International Civil Aviation Organization

DGP-WG/25-WP/14
7/3/25

WORKING PAPER

DANGEROUS GOODS PANEL (DGP) WORKING GROUP MEETING (DGP-WG/25)

Delhi, India, 21 to 25 April 2025

Agenda Item 1: Harmonizing ICAO dangerous goods provisions with UN Recommendations on the Transport of Dangerous Goods (REC-A-DGS-2027)

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 2027-2028 Edition

DRAFT AMENDMENTS TO PART 4 OF THE TECHNICAL INSTRUCTIONS TO ALIGN WITH THE UN RECOMMENDATIONS

(Presented by the Secretary)

SUMMARY

This working paper contains draft amendments to Part 4 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 twelfth session (Geneva, 6 December 2024).

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

Part 4

PACKING INSTRUCTIONS

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Chapter 2

GENERAL

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UN Model Regulations, Chapter 4.1, 4.1.3.4 (see ST/SG/AC.10/52/Add.1)

2.5 The following packagings must not be used when the substances being transported are liable to become liquid during transport:

Single packagings

For substances of Packing Group I, unless approved for the transport of liquids of Packing Group I:

Drums:	1A2, 1B2, 1H2 and 1N2
Jerricans:	3A2, 3B2 and 3H2

For substances of Packing Groups I, II and III:

Drums:	1D and 1G
Boxes:	4A, 4B, 4C1, 4C2, 4D, 4F, 4G ~~and~~, 4H1, 4H2 and 4N
Bags:	5L1, 5L2, 5L3, 5H1, 5H2, 5H3, 5H4, 5M1 and 5M2
Composite packagings:	6HC, 6HD1, 6HD2, 6HG1, 6HG2~~, 6HD1~~, 6PC, 6PD1, 6PD2, 6PG1, 6PG2 ~~and~~, 6PH1 and 6PH2.

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UN Model Regulations, Chapter 4.1, 4.1.3.6.5 (see ST/SG/AC.10/52/Add.1)

2.7.6 The ~~level~~ degree of filling must not exceed 95 per cent of the capacity of the cylinder at 50°C. Sufficient ullage (outage) must be left to ensure that the cylinder will not be liquid full at a temperature of 55°C.

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Chapter 3

CLASS 1 – EXPLOSIVES

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Packing Instruction 130

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UN Model Regulations, Chapter 4.1, 4.1.4.1, P130 (see ST/SG/AC.10/52/Add.1)

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, 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.

— For UN Nos. 0012 and 0014, despite the requirements of 4;3.3.1.6, articles may be packed without internal cushioning, fittings, coating or liner in metal outer packagings.

Chapter 4

CLASS 2 – GASES

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4.1 SPECIAL PACKING PROVISIONS FOR DANGEROUS GOODS OF CLASS 2

4.1.1 General requirements

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UN Model Regulations, Chapter 4.1, 4.1.6.1.2 (see ST/SG/AC.10/52/Add.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 (such as 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 11114-1:2020 + Amd 1:2023 and ISO 11114-2:2021 must be met.

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UN Model Regulations, Chapter 4.1, 4.1.6.1.8 (see ST/SG/AC.10/52/Add.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 or guards. 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 permanent protective attachments;

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), the requirements of ISO 11117:1998, ISO 11117:2008 + Cor 1:2009 or ISO 11117:2019 must be met. Requirements for shrouds and permanent protective attachments used as valve protection under c) are given in the relevant pressure receptacle shell design standards, see 6;5.2.1. Valves with inherent protection used for refillable cylinders must meet the requirements of clause 4.6.2 of ISO 10297:2006, clause 5.5.2 of ISO 10297:2014, clause 5.5.2 of ISO 10297:2014 + Amd 1:2017 or clause 5.4.2 of ISO 10297:2024 or, in the case of self-closing valves, of clause 5.4.2 of ISO 17879:2017. For valves with inherent protection used for non-refillable cylinders, the requirements of clause 9.2.5 of ISO 11118:2015 or of clause 9.2.5 of ISO 11118:2015 + Amd 1:2019 must be met.

Packing Instruction 200 1.

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The following requirements must be met:

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UN Model Regulations, Chapter 4.1, 4.1.4.1, P200 (see ST/SG/AC.10/52/Add.1)

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

a) the conformity of cylinders and accessories with these Instructions;
b) their compatibility with the product to be transported;
c) the absence of damage which might affect safety;
d) compliance with the ~~degree or pressure of filling~~ filling ratio or pressure of filling, as appropriate; and
e) marks and identification.

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Chapter 6

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

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Packing Instruction 459

Passenger and cargo aircraft – self-reactive substances and polymerizing substances

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UN Model Regulations, Chapter 4.1, 4.1.7.1.1 (see ST/SG/AC.10/52/Add.1)

ADDITIONAL PACKING REQUIREMENTS FOR COMBINATION PACKAGINGS

— Cushioning materials must not be readily combustible.
— Packagings must meet the Packing Group II performance requirements.
— To avoid the unnecessary confinement of liquids, metal packagings meeting the criteria of the internal pressure (hydraulic) test for Packing Group I must not be used.

Note.— The shipper should consult with the packaging manufacturer to verify that the metal packaging does not meet the internal pressure (hydraulic) test criteria for Packing Group I.

UN 3223 or UN3224

Energetic samples classified in accordance with Part 2, Introductory Chapter, paragraph 5.4 may be carried under UN 3223 or UN 3224, as appropriate, provided that:

1. The quantity per individual inner cavity does not exceed 0.01 g for solids or 0.01 mL for liquids and the maximum net quantity per outer packaging does not exceed 20 g for solids or 20 mL for liquids, or in the case of mixed packing the sum of grams and millilitres does not exceed 20:

   a) the samples are carried in microtiter plates or multi-titer plates made of plastics, glass, porcelain or stoneware as an inner packaging;

   b) only combination packaging with outer packaging comprising boxes (4A, 4B, 4N, 4C1, 4C2, 4D, 4F, 4G, 4H1 and 4H2) are permitted; or

UN Model Regulations, Chapter 4.1, 4.1.4.1, P520 (see ST/SG/AC.10/52/Add.1)

2. The maximum content of each inner packaging does not exceed 1 g for solids or 1 mL for liquids and the maximum net quantity per outer packaging does not exceed 56 g for solids or 56 mL for liquids, or in the case of mixed packing the sum of grams and millilitres does not exceed 56:

   a) The individual substance is contained in an inner packaging of glass or plastics of maximum capacity of 30 mL placed in an expandable polyethylene foam matrix of at least 130 mm thickness having a density of 18 ±1 g/L or 24 ± 2.4 g/l;

   b) Within the foam carrier, inner packagings are segregated from each other by a minimum distance of 40 mm and from the wall of the outer packaging by a minimum distance of 70 mm. The package may contain up to two layers of such foam matrices, each carrying up to twenty-eight inner packagings;

   c) The outer packaging consists only of corrugated fibreboard boxes (4G) having minimum dimensions of 60 cm (length) by 40.5 cm (width) by 30 cm (height) and minimum wall thickness of 1.3 cm.

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Chapter 7

CLASS 5 – OXIDIZING SUBSTANCES; ORGANIC PEROXIDES

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Packing Instruction 570

Passenger and cargo aircraft

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UN Model Regulations, Chapter 4.1, 4.1.7.1.1 (see ST/SG/AC.10/52/Add.1)

ADDITIONAL PACKING REQUIREMENTS FOR COMBINATION PACKAGINGS

— Packagings must meet the Packing Group II performance requirements.
— To avoid the unnecessary confinement of liquids, metal packagings meeting the criteria of the internal pressure (hydraulic) test for Packing Group I must not be used.

Note.— The shipper should consult with the packaging manufacturer to verify that the metal packaging does not meet the internal pressure (hydraulic) test criteria for Packing Group I.

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Chapter 10

CLASS 8 – CORROSIVE SUBSTANCES

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Packing Instructions 854 – 856

Cargo aircraft only

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ADDITIONAL PACKING REQUIREMENTS FOR COMBINATION PACKAGINGS

Packing Group I

— 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.

UN Model Regulations, Chapter 4.1, 4.1.4.1, P001 (see ST/SG/AC.10/52/Add.1)

ADDITIONAL PACKING REQUIREMENTS FOR SINGLE PACKAGINGS

For UN 2029

When a cylinder is used, the internal pressure at 65°C must not exceed the test pressure.

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Chapter 11

CLASS 9 – MISCELLANEOUS DANGEROUS GOODS

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UN Model Regulations, Chapter 3.3, SP 388 (see ST/SG/AC.10/52/Add.1):

Packing Instruction 950

Passenger and cargo aircraft for UN 3166 only

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ADDITIONAL PACKING REQUIREMENTS

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UN Model Regulations, Chapter 3.3, SP 388 (see ST/SG/AC.10/52/Add.1):

See also proposed amendment to Special Provision A214 in DGP-WG/25-WP/13

Batteries

All batteries must be installed and securely fastened in the battery holder of the vehicle 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 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 870.

2) If lithium batteries or sodium ion batteries are installed:

   i) ~~lithium~~ batteries identified as being damaged or defective in accordance with Special Provision A154 are forbidden for transport; and

   ii) lithium batteries must meet the provisions of Part 2;9.3 and sodium ion batteries must meet the provisions of Part 2;9.4, except that pre-production prototypes of lithium batteries or cells or sodium ion batteries or cells, when these prototypes are transported for testing, or low production runs of lithium batteries or cells or sodium ion 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 State of the Operator. A copy of the document of approval must accompany the consignment.

3) If metallic sodium or sodium alloy batteries are installed, they must conform to the requirements of Special Provision A94.

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Packing Instruction 951

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ADDITIONAL PACKING REQUIREMENTS

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UN Model Regulations, Chapter 3.3, SP 388 (see ST/SG/AC.10/52/Add.1):

See also proposed amendment to Special Provision A214 in DGP-WG/25-WP/13

Batteries

All batteries must be installed and securely fastened in the battery holder of the vehicle 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 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 870.

2) If lithium batteries or sodium ion batteries are installed:

   i) ~~lithium~~ batteries identified as being damaged or defective in accordance with Special Provision A154 are forbidden for transport; and

   ii) lithium batteries must meet the provisions of Part 2;9.3 and sodium ion batteries must meet the provisions of Part 2;9.4, except that pre-production prototypes of lithium batteries or cells or sodium ion batteries or cells, when these prototypes are transported for testing, or low production runs of lithium batteries or cells or sodium ion 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 State of the Operator. A copy of the document of approval must accompany the consignment.

3) If metallic sodium or sodium alloy batteries are installed, they must conform to the requirements of Special Provision A94.

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Packing Instruction 952

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ADDITIONAL PACKING REQUIREMENTS

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UN Model Regulations, Chapter 3.3, SP 388 (see ST/SG/AC.10/52/Add.1):

See also proposed amendment to Special Provision A214 in DGP-WG/25-WP/13

Batteries

All batteries must be installed and securely fastened in the battery holder of the vehicle 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 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 870.

2) If lithium batteries or sodium ion batteries are installed:

   i) batteries identified as being damaged or defective in accordance with Special Provision A154 are forbidden for transport;

   ii) lithium batteries must meet the provisions of Part 2;9.3 and sodium ion batteries must meet the provisions of Part 2;9.4, except that pre-production prototypes of lithium batteries or cells or sodium ion batteries or cells, when these prototypes are transported for testing, or low production runs of lithium batteries or cells or sodium ion 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 State of the Operator. A copy of the document of approval must accompany the consignment;

   iii) where the battery is removed from the vehicle and is packed separate from the vehicle in the same outer packaging, the package must be consigned as UN 3481 – **Lithium ion batteries packed with equipment**, UN 3552 – **Sodium ion batteries packed with equipment** or UN 3091 – **Lithium metal batteries packed with equipment** and packed according to Packing Instruction 966, 969 or 977, as applicable; and

   iv) for UN 3556 – **Vehicle, lithium ion battery powered**, UN 3557 – **Vehicle, lithium metal battery powered** when the battery is rechargeable, and UN 3558 – **Vehicle, sodium ion battery powered**:

      1) **Until 31 December 2025**

         Vehicles should be offered for transport with:

         — the battery(ies) at a state of charge not exceeding 30 per cent of their rated capacity; or
         — an indicated battery capacity not exceeding 25 per cent.

      2) **From 1 January 2026**

         a) Vehicles powered by batteries with a Watt-hour rating in excess of 100 Wh must be offered for transport with:

            — the battery(ies) at a state of charge not exceeding 30 per cent of their rated capacity; or
            — an indicated battery capacity not exceeding 25 per cent.

         b) Vehicles powered by batteries with a Watt-hour rating not in excess of 100 Wh should be offered for transport with:

            — the battery(ies) at a state of charge not exceeding 30 per cent of their rated capacity; or
            — an indicated battery capacity not exceeding 25 per cent.

c) Vehicles powered by batteries with a Watt-hour rating in excess of 100 Wh and at a state of charge exceeding 30 per cent of their rated capacity or with an indicated battery capacity exceeding 25 per cent may only be offered for transport with the approval of the appropriate national authorities 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*. Cells and batteries shipped at a reduced state of charge are less prone to thermal runaway.*

3) If metallic sodium or sodium alloy batteries are installed, they must conform to the requirements of Special Provision A94.

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Packing Instruction 962

Passenger and cargo aircraft for UN 3363 only

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UN Model Regulations, Chapter 3.3, SP 301 (see ST/SG/AC.10/52/Add.1):

See also proposed amendment to Special Provision A107 in DGP-WG/25-WP/13

ADDITIONAL PACKING REQUIREMENTS

— If the article contains more than one item of dangerous goods and these could react dangerously with one another during transport, ~~the individual~~ each of the dangerous goods must be enclosed ~~to prevent them reacting dangerously with one another during transport~~ separately (see 4;1.1.3).
— Receptacles containing dangerous goods must be so secured or cushioned so as to prevent their breakage or leakage and so as to control their movement within the article during normal conditions of transport. Cushioning material must not react dangerously with the contents of the receptacles. Any leakage of the contents must not substantially impair the protective properties of the cushioning material.
— "Package orientation" labels (Figure 5-29), or preprinted orientation labels meeting the same specification as either Figure 5-29 or ISO Standard 780-1997 must be affixed on at least two opposite vertical sides with the arrows pointing in the correct direction only when required to ensure liquid dangerous goods remain in their intended orientation.
— Irrespective of 5;3.2.10, articles containing magnetized material meeting the requirements of Packing Instruction 953 must also bear the "Magnetized material" label (Figure 5-27).
— For Division 2.2 gases, cylinders for gases, their contents and filling ratios must conform to the requirements of Packing Instruction 200.
— Dangerous goods in articles must be packed in strong outer packagings unless the receptacles containing the dangerous goods are afforded adequate protection by the construction of the articles.

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Packing Instruction 965

Cargo aircraft only for UN 3480

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IB. **SECTION IB**

Cells or batteries prepared in accordance with this section 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.

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.

UN Model Regulations, Chapter 3.3, SP 188 (see ST/SG/AC.10/52/Add.1):

Cells and batteries may be offered for transport provided that each cell and battery meets the provisions of 2;9.3 a), e) ~~and~~, g) and h) (if applicable) and the following:

1) for cells, the Watt-hour rating (see the Glossary of Terms in Attachment 2) is not more than 20 Wh;

2) for 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 batteries manufactured before 1 January 2009;

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).
— 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*. Cells and batteries shipped at a reduced state of charge are less prone to thermal runaway.*

Table 965-IB

Contents	*Net quantity per package*	
	Passenger	*Cargo*
Lithium ion cells and batteries	Forbidden	10 kg

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Packing Instruction 966

Passenger and cargo aircraft for UN 3481 (packed with equipment) only

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II. **SECTION II**

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 5;2.4.16 (Shipper's responsibilities – Special marking requirements for lithium batteries or sodium ion batteries);
— Part 7;4.4 (Operator's responsibilities – Reporting of dangerous goods accidents and incidents);
— Part 7;4.5 (Operator's responsibilities – Reporting of undeclared and misdeclared dangerous goods);
— 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.

UN Model Regulations, Chapter 3.3, SP 188 (see ST/SG/AC.10/52/Add.1):

Cells and batteries may be offered for transport provided that each cell and battery meets the provisions of 2;9.3 a), e) ~~and~~, g) and h) (if applicable) and the following:

1) for cells, the Watt-hour rating (see the Glossary of Terms in Attachment 2) is not more than 20 Wh;

2) for batteries, the Watt-hour rating is not more than 100 Wh;
   – the Watt-hour rating must be marked on the outside case except for batteries manufactured before 1 January 2009.

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Packing Instruction 967

Passenger and cargo aircraft for UN 3481 (contained in equipment) only

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II. **SECTION II**

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 5;2.4.16 (Shipper's responsibilities – Special marking requirements for lithium batteries or sodium ion batteries);
— Part 7;4.4 (Operator's responsibilities – Reporting of dangerous goods accidents and incidents);
— Part 7;4.5 (Operator's responsibilities – Reporting of undeclared and misdeclared dangerous goods);
— 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.

UN Model Regulations, Chapter 3.3, SP 188 (see ST/SG/AC.10/52/Add.1):

Cells and batteries may be offered for transport provided that each cell and battery meets the provisions of 2;9.3 a), e) ~~and~~, g) and h) (if applicable) and the following:

1) for cells, the Watt-hour rating (see the Glossary of Terms in Attachment 2) is not more than 20 Wh;

2) for 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 batteries manufactured before 1 January 2009.

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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.
— Where multiple pieces of equipment are packed in the same outer packaging, each piece of equipment must be packed to prevent contact with other equipment.
— Each package must be capable of withstanding, without damage to the equipment contained therein and without any reduction of effectiveness, a force applied to the top surface equivalent to the total weight of identical packages stacked to a height of 3 m (including the test sample) for a duration of 24 hours. Large equipment that is offered for transport unpackaged or on pallets is not subject to the requirements for the 3 m stack test capability.

Note.— Capability may be demonstrated by testing, assessment or experience.

UN Model Regulations, Chapter 3.3, SP 188 (see ST/SG/AC.10/52/Add.1):

— Each package must be marked with the 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.— Where the equipment contains one or more button cells in addition to cells or batteries, the button cell or cells do not count toward package or consignment limits.

— Where a consignment includes packages bearing the battery mark (Figure 5-3), 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. Where packages of Section II batteries from multiple packing instructions are included on one air waybill, the compliance statement for the different battery types and/or packing instructions may be combined into a single statement provided that the statement identifies the applicable battery type(s) and packing instruction numbers.
— Any person preparing or offering cells or batteries for transport must receive adequate instruction on these requirements commensurate with the functions for which they are responsible.

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Packing Instruction 968

Cargo aircraft only for UN 3090

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IB. **SECTION IB**

Cells or batteries prepared in accordance with this section 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.

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.

UN Model Regulations, Chapter 3.3, SP 188 (see ST/SG/AC.10/52/Add.1):

Cells and batteries may be offered for transport provided that each cell and battery meets the provisions of 2;9.3 a), e), f) (if applicable) ~~and~~, g) and h) (if applicable) and the following:

1) for cells, the lithium content is not more than 1 g;
2) for batteries, the aggregate lithium content is not more than 2 g.

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

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Packing Instruction 969

Passenger and cargo aircraft for UN 3091 (packed with equipment) only

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II. **SECTION II**

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 5;2.4.16 (Shipper's responsibilities – Special marking requirements for lithium batteries or sodium ion batteries);
— Part 7;4.4 (Operator's responsibilities – Reporting of dangerous goods accidents and incidents);
— Part 7;4.5 (Operator's responsibilities – Reporting of undeclared and misdeclared dangerous goods);
— 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.

UN Model Regulations, Chapter 3.3, SP 188 (see ST/SG/AC.10/52/Add.1):

Lithium metal cells and batteries may be offered for transport provided that each cell and battery meets the provisions of 2;9.3 a),e), f) (if applicable) ~~and~~, g) and h) (if applicable) ~~-~~ and the following:

1) for cells, the lithium content is not more than 1 g;
2) for batteries, the aggregate lithium content is not more than 2 g.

Packing Instruction 970

Passenger and cargo aircraft for UN 3091 (contained in equipment) only

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II. **SECTION II**

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 5;2.4.16 (Shipper's responsibilities – Special marking requirements for lithium batteries or sodium ion batteries);
— Part 7;4.4 (Operator's responsibilities – Reporting of dangerous goods accidents and incidents);
— Part 7;4.5 (Operator's responsibilities – Reporting of undeclared and misdeclared dangerous goods);
— 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.

UN Model Regulations, Chapter 3.3, SP 188 (see ST/SG/AC.10/52/Add.1):

Cells and batteries may be offered for transport provided that each cell and battery meets the provisions of 2;9.3 a), e), f) (if applicable) ~~and~~, g) and h) (if applicable) and the following:

1) for cells, the lithium content is not more than 1 g;
2) for batteries, the aggregate lithium content is not more than 2 g.

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.
— Where multiple pieces of equipment are packed in the same outer packaging, each piece of equipment must be packed to prevent contact with other equipment.
— Each package must be capable of withstanding, without damage to the equipment contained therein and without any reduction of effectiveness, a force applied to the top surface equivalent to the total weight of identical packages stacked to a height of 3 m (including the test sample) for a duration of 24 hours. Large equipment that is offered for transport unpackaged or on pallets is not subject to the requirements for the 3 m stack test capability.

Note.— Capability may be demonstrated by testing, assessment or experience.

— Each package must be marked with the 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.

UN Model Regulations, Chapter 3.3, SP 188 (see ST/SG/AC.10/52/Add.1):

Note.— Where the equipment contains one or more button cells in addition to cells or batteries, the button cell or cells do not count toward package or consignment limits.

— Where a consignment includes packages bearing the battery mark (Figure 5-3), the words "lithium metal batteries, in compliance with Section II of PI970" must be placed on the air waybill, when an air waybill is used. Where packages of Section II batteries from multiple packing instructions are included on one air waybill, the compliance statement for the different battery types and/or packing instructions may be combined into a single statement provided that the statement identifies the applicable battery type(s) and packing instruction numbers.
— Any person preparing or offering cells or batteries for transport must receive adequate instruction on these requirements commensurate with the functions for which they are responsible.

. . .

— END —