International Civil Aviation Organization

DGP-WG/19-WP/15
18/3/19

WORKING PAPER

DANGEROUS GOODS PANEL (DGP)
WORKING GROUP MEETING (DGP-WG/19)

Montréal, 1 to 5 April 2019

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 2021-2022 Edition

DRAFT AMENDMENTS TO THE TECHNICAL INSTRUCTIONS TO ALIGN WITH THE UN RECOMMENDATIONS — PART 5

(Presented by the Secretary)

SUMMARY

This working paper contains draft amendments to Part 5 of the Technical Instructions to reflect the decisions taken by the UN Committee of Experts on the Transport of Dangerous Goods and on the Globally Harmonized System of Classification and Labelling of Chemicals at its ninth session (Geneva, 7 December 2018). It also reflects amendments agreed by DGP-WG/18 (Montréal, 1 to 5 October 2019) under Agenda Item 1.2 of that meeting (Harmonizing ICAO dangerous goods provisions with UN Recommendations on the Transport of Dangerous Goods — Develop proposals, if necessary, for amendments to the Technical Instructions for incorporation in the 2021-2022 Edition).

Action by the DGP-WG: The DGP-WG is invited to agree to the draft amendments in this working paper.

Part 5

SHIPPER'S RESPONSIBILITIES

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Chapter 1

GENERAL

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1.2 GENERAL PROVISIONS FOR CLASS 7

1.2.1 Approval of shipments and notification

1.2.1.1 *General*

In addition to the approval of package designs described in Part 6, Chapter 4, multilateral shipment approval is also required in certain circumstances (1.2.1.2 and 1.2.1.3). In some circumstances it is also necessary to notify competent authorities of a shipment (1.2.1.4).

UN Model Regulations, 5.1.5.1.2 (see ST/SG/AC.10/46/Add.1)

1.2.1.2 *Shipment approvals*

Multilateral approval must be required for:

a) The shipment of Type B(M) packages not conforming with the requirements of 6;7.6.5;

b) The shipment of Type B(M) packages containing radioactive material with an activity greater than 3000 A_1 or 3000 A_2, as appropriate, or 1000 TBq, whichever is the lower;

c) The shipment of packages containing fissile materials if the sum of the criticality safety indexes of the packages in a single freight container or in an aircraft exceeds 50; and

except that a competent authority may authorize transport into or through its country without shipment approval, by a specific provision in its design approval (see 1.2.2.1).

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1.2.1.4 *Notifications*

Notification to competent authorities is required as follows:

a) Before the first shipment of any package requiring competent authority approval, the shipper must ensure that copies of each applicable competent authority certificate applying to that package design have been submitted to the competent authority of the country of origin of the shipment and to the competent authority of each country through or into which the consignment is to be transported. The shipper is not required to await an acknowledgement from the competent authority, nor is the competent authority required to make such acknowledgement of receipt of the certificate;

b) For each of the following types of shipments:

   i) Type C packages containing radioactive material with an activity greater than 3000 A_1 or 3000 A_2, as appropriate, or 1000 TBq, whichever is the lower;

   ii) Type B(U) packages containing radioactive material with an activity greater than 3000 A_1 or 3000 A_2, as appropriate, or 1000 TBq, whichever is the lower;

   iii) Type B(M) packages;

   iv) Shipment under special arrangement;

UN Model Regulations, 5.1.5.1.4 (b) (see ST/SG/AC.10/46/Add.1)

the shipper must notify the competent authority of the country of origin of the shipment and the competent authority of each country through or into which the consignment is to be transported. This notification must be ~~in the hands~~ in the possession of each competent authority prior to the commencement of the shipment, and preferably at least 7 days in advance;

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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:

UN Model Regulations, 5.1.5.3.1 (see ST/SG/AC.10/46/Add.1)

a) Determine the maximum ~~radiation level~~ dose rate 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~~ dose rate 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;

UN Model Regulations, 5.1.5.3.1 (see ST/SG/AC.10/46/Add.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 and the resulting number is the TI value.

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)).

UN Model Regulations, 5.1.5.3.2 (see ST/SG/AC.10/46/Add.1)

1.2.3.1.2 The transport index for each rigid overpack or freight container must be determined as ~~either~~ the sum of the transport indices of all the packages contained therein. ~~, or by direct measurement of radiation level, except in the case of non-rigid overpacks for which the transport index must be determined only as the sum of the transport indices of all the packages.~~ For a shipment from a single shipper, the shipper may determine the transport index by direct measurement of dose rate. The transport index for a non-rigid overpack must be determined only as the sum of the transport indices of all the packages within the overpack.

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Chapter 2

MARKING

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2.4 MARKING SPECIFICATIONS AND REQUIREMENTS

2.4.1 Marking with proper shipping name and UN or ID number

DGP-WG/18-WP/11 (see paragraph 3.1.2.2 of the DGP-WG/18 Report) and UN Model Regulations, 5.2.1.1 (see ST/SG/AC.10/46/Add.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 or ID number preceded by the letters "UN" or "ID", as appropriate, must be displayed on each package. The UN or ID number and the letters "UN" or "ID" must be at least 12 mm high, except for packagings of 30 ~~litres~~ L capacity or less or of 30 kg maximum net mass and for cylinders of 60 ~~litres~~ L water capacity or less, when they must be at least 6 mm in height and except for packagings of 5 ~~litres~~ L capacity or less or of 5 kg maximum net mass ~~or less~~ when they must be of an appropriate size. In the case of unpackaged articles, the mark must be displayed on the article, on its cradle or on its handling, storage or launching device. A typical package mark would be:

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

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2.4.5 Special marking requirements for radioactive material

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UN Model Regulations, 5.2.1.5.6 (see ST/SG/AC.10/46/Add.1):

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. Any mark on the package made in accordance with the requirements of 2.4.5.3 a) and b) and 2.4.5.4 c) relating to the package type that does not relate to the UN number and proper shipping name assigned to the consignment must be removed or covered.

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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.

UN Model Regulations, 5.2.1.9.2(see ST/SG/AC.10/46/Add.1):

2.4.16.3 The mark must be in the form of a rectangle or a square 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 or suitable contrasting background. The hatching must be red. The mark must be a minimum dimension of ~~120~~ 100 mm wide × ~~110~~ 100 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~~ 100 mm wide × ~~74~~ 70 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).

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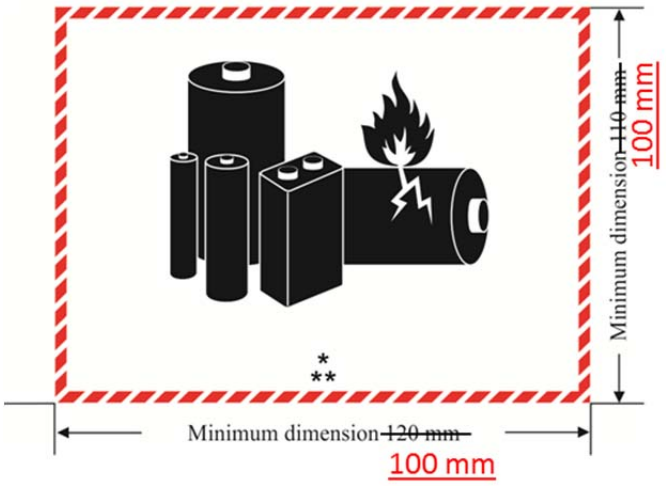
UN Model Regulations, Figure 5.2.5 (see ST/SG/AC.10/46/Add.1):



* Place for UN Number(s)
** Place for telephone number for additional information

Figure 5-3. Lithium battery mark

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Chapter 3

LABELLING

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3.5 LABEL SPECIFICATIONS

3.5.1 Class hazard label specifications

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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 5-4 to 5-26.

Note.— Where appropriate, labels in Figures 5-4 to 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 5-4).

i) Labels must be displayed on a background of contrasting colour, or must have either a dotted or solid outer boundary line.

UN Model Regulations, 5.2.2.2.1.1.2 (see ST/SG/AC.10/46/Add.1):

Secretariat Note.— The amendments to the 20th revised edition of the UN Model Regulations were incorporated in the 2019-2020 Edition of the Technical Instructions (when the amendment was proposed, the UN Sub-committee agreed that specifying a minimum thickness for the line was not necessary for safety and agreed to adopt an amendment in the twentieth revised edition of the UN Model Regulations. It invited organizations responsible for modal regulations to amend their respective instruments accordingly (see paragraph 2.5.1.2 of the DGP/26 Report. However, an editorial error was made in the Technical Instructions which is corrected as shown below.

ii) The label must be in the form of a square set at an angle of 45°degrees (diamond shaped). The minimum dimensions must be 100 mm × 100 mm. There must be a line inside the edge forming the diamond which must be parallel and approximately 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. Dimensions for labels on cylinders must comply with 3.5.1.1 b).

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Labelling of radioactive material

h) Each label conforming to the applicable Figure 5-20, 5-21 or 5-22 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”;

UN Model Regulations, 5.2.2.1.12.2 d) (see ST/SG/AC.10/46/Add.1):

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~~ except for category I-WHITE.)

i) Each label conforming to Figure 5-23 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 5-23 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.

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Chapter 4

DOCUMENTATION

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For French language version: please check alignment with the English of the Technical Instructions. The need for an amendment to the UN Model Regulations was identified, but this likely does not affect the French edition of the Technical Instructions because the text in the Technical Instructions is slightly different. Please verify alignment with English Technical Instructions. The amendment to the UN Model Regulations is:

5.4.1.5.1 Modifier la première phrase pour lire comme suit :
« Sauf pour les emballages vides non nettoyés, la quantité totale de marchandises dangereuses à laquelle s'applique la description (volume ou masse, selon le cas) doit être indiquée pour chaque marchandise dangereuse ayant une désignation officielle de transport, un numéro ONU, ou un groupe d'emballage différent. ».

UN Model Regulations, 5.4.1.5.1 (see ST/SG/AC.10/46/Add.1):

4.1.5 Information required in addition to the dangerous goods description

In addition to the dangerous goods description the following information must be included after the dangerous goods description on the dangerous goods transport document.

4.1.5.1 *Quantity of dangerous goods, number and type of packagings*

The number of packages, type of packaging (e.g. steel drum, fibreboard box, etc.) and net quantity of dangerous goods in each package (by volume or mass, as appropriate) must be indicated for each item of dangerous goods bearing a different proper shipping name, UN number or packing group. Abbreviations may be used to specify the unit of measurement for the quantity.

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UN Model Regulations, 5.4.1.5.7.1 (see ST/SG/AC.10/46/Add.1):

4.1.5.7 *Radioactive material*

4.1.5.7.1 The following information must be included for each consignment of Class 7 material, as applicable, in the order given:

a) The name or symbol of each radionuclide or, for mixtures of radionuclides, an appropriate general description or a list of the most restrictive nuclides;

b) A description of the physical and chemical form of the material, or a notation that the material is special form radioactive material or low dispersible radioactive material. A generic chemical description is acceptable for chemical form;

Note.— For empty Type B(U) or Type B(M) packages as specified in the Note to 2;7.2.4.1.1.7, the name or symbol of the radionuclide of the shielding material followed by the physical and chemical form must be included (e.g. U-dep., solid, metal oxide) in which case the indicated radionuclide may differ from the radionuclide(s) authorized in the package design certificate.

c) The maximum activity of the radioactive contents during transport expressed in units of becquerels (Bq) with an appropriate SI prefix symbol (see 1;3.2). For fissile material, the mass of fissile material (or mass of each fissile nuclide for mixtures when appropriate) in units of grams (g), or appropriate multiples thereof, may be used in place of activity;

d) The category of the package, overpack or freight container, as assigned per 1.2.3.1.4, i.e. I-WHITE, II-YELLOW, III-YELLOW;

e) The transport index as determined per 1.2.3.1.1 and 1.2.3.1.2 (~~categories II-YELLOW and III-YELLOW only~~ except for category I-WHITE);

— END —