

**Committee of Experts on the Transport of Dangerous Goods
and on the Globally Harmonized System of Classification
and Labelling of Chemicals**

Sub-Committee of Experts on the Transport of Dangerous Goods

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Item 3 of the provisional agenda

Listing, classification and packing

**Revision of various specialist packing instructions in the
Model Regulations**

**Transmitted by the experts from the United Kingdom and Sweden and
by the International Air Transport Association**

NOTE 4N added to all PI where boxes are an option 2010/8

New PI 004 from INF29 and text para (3) from INF 17

P004	PACKING INSTRUCTION	P004
This instruction applies to UN Nos. 3473, 3476, 3477, 3478 and 3479		
<p>(1) For fuel cell cartridges: The following packagings are authorized provided the general provisions of 4.1.1.1, 4.1.1.2, 4.1.1.3, 4.1.1.6 and 4.1.3, are met</p> <p><u>Drums (1A2, 1B2, 1N2, 1H2, 1D, 1G):</u></p> <p><u>Boxes (4A, 4B, 4C1, 4C2, 4D, 4F, 4G, 4H1, 4H2, 4N):</u></p> <p><u>Jerricans (3A2, 3B2, 3H2).</u></p> <p>Packagings shall conform to the packing group II performance level.</p> <p>(2) For fuel cell cartridges packed with equipment: <u>Strong outer packagings which meet the general provisions of 4.1.1.1, 4.1.1.2, 4.1.1.6 and 4.1.3.</u></p> <p>When fuel cell cartridges are packed with equipment, they shall be packed in inner packagings or placed in the outer packaging with cushioning material or divider(s) so that the fuel cell cartridges are protected against damage that may be caused by the movement or placement of the contents within the outer packaging.</p> <p><u>The equipment shall be secured against movement within the outer packaging.</u></p> <p><u>For the purpose of this packing instruction, “equipment” means apparatus requiring the fuel cell cartridges with which it is packed for its operation.</u></p> <p>(3) Fuel cell cartridges contained in equipment: <u>Strong outer packagings which meet the general provisions of 4.1.1.1, 4.1.1.2, 4.1.1.6 and 4.1.3.</u></p> <p><u>Large robust equipment (see 4.1.3.8) containing fuel cell cartridges may be transported unpackaged.–For fuel cell cartridges contained in equipment, the entire system shall be protected against short circuit and inadvertent operation</u></p>		

P201	PACKING INSTRUCTION	P201
This instruction applies to UN Nos. 3167, UN 3168 and UN 3169.		
The following packagings are authorized:		
(1) Compressed gas cylinders and gas receptacles conforming to the construction, testing and filling requirements approved by the competent authority.		
(2) In addition, the following combination packagings are authorized provided that the general provisions of 4.1.1 and 4.1.3 are met:		
Outer packagings:		
<u>Drums (1A2, 1B2, 1N2, 1H2, 1D, 1G);</u>		
<u>Boxes (4A, 4B, 4C1, 4C2, 4D, 4F, 4G, 4H1, 4H2, 4N);</u>		
<u>Jerricans (3A2, 3B2, 3H2);</u>		
Inner packagings:		
(a) For non-toxic gases, combination packagings with hermetically sealed inner packagings of glass or metal with a maximum capacity of 5 litres per package which meet the packing group III performance level		
(b) For toxic gases, combination packagings with hermetically sealed inner packagings of glass or metal with a maximum capacity of 1 litre per package which meet the packing group III performance level.		
Packagings shall conform to the packing group III performance level.		

P302	PACKING INSTRUCTION	P302
This instruction applies to UN No. 3269.		
The following combination packagings are authorized, provided that the general provisions of 4.1.1 and 4.1.3 are met:		
Outer packagings:		
<u>Drums (1A2, 1B2, 1N2, 1H2, 1D, 1G);</u>		
<u>Boxes (4A, 4B, 4C1, 4C2, 4D, 4F, 4G, 4H1, 4H2, 4N)</u>		
<u>Jerricans (3A2, 3B2, 3H2);</u>		
Inner packagings:		
The activator (organic peroxide) shall have a maximum quantity of 125 ml per inner packaging if liquid, and 500 g per inner packaging if solid.		
The base material and the activator shall be each separately packed in inner packagings.		
The components may be placed in the same outer packaging provided that they will not interact dangerously in the event of a leakage.		
Packagings shall conform to the packing group II or III performance level according to the criteria for Class 3 applied to the base material.		

P401	PACKING INSTRUCTION	P401
<p>The following packagings are authorized, provided that the general provisions of 4.1.1 and 4.1.3 are met:</p> <p>(1) Pressure receptacles, provided that the general provisions of 4.1.3.6 are met. They shall be made of steel and subjected to an initial test and periodic tests every 10 years at a pressure of not less than 0.6 MPa (6 bar) (gauge pressure). During transport, the liquid shall be under a layer of inert gas with a gauge pressure of not less than 20 kPa (0.2 bar).</p> <p>(2) Combination packagings:</p> <p style="padding-left: 20px;">Outer packagings:</p> <p style="padding-left: 40px;"><u>Drums (1A2, 1B2, 1N2, 1H2, 1D, 1G);</u></p> <p style="padding-left: 40px;"><u>Boxes (4A, 4B, 4C1, 4C2, 4D, 4F, 4G, 4H1,4 H2, 4N);</u></p> <p style="padding-left: 40px;"><u>Jerricans (3A2, 3B2, 3H2).</u></p> <p style="padding-left: 20px;">Inner packagings:</p> <p style="padding-left: 40px;">Glass, metal or plastics which have threaded closures with a maximum capacity of 1 litre</p> <p style="padding-left: 40px;">Each inner packaging shall be surrounded by inert cushioning and absorbent material in a quantity sufficient to absorb the entire contents.</p> <p style="padding-left: 20px;">The maximum net mass per outer packaging shall not exceed 30 kg.</p>		

P402	PACKING INSTRUCTION	P402				
<p>The following packagings are authorized, provided that the general provisions of 4.1.1 and 4.1.3 are met:</p> <p>(1) Pressure receptacles, provided that the general provisions of 4.1.3.6 are met. They shall be made of steel and subjected to an initial test and periodic tests every 10 years at a pressure of not less than 0.6 MPa (6 bar) (gauge pressure). During transport, the liquid shall be under a layer of inert gas with a gauge pressure of not less than 20 kPa (0.2 bar).</p> <p>(2) Combination packagings:</p> <p style="padding-left: 20px;">Outer packagings:</p> <p style="padding-left: 40px;"><u>Drums (1A2, 1B2, 1N2, 1H2, 1D, 1G);</u></p> <p style="padding-left: 40px;"><u>Boxes (4A, 4B, 4C1, 4C2, 4D, 4F, 4G, 4H1,4 H2, 4N);</u></p> <p style="padding-left: 40px;"><u>Jerricans (3A2, 3B2, 3H2).</u></p> <p style="padding-left: 20px;">Inner packagings with a maximum net mass as follows:</p> <table style="margin-left: 40px; border: none;"> <tr> <td style="padding-right: 20px;">Glass</td> <td>10 kg</td> </tr> <tr> <td>Metal or plastics</td> <td>15 kg</td> </tr> </table> <p style="padding-left: 40px;">Each inner packaging shall be fitted with threaded closures.</p> <p style="padding-left: 40px;">Each inner packaging shall be surrounded by inert cushioning and absorbent material in a quantity sufficient to absorb the entire contents.</p> <p style="padding-left: 20px;">The maximum net mass per outer packaging shall not exceed 125 kg.</p> <p>(3) Steel drums (1A1) with a maximum capacity of 250 litres.</p> <p>(4) Composite packagings consisting of plastics receptacle in a steel or aluminium drum (6HA1 or 6HB1) with a maximum capacity of 250 litres.</p>			Glass	10 kg	Metal or plastics	15 kg
Glass	10 kg					
Metal or plastics	15 kg					

P407	PACKING INSTRUCTION	P407
This instruction applies to UN Nos. 1331, 1944, 1945 and 2254.		
The following packagings are authorized, provided that the general provisions of 4.1.1 and 4.1.3 are met:		
Outer packagings:		
<u>Drums (1A2, 1B2, 1N2, 1H2, 1D, 1G);</u>		
<u>Boxes (4A, 4B, 4C1, 4C2, 4D, 4F, 4G, 4H1, 4H2, 4N);</u>		
<u>Jerricans (3A2, 3B2, 3H2).</u>		
Inner packagings:		
Matches shall be tightly packed in securely closed inner packagings to prevent accidental ignition under normal conditions of transport.		
The maximum gross mass of the package shall not exceed 45 kg except for fibreboard boxes which shall not exceed 30 kg.		
Packagings shall conform to the packing group III performance level.		
Special packing provision:		
PP27 UN 1331, Strike-anywhere matches shall not be packed in the same outer packaging with any other dangerous goods other than safety matches or wax Vesta matches, which shall be packed in separate inner packagings. Inner packagings shall not contain more than 700 strike-anywhere matches.		

P408	PACKING INSTRUCTION	P408
This instruction applies to UN No. 3292.		
The following packagings are authorized, provided that the general provisions of 4.1.1 and 4.1.3 are met:		
(1) For cells:		
Drums (1A2, 1B2, 1N2, 1H2, 1D, 1G);		
Boxes (4A, 4B, 4C1, 4C2, 4D, 4F, 4G, 4H1, 4H2, 4N);		
Jerricans (3A2, 3B2, 3H2).		
There shall be sufficient cushioning material to prevent contact between cells and between cells and the internal surfaces of the outer packaging and to ensure that no dangerous movement of the cells within the outer packaging occurs in transport.		
Packagings shall conform to the packing group II performance level.		
(2) Batteries may be carried unpacked or in protective enclosures(e.g. fully enclosed or wooden slatted crates): The terminals shall not support the weight of other batteries or materials packed with the batteries.		
Packagings need not meet the requirements of 4.1.1.3.		
Additional requirement:		
Cells and batteries shall be protected against short circuit and shall be isolated in such a manner as to prevent short circuits.		

P411	PACKING INSTRUCTION	P411
This instruction applies to UN No. 3270.		
The following packagings are authorized, provided that the general provisions of 4.1.1 and 4.1.3 are met:		
<u>Drums (1A2, 1B2, 1N2, 1H2, 1D, 1G);</u>		
<u>Boxes (4A, 4B, 4C1, 4C2, 4D, 4F, 4G, 4H1, 4H2, 4N);</u>		
<u>Jerricans (3A2, 3B2, 3H2)</u>		
provided that explosion is not possible by reason of increased internal pressure.		
The maximum net mass shall not exceed 30 kg.		

P500	PACKING INSTRUCTION	P500
This instruction applies to UN No. 3356.		
The following packagings are authorized, provided that the general provisions of 4.1.1 and 4.1.3 are met:		
<u>Drums (1A2, 1B2, 1N2, 1H2, 1D, 1G);</u>		
<u>Boxes (4A, 4B, 4C1, 4C2, 4D, 4F, 4G, 4H1, 4 H2, 4N);</u>		
<u>Jerricans (3A2, 3B2, 3H2).</u>		
Packagings shall conform to the packing group II performance level.		
The generator(s) shall be transported in a package which meets the following requirements when one generator in the package is actuated:		
(a) Other generators in the package will not be actuated;		
(b) Packaging material will not ignite; and		
(c) The outside surface temperature of the completed package shall not exceed 100 °C.		

P620	PACKING INSTRUCTION	P620
This instruction applies to UN Nos. 2814 and 2900.		
<p>The following packagings are authorized provided that the special packing provisions of 4.1.8 are met: Packagings meeting the requirements of Chapter 6.3 and approved accordingly consisting of:</p> <p>(a) Inner packagings comprising:</p> <ul style="list-style-type: none"> (i) leakproof primary receptacle(s); (ii) a leakproof secondary packaging; (iii) other than for solid infectious substances, an absorbent material in sufficient quantity to absorb the entire contents placed between the primary receptacle(s) and the secondary packaging; if multiple primary receptacles are placed in a single secondary packaging, they shall be either individually wrapped or separated so as to prevent contact between them; <p>(b) A rigid outer packaging:</p> <p style="margin-left: 20px;"><u>Drums (1A2, 1B2, 1N2, 1H2, 1D, 1G);</u></p> <p style="margin-left: 20px;"><u>Boxes (4A, 4B, 4C1, 4C2, 4D, 4F, 4G, 4H1, 4H2, 4N);</u></p> <p style="margin-left: 20px;"><u>Jerricans (3A2, 3B2, 3H2).</u></p> <p>The smallest external dimension shall be not less than 100 mm.</p>		
Additional requirements:		
Existing text		

NO OTHER CHANGES ARE MADE TO THIS PI

P621	PACKING INSTRUCTION	P621
This instruction applies to UN No. 3291.		
<p>The following packagings are authorized provided that the general provisions of 4.1.1 except 4.1.1.15 and 4.1.3 are met:</p> <p>(1) Provided that there is sufficient absorbent material to absorb the entire amount of liquid present and the packaging is capable of retaining liquids:</p> <p style="margin-left: 20px;"><u>Drums (1A2, 1B2, 1N2, 1H2, 1D, 1G);</u></p> <p style="margin-left: 20px;"><u>Boxes (4A, 4B, 4C1, 4C2, 4D, 4F, 4G, 4H1, 4H2, 4N);</u></p> <p style="margin-left: 20px;"><u>Jerricans (3A2, 3B2, 3H2).</u></p> <p style="margin-left: 20px;">Packagings shall conform to the packing group II performance level for solids.</p> <p>(2) For packages containing larger quantities of liquid:</p> <p style="margin-left: 20px;"><u>Drums (1A1, 1A2, 1B1, 1B2, 1N1, 1N2, 1H1, 1H2, 1D, 1G);</u></p> <p style="margin-left: 20px;"><u>Jerricans (3A1, 3A2, 3B1, 3B2, 3H1, 3H2);</u></p> <p style="margin-left: 20px;"><u>Composites (6HA1, 6HB1, 6HG1, 6HH1, 6HD1, 6HA2, 6HB2, 6HC, 6HD2, 6HG2, 6HH2 6PA1, 6PB1, 6PG1, 6PD1, 6PH1, 6PH2, 6PA2, 6PB2, 6PC, 6PG2 or 6PD2).</u></p> <p style="margin-left: 20px;">Packagings shall conform to the packing group II performance level for liquids.</p>		
Additional requirement:		
Packagings intended to contain sharp objects such as broken glass and needles shall be resistant to puncture and retain liquids under the performance test conditions in Chapter 6.1.		

P901	PACKING INSTRUCTION	P901
This instruction applies to UN 3316		
<p>The following <u>combination</u> packagings are authorized provided the general provisions of 4.1.1 and 4.1.3 are met:</p> <p style="padding-left: 40px;"><u>Drums (1A2, 1B2, 1N2, 1H2, 1D, 1G);</u></p> <p style="padding-left: 40px;"><u>Boxes (4A, 4B, 4C1, 4C2, 4D, 4F, 4G, 4H1, 4H2, 4N);</u></p> <p style="padding-left: 40px;"><u>Jerricans (3A2, 3B2, 3H2).</u></p> <p>Packagings shall conform to the performance level consistent with the packing group assigned to the kit as a whole (see 3.3.1, special provision 251).</p> <p>Maximum quantity of dangerous goods per outer packaging: 10 kg excluding the mass of any carbon dioxide, solid (dry ice) used as a refrigerant.</p>		
Additional requirement:		
Dangerous goods in kits shall be packed in inner packagings which shall not exceed either 250 ml or 250 g and shall be protected from other materials in the kit.		

P902	PACKING INSTRUCTION	P902
This instruction applies to UN 3268		
<p>Packaged articles:</p> <p>The following packagings are authorized provided the general provisions of 4.1.1 and 4.1.3 are met:</p> <p style="padding-left: 40px;"><u>Drums (1A2, 1B2, 1N2, 1H2, 1D, 1G);</u></p> <p style="padding-left: 40px;"><u>Boxes (4A, 4B, 4C1, 4C2, 4D, 4F, 4G, 4H1, 4H2, 4N);</u></p> <p style="padding-left: 40px;"><u>Jerricans (3A2, 3B2, 3H2).</u></p> <p>Packagings shall conform to the packing group III performance level.</p> <p>The packagings shall be designed and constructed to prevent movement of the articles and inadvertent operation during normal conditions of carriage.</p>		
Unpackaged articles:		
The articles may also be carried unpackaged in dedicated handling devices, vehicles or containers when moved from where they are manufactured to an assembly plant.		
Additional requirement:		
Any pressure vessel shall be in accordance with the requirements of the competent authority for the substance(s) contained in the pressure vessel(s).		

P903	PACKING INSTRUCTION	P903
This instruction applies to UN Nos. 3090, 3091, 3480 and 3481.		
The following packagings are authorized, provided that the general provisions of 4.1.1 and 4.1.3 , are met:		
(1) For cells and batteries:		
Drums (1A2, 1B2, 1N2, 1H2, 1D, 1G);		
Boxes (4A, 4B, 4C1, 4C2, 4D, 4F, 4G, 4H1, 4H2, 4N);		
Jerricans (3A2, 3B2, 3H2).		
Cells or batteries shall be packed in packagings so that the cells or batteries are protected against damage that may be caused by the movement or placement of the cells or batteries within the packaging.		
Packagings shall conform to the packing group II performance level.		
(2) In addition for cells or batteries with a gross mass of 12 kg or more employing a strong, impact resistant outer casing, and assemblies of such cells or batteries:		
(a) Strong outer packagings, in protective enclosures (e.g., in fully enclosed or wooden slatted crates); or		
(b) Pallets or other handling devices.		
Cells or batteries shall be secured to prevent inadvertent movement, and the terminals shall not support the weight of other superimposed elements.		
Packagings need not meet the requirements of 4.1.1.3.		
(3) For cells or batteries packed with equipment:		
Packagings conforming to the requirements in paragraph (1) of this packing instruction., then placed with the equipment in an outer packaging; or		
Packagings that completely enclose the cells or battery , then placed with equipment in a package conforming to the requirements in paragraph (1) of this packing instruction.		
The equipment shall be secured against movement within the outer packaging.		
For the purpose of this packing instruction, "equipment" means apparatus requiring the lithium and lithium ion batteries with which it is packed for its operation.		
(4) For cells or batteries contained in equipment:		
Strong outer packagings <u>constructed of suitable material of adequate strength and design, in relation to the packagings capacity and its intended use</u> . They shall be constructed in such a manner as to prevent accidental operation during transport. Packagings need not meet the requirements of 4.1.1.3.		
Large equipment can be offered for transport unpackaged or on pallets when the cell or battery is afforded equivalent protection by the equipment in which it is contained.		
Devices such as radio frequency identification (RFID) tags, watches and temperature loggers, which are not capable of generating a dangerous evolution of heat, may be transported when intentionally active in strong outer packagings. When active, these devices shall meet defined standards for electromagnetic radiation to ensure that the operation of the device does not interfere with aircraft systems.*		
Additional requirement:		
Cells or batteries shall be protected so as to prevent short circuits.		