#">Plastics</a> <a href="#">Plywood</a> <a href="#">Reconstituted wood</a> <a href="#">Steel</a>	<a href="#">Aluminium</a> <a href="#">Fibre</a> <a href="#">Other metal</a> <a href="#">Plastics</a> <a href="#">Plywood</a> <a href="#">Steel</a>	<a href="#">Aluminium</a> <a href="#">Plastics</a> <a href="#">Steel</a>

Strong outer packagings

DGP/25-WP/3 (see paragraph 3.2.5.1.1 b))

#### II.4 Overpacks

When packages are placed in an overpack, the lithium battery ~~handling label mark~~ required by this packing instruction must either be clearly visible or the ~~label mark~~ must be affixed on the outside of the overpack and the overpack must be marked with the word "Overpack".

### Packing Instruction 967

Passenger and cargo aircraft for UN 3481 (contained in equipment) only

UN Model Regulations, SP 188, ST/SG/AC.10/42/Add.1 and DGP/25-WP/3 (see paragraph 3.2.4.1.1 d))

#### 1. Introduction

This entry applies to lithium ion or lithium polymer batteries contained in equipment.

Section I of this packing instruction applies to lithium ion and lithium polymer cells and batteries that are assigned to Class 9. Certain lithium ion and lithium polymer cells and batteries offered for transport and meeting the requirements of Section II of this packing instruction, subject to paragraph 2 below, are not subject to other additional requirements of these Instructions.

A single cell battery as defined in Part III, sub-section 38.3.2.3 of the UN Manual of Tests and Criteria is considered a "cell" and must be transported according to the requirements for "cells" for the purpose of this packing instruction.

DGP/25-WP/33 (see paragraph 5.10 of this report)

For the purpose of this packing instruction, "equipment" means apparatus for which the lithium cells or batteries will provide electrical power for its operation.

#### 2. Lithium batteries forbidden from transport

The following applies to all lithium ion cells and batteries in this packing instruction:

Cells and batteries, identified by the manufacturer as being defective for safety reasons, or that have been damaged, that have the potential of producing a dangerous evolution of heat, fire or short circuit are forbidden for transport (e.g. those being returned to the manufacturer for safety reasons).

## Packing Instruction 967

### I. SECTION I

Each cell or battery must meet all the provisions of 2;9.3.

#### I.1 General requirements

Equipment must be packed in strong outer packagings that conform to Part 4;1.1.1, 1.1.3.1 and 1.1.10 (except 1.1.10.1).

UN number and proper shipping name	Package quantity (Section I)	
	Passenger	Cargo
UN 3481 <b>Lithium ion batteries contained in equipment</b>	5 kg of lithium ion cells or batteries	35 kg of lithium ion cells or batteries

#### I.2 Additional requirements

- The equipment must be secured against movement within the outer packaging and be packed so as to prevent accidental operation during air transport.
- The equipment must be packed in strong outer packagings constructed of suitable material of adequate strength and design in relation to the packaging's capacity and its intended use unless the battery is afforded equivalent protection by the equipment in which it is contained.
- Batteries manufactured after 31 December 2011 must be marked with the Watt-hour rating on the outside case

#### I.3 Outer packagings

*Boxes*

*Drums*

*Jerricans*

Strong outer packagings

---

DGP/25-WP/3 (see paragraph 3.5.1.4.1)

---

### II. SECTION II

~~With the exception of Part 1;2.3 (Transport of dangerous goods by post), 7;4.4 (Reporting of dangerous goods accidents and incidents), 8;1.1 (Dangerous goods carried by passengers or crew) and paragraph 2 of this packing instruction, lithium ion cells and batteries contained in equipment offered for transport are not subject to other additional requirements of these Instructions if they meet the requirements of this section. Lithium ion cells and batteries contained in equipment, when complying with Section II of this packing instruction, are only subject to the following additional provisions of these Instructions:~~

- ~~— Part 1;2.3 (General — Transport of dangerous goods by post):~~
- ~~— Part 7;4.4 (Operator's responsibilities — Reporting of dangerous goods accidents and incidents):~~
- ~~— Part 8;1.1 (Provisions concerning passengers and crew — Dangerous goods carried by passengers or crew); and~~
- ~~— Paragraphs 1 and 2 of this packing instruction.~~

Lithium ion cells and batteries may be offered for transport provided that each cell and battery meets the provisions of 2;9.3.1 a) and e) and the following:

- 1) for lithium ion cells, the Watt-hour rating (see the Glossary of Terms in Attachment 2) is not more than 20 Wh;
- 2) for lithium ion batteries, the Watt-hour rating is not more than 100 Wh;
  - the Watt-hour rating must be marked on the outside of the battery case except for those batteries manufactured before 1 January 2009.

## Packing Instruction 967

Devices such as radio frequency identification (RFID) tags, watches and temperature loggers, which are not capable of generating a dangerous evolution of heat, may be transported when intentionally active. When active, these devices must meet defined standards for electromagnetic radiation to ensure that the operation of the device does not interfere with aircraft systems. The devices must not be capable of emitting disturbing signals (such as buzzing alarms, strobe lights, etc.) during transport.

### II.1 General requirements

Equipment must be packed in strong outer packagings that conform to Part 4;1.1.1, 1.1.3.1 and 1.1.10 (except 1.1.10.1).

Contents	Package quantity (Section II)	
	Passenger	Cargo
Net quantity of lithium ion cells or batteries per package	5 kg	5 kg

DGP/25-WP/3 (see paragraph 3.5.1.1.1) and UN Model Regulations, SP 188 f), ST/SG/AC.10/42/Add.1 and DGP/25-WP/3 (see paragraphs 3.2.4.1 and 3.2.5.1.1 b and c):

### II.2 Additional requirements

- The equipment must be secured against movement within the outer packaging and must be equipped with an effective means of preventing accidental activation.
- Cells and batteries must be protected so as to prevent short circuits.
- The equipment must be packed in strong rigid outer packagings constructed of suitable material of adequate strength and design in relation to the packaging's capacity and its intended use unless the battery is afforded equivalent protection by the equipment in which it is contained.
- ~~— Each package containing more than four cells or more than two batteries installed in equipment must be labelled with a lithium battery handling label (Figure 5-32) (except button cell batteries installed in equipment (including circuit boards)). Each package must be marked with the appropriate lithium battery mark (Figure 5-3). The package must be of such size that there is adequate space to affix the mark on one side without the mark being folded.~~
- ~~— this requirement does not apply to:
 
  - packages containing only button cell batteries installed in equipment (including circuit boards); and
  - packages containing no more than four cells or two batteries installed in equipment, where there are not more than two packages in the consignment.~~

*Note.— Figure 5-32 and the provisions for a lithium battery handling label as contained in the 2015-2016 Edition of these Instructions may continue to be used until 31 December 2018.*

UN Model Regulations, SP 188 g), ST/SG/AC.10/42/Add.1 and DGP/25-WP/3 (see paragraph 3.2.4.1)

- ~~— Each consignment with packages bearing the lithium battery handling label must be accompanied with a document with an indication that:
 
  - the package contains lithium ion cells or batteries;
  - the package must be handled with care and that a flammability hazard exists if the package is damaged;
  - special procedures must be followed in the event the package is damaged, to include inspection and repacking if necessary; and
  - a telephone number for additional information.~~
- Where a consignment includes packages bearing the lithium battery ~~handling label mark~~, the words "lithium ion batteries, in compliance with Section II of PI967" must be placed on the air waybill, when an air waybill is used.
- Any person preparing or offering cells or batteries for transport must receive adequate instruction on these requirements commensurate with their responsibilities.

### Packing Instruction 967

DGP/25-WP/3 (see paragraph 3.5.1.1.1):

#### II.3 Outer packagings

##### Boxes

[Aluminium](#)  
[Fibreboard](#)  
[Natural wood](#)  
[Other metal](#)  
[Plastics](#)  
[Plywood](#)  
[Reconstituted wood](#)  
[Steel](#)

##### Drums

[Aluminium](#)  
[Fibre](#)  
[Other metal](#)  
[Plastics](#)  
[Plywood](#)  
[Steel](#)

##### Jerricans

[Aluminium](#)  
[Plastics](#)  
[Steel](#)

Strong outer packagings

DGP/25-WP/3 (see paragraph 3.2.5.1.1 b))

#### II.4 Overpacks

When packages are placed in an overpack, the lithium battery ~~handling label mark~~ required by this packing instruction must either be clearly visible or the ~~label mark~~ must be affixed on the outside of the overpack and the overpack must be marked with the word "Overpack".

### Packing Instruction 968

Cargo aircraft only for UN 3090

UN Model Regulations, SP 188, ST/SG/AC.10/42/Add.1 and DGP/25-WP/3 (see paragraph 3.2.4.1.1 d))

#### 1. Introduction

This entry applies to lithium metal or lithium alloy batteries. This packing instruction is structured as follows:

- Section IA applies to lithium metal cells with a lithium metal content in excess of 1 g and lithium metal batteries with a lithium metal content in excess of 2 g, which must be assigned to Class 9 and are subject to all of the applicable requirements of these Instructions;
- Section IB applies to lithium metal cells with a lithium metal content not exceeding 1 g and lithium metal batteries with a lithium metal content not exceeding 2 g packed in quantities that exceed the allowance permitted in Section II, Table 968-II; and
- Section II applies to lithium metal cells with a lithium metal content not exceeding 1 g and lithium metal batteries with a lithium metal content not exceeding 2 g packed in quantities not exceeding the allowance permitted in Section II, Table 968-II.

A single cell battery as defined in Part III, sub-section 38.3.2.3 of the UN Manual of Tests and Criteria is considered a "cell" and must be transported according to the requirements for "cells" for the purpose of this packing instruction.

#### 2. Lithium batteries forbidden from transport

The following applies to all lithium metal cells and batteries in this packing instruction:

Cells and batteries, identified by the manufacturer as being defective for safety reasons, or that have been damaged, that have the potential of producing a dangerous evolution of heat, fire or short circuit are forbidden for transport (e.g. those being returned to the manufacturer for safety reasons).

Waste lithium batteries and lithium batteries being shipped for recycling or disposal are forbidden from air transport unless approved by the appropriate national authority of the State of Origin and the State of the Operator.

## Packing Instruction 968

### IA. SECTION IA

Each cell or battery must meet all the provisions of 2;9.3.

#### IA.1 General requirements

Part 4;1 requirements must be met.

**Table 968-IA**

<i>UN number and proper shipping name</i>	<i>Net quantity per package</i>	
	<i>Passenger</i>	<i>Cargo</i>
UN 3090 <b>Lithium metal batteries</b>	Forbidden	35 kg

#### IA.2 Additional requirements

- Lithium metal cells and batteries must be protected against short circuits.
- Lithium metal cells and batteries must be placed in inner packagings that completely enclose the cell or battery, then placed in an outer packaging. The completed package for the cells or batteries must meet the Packing Group II performance requirements.
- Lithium metal batteries with a mass of 12 kg or greater and having a strong, impact-resistant outer casing, or assemblies of such batteries, may be transported when packed in strong outer packagings or protective enclosures (e.g. in fully enclosed or wooden slatted crates) not subject to the requirements of Part 6 of these Instructions, if approved by the appropriate authority of the State of Origin. A copy of the document of approval must accompany the consignment.

#### IA.3 Outer packagings

##### *Boxes*

Aluminium (4B)  
Fibreboard (4G)  
Natural wood (4C1, 4C2)  
Other metal (4N)  
Plastics (4H1, 4H2)  
Plywood (4D)  
Reconstituted wood (4F)  
Steel (4A)

##### *Drums*

Aluminium (1B2)  
Fibre (1G)  
Other metal (1N2)  
Plastics (1H2)  
Plywood (1D)  
Steel (1A2)

##### *Jerricans*

Aluminium (3B2)  
Plastics (3H2)  
Steel (3A2)

### IB. SECTION IB

Quantities of lithium metal cells or batteries that exceed the allowance permitted in Section II, Table 968-II, are subject to all of the applicable provisions of these Instructions (including the requirements in paragraph 2 of this packing instruction and of this section) except for the provisions of Part 6.

Lithium metal cells or batteries shipped in accordance with the provisions of Section IB must be described on a dangerous goods transport document as set in Part 5;4. The packing instruction number "968" required by 5;4.1.5.8.1 a) must be supplemented with "IB". All other applicable provisions of Part 5;4 apply.

Lithium metal or lithium alloy cells and batteries may be offered for transport provided that each cell and battery meets the provisions of 2;9.3.1 a) and e) and the following:

- 1) for lithium metal cells, the lithium content is not more than 1 g;
- 2) for lithium metal or lithium alloy batteries, the aggregate lithium content is not more than 2 g.

## Packing Instruction 968

### IB.1 General requirements

Cells and batteries must be packed in strong outer packagings that conform to Part 4;1.1.1, 1.1.3.1 and 1.1.10 (except 1.1.10.1).

**Table 968-IB**

Contents	Net quantity per package	
	Passenger	Cargo
Lithium metal cells and batteries	Forbidden	2.5 kg

### IB.2 Additional requirements

- Cells and batteries must be packed in inner packagings that completely enclose the cell or battery then placed in a strong **rigid** outer packaging.
- Cells and batteries must be protected so as to prevent short circuits. This includes protection against contact with conductive materials within the same packaging that could lead to a short circuit.
- Each package must be capable of withstanding a 1.2 m drop test in any orientation without:
  - damage to cells or batteries contained therein;
  - shifting of the contents so as to allow battery to battery (or cell to cell) contact;
  - release of contents.

UN Model Regulations, SP 188 f), ST/SG/AC.10/42/Add.1 and DGP/25-WP/3 (see paragraphs 3.2.5.1.1 b) and c))

~~— Each package must be labelled marked with a the appropriate lithium battery handling label mark (Figure 5-32 5-3) in addition to the appropriate Class 9 hazard label and the cargo aircraft only label (Figure 5-265-28).~~

~~*Note.— Figure 5-32 and the provisions for a lithium battery handling label as contained in the 2015-2016 Edition of these Instructions may continue to be used until 31 December 2018.*~~

UN Model Regulations, SP 188 g), ST/SG/AC.10/42/Add.1 and DGP/25-WP/3 (see paragraph 3.2.4.1)

~~— Each consignment must be accompanied with a document with an indication that:~~

- ~~— the package contains lithium metal cells or batteries;~~
- ~~— the package must be handled with care and that a flammability hazard exists if the package is damaged;~~
- ~~— special procedures must be followed in the event the package is damaged, to include inspection and repacking if necessary; and~~
- ~~— a telephone number for additional information.~~

~~*Note.— This information may be provided on the dangerous goods transport document.*~~

### IB.3 Outer packagings

#### Boxes

Aluminium  
Fibreboard  
Natural wood  
Other metal  
Plastics  
Plywood  
Reconstituted wood  
Steel

#### Drums

Aluminium  
Fibre  
Other metal  
Plastics  
Plywood  
Steel

#### Jerricans

Aluminium  
Plastics  
Steel

Strong outer packagings

## Packing Instruction 968

DGP/25-WP/3 (see paragraph 3.5.1.4.1)

### II. SECTION II

~~With the exception of Part 1:2.3 (General — Transport of dangerous goods by post), 5:1.1 g), 5:1.1 j) (Shipper's responsibilities — General requirements), 7:2.1 (Operator's responsibilities — Loading restrictions on the flight deck and for passenger aircraft), 7:2.4.1 (Operator's responsibilities — Loading of cargo aircraft), 7:4.4 (Operator's responsibilities — Reporting of dangerous goods accidents and incidents), 8:1.1 (Provisions concerning passengers and crew — Dangerous goods carried by passengers or crew) and paragraph 2 of this packing instruction, lithium metal or lithium alloy cells and batteries offered for transport are not subject to other additional requirements of these Instructions if they meet the requirements of this section. Lithium metal or lithium alloy cells and batteries, when complying with Section II of this packing instruction, are only subject to the following additional provisions of these Instructions:~~

- ~~— Part 1:2.3 (General — Transport of dangerous goods by post);~~
- ~~— Part 5:1.1 g) and j) (Shipper's responsibilities — General requirements);~~
- ~~— Part 7:2.1 (Operator's responsibilities — Loading restrictions on the flight deck and for passenger aircraft);~~
- ~~— Part 7:2.4.1 (Operator's responsibilities — Loading of cargo aircraft);~~
- ~~— Part 7:4.4 (Operator's responsibilities — Reporting of dangerous goods accidents and incidents);~~
- ~~— Part 8:1.1 (Provisions concerning passengers and crew — Dangerous goods carried by passengers or crew); and~~
- ~~— Paragraphs 1 and 2 of this packing instruction.~~

Lithium metal or lithium alloy cells and batteries may be offered for transport provided that each cell and battery meets the provisions of 2:9.3.1 a) and e) and the following:

- 1) for a lithium metal cell, the lithium content is not more than 1 g;
- 2) for a lithium metal or lithium alloy battery, the aggregate lithium content is not more than 2 g.

#### II.1 General requirements

Cells and batteries must be packed in strong outer packagings that conform to Part 4:1.1.1, 1.1.3.1 and 1.1.10 (except 1.1.10.1).

**Table 968-II**

<i>Contents</i>	<i>Lithium metal cells and/or batteries with a lithium content not more than 0.3 g</i>	<i>Lithium metal cells with a lithium content more than 0.3 g but not more than 1 g</i>	<i>Lithium metal batteries with a lithium content more than 0.3 g but not more than 2 g</i>
1	2	3	4
Maximum number of cells / batteries per package	No limit	8 cells	2 batteries
Maximum net quantity (mass) per package	2.5 kg	n/a	n/a

The limits specified in columns 2, 3 and 4 of Table 968-II must not be combined in the same package.

## Packing Instruction 968

DGP/25-WP/3 (see paragraph 3.5.1.1.1) and UN Model Regulations, SP 188 f), ST/SG/AC.10/42/Add.1 and DGP/25-WP/3 (see paragraphs 3.2.4.1 and 3.2.5.1.1 b) and c))

### II.2 Additional requirements

- Cells and batteries must be packed in inner packagings that completely enclose the cell or battery, then placed in a strong rigid outer packaging.
- Cells and batteries must be protected so as to prevent short circuits. This includes protection against contact with conductive materials within the same packaging that could lead to a short circuit.
- Each package must be capable of withstanding a 1.2 m drop test in any orientation without:
  - damage to cells or batteries contained therein;
  - shifting of the contents so as to allow battery to battery (or cell to cell) contact;
  - release of contents.
- ~~Each package must be labelled marked with a the appropriate lithium battery handling label mark (Figure 5-32 5-3) and the cargo aircraft only label (Figure 5-26 5-28).~~
- ~~the package must be of such size that there is adequate space to affix the mark on one side without the mark being folded.~~
- ~~the cargo aircraft only label must be located on the same surface of the package near the lithium battery handling label mark, if the package dimensions are adequate.~~

*Note. — Figure 5-32 and the provisions for a lithium battery handling label as contained in the 2015-2016 Edition of these Instructions may continue to be used until 31 December 2018.*

UN Model Regulations, SP 188 g), ST/SG/AC.10/42/Add.1 and DGP/25-WP/3 (see paragraph 3.2.4.1) and DGP/25-WP/3 (see paragraph 3.5.1.1.1)

- ~~Each consignment must be accompanied with a document with an indication that:~~
- ~~the package contains lithium metal cells or batteries;~~
- ~~the package must be handled with care and that a flammability hazard exists if the package is damaged;~~
- ~~special procedures must be followed in the event the package is damaged, to include inspection and repacking if necessary; and~~
- a telephone number for additional information.
- ~~A shipper is not permitted to offer for transport more than one package prepared according to this section in any single consignment.~~
- The words "lithium metal batteries, in compliance with Section II of PI968 — cargo aircraft only" or "lithium metal batteries, in compliance with Section II of PI968 — CAO" must be placed on the air waybill, when an air waybill is used.
- ~~Consignments Packages and overpacks of lithium metal batteries prepared in accordance with the provisions of Section II must not be consolidated with other shipments of dangerous goods or non-dangerous goods be offered to the operator separately from cargo which is not subject to these Instructions and must not be loaded into a unit load device before being offered to the operator.~~
- Any person preparing or offering cells or batteries for transport must receive adequate instruction on these requirements commensurate with their responsibilities.

DGP/25-WP/3 (see paragraph 3.5.1.1.1):

### II.3 Outer packagings

#### Boxes

Aluminium  
Fibreboard  
Natural wood  
Other metal  
Plastics  
Plywood  
Reconstituted wood  
Steel

#### Drums

Aluminium  
Fibre  
Other metal  
Plastics  
Plywood  
Steel

#### Jerricans

Aluminium  
Plastics  
Steel

Strong outer packagings

### Packing Instruction 968

DGP/25-WP/3 (see paragraph 3.5.1.1.1) (pending outcome of working group on performance standards) and DGP/25-WP/3 (see paragraph 3.2.5.1.1 b))

#### II.4 Overpacks

Not more than one package prepared in accordance with this section may be placed into an overpack. When the packages ~~are is~~ placed in an overpack, the lithium battery handling label mark and the cargo aircraft only label (Figure ~~5-26 5-28~~) required by this packing instruction must either be clearly visible or the labels mark and label must be affixed on the outside of the overpack and the overpack must be marked with the word "Overpack".

Note.— For the purpose of Section II, an overpack is an enclosure used by a single shipper that contains no more than one package prepared in accordance with this section. For shipments prepared in accordance with Section IA and/or IB, this limit of one package of Section II batteries per overpack still applies.

### Packing Instruction 969

Passenger and cargo aircraft for UN 3091 (packed with equipment) only

UN Model Regulations, SP 188, ST/SG/AC.10/42/Add.1 and DGP/25-WP/3 (see paragraph 3.2.4.1.1 d))

#### 1. Introduction

This entry applies to lithium metal or lithium alloy batteries packed with equipment.

Section I of this packing instruction applies to lithium metal and lithium alloy cells and batteries that are assigned to Class 9. Certain lithium metal and lithium alloy cells and batteries offered for transport and meeting the requirements of Section II of this packing instruction, subject to paragraph 2 below, are not subject to other additional requirements of these Instructions.

A single cell battery as defined in Part III, sub-section 38.3.2.3 of the UN Manual of Tests and Criteria is considered a "cell" and must be transported according to the requirements for "cells" for the purpose of this packing instruction.

DGP/25-WP/33 (see paragraph 5.10 of this report)

For the purpose of this packing instruction, "equipment" means apparatus for which the lithium cells or batteries will provide electrical power for its operation.

#### 2. Lithium batteries forbidden from transport

The following applies to all lithium metal cells and batteries in this packing instruction:

Cells and batteries, identified by the manufacturer as being defective for safety reasons, or that have been damaged, that have the potential of producing a dangerous evolution of heat, fire or short circuit are forbidden for transport (e.g. those being returned to the manufacturer for safety reasons).

## Packing Instruction 969

### I. SECTION I

Each cell or battery must meet all the provisions of 2;9.3.

#### I.1 General requirements

Part 4;1 requirements must be met.

UN number and proper shipping name	Package quantity (Section I)	
	Passenger	Cargo
UN 3091 <b>Lithium metal batteries packed with equipment</b>	5 kg of lithium metal cells or batteries	35 kg of lithium metal cells or batteries

#### I.2 Additional requirements

- Lithium metal cells and batteries must be protected against short circuits.
- Lithium metal cells or batteries must:
  - be placed in inner packagings that completely enclose the cell or battery, then placed in an outer packaging. The completed package for the cells or batteries must meet the Packing Group II performance requirements; or
  - be placed in inner packagings that completely enclose the cell or battery, then placed with equipment in a packaging that meets the Packing Group II performance requirements.
- The equipment must be secured against movement within the outer packaging and must be equipped with an effective means of preventing accidental activation.
- The number of cells or batteries in each package must not exceed the appropriate number for the equipment's operation, plus two spares.
- ~~For the purpose of this packing instruction, "equipment" means apparatus requiring the lithium batteries with which it is packed for its operation.~~
- For lithium metal cells and batteries prepared for transport on passenger aircraft as Class 9:
  - cells and batteries offered for transport on passenger aircraft must be packed in intermediate or outer rigid metal packaging surrounded by cushioning material that is non-combustible and non-conductive and placed inside an outer packaging.

#### I.3 Outer packagings

##### Boxes

Aluminium (4B)  
Fibreboard (4G)  
Natural wood (4C1, 4C2)  
Other metal (4N)  
Plastics (4H1, 4H2)  
Plywood (4D)  
Reconstituted wood (4F)  
Steel (4A)

##### Drums

Aluminium (1B2)  
Fibre (1G)  
Other metal (1N2)  
Plastics (1H2)  
Plywood (1D)  
Steel (1A2)

##### Jerricans

Aluminium (3B2)  
Plastics (3H2)  
Steel (3A2)

## Packing Instruction 969

DGP/25-WP/3 (see paragraph 3.5.1.4.1)

### II. SECTION II

~~With the exception of Part 1;2.3 (Transport of dangerous goods by post), 7;4.4 (Reporting of dangerous goods accidents and incidents), 8;1.1 (Dangerous goods carried by passengers or crew) and paragraph 2 of this packing instruction, lithium metal cells and batteries packed with equipment offered for transport are not subject to other additional requirements of these Instructions if they meet the requirements of this section. Lithium metal or lithium alloy cells and batteries packed with equipment, when complying with Section II of this packing instruction, are only subject to the following additional provisions of these Instructions:~~

- ~~— Part 1;2.3 (General — Transport of dangerous goods by post);~~
- ~~— Part 7;4.4 (Operator's responsibilities — Reporting of dangerous goods accidents and incidents);~~
- ~~— Part 8;1.1 (Provisions concerning passengers and crew — Dangerous goods carried by passengers or crew); and~~
- ~~— Paragraphs 1 and 2 of this packing instruction.~~

Lithium metal cells and batteries may be offered for transport provided that each cell and battery meets the provisions of 2;9.3.1 a) and e) and the following:

- 1) for a lithium metal cell, the lithium content is not more than 1 g;
- 2) for a lithium metal or lithium alloy battery, the aggregate lithium content is not more than 2 g.

#### II.1 General requirements

Cells and batteries must be packed in strong outer packagings that conform to Part 4;1.1.1, 1.1.3.1 and 1.1.10 (except 1.1.10.1).

<i>Contents</i>	<i>Package quantity (Section II)</i>	
	<i>Passenger</i>	<i>Cargo</i>
Net quantity of lithium metal cells or batteries per package	5 kg	5 kg

DGP/25-WP/3 (see paragraph 3.5.1.1.1) and UN Model Regulations, SP 188 f), ST/SG/AC.10/42/Add.1 and DGP/25-WP/3 (see paragraphs 3.2.4.1 and 3.2.5.1.1 e))

#### II.2 Additional requirements

- Lithium metal cells or batteries must:
  - be placed in inner packagings that completely enclose the cell or battery, then placed in a strong rigid outer packaging; or
  - be placed in inner packagings that completely enclose the cell or battery, then placed with the equipment in a strong rigid outer packaging.
- Cells and batteries must be protected so as to prevent short circuits. This includes protection against contact with conductive materials within the same packaging that could lead to a short circuit.
- The equipment must be secured against movement within the outer packaging and must be equipped with an effective means of preventing accidental activation.
- The number of cells or batteries in each package must not exceed the appropriate number for the equipment's operation, plus two spares.
- Each package of cells or batteries, or the completed package, must be capable of withstanding a 1.2 m drop test in any orientation without:
  - damage to cells or batteries contained therein;
  - shifting of the contents so as to allow battery to battery (or cell to cell) contact;
  - release of contents.
- ~~— Each package must be labelled marked with a the appropriate lithium battery handling label mark (Figure 5-32 5-3).~~
- ~~— the package must be of such size that there is adequate space to affix the mark on one side without the mark being folded.~~

### Packing Instruction 969

*Note.— Figure 5-32 and the provisions for a lithium battery handling label as contained in the 2015-2016 Edition of these Instructions may continue to be used until 31 December 2018.*

UN Model Regulations, SP 188 g), ST/SG/AC.10/42/Add.1 and DGP/25-WP/3 (see paragraph 3.2.4.1)

- ~~— Each consignment must be accompanied with a document with an indication that:~~
- ~~— the package contains lithium metal cells or batteries;~~
- ~~— the package must be handled with care and that a flammability hazard exists if the package is damaged;~~
- ~~— special procedures must be followed in the event the package is damaged, to include inspection and repacking if necessary; and~~
- ~~— a telephone number for additional information.~~
- The words “lithium metal batteries, in compliance with Section II of PI969” must be placed on the air waybill, when an air waybill is used.

DGP/25-WP/26 (see paragraph 5.8 of this report)

- ~~— Where a package contains a combination of lithium batteries contained in equipment and lithium batteries packed with equipment that meet the limits for lithium cells or batteries of Section II, the following additional requirements apply:~~
- ~~— the shipper must ensure that all applicable parts of both packing instructions are met. The total mass of lithium batteries contained in any package must not exceed 5 kg;~~
- ~~— the words “lithium metal batteries, in compliance with Section II of PI969” must be placed on the air waybill, when an air waybill is used.~~
- Any person preparing or offering cells or batteries for transport must receive adequate instruction on these requirements commensurate with their responsibilities.

DGP/25-WP/3 (see paragraph 3.5.1.1.1):

#### II.3 Outer packagings

<i>Boxes</i>	<i>Drums</i>	<i>Jerricans</i>
<u>Aluminium</u>	<u>Aluminium</u>	<u>Aluminium</u>
<u>Fibreboard</u>	<u>Fibre</u>	<u>Plastics</u>
<u>Natural wood</u>	<u>Other metal</u>	<u>Steel</u>
<u>Other metal</u>	<u>Plastics</u>	
<u>Plastics</u>	<u>Plywood</u>	
<u>Plywood</u>	<u>Steel</u>	
<u>Reconstituted wood</u>		
<u>Steel</u>		

Strong outer packagings

DGP/25-WP/3 (see paragraph 3.2.5.1.1 b))

#### II.4 Overpacks

When packages are placed in an overpack, the lithium battery ~~handling label mark~~ required by this packing instruction must either be clearly visible or the ~~label mark~~ must be affixed on the outside of the overpack and the overpack must be marked with the word “Overpack”.

## Packing Instruction 970

Passenger and cargo aircraft for UN 3091 (contained in equipment) only

UN Model Regulations, SP 188, ST/SG/AC.10/42/Add.1 and DGP/25-WP/3 (see paragraph 3.2.4.1.1 d))

### 1. Introduction

This entry applies to lithium metal or lithium alloy batteries contained in equipment.

Section I of this packing instruction applies to lithium metal and lithium alloy cells and batteries that are assigned to Class 9. Certain lithium metal and lithium alloy cells and batteries offered for transport and meeting the requirements of Section II of this packing instruction, subject to paragraph 2 below, are not subject to other additional requirements of these Instructions.

A single cell battery as defined in Part III, sub-section 38.3.2.3 of the [UN Manual of Tests and Criteria is considered a "cell" and must be transported according to the requirements for "cells" for the purpose of this packing instruction.](#)

DGP/25-WP/33 (see paragraph 5.10 of this report)

For the purpose of this packing instruction, "equipment" means apparatus for which the lithium cells or batteries will provide electrical power for its operation.

### 2. Lithium batteries forbidden from transport

The following applies to all lithium metal cells and batteries in this packing instruction:

Cells and batteries, identified by the manufacturer as being defective for safety reasons, or that have been damaged, that have the potential of producing a dangerous evolution of heat, fire or short circuit are forbidden for transport (e.g. those being returned to the manufacturer for safety reasons).

### I. SECTION I

Each cell or battery must meet all the provisions of 2;9.3.

#### I.1 General requirements

Equipment must be packed in strong [rigid](#) outer packagings that conform to Part 4;1.1.1, 1.1.3.1 and 1.1.10 (except 1.1.10.1).

UN number and proper shipping name	Package quantity (Section I)	
	Passenger	Cargo
UN 3091 <b>Lithium metal batteries contained in equipment</b>	5 kg of lithium metal cells or batteries	35 kg of lithium metal cells or batteries

#### I.2 Additional requirements

- The equipment must be secured against movement within the outer packaging and must be equipped with an effective means of preventing accidental activation.
- The equipment must be packed in strong outer packagings constructed of suitable material of adequate strength and design in relation to the packaging's capacity and its intended use unless the battery is afforded equivalent protection by the equipment in which it is contained.
- The quantity of lithium metal contained in any piece of equipment must not exceed 12 g per cell and 500 g per battery.

## Packing Instruction 970

### I.3 Outer packagings

#### Boxes

[Aluminium](#)  
[Fibreboard](#)  
[Natural wood](#)  
[Other metal](#)  
[Plastics](#)  
[Plywood](#)  
[Reconstituted wood](#)  
[Steel](#)

#### Drums

[Aluminium](#)  
[Fibre](#)  
[Other metal](#)  
[Plastics](#)  
[Plywood](#)  
[Steel](#)

#### Jerricans

[Aluminium](#)  
[Plastics](#)  
[Steel](#)

Strong outer packagings

DGP/25-WP/3 (see paragraph 3.5.1.4.1)

## II. SECTION II

~~With the exception of Part 1;2.3 (Transport of dangerous goods by post), 7;4.4 (Reporting of dangerous goods accidents and incidents), 8;1.1 (Dangerous goods carried by passengers or crew) and paragraph 2 of this packing instruction, lithium metal cells and batteries contained in equipment offered for transport are not subject to other additional requirements of these Instructions if they meet the requirements of this section. Lithium metal or lithium alloy cells and batteries contained with equipment, when complying with Section II of this packing instruction, are only subject to the following additional provisions of these Instructions:~~

- ~~— Part 1;2.3 (General — Transport of dangerous goods by post):~~
- ~~— Part 7;4.4 (Operator's responsibilities — Reporting of dangerous goods accidents and incidents):~~
- ~~— Part 8;1.1 (Provisions concerning passengers and crew — Dangerous goods carried by passengers or crew): and~~
- ~~— Paragraphs 1 and 2 of this packing instruction.~~

Lithium metal cells and batteries may be offered for transport provided that each cell and battery meets the provisions of 2;9.3.1 a) and e) and the following:

- 1) for a lithium metal cell, the lithium content is not more than 1 g;
- 2) for a lithium metal or lithium alloy battery, the aggregate lithium content is not more than 2 g.

Devices such as radio frequency identification (RFID) tags, watches and temperature loggers, which are not capable of generating a dangerous evolution of heat, may be transported when intentionally active. When active, these devices must meet defined standards for electromagnetic radiation to ensure that the operation of the device does not interfere with aircraft systems. The devices must not be capable of emitting disturbing signals (such as buzzing alarms, strobe lights, etc.) during transport.

### II.1 General requirements

Equipment containing batteries must be packed in strong outer packagings that conform to Part 4;1.1.1, 1.1.3.1 and 1.1.10 (except 1.1.10.1).

Contents	Package quantity (Section II)	
	Passenger	Cargo
Net quantity of lithium metal cells or batteries per package	5 kg	5 kg

## Packing Instruction 970

DGP/25-WP/3 (see paragraph 3.5.1.1.1) and UN Model Regulations, SP 188 f), ST/SG/AC.10/42/Add.1 and DGP/25-WP/3 (see paragraphs 3.2.4.1 and 3.2.5.1.1 b) and c)):

### II.2 Additional requirements

- The equipment must be secured against movement within the outer packaging and must be equipped with an effective means of preventing accidental activation.
- Cells and batteries must be protected so as to prevent short circuits.
- The equipment must be packed in strong rigid outer packagings constructed of suitable material of adequate strength and design in relation to the packaging's capacity and its intended use unless the battery is afforded equivalent protection by the equipment in which it is contained.
- ~~— Each package containing more than four cells or more than two batteries installed in equipment must be labelled with a lithium battery handling label (Figure 5-32) (except button cell batteries installed in equipment (including circuit boards)). Each package must be marked with the appropriate lithium battery mark (Figure 5-3). The package must be of such size that there is adequate space to affix the mark on one side without the mark being folded.~~
  - ~~— this requirement does not apply to:~~
    - ~~— packages containing only button cell batteries installed in equipment (including circuit boards); and~~
    - ~~— packages containing no more than four cells or two batteries installed in equipment, where there are not more than two packages in the consignment.~~

*Note.— Figure 5-32 and the provisions for a lithium battery handling label as contained in the 2015-2016 Edition of these Instructions may continue to be used until 31 December 2018.*

UN Model Regulations, SP 188 g), ST/SG/AC.10/42/Add.1 and DGP/25-WP/3 (see paragraph 3.2.4.1). Amendment replacing “ion” with “metal” was incorporated in 2015-2016 Edition by way of corrigendum.

- ~~— Each consignment with packages bearing the lithium battery handling label must be accompanied with a document with an indication that:~~
  - ~~— the package contains lithium metal cells or batteries;~~
  - ~~— the package must be handled with care and that a flammability hazard exists if the package is damaged;~~
  - ~~— special procedures must be followed in the event the package is damaged, to include inspection and repacking if necessary; and~~
  - ~~— a telephone number for additional information.~~
- Where a consignment includes packages bearing the lithium battery ~~handling label mark~~, the words “lithium ~~ion~~ metal batteries, in compliance with Section II of PI970” must be placed on the air waybill, when an air waybill is used.
- Any person preparing or offering cells or batteries for transport must receive adequate instruction on these requirements commensurate with their responsibilities.

DGP/25-WP/3 (see paragraph 3.5.1.1.1):

### II.3 Outer packagings

<i>Boxes</i>	<i>Drums</i>	<i>Jerricans</i>
<ul style="list-style-type: none"> <li><u>Aluminium</u></li> <li><u>Fibreboard</u></li> <li><u>Natural wood</u></li> <li><u>Other metal</u></li> <li><u>Plastics</u></li> <li><u>Plywood</u></li> <li><u>Reconstituted wood</u></li> <li><u>Steel</u></li> </ul>	<ul style="list-style-type: none"> <li><u>Aluminium</u></li> <li><u>Fibre</u></li> <li><u>Other metal</u></li> <li><u>Plastics</u></li> <li><u>Plywood</u></li> <li><u>Steel</u></li> </ul>	<ul style="list-style-type: none"> <li><u>Aluminium</u></li> <li><u>Plastics</u></li> <li><u>Steel</u></li> </ul>

Strong outer packagings

DGP/25-WP/3 (see paragraph 3.2.5.1.1 b))

### II.4 Overpacks

When packages are placed in an overpack, the lithium battery ~~handling label mark~~ required by this packing instruction must either be clearly visible or the ~~label mark~~ must be affixed on the outside of the overpack and the overpack must be marked with the word “Overpack”.

...

## Part 5

# SHIPPER'S RESPONSIBILITIES

...

## Chapter 2

### PACKAGE ~~MARKINGS~~ MARKING

...

---

DGP/25-WP/3 (see paragraphs 3.2.5.1.1 b) and c):

---

#### 2.4.16 Special marking requirements for lithium batteries

2.4.16.1 Packages containing lithium cells or batteries prepared in accordance with Section II of Packing Instructions 965 to 970 and Section IB of Packing Instructions 965 and 968 must be marked as shown in Figure 5-3.

2.4.16.2 The mark must indicate:

a) the appropriate UN number preceded by the letters "UN" as follows:

- 1) "UN 3090" for lithium metal cells or batteries;
- 2) "UN 3480" for lithium ion cells or batteries;
- 3) "UN 3091" for lithium metal cells or batteries contained in, or packed with, equipment; or
- 4) "UN 3481" for lithium ion cells or batteries contained in, or packed with, equipment;

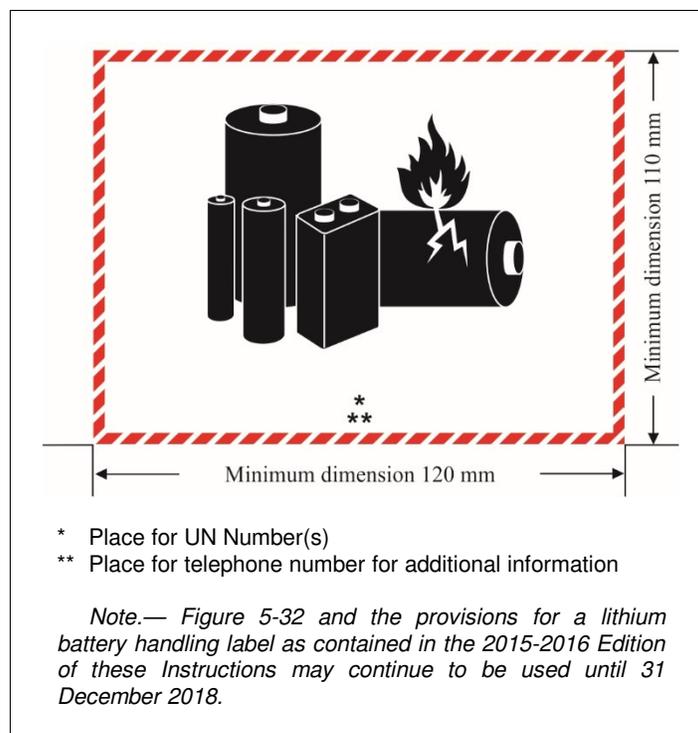
Where a package contains lithium cells or batteries assigned to different UN numbers, all applicable UN numbers must be indicated on one or more marks.

b) a telephone number for additional information.

2.4.16.3 The mark must be in the form of a rectangle with hatched edging. The symbol (group of batteries, one damaged and emitting flame, above the UN number for lithium ion or lithium metal batteries or cells) must be black on white. The hatching must be red. The mark must be a minimum dimension of 120 mm wide × 110 mm high and the minimum width of the hatching must be 5 mm. If the size of the package so requires, the dimensions/line thickness may be reduced to not less than 105 mm wide × 74 mm high. Where dimensions are not specified, all features must be in approximate proportion to those shown on the full-size mark (Figure 5-3).

2.4.16.4 Packages containing lithium batteries that meet the requirements of Section IB of Packing Instructions 965 or 968 must bear both the lithium battery mark (Figure 5-3) and the lithium battery Class 9 hazard label (Figure 5-26).

Insert new Figure 5-3:



**Figure 5-3. Lithium battery mark**

Renumber subsequent figures and update references accordingly

...

## Chapter 3

### LABELLING

...

#### 3.5 LABEL SPECIFICATIONS

##### 3.5.1 Class hazard label specifications

...

3.5.1.1 Labels must satisfy the provisions of this section and conform, in terms of colour, symbols and general format, to the specimen labels shown in Figures [5-3](#), [5-4](#) to [5-24](#), [5-26](#).

...

- c) With the exception of labels for Divisions 1.4, 1.5 and 1.6 of Class 1, the upper half of the label must contain the pictorial symbol and the lower half must contain the class or, in the case of labels for Class 5, the division number, as appropriate. The lower half of the label must also contain the pictorial symbol on the Class 9 label for lithium cells and batteries (Figure 5-26). The label may include such text as the UN number, or words describing the hazard

class (e.g. “flammable”) in accordance with 3.5.1.1 e) provided that the text does not obscure or detract from the other required label elements.

- d) In addition, except for Divisions 1.4, 1.5 and 1.6, labels for Class 1 must show in the lower half, above the class number, the division number and compatibility group letter for the substance or article. Labels for Divisions 1.4, 1.5 and 1.6 must show in the upper half the division number and in the lower half the class number and the compatibility group letter.

UN Model Regulations, paragraph 5.2.2.1.5, ST/SG/AC.10/42/Add.1 and DGP/25-WP/3 (see paragraph 3.2.5.1)

In addition to new text related to the Class 9 label for lithium batteries, further amendments to sub-paragraph e) are made for the sake of harmonization with the UN Model Regulations as shown below.

~~e) Unless otherwise provided for in these Instructions, only text indicating the nature of the risk may be inserted in the lower half of the label (in addition to the class or division number or compatibility group). On labels other than those for material of Class 7, the insertion of any text (other than the class or division number or compatibility group) in the space below the symbol must be confined to particulars indicating the nature of the risk and precautions to be taken in handling. In the case of the Class 9 label for lithium cells and batteries (Figure 5-26), no text other than the class mark must be included in the bottom part of the label.~~

...

### 3.5.2 Handling labels

...

UN Model Regulations, paragraph 5.2.1.9, ST/SG/AC.10/42/Add.1 and DGP/25-WP/3 (see paragraph 3.2.5.1.1 b)) Requirement for a handling label now a requirement for a mark (see 5 2.4.16)

#### ~~— 3.5.2.2 — Lithium battery handling label~~

~~≠ Packages containing lithium batteries that meet the requirements of Section II of Packing Instructions 965 to 970 must bear a “Lithium battery” handling label shown in Figure 5-32, as required by the applicable packing instruction. The label must be a minimum dimension of 120 mm wide × 110 mm high except labels of 105 mm wide × 74 mm high may be used on packages containing lithium batteries where the packages are of dimensions such that they can only bear smaller labels. When the reduced size label is used, the label features must be in approximate proportion to those shown on the full size label (Figure 5-32). The label must show “Lithium metal batteries” or “Lithium ion batteries”, as applicable, and a telephone number for additional information. Where the package contains both types of batteries, the label must show “Lithium metal and lithium ion batteries”. Packages containing lithium batteries that meet the requirements of Section IB of Packing Instructions 965 and 968 must bear both a “Lithium battery” handling label shown in Figure 5-32 and a Class 9 hazard label (Figure 5-24).~~

...

UN Model Regulations, paragraph 5.2.5, ST/SG/AC.10/42/Add.1 and DGP/25-WP/3 (see paragraph 3.2.5.1.1 c))

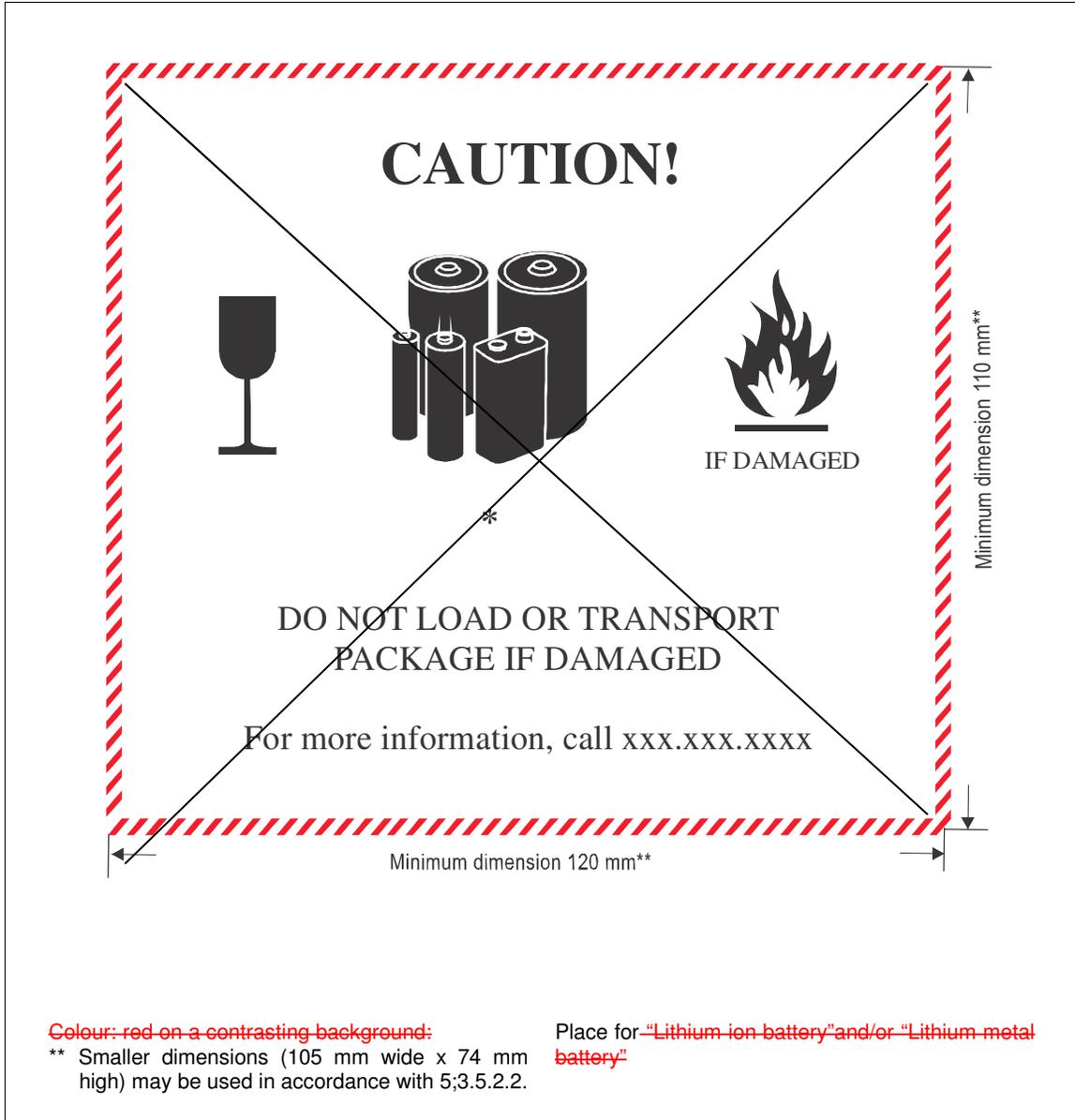


Figure 5-32. — Lithium battery handling label

≠

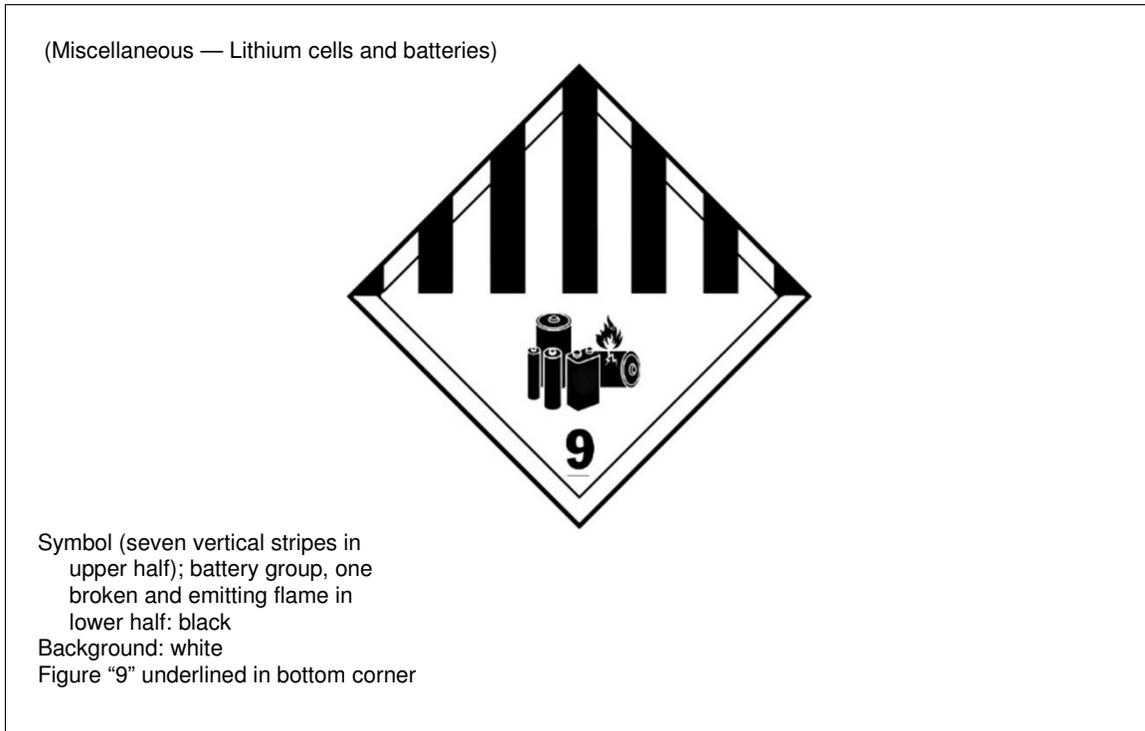
---

UN Model Regulations, paragraph 5.2.2.2.2, ST/SG/AC.10/42/Add.1 and DGP/25-WP/3 (see paragraph 3.2.5.1)

---

Insert the following new Figure 5-26:

---



**Figure 5-26. Miscellaneous dangerous goods — lithium batteries, Class 9**

---

*Renumber* subsequent figures accordingly and revise references throughout Technical Instructions as applicable.

---

...

## Part 7

### OPERATOR'S RESPONSIBILITIES

...

#### INTRODUCTORY NOTES

Note 1.— Annex 19 includes safety management provisions for air operators. Further guidance is contained in the Safety Management Manual (SMM) (Doc 9859).

Note 2.— The carriage of dangerous goods is included in the scope of the operator's safety management system (SMS).

Note 3.— This Part details the responsibilities of operators with regard to the acceptance, handling and loading of dangerous goods. However, nothing contained herein should be interpreted as requiring an operator to transport a particular article or substance or as preventing an operator from imposing special requirements on the transport of a particular article or substance. Also, nothing in this Part is intended to preclude a ground handling agent from carrying out some or all of the functions of an operator. However, such ground handling agents are subject to the operator's responsibilities of Part 7.

...

## Chapter 1

### ACCEPTANCE PROCEDURES

...

#### 1.7 CONDUCTING SAFETY RISK ASSESSMENTS

Operators engaged in commercial air transport operations should include a safety risk assessment process for the transport of dangerous goods as part of their approved safety management system to comply with Annex 6 and 19. This safety risk assessment should include appropriate information to result in implementation of safety measures that ensure the safe transport of dangerous goods including lithium batteries and cells as cargo.

...

## Part 8

PROVISIONS CONCERNING  
PASSENGERS AND CREW

...

Table 8-1. Provisions for dangerous goods carried by passengers or crew

Items or articles	Location			Approval of the operator(s) is required	The pilot-in-command must be informed	Restrictions
	Checked baggage	Carry-on baggage	On the person			
...						
Consumer articles						
...						
DGP/25-WP/31 (see paragraph 5.9 of this report)						
1920) Portable electronic devices (such as watches, calculating machines, cameras, cellular phones, laptop computers, camcorders, <u>electronic baggage tags</u> )						
Portable electronic devices <del>(including medical devices)</del> containing lithium metal or lithium ion cells or batteries (articles containing lithium metal or lithium ion cells or batteries the primary purpose of which is to provide power to another device must be carried as spare batteries in accordance with the item below)	Yes	Yes	Yes	No	No	a) carried by passengers or crew for personal use; b) should be carried as carry-on baggage; c) each battery must not exceed the following: <ul style="list-style-type: none"> <li>— for lithium metal batteries, a lithium content of <u>not more than</u> 2 grams; or</li> <li>— for lithium ion batteries, a Watt-hour rating of <u>not more than</u> 100 Wh;</li> </ul> d) if devices are carried in checked baggage, measures must be taken to prevent unintentional activation; and e) if devices are carried outside the baggage, e.g. <u>electronic baggage tags, the device must provide adequate protection for the battery fitted inside the device;</u>

Items or articles	Location			Approval of the operator(s) is required	The pilot-in-command must be informed	Restrictions
	Checked baggage	Carry-on baggage	On the person			
						<p>f) <u>electronic baggage tags which are not capable of generating a dangerous evolution of heat may be transported when intentionally active. Devices must meet defined standards for electromagnetic radiation to ensure that the operation of the device does not interfere with aircraft systems. Devices must not be capable of emitting disturbing signals (such as buzzing alarms, strobe lights, etc.) during transport. The device in or on checked baggage must be designed with a minimum of two independent means to turn off completely, turn off cellular or mobile functions, or a combination of both when airborne.</u></p> <p>g) <u>the electronic baggage tag may only contain one lithium battery and the device must not exceed the following:</u></p> <ul style="list-style-type: none"> <li>— <u>for lithium metal batteries and cells, a lithium metal content of 1.0 gram with no cells in the battery or device larger than 0.3 grams; or</u></li> <li>— <u>for lithium ion batteries and cells, a Watt-hour rating of 2.7 Wh;</u></li> </ul> <p>eh) batteries and cells must be of a type which meets the requirements of each test in the UN <i>Manual of Tests and Criteria</i>, Part III, subsection 38.3.</p>

...

## المرفق (ب)

التعديلات المقترحة إدخالها على الأحكام المتعلقة ببطاريات الليثيوم في  
التعليمات الفنية للنقل الآمن للبضائع الخطرة بطريق الجو  
الموصى بإدراجها في طبعة 2015-2016 من التعليمات  
الفنية عن طريق إضافة

## Packing Instruction 965

Passenger and cargo aircraft for UN 3480

...

## IA. SECTION IA

Each cell or battery must meet all the provisions of 2;9.3.

## 1AIA.1 General requirements

— Part 4;1 requirements must be met.

— Lithium ion cells and batteries must be offered for transport at a state of charge not exceeding 30 per cent of their rated capacity. Cells and/or batteries at a state of charge greater than 30 per cent of their rated capacity may only be shipped with the approval of the State of Origin and the State of the Operator under the written conditions established by those authorities.

*Note.— Guidance and methodology for determining the rated capacity can be found in sub-section 38.3.2.3 of the UN Manual of Tests and Criteria.*

...

## IB.1 General requirements

— Cells and batteries must be packed in strong outer packagings that conform to Part 4;1.1.1, 1.1.3.1 and 1.1.10 (except 1.1.10.1).

— Lithium ion cells and batteries must be offered for transport at a state of charge not exceeding 30 per cent of their rated capacity. Cells and/or batteries at a state of charge greater than 30 per cent of their rated capacity may only be shipped with the approval of the State of Origin and the State of the Operator under the written conditions established by those authorities.

*Note.— Guidance and methodology for determining the rated capacity can be found in sub-section 38.3.2.3 of the UN Manual of Tests and Criteria.*

...

## Packing Instruction 965

### II. SECTION II

With the exception of Part 1;2.3 (General — Transport of dangerous goods by post), 5;1.1 g) and j) (Shipper's responsibilities — General requirements), 7;4.4 (Operator's responsibilities — Reporting of dangerous goods accidents and incidents), 8;1.1 (Provisions concerning passengers and crew — Dangerous goods carried by passengers or crew) and paragraph 2 of this packing instruction, lithium ion cells and batteries offered for transport are not subject to other additional requirements of these Instructions if they meet the requirements of this section.

...

#### II.1 General requirements

- Cells and batteries must be packed in strong outer packagings that conform to Part 4;1.1.1, 1.1.3.1 and 1.1.10 (except 1.1.10.1).
- Lithium ion cells and batteries must be offered for transport at a state of charge not exceeding 30 per cent of their rated capacity.

*Note.— Guidance and methodology for determining the rated capacity can be found in sub-section 38.3.2.3 of the UN Manual of Tests and Criteria.*

...

#### II.2 Additional requirements

...

- A shipper is not permitted to offer for transport more than one package prepared according to this section in any single consignment.
- The words "lithium ion batteries, in compliance with Section II of PI965" must be placed on the air waybill, when an air waybill is used.
- Packages and overpacks of lithium ion batteries prepared in accordance with the provisions of Section II must be offered to the operator separately from cargo which is not subject to these Instructions and must not be loaded into a unit load device before being offered to the operator.
- Any person preparing or offering cells or batteries for transport must receive adequate instruction on these requirements commensurate with their responsibilities.

...

#### II.4 Overpacks

Not more than one package prepared in accordance with this section may be placed into an overpack. When the packages ~~are~~ is placed in an overpack, the lithium battery handling label required by this packing instruction must either be clearly visible or the label must be affixed on the outside of the overpack and the overpack must be marked with the word "Overpack".

*Note.— For the purpose of Section II, an overpack is an enclosure used by a single shipper that contains no more than one package prepared in accordance with this section. For shipments prepared in accordance with Section IA and/or IB, this limit of one package of Section II batteries per overpack still applies.*

...

<b>Packing Instruction 968</b>	
Cargo aircraft only for UN 3090	
DGP/25-WP/3 (see paragraph 3.5.1.4.1)	
<b>II. SECTION II</b>	
...	
<b>II.2 Additional requirements</b>	
...	
<p><del>— A shipper is not permitted to offer for transport more than one package prepared according to this section in any single consignment.</del></p> <p>— The words "lithium metal batteries, in compliance with Section II of PI968 — cargo aircraft only" or "lithium metal batteries, in compliance with Section II of PI968 — CAO" must be placed on the air waybill, when an air waybill is used.</p> <p><del>— Consignments—Packages and overpacks</del> of lithium metal batteries prepared in accordance with the provisions of Section II must <del>not be consolidated with other shipments of dangerous goods or non-dangerous goods</del> be offered to the operator separately from cargo which is not subject to these Instructions and must not be loaded into a unit load device before being offered to the operator.</p> <p>— Any person preparing or offering cells or batteries for transport must receive adequate instruction on these requirements commensurate with their responsibilities.</p>	
...	
<b>II.4 Overpacks</b>	
<p><u>Not more than one package prepared in accordance with this section may be placed into an overpack.</u> When <u>the packages are is</u> placed in an overpack, the lithium battery handling label and the cargo aircraft only label (Figure 5-26) required by this packing instruction must either be clearly visible or the labels must be affixed on the outside of the overpack and the overpack must be marked with the word "Overpack".</p> <p><u>Note.— For the purpose of Section II, an overpack is an enclosure used by a single shipper that contains no more than one package prepared in accordance with this section. For shipments prepared in accordance with Section IA and/or IB, this limit of one package of Section II batteries per overpack still applies.</u></p>	

## المرفق (ج)

التعديلات المقترحة إدخالها على الإضافة الملحقة بالتعليمات الفنية

## Part S-3

## DANGEROUS GOODS LIST, SPECIAL PROVISIONS AND QUANTITY LIMITATIONS

### (ADDITIONAL INFORMATION FOR PART 3 OF THE TECHNICAL INSTRUCTIONS)

## Chapter 6

## SPECIAL PROVISIONS

...

## Table S-3-4. Special Provisions

*Supplementary special provisions*

...

DGP/25 (see paragraph 5.4.9 of this report)

A331 assigned to UN 3480 in the Supplement

A331 Lithium ion cells or batteries may be offered for transport at a state of charge greater than 30 per cent of their rated capacity with the approval of the State of Origin and the State of the Operator under the written conditions established by those authorities. When considering an approval, at a minimum, the following criteria should be considered to mitigate risks posed by a lithium cell or battery heat, smoke or fire event inside a package at the cell, battery or package level:

- a) no hazardous amount of flame is allowed outside the package;
- b) the external surface temperature of the package cannot exceed the amount that would ignite adjacent packing material or cause batteries or cells in adjacent packages to go into thermal runaway;
- c) no hazardous fragments can exit the package and the package must maintain structural integrity; and
- d) the quantity of flammable vapour emitted must be less than the amount of gas that when mixed with air and ignited could cause a pressure pulse that could dislodge the overpressure panels of the aircraft cargo compartment or damage the aircraft cargo compartment liners.

-----



**APPENDIX D****HIGH-LEVEL PERFORMANCE STANDARDS DEVELOPED BY THE  
THIRD INTERNATIONAL MULTIDISCIPLINARY LITHIUM  
BATTERY TRANSPORT COORDINATION MEETING AND  
RECOMMENDATIONS FOR INTERIM MEASURES****HIGH-LEVEL PERFORMANCE STANDARDS 1.**

1.1 The Third International Multidisciplinary Lithium Battery Transport Coordination Meeting meeting agreed the following standards to be appropriate to mitigate the risks posed by a fire developing inside a package containing lithium batteries or cells and determined that they could be met at either the package or battery/cell level:

- a) No hazardous amount of flame is allowed outside the package;
- b) The external surface temperature of the package cannot exceed the amount that would ignite adjacent packing material or cause batteries or cells in adjacent packages to go into thermal runaway [100°C];
- c) No hazardous fragments can exit the package and the package must maintain structural integrity; and
- d) The quantity of flammable vapour must be less than the amount of gas that when mixed with air and ignited could cause a pressure pulse in a [2.83 m<sup>3</sup>] volume that could dislodge the overpressure panels of the compartment or damage the cargo liner [3.45 kPa].

*Note.— [2.83 m<sup>3</sup>] volume is representative of the empty volume in the forward cargo compartment of a 737-200 aircraft with a 70 percent cargo load factor which when ignited could cause a pressure pulse that, according to airframe manufacturers' specifications, could dislodge the overpressure panels of the compartment or damage the cargo liner [3.45 kPa].*

It could be assumed that smoke released outside the package may not be a consideration if the event is contained within the package.

**INTERIM RECOMMENDATIONS 2.**

2.1 Noting that the development of performance standards could take several years to develop, the meeting was asked to consider interim measures that operators could consider as part of a risk mitigation strategy. The need for a multi-layered mitigation strategy was emphasized.

2.2 The meeting recommended that operators perform a safety risk assessment in order to establish if they could manage the risks associated with the transport of lithium batteries as cargo on passenger or all-cargo aircraft to an acceptable level of safety. In order to perform a safety risk assessment, information on the types and quantities of lithium batteries and cells being transported would need to be considered. The very limited capabilities of the fire protection system in a lithium battery fire event would also need to be considered.

2.3 The meeting also recommended that guidance on how to conduct and evaluate a safety risk assessment be developed for operators and regulators.

## 2.4 Mitigation measures

2.4.1 Some mitigation measures were suggested, including shipping lithium ion batteries at a reduced state of charge and introducing additional cargo loading controls.

### Reduced state of charge

2.4.2 The results of tests conducted at the FAA Technical Centre demonstrated that propagation of thermal runaway did not occur for the majority of cells tested when the state of charge was reduced to 30 per cent. Representatives of the battery industry reported, however, that a 30 per cent state of charge was not appropriate for all battery types and that reducing it to that level could introduce a new safety risk if the battery was not shipped from origin to final destination within a short period of time as their test results had shown the potential for cell degradation at lower states of charge for certain cells and batteries. Regardless, there was agreement that transporting lithium ion batteries at a reduced state of charge could be an effective mitigation measure for certain cells and batteries, whilst recognizing that regulating and overseeing this type of a measure would be difficult.

### Cargo loading controls

2.4.3 Other interim measures suggested included additional cargo loading controls such as limiting the number of batteries loaded in one place and segregating them from other dangerous goods. The feasibility of implementing such measures for batteries shipped under Section II of the packing instructions for lithium batteries was raised, recognizing that these batteries are not fully declared dangerous goods. Likewise, illegally undeclared and both intentionally and unintentionally misdeclared lithium batteries effected the feasibility of implementing such measures. The subject of Section II batteries and misdeclared/undeclared batteries was also raised in relation to safety risk assessments and risk mitigation and whether or not an operator could perform an effective assessment and implement effective mitigation measures without knowing what quantities or types of batteries were being offered for transport.

2.4.4 Loading lithium batteries under fire resistant containment covers or unit load devices equipped with fire suppression systems was considered as another potential mitigation measure, although the FAA Technical Centre test results demonstrating the potential for flammable gases emitted from venting lithium ion cells to collect, ignite and result in an explosion in closed compartments needed to be considered. Further testing by the FAA Technical Centre revealed that the gas vented from eight 18650 cells was enough to cause such a condition. It was reported, however, that new developments in fire resistant containment covers and ULD construction for freighter aircraft were showing the potential to safely contain the hazards from lithium ion cells.

-----

البند 6 من جدول الأعمال: القيام، إن أمكن، ببحث بنود الأعمال غير المتكررة التي حدتها لجنة الملاحة الجوية أو فريق الخبراء:

6-1-1 إعداد إطار عالمي لتبادل المعلومات بشأن الحوادث والوقائع المرتبطة بالبضائع الخطرة

6-1-1-1 تقرير الفريق العامل التابع لفريق خبراء البضائع الخطرة بشأن الإبلاغ

6-1-1-1-1 بدأ العمل على تطوير نظام الإبلاغ عن الحوادث المرتبطة بالبضائع الخطرة عقب الاجتماع الثالث والعشرين لفريق خبراء البضائع الخطرة DGP/23 بناءً على طلب لجنة الملاحة الجوية خلال استعراضها للتقرير الصادر عن الاجتماع الأول للفريق العامل الجامع المعني بطائرات الليثيوم التابع لفريق خبراء البضائع (مونتريال، من 6 إلى 10/2/2012) (DGP-WG/LB/1). وكان الفريق العامل قد أوصى في البداية بإبلاغ الايكاو عن الحوادث المرتبطة بطائرات الليثيوم لنشرها على موقع إلكتروني متاح للعموم. وكان من المسلم به أن هذه المعلومات توفر أدوات لتحديد العوامل السببية والثغرات المحتملة في اللوائح التنظيمية. وطلبت لجنة الملاحة الجوية في وقت لاحق من الأمانة العامة أن تنتظر في وضع نظام للإبلاغ عن الحوادث المرتبطة بالبضائع الخطرة يتجاوز حدود بطائرات الليثيوم ليشمل جميع البضائع الخطرة.

6-1-1-2 شرع فريق عمل مخصص في إعداد النظام من خلال مراسلات وعقد اجتماعات قصيرة وجهها لوجه أثناء اجتماعات الفريق العامل التابع لفريق الخبراء، بيد أنه تبين أن العمل بلغ من التعقيد مبلغاً تعذر معه إحراز تقدم دون عقد لقاءات مخصصة وجهاً لوجه. وبناءً على ذلك، عقد الفريق العامل المعني بالإبلاغ التابع لفريق الخبراء اجتماعه في ريو دي جانيرو في أغسطس 2015.

6-1-1-3 عقد الفريق العامل أهمية كبيرة على تحديد هدف النظام بشكل واضح. مع الأخذ في الاعتبار للتوجيه الأولي للجنة الملاحة الجوية بتطوير نظام يمكن استخدامه كأداة لتحديد العوامل السببية والثغرات المحتملة في اللوائح التنظيمية، ولم يكن الأمر واضحاً للفريق من حيث ما يتعين توقعه من إجراءات نتيجة لذلك. فهل سيكون الهدف أن يكون مجرد مصدر معلومات للأمانة العامة للايكاو وأجهزة الحكم فيها أو أن يكون متاحاً للدول المتعاقدة؟ هل سيجري استخدامه لتحديد مدى ضرورة إجراء تغييرات في اللوائح المعنية بالبضائع الخطرة أو إجراء مزيد من التدريب و/أو إجراء الأبحاث اللازمة؟ هل سيجري تحليله وتقييمه لرصد الاتجاهات، أو الشواغل على المستوى الإقليمي أو القطري حيث يمكن للايكاو أن تخصص موارد إضافية. وهل ينبغي أن يقتصر الإبلاغ على الحوادث المرتبطة بالبضائع الخطرة والوقائع الخطيرة؛ أو هل ينبغي أن يشمل الحوادث الأخرى؛ وفي حين كان يتوقع أن تصدر برامج السلامة الوطنية معلومات يمكن نقلها إلكترونياً إلى الايكاو؛ فسيكون هناك رسم على الموارد التقنية والإدارية. وقرر الفريق أن هناك حاجة إلى الحصول على مزيد من الإرشادات في هذا الصدد من لجنة الملاحة الجوية.

6-1-1-4 وبغض النظر عما هو متوقع من النظام، فقد رأى الفريق أن فعالية النظام ستعتمد على جودة واتساق المعلومات التي توفرها الدول. وفي إطار النظر في متطلبات الإبلاغ الحالية التي يتضمنها الملحق 18 والتعليمات الفنية، حدد الفريق عدة ثغرات بين المرفق 18 والتعليمات الفنية والمجالات التي يتعين تعهدها بمزيد من التوضيح فيما يتعلق بمسؤوليات الإبلاغ والإشراف، وقرر وضع معالجة هذا الشأن على رأس الأولويات. وكان تحقيق التناغم مع الأحكام المعمول بها في الملحق ذات الصلة هدفاً بارزاً لهذه العملية، وعلى هذا النحو فقد عمل الفريق على ضمان التوافق بين الملحق 13 - التحقيق في حوادث ووقائع الطائرات، والملحق 19 - إدارة السلامة. وقد شمل ذلك أيضاً وضع تعاريف جديدة ومنفحة للأحكام التي من شأنها أن توفر التفاصيل الكافية في الإبلاغ. وبدأ الفريق في إعداد مواد إرشادية بشأن مسؤوليات الإبلاغ والإشراف للدول، وكان يُتوخى إدراجها في الإضافة الملحقة بالتعليمات الفنية.

5-1-1-6 ازداد حجم مشروع التعديلات على الملحق 18 والتعليمات الفنية والإضافة الملحقة بالتعليمات الفنية أكثر مما كان مرجوياً في بداية الأمر، ولكن لا يزال يتعين الاضطلاع بالكثير من العمل الضروري قبل وجود حزمة كاملة. ولهذا السبب، فقد رأى الفريق أن النهج المفضل هو إطلاع فريق الخبراء بالتقدم المحرز والتماس الأسئلة والتعليقات منه.

6-1-1-6 لم يكن هناك اعتراضات من فريق الخبراء على النهج الذي اتبعه الفريق العامل، وتم الاتفاق على أن يواصل الفريق العامل العمل على وضع أحكام شاملة بشأن الإبلاغ في الملحق 18، وفي التعليمات الفنية، وإعداد مواد إرشادية من أجل الإضافة الملحقة بالتعليمات الفنية.

-----

البند 6 من جدول الأعمال: القيام، إن أمكن، ببحث بنود الأعمال غير المتكررة التي حدّتها لجنة الملاحاة الجوية أو فريق الخبراء:

6-2: إعداد أحكام للتدريب القائم على الكفاءة فيما يتعلّق بالبضائع الخطرة

6-2-1-1 التدريب القائم على الكفاءة الموجّه إلى العاملين في

مجال البضائع الخطرة وموظفي الدول

(DGP/25-WP/37)

6-2-1-1-1 عرّض في الاجتماع الشكل النهائي لأحكام التدريب والمواد الإرشادية التي وضعها الفريق العامل المعني بالتدريب التابع لفريق الخبراء. وتضمنت المادة أحكام التدريب المنقحة في الجزء 1؛ 4 من التعليمات الفنية والمواد الإرشادية الداعمة. وتضمنت المواد الإرشادية كذلك إطاراً قائماً على الكفاءة من أجل العاملين في مجال البضائع الخطرة. كما تضمنت المواد إطاراً قائماً على الكفاءة لموظفي الدول لإدراجه في الإضافة الملحقة بالتعليمات الفنية. واقترح إدراج أحكام التدريب المنقحة؛ في إضافة جديدة (4) إلى التعليمات الفنية كتدبير انتقالي إلى جانب المواد الإرشادية الداعمة. وستظل المواد الإرشادية في الإضافة 4 في الطبقات المقبلة من التعليمات الفنية، وكان من المتوقع أن يجري نقل أحكام التدريب المنقحة إلى الجزء 1؛ 4، لتحل محل الأحكام الموجودة في الجزء 1؛ 4 في طبعة 2019-2020 من التعليمات الفنية.

6-2-1-2 أثار فريق الخبراء مخاوف متعلقة بالبند الجديد المقترح (الجزء 1؛ 4-1) الذي يهدف إلى معالجة الجهات التي لم يُعهد إليها بمسؤوليات في التعليمات الفنية، ولكنها لا تزال مُطلّبة بالتدريب في مجال البضائع الخطرة (مثل طاقم مقصورة الركاب) وتوضيح أن الجهات المعنية بمناولة البضائع (غير الخطرة) لا تزال مطالبة بالتدريب للتوعية بالبضائع الخطرة. واقترح أن الإلزام بالتدريب للتوعية بالبضائع الخطرة لجهات مثل وكلاء الشحن الذين لا يقومون بمناولة البضائع الخطرة كان خارج نطاق الملحق 18 والتعليمات الفنية. وخُصّ الفريق إلى أن نطاق الملحق 18 أوسع بكثير من مجرد التدريب، وأوصى بأن ينظر فيه فريق الخبراء بكامل هيئته. وبالتالي، فقد أُثير هذا الموضوع في ورقة عمل منفصلة في إطار البند 1 من جدول الأعمال (انظر الفقرة 1-3 من هذا التقرير). وسيجري تنقيح النص خلال الفترة الانتقالية ليعكس نتائج العمل على توضيح نطاق الملحق 18 وأيضاً على المدخلات التي تقدمها الدول.

6-2-1-3 أزيل من أحكام التدريب الموجودة في الجزء المنقح 1؛ 4 الجدولان 1-4 و1-5، المعنيان بنقل البضائع الخطرة مع تحديد مختلف فئات الموظفين الذين يتعين أن يكونوا على دراية بهذا الشأن. وثمة إدراك بأن هذا تغيير كبير نظراً لأنه على الرغم من أن القصد من هذين الجدولين أن يكونا بمثابة مادة إرشادية، إلا أنهما كانا يعتبران بشكل كبير كمتطلبين إلزاميين حيث تم تطوير برامج تدريبية عديدة في جميع أنحاء العالم بناءً عليهما. ومع ذلك، فقد قرر فريق الخبراء أن تطوير برامج التدريب القائم على الكفاءة من شأنه أن يلغي الحاجة إلى تضمين مثل هذين الجدولين في التعليمات الفنية، وأن إبقاءهما سيكون عائقاً أمام تحقيق هدف الانتقال ببرامج التدريب من مجرد تدريب موضوعي إلى مادة تقوم على المهام بما يتناسب مع المسؤوليات. وسيكون هناك بدلاً من ذلك، مصفوفة أدوات جديدة لمساعدة مطوري برامج التدريب على تحديد نطاق المعرفة الذي يتعين أن يكون عليه الأفراد الذين يؤدون وظائف محددة. وكان من المتوخى أن تعزز هذه الأداة نهجاً أكثر تحليلاً من أجل مطوري برامج التدريب لاستخدامه في تحديد نوع ومستوى المعرفة اللازمين لأداء وظائف محددة، بما يعزز الحاجة إلى تحديد الاحتياجات التدريبية بما يتناسب مع المسؤوليات.

6-2-1-4 كانت هناك اعتراضات قوية على إزالة الجدولين من أحد أعضاء فريق الخبراء الذي، على الرغم من دعمه نظرياً للحجة المضادة للإبقاء على الجدولين، فإنه يرى أنهما مفيدان في إبراز متطلبات التدريب الدنيا، لا سيما في الدول والمنظمات التي لم يكن لديها الموارد والخبرة الكافية لتحديد الاحتياجات التدريبية في مجال البضائع الخطرة. وأشار إلى أن أحكام التدريب المنقحة ستعني أنه سيجب على الدول إعادة المصادقة على برامج التدريب لديها، الأمر الذي من شأنه أن يكون

مهمة مضمينة. كما كان لديه مخاوف جدية أنه من دون الإرشادات التي يوفرها هذان الجدولان، فسوف ينتهي الأمر بالجهات المعنية إلى برامج تدريب محدودة يمكن أن تؤثر سلباً في السلامة. واقترح بالتالي الإبقاء على الجدولين كخيار مواز نحو الامتثال على الأقل إلى أن يتم جمع مزيد من المعلومات حول فعالية التنفيذ.

6-1-2-6 أبدأ فريق الخبراء تقديره للشواغل التي أثرت بشأن إزالة الجدولين 1-4 و 1-5، واقترح بعض الأعضاء أن ذلك قد سلط الضوء على ضرورة توزيع المادة على أوسع نطاق ممكن للدول وأوساط الصناعة للنظر فيها وإبداء التعليقات. على أن يجري تنقيح المادة بناءً على ما يرد من تعليقات، بل ربما يرى فريق الخبراء ضرورة لإطالة فترة السنتين الانتقاليين. وتم التأكيد على أن الهدف من المتطلبات الجديدة لم يكن مختلفاً بأي شكل عما كان مقصوداً من متطلبات التدريب الحالية، وهو ضمان تدريب جميع الموظفين على الأداء بكفاءة لما يكلفون به من واجبات بشأن البضائع الخطرة. وكان النهج القائم على الكفاءة أحد أساليب تحقيق هذا الهدف، ولكن لم يكن هناك أي شرط لاتباعه، ما يهم هو فقط تحقيق النتيجة المرجوة. وكان أعضاء فريق الخبراء واثقين بأن نهج التدريب القائم على الوظائف من شأنه أن يزيد من كفاءة تدريب الموظفين أكثر من الأحكام الحالية التي تركز على التدريب الموضوعي.

6-1-2-6 تضع الأحكام الجديدة مزيداً من التأكيد على ضرورة التقييم المستمر للموظفين. وكانت هناك بعض المخاوف من أن يستلزم الأمر توفير مزيد من التوضيح للمواد الإرشادية الخاصة بالعاملين الذين يقومون بعملية التقييم، وبرنامج التدريب في مجال البضائع الخطرة، والتمييز بين الاثنتين. ودار بعض النقاش حول تحديد المسؤول عن تقييم مؤهلات المدرب، وما هو نطاق دور الدولة في الإشراف على ذلك. وأشار إلى أنه يتعين توضيح ذلك في المواد الإرشادية.

6-1-2-7 تضمنت أحكام التدريب المنقحة ملاحظة تنص على أنه يتعين أن تتضمن جميع الدورات التدريبية أحكاماً للبضائع الخطرة التي يحملها الركاب وأفراد الطاقم. ونظراً لأنه يمكن اعتبار هذه الملاحظة غير متغاممة مع مفهوم التدريب على أساس الكفاءة، فقد طُلب من فريق الخبراء النظر فيما إذا كان ينبغي الإبقاء عليها. ولم يؤيد بعض أعضاء الفريق فكرة الإبقاء على الملاحظة. فهم يعتقدون أنها تتنافى مع مبادئ التدريب القائم على الكفاءة نظراً لأن هذه المعرفة المحددة ليست ضرورية لأداء جميع المهام المتعلقة بالبضائع الخطرة بكفاءة. بينما يعتقد البعض الآخر أنه ينبغي إدراج هذه الملاحظة باعتبارها أداة توعية مع التسليم بأن هناك احتمال أن تكون جميع فئات الموظفين للركاب. وكان هذا هو المنطق الأساسي وراء التوصية بالتدريب على الأحكام المعنية بالركاب لجميع فئات الموظفين في الجدول الحالي 1-4. وبعد الكثير من النقاش، تم الموافقة على مذكرة منقحة تركز على توفير المعلومات عن أحكام البضائع الخطرة التي يحملها الركاب أو أفراد الطاقم وليس عن الأفراد الذين يجري تدريبهم.

6-1-2-8 لم تكن هناك اعتراضات على نشر التقيحات المقترحة بشأن الجزء 1؛ 4 والمواد الإرشادية لدعم ذلك في إضافة جديدة (4) إلى طبعة 2017-2018 من التعليمات الفنية. وبمجرد الموافقة عليها من لجنة الملاحة الجوية والمجلس، سيجري نشر المادة أيضاً على الموقع الإلكتروني العام للابكاو من أجل التشاور مع العموم. ويمكن طرح أسئلة محددة على الدول وأوساط الصناعة بشأن المجالات التي يرى فريق الخبراء أنها تحتاج إلى مزيد من الدراسة. وإذا لزم الأمر، سيقوم الفريق العامل التابع لفريق الخبراء المعني بالتدريب بإعداد تقيحات للمادة لكي يقوم فريق الخبراء بدراستها بناءً على التعليقات التي ترد بشأنها. فإذا أشارت التعليقات إلى عدم جاهزية الدول وأوساط الصناعة لتنفيذ أحكام جديدة، فسيجري حينئذ النظر في تمديد الفترة الانتقالية. وخلاف ذلك، فسيجري اقتراح إدراج أحكام التدريب المنقحة الموجودة في الجزء 1؛ 4 في طبعة 2019-2020 من التعليمات الفنية باعتبارها متطلبات إلزامية. وستظل المواد الإرشادية كما هي في الإضافة 4.

9-1-2-6 اتفق فريق الخبراء أيضاً على دمج إطار الكفاءات لموظفي الدول في الطبعة 2019-2020 من الإضافة الملحقة بالتعليمات الفنية. وسيجري إصدار كتاب المنظمة إلى الدول متضمناً طلباً من الدول بأن ترسل تعليقاتها في هذا الشأن.

**توصية 1/6 - تعديل وثيقة التعليمات الفنية للنقل الآمن للبضائع الخطرة بطريق الجو (Doc 9824) لإدراجها في طبعة 2017-2018 بحيث تتضمن أحكام التدريب القائم على الكفاءة**

أن تقدم الأحكام المتعلقة بالتدريب القائم على الكفاءة في إضافة جديدة (4) إلى طبعة 2017-2018 من التعليمات الفنية بغرض المراجعة واستطلاع الآراء والتعليقات من الدول وأوساط الصناعة.

-----

البند 6 من جدول الأعمال: القيام، إن أمكن، ببحث بنود الأعمال غير المتكررة التي حدّتها لجنة الملاحه الجوية أو فريق الخبراء:

3-6: إعداد مواد إرشادية بشأن مواجهة الاستخدام المحتمل للبضائع الخطرة في أفعال التدخل غير المشروع

1-3-6 فرقة العمل المختصة المشتركة بين فريق خبراء البضائع الخطرة وفريق خبراء أمن الطيران

1-1-3-6 بناءً على طلب الأمين العام، تشكلت فرقة عمل مختصة مشتركة من أجل تطوير مواد إرشادية بشأن مواجهة الاستخدام المحتمل للبضائع الخطرة في أفعال التدخل غير المشروع. وكان ذلك في إطار الاستجابة للأهمية المتزايدة التي يوليها مجلس الايكاو لضرورة التنسيق بين فريق خبراء أمن الطيران (AVSECP) وفريق خبراء البضائع الخطرة (DGP).

2-1-3-6 أنجزت فرقة العمل المختصة المشتركة بعض الأعمال الأولية في عام 2013، وقدمت تقريراً إلى فريق خبراء البضائع الخاصة (DGP/25) وفريق خبراء أمن الطيران (AVSECP/25)، (انظر الفقرة 4-5 من تقرير فريق خبراء البضائع الخطرة (DGP/24)). ولم يحرز تقدم يذكر في عمل فرقة العمل منذ ذلك الحين. بيد أن فريق خبراء البضائع الخطرة أوصى بمواصلة بذل الجهود للمشاركة مع فريق خبراء أمن الطيران.

-----

البند 6 من جدول الأعمال: القيام، إن أمكن، ببحث بنود الأعمال غير المتكررة التي حدّتها لجنة الملاحه الجوية أو فريق الخبراء:

4-6: النظر في إجراءات انتقالية لإدخال تعديلات على التعليمات الفنية

1-4-6 الاعتبارات الانتقالية (DGP/25-WP/40)

1-1-4-6 نظر الفريق العامل التابع لفريق خبراء البضائع الخطر في اجتماعيه DGP-WG14 و DGP-WG15 في السماح بوجود فترة انتقالية قبل أن تصبح أحكام الطبقات الجديدة من التعليمات الفنية أحكاماً إلزامية. غير أن فريق الخبراء لم يؤيد أن يكون السماح بوجود فترة انتقالية قاعدة قياسية لجميع الأحكام، ولكنه وافق على أن يجري النظر في منح فترة انتقالية لبعض التغييرات التي يُرى أنها مناسبة لمنح الشاحنين مهلة من الوقت للامتثال للمتطلبات الواردة في الطبعة الجديدة من التعليمات الفنية.

2-1-4-6 ووافق الاجتماع على منح فترة انتقالية مدتها ثلاثة أشهر قبل إلزام الشاحنين بتطبيق معايير التصنيف الجديدة وأرقام تصنيف الأمم المتحدة (UNxxxx) للمحركات. وأضيفت ملاحظة تحت البند الخاص الجديد A208، وتحت متطلبات وثيقة نقل البضائع الخطرة (5؛ 1-4-1-4) لهذا الغرض (انظر المرفق (أ) بالتقرير عن البند 2 من جدول الأعمال).

3-1-4-6 لم يحظ الاقتراح بتقليص الفترة الانتقالية المنصوص عليها لعلامة بطاريات الليثيوم من سنتين إلى سنة واحدة بالتأييد، نظراً للاعتقاد بأن ذلك من شأنه أن يسبب صعوبات للنقل متعدد الوسائط.

-----



**المرفق (أ)****أحكام التدريب المقترح إدراجها في الإضافة الجديدة (4) الملحقه بالتعليمات الفنية****Attachment 4****PROPOSED NEW TRAINING PROVISIONS  
(APPLICABLE FROM 1 JANUARY 2019)****INTRODUCTORY CHAPTER****PROPOSED REVISIONS TO THE TRAINING PROVISIONS**

The training provisions are undergoing an extensive review by the Dangerous Goods Panel (DGP) which will result in revisions to Part 1;4 and the addition of new guidance material in an attachment to these Instructions. Proposed revisions to Part 1;4 are temporarily included as part of this attachment in this edition of the Instructions for the purpose of review and feedback to ICAO by relevant parties.

Chapter 1 of this attachment provides the proposed new training requirements which will replace current Part 1;4 in the 2019-2020 Edition of these Instructions. Chapters 2 to 4 provide guidance material on implementing a competency-based approach to training specific to dangerous goods which will stay in this attachment as Chapters 1 to 3 in the 2019-2020 Edition of the Technical Instructions.

The proposed revisions to Part 1;4 and guidance material can also be found on the ICAO public website at [www.icao.int/safety/DangerousGoods](http://www.icao.int/safety/DangerousGoods). Comments on the revised training provisions are welcome and should be submitted through that website by 31 March 2017. Based on comments received, further amendments to the proposed new provisions may be made by the DGP for further consideration at its twenty-sixth meeting which will be held during the fourth quarter of 2017.

---

## Chapter 1

### PROPOSED NEW PART 1, CHAPTER 4 — DANGEROUS GOODS TRAINING (Applicable from 1 January 2019)

Replace Part 1, Chapter 4 of the Technical Instructions with the following:

#### INTRODUCTORY NOTE

The objective of a dangerous goods training programme is to ensure that persons are competent to perform their assigned functions. An approach to achieving this objective is provided in Chapter 2 to Attachment 4.

## Chapter 4

### DANGEROUS GOODS TRAINING

*Parts of this Chapter are affected by State Variations AE 2, BR 7, CA 11, HK 1;  
see Table A-1*

#### 4.1 GENERAL REQUIREMENTS

Whether or not training requirements for entities involved in the transport of non-dangerous goods as cargo were within the scope of Annex 18 and the Technical Instructions was discussed at DGP/25. It was agreed that the scope was not clearly defined (see paragraph 1.2 of the DGP/25 Report). The following alternative provisions are therefore tentatively proposed and will be finalized based on the outcome of work to clarify the scope of Annex 18 (see DGP/25 Report on Agenda Item 1, paragraph 1.2).

[The employer must ensure that personnel are competent to perform any function described in these Instructions for which they are responsible prior to performing any of these functions. This must be achieved through training and assessment. ]  
[The employer must ensure that personnel with responsibilities for the processing, acceptance or handling of cargo, mail or passengers or of checked and/or carry-on baggage are competent to perform the function for which they are responsible prior to performing any of these functions. This must be achieved through training and assessment.]

*Note.—Guidance on developing a competency-based approach to training is provided in Chapter 2 to Attachment 4.*

#### 4.2 TRAINING PROGRAMMES

4.2.1 The employer must establish and maintain a dangerous goods training programme.

*Note.—A training programme includes elements such as design methodology, assessment, initial and recurrent training, instructor qualifications and competencies, training records and evaluation of the effectiveness of training.*

4.2.2 All operators must establish a dangerous goods training programme regardless of whether or not they are approved to transport dangerous goods as cargo.

4.2.3 Personnel must be trained and assessed commensurate with the functions for which they are responsible prior to performing any of these functions. Personnel that have received training but that are assigned to new functions must be assessed to determine their competence in respect of their new function. If competency is not demonstrated, appropriate additional training must be provided. Personnel must be trained to recognize the hazards presented by dangerous goods, to safely handle them and to apply appropriate emergency response procedures.

[ *Note.—In order to prevent the introduction of undeclared dangerous goods into air transport, any person who performs functions that may indirectly impact the movement of cargo, COMAT, baggage, passengers, or mail such as passenger or cargo reservation personnel and engineering personnel should also be trained.*]

4.2.4 Security personnel who are involved with the screening of passengers and crew and their baggage and cargo or mail must be trained irrespective of whether the operator on which passenger or cargo is to be transported carries dangerous goods as cargo.

4.2.5 Personnel must receive recurrent training and assessment within 24 months of previous training and assessment to ensure that competency has been maintained. However, if recurrent training and assessment is completed within the final

three months of validity of the previous training and assessment, the period of validity extends from the month on which the recurrent training and assessment was completed until 24 months from the expiry month of that previous training and assessment.

4.2.6 Training courses may be developed and delivered by or for the employer.

*Note.— General information on the provisions for dangerous goods carried by passengers and crew (see Part 8) should be included in training courses, as appropriate.*

4.2.7 The employer must maintain a record of training and assessment for personnel.

4.2.7.1 The record of training and assessment must include:

- a) the individual's name;
- b) the most recent training and assessment completion month;
- c) a description, copy or reference to training and assessment materials used to meet the training and assessment requirements;
- d) the name and address of the organization providing the training and assessment; and
- e) evidence which shows that personnel have been assessed as competent.

4.2.7.2 Training and assessment records must be retained by the employer for a minimum period of 36 months from the most recent training and assessment completion month and must be made available upon request to personnel or the appropriate national authority.

4.2.8 Dangerous goods training programmes for operators must be approved by the appropriate authority of the State of the Operator in accordance with the provisions of Annex 6 — *Operation of Aircraft*.

4.2.9 Dangerous goods training programmes required for entities other than operators and designated postal operators should be approved as determined by the appropriate national authority.

### 4.3 INSTRUCTOR QUALIFICATIONS AND COMPETENCIES

4.3.1 Unless otherwise provided for by the appropriate national authority, instructors of initial and recurrent dangerous goods training must demonstrate or be assessed as competent in instruction and the function that they will instruct prior to delivering such training.

4.3.2 Instructors delivering initial and recurrent dangerous goods training must at least every 24 months deliver such courses, or in the absence of this attend recurrent training.

### 4.4 DESIGNATED POSTAL OPERATORS

4.4.1 Staff of designated postal operators must be trained commensurate with their responsibilities. The subject matter to which their various categories of staff should be familiar with is indicated in Table 1-4.

4.4.2 Dangerous goods training programmes for designated postal operators must be subjected to review and approval by the civil aviation authority of the State where the mail was accepted by the designated postal operator.

**Table 1-4. Content of training courses for staff of designated postal operators**

<i>Aspects of transport of dangerous goods by air with which they should be familiar, as a minimum</i>	<i>Designated postal operators</i>		
	<i>Categories of staff</i>		
	<i>A</i>	<i>B</i>	<i>C</i>
General philosophy	x	x	x
Limitations	x	x	x
General requirements for shippers	x		
Classification	x		
List of dangerous goods	x		
Packing requirements	x		
Labelling and marking	x	x	x
Dangerous goods transport document and other relevant documentation	x	x	
Acceptance of the dangerous goods listed in 1;2.3.2	x		
Recognition of undeclared dangerous goods	x	x	x
Storage and loading procedures			x
Provisions for passengers and crew	x	x	x
Emergency procedures	x	x	x

**CATEGORIES**

- A — Staff of designated postal operators involved in accepting mail containing dangerous goods  
 B — Staff of designated postal operators involved in processing mail (other than dangerous goods)  
 C — Staff of designated postal operators involved in the handling, storage and loading of mail

*Note.— Guidance on the aspects of training to be covered by staff of designated postal operators can be found in S-1;3.*

## Chapter 2

# GUIDANCE ON A COMPETENCY-BASED APPROACH TO DANGEROUS GOODS TRAINING

### 2.1 INTRODUCTION

ICAO has recognized that the implementation of a competency-based approach to training for safety-critical functions is essential to ensure that enough qualified and competent personnel support the air transport system. This chapter provides guidance to Contracting States in implementing a competency-based approach to dangerous goods training and assessment for personnel involved in the transport of cargo, mail, passengers and baggage by air. The *Procedures for Air Navigation Services — Training* (PANS-TRG, Doc 9868) contains greater detail on competency-based training and assessment.

### 2.2 COMPETENCY-BASED TRAINING AND ASSESSMENT

2.2.1 Conventional dangerous goods training is typically designed around the job title and is subject-matter driven (e.g. Table 1-4 in Part 1;4 of this edition of the Technical Instructions lists the subject matter relating to dangerous goods which various categories of personnel should be familiar). Competency-based training is designed to ensure that personnel can perform the function for which they are responsible.

2.2.2 The development of competency-based training and assessment is based on a systematic approach whereby competencies and their standards are defined, training is based on the competencies identified, and assessments are developed to determine whether these competencies have been achieved.

2.2.3 Competencies describe what a competent person's performance on the job should be. The PANS-TRG defines competency as "a combination of skills, knowledge and attitudes required to perform a task to the prescribed standard".

2.2.4 A critical feature of competency-based training is continuous assessment to ensure training is efficient and effective in order to provide the skills, knowledge and attitudes required to perform the function.

*Note.— Competency-based training and assessment is described in more detail in the PANS-TRG, Chapter 2, 2.2.*

### 2.3 COMPETENCY-BASED PROVISIONS IN ICAO

2.3.1 Competency-based approaches are used to prepare professionals for a variety of domains besides aviation (e.g. medical education, the oil and gas industry, pharmaceutical industry, social work, teacher education).

2.3.2 In 2006, ICAO introduced the multi-crew pilot licence (MPL) in Annex 1 — *Personnel Licensing*. This was the first competency-based training provision developed by ICAO. It resulted from the work of the Flight Crew Licensing and Training Panel (FCLTP) whose goal was to develop provisions that would not put conventional pilot training methods out of compliance but would allow an alternative training path that made use of contemporary instructional methods. The FCLTP developed the first edition of the PANS-TRG to provide detailed procedures to assist States and the industry in implementing the MPL.

2.3.3 Since then, ICAO has introduced several competency frameworks in its provisions related to the following:

- a) aircraft maintenance personnel (PANS-TRG, Doc 9868);
- b) flight procedure designers (*The Quality Assurance Manual for Flight Procedure Design* (Doc 9906), Volume 2);
- c) flight validation pilots (Doc 9906, Volume 6);
- d) designated medical examiners (*Manual of Civil Aviation Medicine* (Doc 8984)); and
- e) air traffic controllers and air traffic safety electronics personnel (PANS TRG, Doc 9868)

## 2.4 BENEFITS OF COMPETENCY-BASED TRAINING TO THE SAFE TRANSPORT OF DANGEROUS GOODS BY AIR

### 2.4.1 Supports safety management systems (SMS)

2.4.1.1 Annex 19 requires operators conducting international commercial air transport in accordance with Annex 6, Part I or Part III, to implement an SMS. An operator's SMS addresses the aviation activities that are related to the safe operation of the aircraft. These aviation activities include the carriage of dangerous goods in the scope of the operator's SMS. Other entities in the dangerous goods transport chain should be encouraged to implement a similar safety system.

2.4.1.2 Implementing SMS requires that all personnel understand the safety philosophy and embrace a disciplined and standardized approach for SMS. Personnel need to know their roles and responsibilities with respect to dangerous goods and have the requisite competencies to perform their functions within the SMS. Therefore, the depth of training each person receives should be appropriate to the functions they perform. This could range from a familiarization level to expert-level for dangerous goods professionals. To ensure that personnel have the knowledge, skills and abilities to support SMS, training activities should follow the competency-based approach.

2.4.1.3 The "Swiss-Cheese" Model of accident causation proposes that complex aviation systems are extremely well defended by layers of defences making single-point failures rarely consequential in such systems (see paragraph 2.3 of the *Safety Management Manual (SMM)* (Doc 9859)). The model illustrates that accidents involve successive breaches of multiple system defences and that all accidents include a combination of both active conditions (actions or inactions that have an immediate adverse effect) and latent conditions (conditions that exist in the aviation system well before a damaging outcome is experienced). Doc 9859 identifies training as one of the three main groups of defences in aviation and identifies deficiencies in training as a latent condition. The importance of clearly-defined competency-based training is essential for the design and delivery of training programmes aimed at developing qualified personnel better able to eliminate or mitigate risks related to the safe transport of dangerous goods by air.

### 2.4.2 Facilitates development of effective dangerous goods training and reduces risks

2.4.2.1 The application of competency-based training will benefit the safe transport of dangerous goods, which may reduce occurrences that could introduce risk to the aviation system. Currently the training requirement in the Technical Instructions is based on evidence that personnel have completed the dangerous goods course and successfully passed the test. This, however, does not guarantee that personnel can apply what was learned in the course while performing their functions. A competency-based training approach designs training and assessment that is specific to their functions and not just theoretical knowledge about dangerous goods.

2.4.2.2 The acceptance of dangerous goods for air transport requiring an operator to verify that the dangerous goods are properly prepared for transport can be used as an example. This verification is accomplished through a checklist process so as to prevent dangerous goods not properly prepared from being transported on the aircraft. However, if training has not adequately prepared personnel to complete this process, risks to the aircraft and its occupants may be introduced if an improperly prepared shipment is accepted and transported. In addition, without adequate ability to complete the acceptance process, the shipment may be rejected even though it is properly prepared. This can cause increased costs to the shipper and the operator and delay the shipment.

2.4.2.3 Another example would be the preparation of dangerous goods shipments which includes identifying, classifying, packaging, marking, labelling and documentation for the transport of dangerous goods. These functions are considered critical and key to the correct transport of dangerous goods. In competency-based training, shipper's knowledge, skills and abilities should result in demonstrating their proficiency to meet these functions. It is critical that dangerous goods shipments are prepared in compliance with the Technical Instructions prior to offering the shipment for transport to an operator. This should reduce the number of improperly-prepared shipments thus reducing cost and the introduction of risk into the aviation system.

## 2.5 DRIVING PRINCIPLES

### 2.5.1 The "function" approach

2.5.1.1 The Technical Instructions state that personnel must be trained in the requirements commensurate with their responsibilities. Responsibilities are not necessarily category/job specific as indicated in Tables 1-4 and 1-5 in Part 1;4 of this edition of the Technical Instructions. For example, in smaller operations, a person may perform many functions such as accepting dangerous goods and loading/securing dangerous goods on board an aircraft. This person's training must address all of the functions performed. Also, entities such as ground handling companies and freight forwarders may perform functions that are specific to a shipper or an operator. These entities must train their personnel commensurate with their responsibilities and functions they perform regardless of their job title. Concentrating on functions and responsibilities rather than a job title or description will ensure that a person is competent to perform the function in compliance with the Technical Instructions.

2.5.1.2 Tables 1-4 and 1-5 in Part 1;4 of this edition of the Technical Instructions refer only to the aspect of knowledge that personnel should have to perform their specific job, but do not cover the "how to" part of their job. The focus of competency-based training is to ensure that personnel can perform their job. Tables 1-4 and 1-5 in current Part 1;4 do not support a competency-based approach.

## 2.6 ROLES AND RESPONSIBILITIES IN A COMPETENCY-BASED APPROACH TO TRAINING

### 2.6.1 Employer

2.6.1.1 Employers need to determine the purpose and objective of the competency-based training programme based on the functions for which their personnel are responsible. A training programme includes elements such as design methodology, initial and recurrent training, assessment, instructor qualifications and competencies, training records and evaluation of its effectiveness.

2.6.1.2 Employers should ensure that training is designed and developed to establish clear links among the competencies to be achieved, learning objectives, assessment methods, and course materials.

### 2.6.2 Instructor

2.6.2.1 In competency-based training, the instructor facilitates the trainee's progression towards the achievement of competencies. They also collect information about the effectiveness of the training materials which supports continuous improvement. See instructor competencies in PANS-TRG.

### 2.6.3 Trainee

2.6.3.1 In competency-based training, trainees are active participants in their learning process and the achievement of competencies as opposed to passive recipients of knowledge. The competency-based training programme provides them with a clear idea of their learning path towards competency through the training programme and beyond. The competency-based training should directly contribute to improving their performance on the job. Trainees' feedback is essential in ensuring that competency-based training is effective.

### 2.6.4 Regulator

2.6.4.1 There are important differences between the ways the regulator would oversee a traditional training programme versus a competency-based training programme. In a traditional training programme, the authority may assess the course components and final test against the elements described in Part 1, Chapter 4, Tables 1-4 and 1-5 of this edition of the Technical Instructions. The fact that all components of any course are there (or appear to be there) and trainees pass the required test does not necessarily mean that they can perform their assigned functions competently.

2.6.4.2 Where competency-based training has been implemented, regulators should oversee the training programme to ensure that it actually produces personnel that can perform the function for which they are responsible in a specific operational setting and in compliance with the national regulatory framework.

## 2.7 DEVELOPING COMPETENCY-BASED TRAINING FOR DANGEROUS GOODS

### 2.7.1 Methods used to develop the ICAO competency framework

2.7.1.1 A competency framework for dangerous goods personnel and a complementary flowchart are provided in Chapters 3 and 4. The competency framework consists of competency units, competency elements and performance criteria which are defined in the PANS-TRG as:

- a) **Competency unit.** A discrete function consisting of a number of competency elements.
- b) **Competency element.** An action that constitutes a task that has a triggering event and a terminating event that clearly defines its limits, and an observable outcome.
- c) **Performance criteria.** Simple, evaluative statements on the required outcome of the competency element and a description of the criteria used to judge whether the required level of performance has been achieved.

2.7.1.2 All responsibilities of personnel involved in transport of dangerous goods by air are described by the following six functions which correspond to the competency units:

- a) classifying dangerous goods;

- b) preparing a dangerous goods shipment;
- c) processing/accepting cargo;
- d) managing cargo pre-loading;
- e) accepting passenger and crew baggage; and
- f) transporting cargo/baggage.

The flowchart in Chapter 3 illustrates the typical processes of performing these functions.

*Note.— Reporting of dangerous accidents, incidents and other occurrences have not been included as a function as reporting may be required at any point after dangerous goods have been prepared for transport.*

## 2.7.2 Methods to develop competency-based training

2.7.2.1 An employer conducts a training needs analysis to determine what they need as a result of training and what their resources are to achieve this result. This critical step will ensure that training fits the employer's purpose and is effective.

2.7.2.2 The employer selects the appropriate competencies associated with the functions that its personnel perform from the ICAO competency framework. In doing so, employers must consider their own operational and organizational environments. For example, one operator may accept dangerous goods shipments as cargo while another may not; a shipper may be dealing with a single class of dangerous goods, while another deals with many. In addition, an employer must consider domestic and international regulatory requirements that apply to their operations. Prior to proceeding with the development of competency-based training, where appropriate, employers should liaise directly with the regulator to ensure that their requirements are taken into account.

2.7.2.3 The employer then determines the level of knowledge and/or skills necessary to perform each of the customized competencies. For example, the person accepting dangerous goods will not require the same level of knowledge and/or skills related to classification as someone who is classifying dangerous goods. Chapter 5 provides a sample matrix tool that can be used to determine the knowledge personnel performing specific functions should maintain. Functions corresponding to the competency framework provided in Chapter 3 are listed across the columns of the table and subject matter (knowledge) is listed down the rows. The employer should indicate what knowledge is needed for a particular function within the organization with a check mark at the point at which the competency element and the knowledge element intersect.

2.7.2.4 The employer must study the target population (future trainees) with a view to identifying the knowledge, skills and attitudes that they already have, to collect information on preferred learning styles, and on the social and linguistic environments of prospective trainees, all of which could have an impact on the training design. The target population may be a mixture of experienced and newly recruited personnel, groups differing in age, etc. All this information is important for determining the knowledge, skills and attitudes already possessed by the target population and for designing the most appropriate programme of instruction.

2.7.2.5 The employer documents the result of the above work as its own customized competency framework. The training curriculum can then be developed based on this competency framework.

2.7.2.6 Competency-based training requires continuous assessment of the trainee's progress until they are competent to perform their assigned function. A trainee's assessment may be completed through a variety of tools including observation of job performance, tests or other practical exercises. In order for assessment tools to be effective, they must be valid and reliable both in terms of being an appropriate measure of the competency being tested and of obtaining consistent results with different raters and ratings.

2.7.2.7 To ensure its effectiveness, the employer should continuously evaluate the training programme. The purpose of this evaluation is to determine the extent to which the training fulfils the purpose for which it was designed. Where appropriate, corrective actions should be implemented and the training programme re-evaluated.

## Chapter 3

### DANGEROUS GOODS COMPETENCY FRAMEWORK

#### ABBREVIATIONS USED

<i>Abbreviation</i>	<i>Meaning</i>
CU	Competency unit
CE	Competency element
PC	Performance criteria

#### COMPETENCY FRAMEWORK

##### CU 1 Classifying dangerous goods

- CE 1.1 Evaluate substances or articles against classification criteria, as applicable
  - PC 1.1.1 Determine if it is dangerous goods
  - PC 1.1.2 Determine if it is forbidden under any circumstances
- CE 1.2 Determine dangerous goods description
  - PC 1.2.1 Determine class or division
  - PC 1.2.2 Determine packing group, if applicable
  - PC 1.2.3 Determine proper shipping name and UN number
  - PC 1.2.4 Determine if it is forbidden unless approval or exemption is granted
- CE 1.3 Review special provisions
  - PC 1.3.1 Assess if special provision(s) is applicable
  - PC 1.3.2 Apply special provision(s)

##### CU 2 Preparing dangerous goods shipment

- CE 2.1 Assess packing options including quantity limitations
  - PC 2.1.1 Consider limitations (de minimis quantities, excepted quantities, limited quantities, passenger aircraft, cargo aircraft only, special provisions)
  - PC 2.1.2 Consider State and operator variations
  - PC 2.1.3 Determine if all-packed-in-one can be used
  - PC 2.1.4 Select how dangerous goods will be shipped based on limitations and variations
- CE 2.2 Apply packing requirements
  - PC 2.2.1 Consider constraints of packing instructions
  - PC 2.2.2 Select packaging materials (absorbent, cushioning, etc.)
  - PC 2.2.3 Assemble package
- CE 2.3 Apply marks and labels
  - PC 2.3.1 Determine applicable marks
  - PC 2.3.2 Apply marks
  - PC 2.3.3 Determine applicable labels
  - PC 2.3.4 Apply labels
- CE 2.4 Determine if overpack can be used
  - PC 2.4.1 Apply marks if necessary
  - PC 2.4.2 Apply labels if necessary
- CE 2.5 Prepare documentation
  - PC 2.5.1 Complete the dangerous goods transport document
  - PC 2.5.2 Complete other transport documents (e.g. AWB)
  - PC 2.5.3 Include other required documentation (e.g. approvals/exemptions, etc.), as applicable
  - PC 2.5.4 Retain copies of documents as required

**CU 3 Processing/accepting cargo**

- CE 3.1 Review documentation
  - PC 3.1.1 Verify air waybill
  - PC 3.1.2 Verify dangerous goods transport document
  - PC 3.1.3 Verify other documents as applicable (exemptions, approvals, etc.)
  - PC 3.1.4 Verify State/operator variations
- CE 3.2 Review package(s)
  - PC 3.2.1 Verify marking
  - PC 3.2.2 Verify label
  - PC 3.2.3 Verify package type
  - PC 3.2.4 Verify package conditions
  - PC 3.2.5 Verify State/operator variations
- CE 3.3 Complete acceptance procedures
  - PC 3.3.1 Complete acceptance checklist, if applicable
  - PC 3.3.2 Provide shipment information for load planning
  - PC 3.3.3 Retain documents as required
- CE 3.4 Process/accept cargo other than dangerous goods
  - PC 3.4.1 Check documentation for indications of undeclared dangerous goods
  - PC 3.4.2 Check packages for indications of undeclared dangerous goods

**CU 4 Managing cargo pre-loading**

- CE 4.1 Plan loading
  - PC 4.1.1 Determine stowage requirements
  - PC 4.1.2 Determine segregation, separation, aircraft/compartment limitations
- CE 4.2 Prepare load for aircraft
  - PC 4.2.1 Check packages for indications of undeclared dangerous goods
  - PC 4.2.2 Check for damage and/or leakage
  - PC 4.2.3 Apply stowage requirements (e.g. segregation, separation, orientation)
  - PC 4.2.4 Apply ULD tags when applicable
  - PC 4.2.5 Transport cargo to aircraft
- CE 4.3 Issue NOTOC
  - PC 4.3.1 Enter required information
  - PC 4.3.2 Verify conformance with load plan
  - PC 4.3.3 Transmit to loading personnel

**CU 5 Accepting passenger and crew baggage**

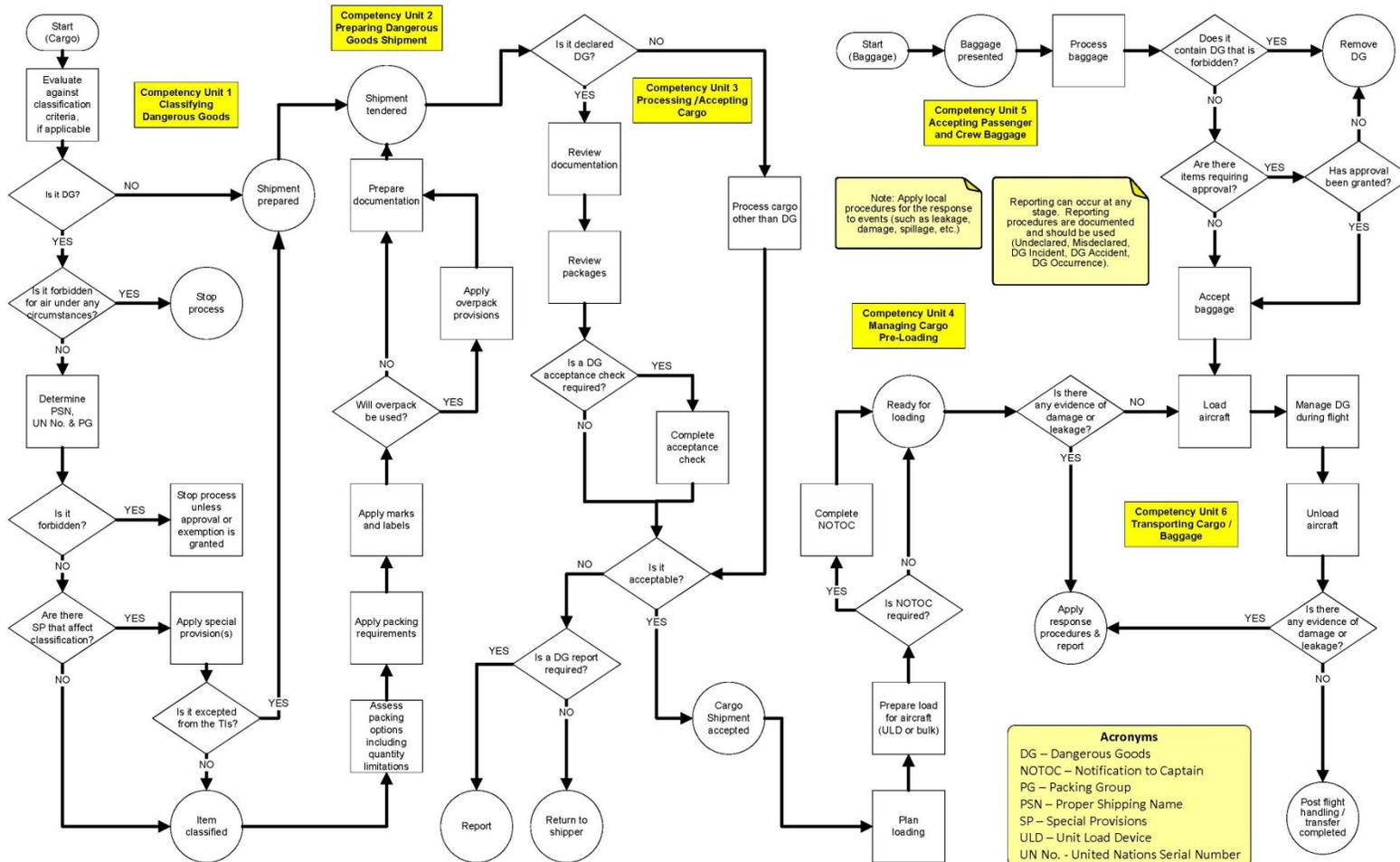
- CE 5.1 Process baggage
  - PC 5.1.1 Identify forbidden dangerous good
  - PC 5.1.2 Apply approval requirements
- CE 5.2 Accept baggage
  - PC 5.2.1 Apply operator requirements
  - PC 5.2.2 Advise pilot in command

**CU 6 Transporting cargo/baggage**

- CE 6.1 Load aircraft
  - PC 6.1.1 Transport cargo/baggage to aircraft
  - PC 6.1.2 Check packages for indications of undeclared dangerous goods
  - PC 6.1.3 Check for damage and/or leakage
  - PC 6.1.4 Apply stowage requirements (e.g. segregation, separation, orientation)
  - PC 6.1.5 Verify that NOTOC reflects against aircraft load
  - PC 6.1.6 Verify passenger baggage requirements if applicable
  - PC 6.1.7 Inform pilot-in-command and flight operations officer/flight dispatcher
- CE 6.2 Manage dangerous goods during flight
  - PC 6.2.1 Detect presence of dangerous goods not permitted in baggage
  - PC 6.2.2 Apply procedures in the event of an emergency
  - PC 6.2.3 Inform flight operations officer/flight dispatcher/air traffic control in the event of an emergency
- CE 6.3 Unload aircraft
  - PC 6.3.1 Apply specific unloading considerations as applicable
  - PC 6.3.2 Check packages for indications of undeclared dangerous goods
  - PC 6.3.3 Check for damage and/or leakage
  - PC 6.3.4 Transport cargo/baggage to facility/terminal

## **Chapter 4**

### **DANGEROUS GOODS FUNCTIONS — PROCESS FLOWCHART**



## **Chapter 5**

### **FUNCTION/KNOWLEDGE MATRIX TOOL**







**Competency elements**

- 1.1 — Evaluate substances or articles against classification criteria, as applicable
  - 1.2 — Determine dangerous goods description
  - 1.3 — Review special provisions
  - 2.1 — Assess packing options including quantity limitations
  - 2.2 — Apply packing requirements
  - 2.3 — Apply marks and labels
  - 2.4 — Determine if overpack can be used
  - 2.5 — Prepare documentation
  - 3.1 — Review documentation
  - 3.2 — Review package(s)
  - 3.3 — Complete acceptance procedures
  - 3.4 — Process/accept cargo other than dangerous goods
  - 4.1 — Plan loading
  - 4.2 — Prepare load for aircraft
  - 4.3 — Issue NOTOC
  - 5.1 — Process baggage
  - 5.2 — Accept baggage
  - 6.1 — Load aircraft
  - 6.2 — Manage dangerous goods during flight
  - 6.3 — Unload aircraft
-





**المرفق (ب)**

التعديل المقترح على الإضافة الملحقمة بالتعليمات الفنية لإدراج  
مواد إرشادية بشأن التدريب القائم على الكفاءة الموجه إلى  
العاملين في مجال البضائع الخطرة وموظفي الدول

**COMPETENCY FRAMEWORK FOR STATE EMPLOYEES****Part S-1****GENERAL****(ADDITIONAL INFORMATION  
FOR PART 1 OF THE  
TECHNICAL INSTRUCTIONS)**

...

---

Insert new Chapter 4 as follows:

---

**Chapter 4****GUIDANCE TO STATES ON COMPETENCY-BASED TRAINING FOR STATE  
EMPLOYEES INVOLVED IN THE REGULATION AND OVERSIGHT OF TRANSPORT  
OF DANGEROUS GOODS BY AIR****1.1 INTRODUCTION**

1.1.1 The objective of this chapter is to provide guidance to States in implementing competency-based training and assessment for personnel engaged in policies, regulation, inspection and supervision of work related to the transport of dangerous goods by air. It includes a competency framework for the uniform implementation of training and assessment required for State employees who must ensure compliance with their State's obligations and with Annex 18 — *The Safe Transport of Dangerous Goods by Air*.

1.1.2 It is noted that States use a variety of systems to exercise safety oversight in the transport of dangerous goods by air. ICAO's safety oversight audits have identified differences among States in their inspectors' performance standards and in the implementation of their respective civil aviation dangerous goods programmes. For example, one State may have a clearly-defined process for the approval of dangerous goods training programmes while another may not. Applying a common competency framework would result in harmonized performance standards of State employees.

1.1.3 A generic competency framework for State employees is at Attachment I to this chapter. This competency framework reflects safety-critical tasks and, when applied, will have a positive impact on specific dangerous goods functions and the ability of individuals to perform their jobs successfully and to the required standards. Each State must provide specific training for these functions to each of its employees involved in policy making, regulation and oversight of compliance of dangerous goods transported by air.

## 1.2 TERMINOLOGY

For the purpose of this chapter, the following terminology applies:

**Air operator certificate.** A certificate authorizing an operator to carry out specified civil air transport operations.

**Competency.** A combination of skills, knowledge and attitudes required to perform a task to the prescribed standard.

**Competency-based training and assessment.** Training and assessment that are characterized by a performance orientation, emphasis on standards of performance and their measurement, and the development of training to the specified performance standards.

**Competency element.** An action that constitutes a task that has a triggering event and a terminating event that clearly defines its limits, and an observable outcome.

**Competency unit.** A discrete function consisting of a number of competency elements.

**Dangerous goods.** Articles or substances which are capable of posing a risk to health, safety, property or the environment and which are shown in the list of dangerous goods in the Technical Instructions or which are classified according to those Instructions.

**Inspection method.** Techniques that are used during the course of evaluating compliance with relevant regulations. The inspection methods include:

- a) observation: visually observing the performance of regulatory requirements for compliance with relevant regulations;
- b) interview: a technique by which questions or discussions with persons performing transportation functions are used to gather information concerning the transportation of dangerous goods;
- c) document review: reviewing paper or electronic records to determine whether required documents are properly prepared, contain accurate information, and maintained as required by the regulations;
- d) verification: using third party information to independently confirm whether regulatory requirements are being met; and
- e) procedure evaluation: ensuring appropriate written procedures, addressing all regulated activities undertaken, are in place.

**Operations manual.** A manual containing procedures, instructions and guidance for use by operational personnel in the execution of their duties.

**Operator.** A person, organization or enterprise engaged in or offering to engage in an aircraft operation.

**Performance criteria.** Simple, evaluative statements on the required outcome of the competency element and a description of the criteria used to judge whether the required level of performance has been achieved.

**Shipper.** A person, organization or enterprise undertaking any of the shipper's responsibilities of Part 5 of the Technical Instructions.

## COMPETENCY FRAMEWORK FOR STATE EMPLOYEES

### 1. SCOPE OF THE COMPETENCY FRAMEWORK

1.1 The scope of the competency framework concerns State employees involved in the regulation and oversight of the transport of dangerous goods by air based on obligations of States according to the Convention on International Civil Aviation:

- a) the State is responsible for implementing a system for determining compliance with Annex 18; and
- b) the application of the basic principles of a competency-based approach determines the performance level for State employees in carrying out their function to meet the State's obligations as defined by the Annex 18;

1.2 The competency framework has taken into account the "ICAO Safety Oversight Transport of Dangerous Goods Audit Checklist", itemizing the separate civil aviation dangerous goods programme activities required by a State:

- a) conduct initial review and approval of an operations manual and training programme on dangerous goods within the approval procedures for the AOC;
- b) conduct initial inspection of new operator or operator that intends to commence carriage of dangerous goods;
- c) conduct periodic inspection of the operator;
- d) conduct an ad-hoc inspection on dangerous shipping and handling procedures;
- e) conduct an investigation on dangerous goods accidents, incidents and other occurrences resulting from violations of the dangerous goods regulations;
- f) conduct a review of a revised operation manual on dangerous goods within the approval procedures for the AOC;
- g) conduct a review of a revised training programme for approval;
- h) conduct periodic inspection of shippers; and
- i) ensure that technical equipment required for inspection is being maintained and/or calibrated.

These activities have been included in the competency framework.

1.3 The details of the competency framework are based on common practices as applied by a number of States on training, operational procedures for inspection, surveillance and enforcement.

### 2. STRUCTURE OF THE DOCUMENT

2.1 Distinction is made between competencies of a "general nature" which are applicable to all State employees and competencies related to the actual "technical performance" of a State employee in relation to their specific tasks.

2.2 For task-related competencies, the basic competency framework is structured according to three levels defined in the *Procedures for Air Navigation Services — Training* (PANS-TRG, Doc 9868): competency units, competency elements, and performance criteria. Further detailing at these three levels is derived from job and task analyses of common practices in some States.

2.3 Regarding the responsibilities of State employees and the principles applicable to the definition of the competency framework, distinction has been made between different functional levels: strategic, managerial and operational.

2.4 Taking into account the above, the competency framework for State employees is based on:

- a) Core competencies applicable to all State employees:
  - core competencies and personal attributes; and
  - general awareness, knowledge and skills;
- b) Competency units related to specific activities of State employees:

- support the development and implementation of a State dangerous goods programme
- approve an operator's dangerous goods system;
- conduct oversight of dangerous goods operations;
- conduct oversight of dangerous goods operations; and
- evaluate dangerous goods accidents, incidents and other occurrences

### **3. CORE COMPETENCIES APPLICABLE TO ALL STATE EMPLOYEES**

Core competencies have not yet been identified for State employees. This will be done once the work of the Next Generation of Aviation Professionals Task Force progresses and will provide a standardized basis from which to work.

### **5. COMPETENCIES RELATED TO SPECIFIC ACTIVITIES OF STATE EMPLOYEES**

Dangerous goods are articles or substances which are capable of posing a risk to health, safety, property or the environment and which are shown in the list of dangerous goods in the Technical Instructions or which are classified according to those Instructions. The transport of dangerous goods is recognized as an integral part of a State's overall safety oversight programme. Each State must provide training to each of its dangerous goods employees which emphasizes a State's specific dangerous goods standards and regulations. Training should be designed so that it enables all State employees involved in dangerous goods oversight to perform their tasks. In the same manner in which States require industries performing dangerous goods related functions to be trained in the transport of dangerous goods, States should provide their employees with training commensurate with their responsibilities. Table S-1-1 identifies competencies related to the specific activities conducted by dangerous goods State employees.

**Table S-1-1. Competency framework for State employees****COMPETENCY FRAMEWORK FOR DANGEROUS GOODS STATE EMPLOYEES****CU 1 Support the development and implementation of a State dangerous goods programme**

## CE 1.1 Develop regulations

PC 1.1.1 Apply procedures to develop national regulations on the air transport of dangerous goods

PC 1.1.2 Monitor relevant changes to ICAO and other relevant international provisions that may impact national dangerous goods air transport regulations

PC 1.1.3 Develop guidance on how to comply with national regulations

## CE 1.2 Develop policies and procedures

PC 1.2.1 Develop policies and procedures to approve an operator's manuals specific to dangerous goods

PC 1.2.2 Develop policies and procedures to approve an operator's training program specific to dangerous goods

PC 1.2.3 Develop policies and procedures to conduct oversight of entities performing any functions prescribed in national regulations for the air transport of dangerous goods

PC 1.2.4 Develop surveillance work plan

## CE 1.3 Develop tools to support the implementation of national regulations

PC 1.3.1 Develop guidance material for entities performing any functions prescribed in national regulations for the air transport of dangerous goods

PC 1.3.2 Develop training for personnel overseeing any function prescribed in national regulations for the air transport of dangerous goods

PC 1.3.3 Develop public awareness materials related to dangerous goods

**CU 2 Approve an operator's dangerous goods system**

## CE 2.1 Approve dangerous goods component of the operations manual

PC 2.1.1 Verify the manual against the national regulations, policies and procedures for transport by air of dangerous goods

PC 2.1.2 Recommend amendments to the operations manual as necessary

PC 2.1.3 Verify that amendments in operations manual are completed

PC 2.1.4 Issue the approval

## CE 2.2 Approve dangerous goods training programme

PC 2.2.1 Verify the training programme against the national regulations, policies and procedures for transport by air of dangerous goods

PC 2.2.2 Verify that the training programme addresses all dangerous goods functions identified in the operations manual

PC 2.2.3 Recommend amendments to the training programme as necessary

PC 2.2.4 Verify that amendments to the training programme are completed

PC 2.2.5 Issue the approval

**CU3 Conduct oversight of dangerous goods operations**

CE 3.1 Prepare for inspection

PC 3.1.1 Analyze information on dangerous goods-related functions

PC 3.1.2 Plan inspection activities

CE 3.2 Conduct inspection

PC 3.2.1 Communicate scope and intent of inspection

PC 3.2.2 Determine compliance with national regulations, policies and procedures for transport by air of dangerous goods

CE 3.3 Finalize inspection

PC 3.3.1 Communicate inspection results

PC 3.3.2 Document inspection results

**CU 4 Evaluate dangerous goods accidents, incidents and other occurrences**

CE 4.1 Conduct investigation

PC 4.1.1 Gather evidence

PC 4.1.2 Verify non-compliance against national regulations for dangerous goods transport by air

CE 4.2 Take corrective/appropriate action

PC 4.2.1 Document specific areas of non-compliance

PC 4.2.2 Apply national enforcement policy

PC 4.2.3 Confirm effectiveness of corrective action

-----

**البند 7 من جدول الأعمال: الأعمال الأخرى****1-7 الموافقة على تقارير الفريق العامل  
(DGP/25-WP/2 And DGP/25-WP/3)**

1-1-7 استعرض الاجتماع الأجزاء السردية من تقارير اجتماعي الفريق العامل التابع لفريق خبراء البضائع الخطرة: DGP-WG/14 (ريو دي جانيرو، من 20 إلى 2014/10/24) و DGP-WG/15 (مونتريال، من 4/27 إلى 2015/5/1). وتمت الموافقة على الأجزاء السردية دون إبداء تعليق. واستعرضت الأفرقة العاملة التعديلات المقترحة في ورقات العمل DGP/25- WPs/11, 12, 13, 14, 15, 16, 17, 18 (انظر التقرير عن البند 2 من جدول الأعمال)، وورقة العمل 19 (انظر التقرير عن البند 3 من جدول الأعمال)، وورقة العمل 20 (انظر التقرير عن البند 4 من جدول الأعمال) التي كانت تحتوي على التعديلات الموحدة.

**2-7 تطبيق الملحق 6 - الدول التي تلزم المشغلين بالحصول على  
موافقة من أجل نقل البضائع الخطرة، ومن أجل البرامج التدريبية  
في مجال البضائع الخطرة (DGP/25-WP/48)**

1-2-7 تم تذكير الاجتماع بالتعديل الذي أُدخل مؤخراً على الملحق 6 - تشغيل الطائرات، الجزء الأول - النقل الجوي التجاري الدولي - الطائرات، وتضمن إضافة الفصل الجديد 14 المعني بالبضائع الخطرة (التعديل 38 على الملحق 6، الجزء الأول، الذي أصبح واجب التطبيق اعتباراً من 2014/11/13). وقد أوضح هذا الفصل الجديد أنه من مسؤوليات دولة المشغل أن تصرح للمشغل بنقل البضائع الخطرة، وأن تصادق كذلك على برنامجه التدريبي في مجال البضائع الخطرة. بيد أنه لوحظ أن عدة دول قد ألزمت المشغلين بالحصول على موافقة منفصلة منها لنقل البضائع الخطرة منها أو إليها، وأن هذا يشمل عادة مراجعة وموافقة منفصلة خاصة ببرنامج التدريب الموجود لدى المشغل في مجال البضائع الخطرة. على الرغم من الإشارة إلى هذا الشرط أحياناً في الإضافة 3 للتعليمات الفنية ضمن التفاوتات فيما بين الدول، فلم تقم كل الدول بإخطار الايكاو. واقترح أن تقوم الدول الراغبة في اعتماد برامج تدريب لدى مشغل أجنبي في مجال البضائع الخطرة بإعداد قائمة فعلية بالاختلاف عن القاعدة القياسية الواردة في الجزء الأول من الملحق 6 التي تلزم الدول المتعاقدة بالاعتراف بصلاحية شهادة المشغل الجوي الصادرة بواسطة دولة متعاقدة أخرى شريطة ألا تقل المتطلبات التي صدرت بموجبها الشهادة عن القواعد القياسية السارية التي حددها الملحق 6 والملحق 19.

2-2-7 يمكن أن تتسبب عملية الموافقة المنفصلة أيضاً في خلق انزعاجاً لدى المشغلين الذين حصلوا بالفعل على موافقة دولهم على برامجهم التدريبية، وذلك لأنه لن يكون بوسع المشغل تغيير برنامجه التدريبي دون موافقة السلطة المختصة في دولته بغض النظر عن رأي دولة أخرى. وأشار إلى أنه لا يزال هناك عدم فهم لمسؤوليات الدول عن الموافقة على برامج التدريب لدى المشغلين في مجال البضائع الخطرة، ومن الضروري بذل جهود لتوضيح هذا الشأن. ولوحظ أن هذا الموضوع قد نوقش في الاجتماع الثاني لفريق خبراء عمليات الطيران (FLTOSP/2)، وطُلب من الأمين التنسيق مع المسؤولين عن الملحق 6 للنظر في الخطوات التي يمكن اتخاذها لمعالجة هذه القضية. واقترح الأمين، كحد أدنى، إرسال خطاب إلى الدول لتوضيح مسؤولياتها فيما يتعلق بالرقابة على المشغلين الأجانب و/أو التعديلات الأخرى للفصل الجديد بشأن البضائع الخطرة في الملحق 6. كما دُعِيَ الأمين أيضاً إلى إثارة هذا الموضوع مع لجنة الملاحة الجوية.

**3-7 النظر في اقتراح من أجل الدورة 48 للجنة الخبراء  
الفرعية للأمم المتحدة (DGP/25-WP/49)**

1-3-7 أُخطِر الاجتماع بالمقترح المُقدم إلى لجنة الخبراء الفرعية للأمم المتحدة المعنية بنقل البضائع الخطرة من أجل استثناء المشروبات والأغذية والأدوية ومستحضرات التجميل التي تحتوي على خليط من الكحول الإيثيلي والمصنفة ضمن مجموعة التعبئة الثانية أو الثالثة من السوائل القابلة للاشتعال عند تغليفها في عبوات مناسبة للبيع بالتجزئة أو لتوزيع الأدوية. ولوحظ أن الاقتراح جاء بناء على تصريح خاص منذ فترة طويلة كان قد تم اعتماده رسمياً ضمن اللائحة المحلية لدولة كبيرة. وطُلب من الاجتماع تقديم تعليقات على الاقتراح ليقدمها الأمين إلى اللجنة الفرعية للأمم المتحدة أثناء مناقشة الاقتراح في دورتها 48.

2-3-7 قدم أحد المشاركين من الدولة الكبيرة التي اعتمدت أحكاماً مماثلة في لوائحها المحلية معلومات أساسية عن تاريخ وتطور الأحكام، وأشار إلى أنه لم يكن هناك أي شواغل تتعلق بالسلامة ترتبط بهذا الشأن.

3-3-7 لم يكن هناك تأييد يذكر للسماح بمثل هذه الاستثناءات، مع ملاحظة أن هذه الاستثناءات المقترحة لم تقدم للسوائل الأخرى الأقل قابلية للاشتعال وتخضع للوائح الكاملة. ولم ير أعضاء فريق الخبراء أن هناك ما يبرر معالجة هذه المواد بأي طريقة مختلفة، وطلبوا من الأمين أن ينقل هذا الرأي إلى اللجنة الفرعية للأمم المتحدة.

- انتهى -