



WORKING PAPER

**DANGEROUS GOODS PANEL (DGP)
WORKING GROUP MEETING (DGP-WG/20)**

Virtual, 19 to 23 October 2020

Agenda Item 1: Harmonizing ICAO dangerous goods provisions with UN Recommendations on the Transport of Dangerous Goods.

1.2: Develop proposals, if necessary, for amendments to the *Technical Instructions for the Safe Transport of Dangerous Goods by Air* (Doc 9284) for incorporation in the 2023-2024 Edition

ALLOWANCE FOR LARGE ARTICLES CONTAINING NON-FLAMMABLE NON-TOXIC GAS, N.O.S.

(Presented by T.L. Muller)

SUMMARY

This working paper proposes a revision to the entry UN 3538 — **Articles containing non-flammable, non-toxic gas, n.o.s.** to amend it from forbidden/forbidden to be permitted on both passenger aircraft and cargo aircraft provided the article contains only a non-flammable, non-toxic gas without any subsidiary hazard. It also proposes a new packing instruction and special provision for these articles.

Action by the DGP-WG: The DGP-WG is invited to consider the amendments shown in the appendix to this working paper.

1. INTRODUCTION

1.1 A large manufacture of magnetic resonance imaging (MRI) scanners recently developed a new type of MRI. Health care professionals use MRI scanners to diagnose a variety of conditions, from torn ligaments to tumors. They are also very useful for examining the brain and spinal cord. For healthcare reasons it is essential for MRI scanners to be transported safely and in a timely manner by air to and from all parts of the world.

1.2 The old type of MRI scanner contains between 125 and 250 kg of refrigerated liquid helium and is transported by air as UN 1963 — **Helium, refrigerated liquid**. Currently an approval by the State of Origin is needed as full compliance with Packing Instruction 202 is not possible.

1.3 The new type of MRI scanner contains a maximum of only 1.5 kg of compressed helium. As this quantity exceeds also the maximum allowed quantity for gases as authorized in Packing Instruction 962 (0.5 kg) for UN 3363 — **Dangerous goods in articles**, the new type of MRI is currently transported as UN 1046 — **Helium, compressed** and requires also the approval of the State of Origin as full compliance with Packing Instruction 200 is not possible.

1.4 However, these articles could be transported as UN 3538 — **Articles containing non-flammable, non toxic gas, n.o.s.***. New entries for articles containing dangerous goods were introduced in the 20th revised Edition of the UN Model Regulations. They were incorporated in the 2019-2020 Edition of the Technical Instructions. At that time, the DGP decided that the new entries should be adopted into Table 3-1 as “forbidden/forbidden” with most entries being assigned special provision A2 to permit transport on a cargo aircraft only with the approval of the State of Origin and the State of the Operator.

1.5 At that time, the DGP’s decision to forbid “Articles containing dangerous goods” assigned to UN Nos. UN 3537 through 3548 was based on a lack of knowledge about the types of articles that would need to be transported by air and on the assumption that the need to transport these articles by air was very limited.

1.6 It has become apparent that there is a need to transport articles, like the MRI scanner, by air. The fact that Special Provision A2 is assigned to UN 3538 and as such requires approval of the State of Origin and of the State of the Operator and is limited to cargo aircraft only, makes the transport of these items very complex. Given the fact that non-flammable, non-toxic gases without subsidiary hazard are allowed on both passenger and cargo aircraft and that certain articles containing similar gases and being assigned an existing proper shipping name are also allowed on both passenger and cargo aircraft (e.g. UN 2857 Refrigerating machines containing non-flammable, non-toxic gases), it is proposed that the entry UN 3538 be revised. Bearing in mind that refrigerated liquefied gases (cryogenic liquids) are very cold and usually heavier than air and as such do not disperse very well in case they are released, it is proposed to retain the Special Provision A2 for articles containing these gases. The A2 will equally be retained for articles containing a Division 2.2 gas with a subsidiary hazard as these are currently also excluded from UN 3363 packed in accordance with Packing Instruction 962.

1.7 To harmonize with the currently maximum allowed net quantities for these non-flammable, non-toxic gases it is proposed to allow 75 kg on a passenger aircraft and 150 kg on a cargo aircraft only.

2. ACTION BY THE DGP-WG

2.1 The DGP-WG is invited to consider the revisions to Part 3 and to Part 4 as shown in the appendix to this working paper.

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APPENDIX

PROPOSED AMENDMENT TO THE TECHNICAL INSTRUCTIONS

AMENDMENT TO PART 3 (TWO OPTIONS):

Part 3

DANGEROUS GOODS LIST,
SPECIAL PROVISIONS AND
LIMITED AND EXCEPTED QUANTITIES

OPTION 1

Table 3-1. Dangerous Goods List

Name	UN No.	Class or division	Subsidiary hazard	Labels	State variations	Special provisions	UN packing group	Excepted quantity	Passenger aircraft		Cargo aircraft	
									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
Articles containing non-flammable, non toxic gas, n.o.s.*	3538	2.2	See 2;0.6			A2			Forbidden		Forbidden	
<u>Articles containing non-flammable, non toxic gas, n.o.s.* (excluding refrigerated liquefied gas and gas with a subsidiary hazard)</u>	<u>3538</u>	<u>2.2</u>		<u>Gas non-flammable</u>		<u>AXX</u>			<u>See 2XX</u>		<u>See 2XX</u>	

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Chapter 3

SPECIAL PROVISIONS

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AXX This entry is only allowed for articles containing no dangerous goods other than non-flammable, non-toxic gases without subsidiary hazard with the exception of refrigerated liquefied gases. Reference to Special Provision AXX must be made on the dangerous goods transport document as required by Part 5;4.1.5.8.

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OPTION 2

Part 3

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

Table 3-1. Dangerous Goods List

Name 1	UN No. 2	Class or division 3	Subsidiary hazard 4	Labels 5	State variations 6	Special provisions 7	UN packing group 8	Excepted quantity 9	Passenger aircraft		Cargo aircraft	
									Packing instruction 10	Max. net quantity per package 11	Packing instruction 12	Max. net quantity per package 13
Articles containing non-flammable, non toxic gas, n.o.s.*	3538	2.2	See 2;0.6			A2 <u>AXY</u>			Forbidden		Forbidden	

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Chapter 3**SPECIAL PROVISIONS**

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AXY UN 3538 — Articles containing non-flammable, non toxic gas 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 only dangerous goods in the article are gases of Division 2.2 without subsidiary hazard but excluding refrigerated liquefied gases;
- b) the articles are packed in compliance with Packing Instruction 2XX; and
- c) reference to Special Provision AXY is made on the dangerous goods transport document as required by Part 5;4.1.5.8.

All other provisions of the Technical Instructions are applicable.

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

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CONSEQUENTIAL AMENDMENT TO PART 5 (APPLIES TO BOTH OPTIONS ABOVE):

Part 5**SHIPPER’S RESPONSIBILITIES**

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Chapter 4**DOCUMENTATION**

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4.1.5.8 *Additional requirements*

4.1.5.8.1 The dangerous goods transport document must also contain:

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- b) when applicable, reference to Special Provision A1, A2, A4, A5, A51, A78, A190, A191, A201, A202, A208, A211-~~or~~, A212 or AXX;

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AMENDMENT TO PART 4:

Part 4

PACKING INSTRUCTIONS

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Chapter 4

CLASS 2 — GASES

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Packing Instruction 2XX

Passenger and cargo aircraft for UN 3538 only

Introduction

This Instruction applies to articles which do not have an existing proper shipping name and which contain only gases of Division 2.2 without subsidiary hazard and excluding refrigerated liquefied gas. The quantity limits of the Division 2.2 gas exceed the quantity limits for UN 3363 as specified in Packing Instruction 962.

General requirements

The requirements of Part 4:1 and Part 4:2 must be met, as appropriate.

<u>UN number and proper shipping name</u>	<u>Maximum net quantity of the gas — passenger</u>	<u>Maximum net quantity of the gas — cargo</u>
<u>UN 3538 Articles containing non-flammable, non toxic gas, n.o.s.*</u>	<u>75 kg</u>	<u>150 kg</u>

ADDITIONAL PACKING REQUIREMENTS

- Packagings must meet the Packing Group II performance requirements.
- Receptacles within articles containing gases must meet the requirements of Part 4:4.1.1, Packing Instruction 200 and Part 6:5, as appropriate, or be capable of providing an equivalent level of protection as Packing Instruction 200.
- Articles must be packed to prevent movement and inadvertent operation during normal conditions of transport.

ROBUST ARTICLES

Robust articles may alternatively be transported in strong outer packagings constructed of suitable material and of adequate strength and design in relation to the packaging capacity and its intended use. The packagings must achieve a level of protection that is at least equivalent to that provided by Part 6:1. Articles may be transported unpackaged or on pallets when the dangerous goods are afforded equivalent protection by the article in which they are contained. In such cases the additional requirement related to Packing Group II performance requirements and the requirement for UN specification outer packagings do not apply

OUTER PACKAGINGS

Boxes

Aluminium (4B)
Fibreboard (4G)
Other metal (4N)
Plastics (4H2)
Plywood (4D)
Steel (4A)

Drums

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

Jerricans

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

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