



WORKING PAPER

DANGEROUS GOODS PANEL (DGP)

TWENTY-FIFTH MEETING

Montréal, 19 to 30 October 2015

Agenda Item 2: Development of recommendations for amendments to the *Technical Instructions for the Safe Transport of Dangerous Goods by Air* (Doc 9284) for incorporation in the 2017-2018 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 seventh session (Geneva, 12 December 2014). It also reflects amendments agreed by DGP-WG15 (Montréal, 27 April to 1 May 2015).

The DGP 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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1.1 GENERAL REQUIREMENTS

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

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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

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1.2 GENERAL PROVISIONS FOR CLASS 7

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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:

- 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)).]

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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/cm² for beta and gamma emitters and low toxicity alpha emitters and 0.04 Bq/cm² for all other alpha emitters.

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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**

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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~~ marking mark must be displayed on the article, on its cradle or on its handling, storage or launching device. A typical package ~~marking mark~~ 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 ~~Markings~~ Marks 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:

- a) the identification mark allocated to that design by the competent authority;
- b) a serial number to uniquely identify each packaging which conforms to that design; and
- c) "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".

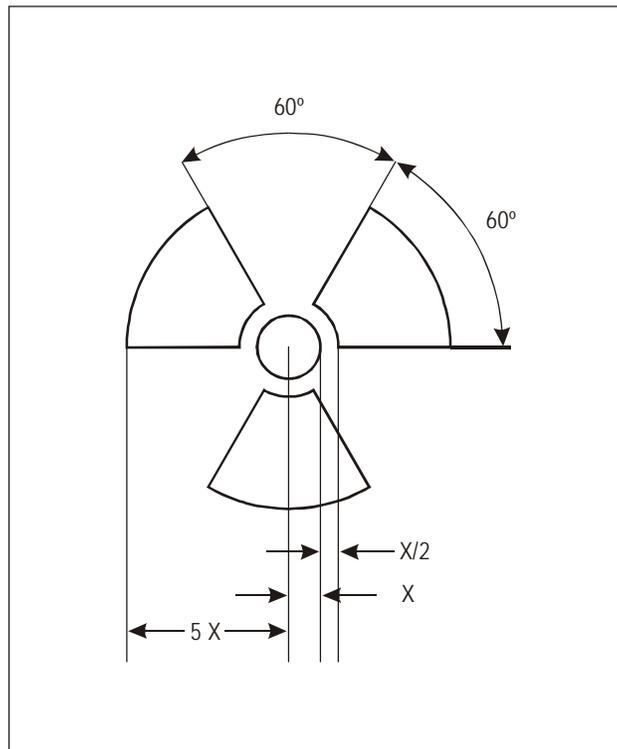


Figure 5-1. Basic trefoil symbol with proportions based on a central circle of radius X. The minimum allowable size of X must be 4 mm.

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 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 also 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 Markings Marks 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.

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:

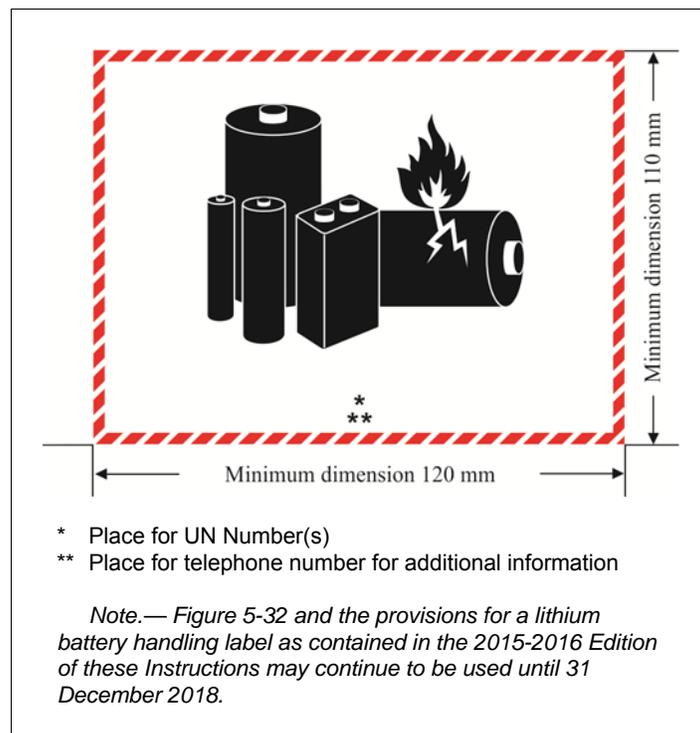


Figure 5-3. Lithium battery mark

Renumber subsequent figures and update references accordingly

2.5 LANGUAGES TO BE USED

In addition to the languages which may be required by the State of Origin, English should be used.

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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, 5-20~~21~~ and 5-24~~22~~ 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 5-22~~23~~; such labels, where applicable, must be affixed adjacent to the labels conforming to Figure 5-19~~20~~, 5-20~~21~~, or 5-24~~22~~, 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)

3.2.8 Except as provided in 3.5.1.1 d), 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 5-25~~27~~) as required by column 5 of Table 3-1, such packages or consignments do not need to bear the "Miscellaneous dangerous goods" label (Figure 5-24~~25~~).

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 5-26~~28~~) 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 5-27~~29~~), or preprinted package orientation labels meeting the same specification as either Figure 5-27~~29~~ 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 5-29~~31~~) 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 5-30~~32~~) 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 5-34~~33~~) 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 5-32~~33~~, 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 in the case of 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))

It is suggested that in addition to new text related to the Class 9 label for lithium batteries, further amendments to sub-paragraph e) are needed 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.**
- 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-~~19~~20, 5-~~20~~21 or 5-~~24~~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";
 - 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-~~22~~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-~~22~~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.

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-~~25~~27 to 5-~~27~~29 and Figures 5-~~29~~31 to 5-~~32~~33. 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-~~27~~29 or ISO Standard 780:1997.

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 x 110 mm high except labels of 105 mm wide x 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).~~

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.

...

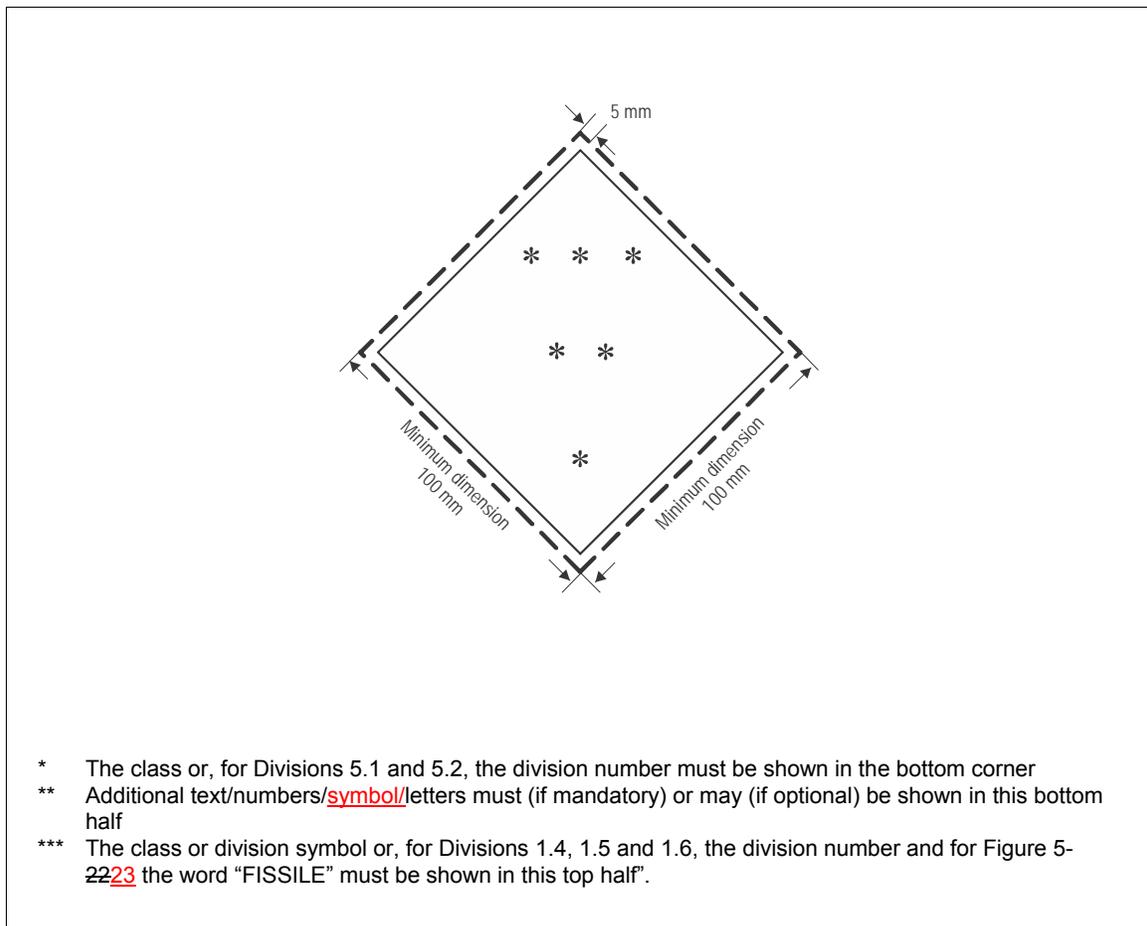


Figure 5-3 5-4. Class/division label

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))

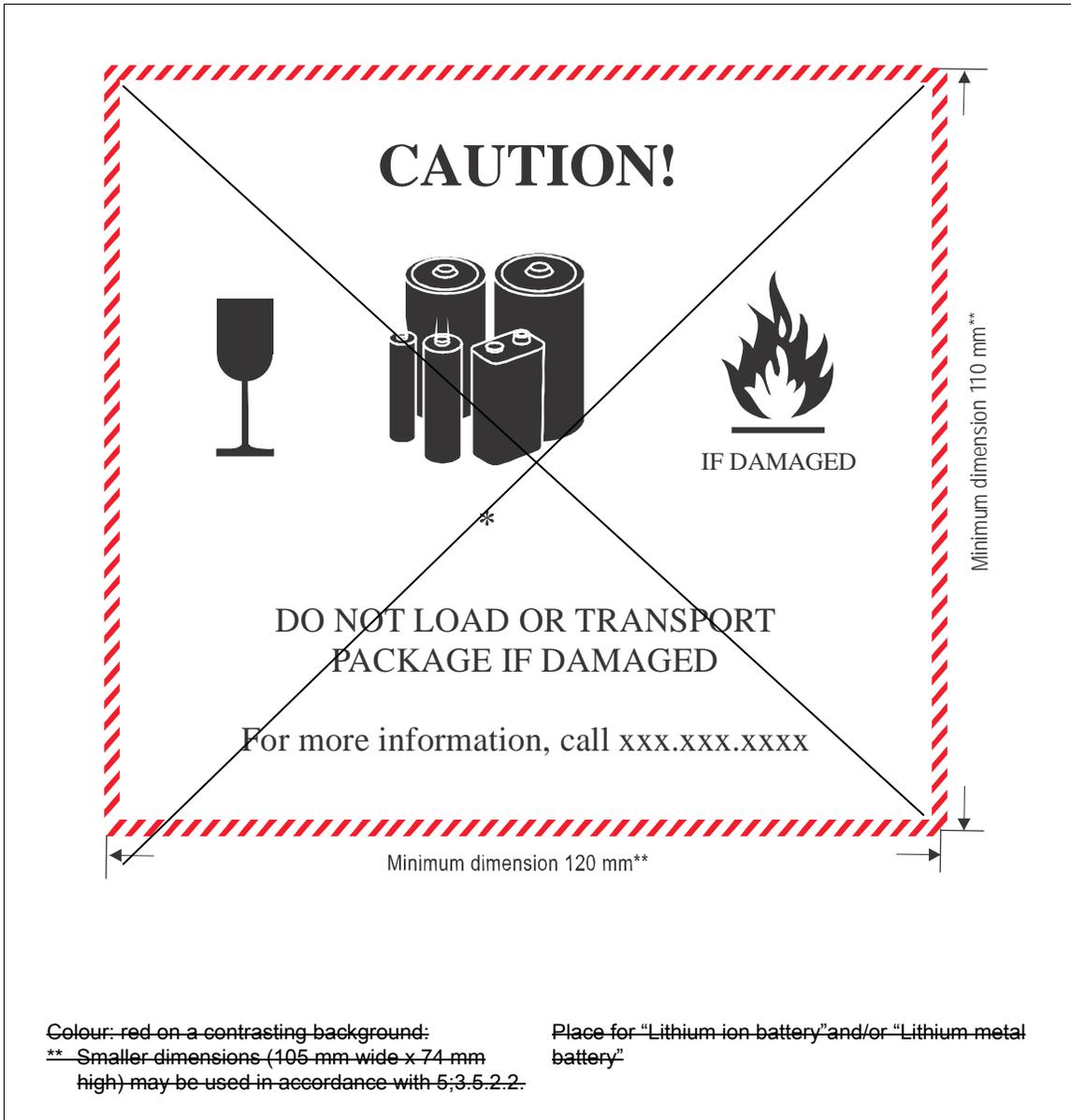


Figure 5.32. Lithium battery handling label

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:

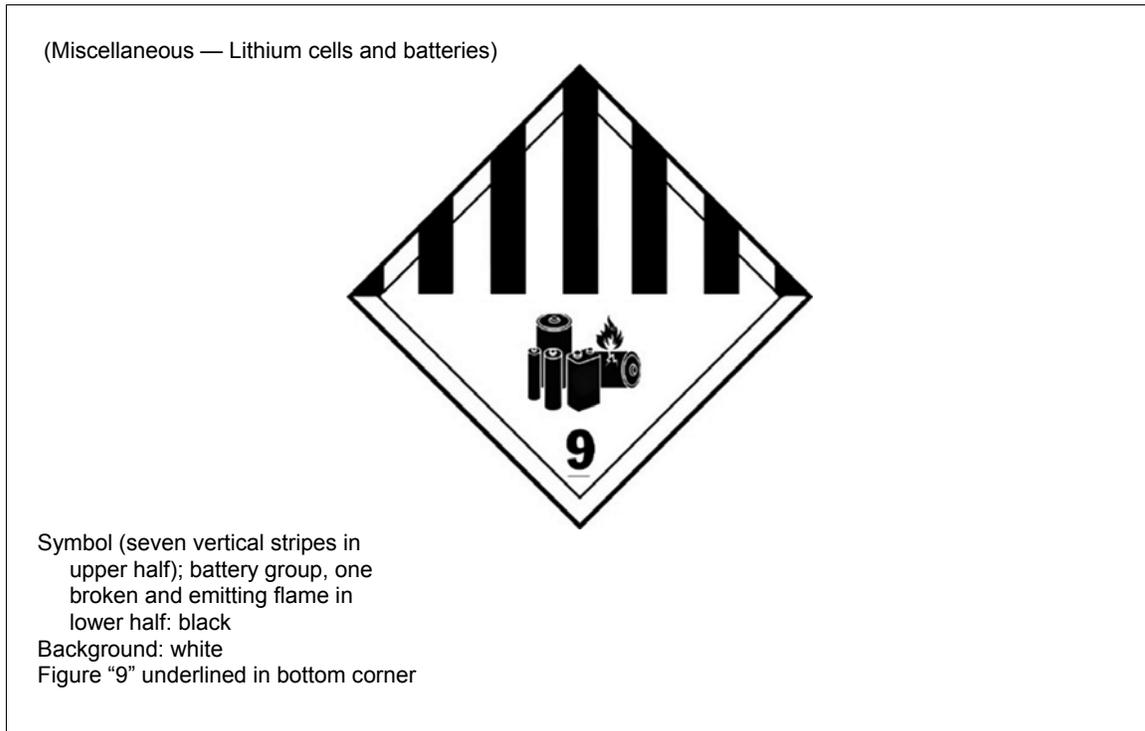


Figure 5-26. Miscellaneous dangerous goods — lithium batteries, Class 9

Renumber subsequent figures accordingly and revise references throughout Technical Instructions as applicable.

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Chapter 4

DOCUMENTATION

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4.1.5 Information required in addition to the dangerous goods description

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DGP/25-WP/3 (see paragraph 3.2.5.1.1 d)) and UN Model Regulations, paragraph 5.4.1.5.12, ST/SG/AC.10/42/Add.1/Corr.1::

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 or A208;
- 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"