



WORKING PAPER

**DANGEROUS GOODS PANEL (DGP)
WORKING GROUP MEETING (DGP-WG/23)**

Rio de Janeiro, Brazil, 15 to 19 May 2023

- Agenda Item 1: Harmonizing ICAO dangerous goods provisions with UN Recommendations on the Transport of Dangerous Goods (REC-A-DGS-2025)**
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 2025-2026 Edition

DRAFT AMENDMENTS TO PART 3 OF THE TECHNICAL INSTRUCTIONS TO ALIGN WITH THE UN RECOMMENDATIONS

(Presented by the DGP Working Group on UN Harmonization)

SUMMARY

This working paper contains draft amendments to Part 3 of the Technical Instructions to reflect the decisions taken by the UN Committee of Experts on the Transport of Dangerous Goods and on the Globally Harmonized System of Classification and Labelling of Chemicals at its ninth session (Geneva, 9 December 2022).

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

Part 3

DANGEROUS GOODS LIST, SPECIAL PROVISIONS AND LIMITED AND EXCEPTED QUANTITIES

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Chapter 2

ARRANGEMENT OF THE DANGEROUS GOODS LIST (TABLE 3-1)

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2.1 ARRANGEMENT OF THE DANGEROUS GOODS LIST (TABLE 3-1)

2.1.1 The Dangerous Goods List (Table 3-1) is divided into 13 columns as follows:

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UN Model Regulations, Chapter 3, 3.2.1 (see ST/SG/AC.10/50/Add.1)

Column 8 “UN packing group” — this column contains the UN packing group number (i.e. I, II or III) assigned to the article or substance. If more than one packing group is indicated for the entry, the packing group of the substance or formulation to be transported should be determined, based on its properties, through application of the hazard grouping criteria as provided in Part 2.

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Table 3-1. Dangerous Goods List

Name	UN No.	Class or division	Subsidiary hazard	Labels	State variations	Special provisions	UN packing group	Excepted quantity	Passenger and cargo aircraft		Cargo aircraft only	
									Packing instruction	Max. net quantity per package	Packing instruction	Max. net quantity per package
1	2	3	4		6	7	8	9	10	11	12	13

UN Model Regulations, Chapter 3.2, dangerous goods list (see ST/SG/AC.10/50/Add.1):

Aircraft hydraulic power unit fuel tank (containing a mixture of anhydrous hydrazine and methyl hydrazine) (M86 fuel)	3165	3	6.1 8	Liquid flammable & Toxic & Corrosive	AU 1 CA 7 IR 3 NL 1 US 3	A1 A48	↓	E0	FORBIDDEN		372	42 L
Aluminium borohydride in devices	2870	4.2	4.3				↓		FORBIDDEN		FORBIDDEN	
Articles containing corrosive substance, n.o.s.*	3547	8	See 2;0.6			A2 <u>A88</u>			FORBIDDEN		FORBIDDEN	
Articles containing flammable gas, n.o.s.*	3537	2.1	See 2;0.6			A2 <u>A88</u>			FORBIDDEN		FORBIDDEN	

Name	UN No.	Class or division	Subsidiary hazard	Labels	State variations	Special provisions	UN packing group	Excepted quantity	Passenger and cargo aircraft		Cargo aircraft only	
									Packing instruction	Max. net quantity per package	Packing instruction	Max. net quantity per package
1	2	3	4		6	7	8	9	10	11	12	13
Articles containing flammable liquid, n.o.s.*	3540	3	See 2;0.6			A2 A88			FORBIDDEN		FORBIDDEN	
Articles containing flammable solid, n.o.s.*	3541	4.1	See 2;0.6			A2 A88			FORBIDDEN		FORBIDDEN	
Articles containing miscellaneous dangerous goods, n.o.s.*	3548	9	See 2;0.6			A2 A88 A224			FORBIDDEN		FORBIDDEN	
Articles containing non-flammable, non toxic gas, n.o.s.*	3538	2.2	See 2;0.6			A2 A88 A225			FORBIDDEN		FORBIDDEN	
Articles containing toxic substance, n.o.s.*	3546	6.1	See 2;0.6			A2 A88			FORBIDDEN		FORBIDDEN	
Batteries, containing metallic sodium or sodium alloy †	3292	4.3		Danger if wet		A94 A183 A228		E0	FORBIDDEN		492	No limit
Batteries, wet, filled with alkali, electric storage †	2795	8		Corrosive		A51 A164 A183 A228		E0	870	30 kg	870	400 kg
Bombs, smoke, non-explosive with corrosive liquid, without initiating device	2028	8		Corrosive			H	E0	FORBIDDEN		866	50 kg
Butadienes and hydrocarbon mixture, stabilized, containing more than 40% 20% butadienes	1010	2.1		Gas flammable	AU 1 CA 7 IR 3 NL 1 US 3	A1 A209 A229		E0	FORBIDDEN		200	150 kg
Cells, containing metallic sodium or sodium alloy †	3292	4.3		Danger if wet		A94 A228		E0	492	25 kg	492	400 kg
Detonators, electric for blasting †	0030	1.1B				A226			FORBIDDEN		FORBIDDEN	
Detonators, electric for blasting †	0255	1.4B		Explosive 1.4		A226		E0	FORBIDDEN		131	75 kg
Detonators, electric for blasting †	0456	1.4S		Explosive 1.4		A165 A226		E0	131	25 kg	131	100 kg
Detonators, electronic programmable for blasting †	0511	1.1B				A226		E0	FORBIDDEN		FORBIDDEN	

Name	UN No.	Class or division	Subsidiary hazard	Labels	State variations	Special provisions	UN packing group	Excepted quantity	Passenger and cargo aircraft		Cargo aircraft only	
									Packing instruction	Max. net quantity per package	Packing instruction	Max. net quantity per package
1	2	3	4		6	7	8	9	10	11	12	13
Detonators, electronic programmable for blasting †	0512	1.4B		Explosive 1.4		<u>A226</u>		E0	FORBIDDEN		131	75 kg
Detonators, electronic programmable for blasting †	0513	1.4S		Explosive 1.4		A165 <u>A226</u>		E0	131	25 kg	131	100 kg
<u>Disilane</u>	<u>3553</u>	<u>2.1</u>						<u>E0</u>	<u>FORBIDDEN</u>		<u>FORBIDDEN</u>	
Fire suppressant dispensing devices †	<u>0514</u>	<u>1.4S</u>		<u>Explosive</u> <u>1.4</u>		<u>A232</u>		<u>E0</u>	<u>135</u>	<u>25 kg</u>	<u>135</u>	<u>100 kg</u>
Fire suppressant dispensing devices †	<u>3559</u>	<u>9</u>		<u>Miscellaneous</u>		<u>A232</u>		<u>E0</u>	<u>961</u>	<u>25 kg</u>	<u>961</u>	<u>100 kg</u>
Gallium contained in manufactured articles	<u>3554</u>	<u>8</u>		<u>Corrosive</u>		<u>A48</u> <u>A69</u>		<u>E0</u>	<u>869</u>	<u>No limit</u>	<u>869</u>	<u>No limit</u>
Isosorbide dinitrate mixture with not less than 60% lactose, mannose, starch or calcium hydrogen phosphate	2907	4.1		Solid flammable	BE 3	<u>A40</u> <u>A49</u>	II	E0	445	15 kg	448	50 kg
Lithium ion batteries (including lithium ion polymer batteries)	3480	9		Miscellaneous — Lithium <u>or</u> <u>sodium ion</u> batteries	US 3	A88 A99 A154 A164 A183 A201 A213		E0	FORBIDDEN		See 965	
Lithium ion batteries contained in equipment (including lithium ionpolymer batteries)	3481	9		Miscellaneous — Lithium <u>or</u> <u>sodium ion</u> batteries	US 3	A48 A88 A99 A154 A164 A181 A185 A213 A220		E0	967	5 kg	967	35 kg
Lithium ion batteries packed with equipment (including lithium ion polymer batteries)	3481	9		Miscellaneous — Lithium <u>or</u> <u>sodium ion</u> batteries	US 3	A88 A99 A154 A164 A181 A185 A213		E0	966	5 kg	966	35 kg

Name	UN No.	Class or division	Subsidiary hazard	Labels	State variations	Special provisions	UN packing group	Excepted quantity	Passenger and cargo aircraft		Cargo aircraft only	
									Packing instruction	Max. net quantity per package	Packing instruction	Max. net quantity per package
1	2	3	4		6	7	8	9	10	11	12	13
Lithium metal batteries (including lithium alloy batteries) †	3090	9		Miscellaneous — Lithium <u>or</u> sodium ion batteries	US 2 US 3	A88 A99 A154 A164 A183 A201 A213		E0	FORBIDDEN		See 968	
Lithium metal batteries contained in equipment (including lithium alloy batteries) †	3091	9		Miscellaneous — Lithium <u>or</u> sodium ion batteries	US 2 US 3	A48 A88 A99 A154 A164 A181 A185 A213 A220		E0	970	5 kg	970	35 kg
Lithium metal batteries packed with equipment (including lithium alloy batteries) †	3091	9		Miscellaneous — Lithium <u>or</u> sodium ion batteries	US 2 US 3	A88 A99 A154 A164 A181 A185 A213		E0	969	5 kg	969	35 kg
Nitrocellulose membrane filters with not more than 12.6% nitrogen, by dry mass	3270	4.1		Solid flammable		A73 A122 <u>A230</u>	II	E2	458 Y458	1 kg 1 kg	458	15 kg
Nitrocellulose solution, flammable with not more than 12.6% nitrogen, by dry mass, and not more than 55% nitrocellulose	2059	3		Liquid flammable	BE 3	A3 <u>A40</u> A91	I II III	E0 E0 E0	351 353 Y341 355 Y344	1 L 5 L 1 L 60 L 10 L	361 364 366	30 L 60 L 220 L
Nitrocellulose with alcohol , not less than 25% alcohol, by mass, and not more than 12.6% nitrogen, by dry mass	2556	4.1		Solid flammable	BE 3	<u>A40</u> A217	II	E0	452	1 kg	453	15 kg
Nitrocellulose with water , not less than 25% water by mass	2555	4.1		Solid flammable	BE 3	<u>A40</u> A217	II	E0	452	15 kg	453	50 kg
Nitroglycerin mixture, desensitized, liquid, n.o.s.* with not more than 30% nitroglycerin, by mass	3357	3			BE 3	<u>A40</u> A17	II		FORBIDDEN		FORBIDDEN	
Nitroglycerin mixture, desensitized, liquid flammable, n.o.s.* with not more than 30% nitroglycerin, by mass	3343	3			BE 3	<u>A40</u>			FORBIDDEN		FORBIDDEN	

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									Packing instruction	Max. net quantity per package	Packing instruction	Max. net quantity per package
1	2	3	4		6	7	8	9	10	11	12	13
Nitroglycerin mixture, desensitized, solid, n.o.s.* with more than 2% but not more than 10% nitroglycerin, by mass	3319	4.1		Solid flammable	AU 1 BE 3 CA 7 IR 3 NL 1 US 3	A1 <u>A40</u> A68	II	E0	FORBIDDEN		499	0.5 kg
Nitroglycerin solution in alcohol with more than 1% but not more than 5% nitroglycerin	3064	3		Liquid flammable	BE 3	<u>A40</u> A188	II	E0	FORBIDDEN		371	5 L
Nitroglycerin solution in alcohol with not more than 1% nitroglycerin	1204	3				<u>A40</u>	II	E0	371 Y341	5 L 1 L	371	60 L
Pentaerythrite tetranitrate mixture desensitized, solid, n.o.s.* with more than 10% but not more than 20% PETN, by mass	3344	4.1			BE 3	<u>A40</u>	II		FORBIDDEN		FORBIDDEN	
Pentaerythritol tetranitrate mixture desensitized, solid, n.o.s.* with more than 10% but not more than 20% PETN, by mass	3344	4.1			BE 3	<u>A40</u>	II		FORBIDDEN		FORBIDDEN	
PETN mixture desensitized, solid, n.o.s.* with more than 10% but not more than 20% PETN, by mass	3344	4.1			BE 3	<u>A40</u>	II		FORBIDDEN		FORBIDDEN	
Sodium ion batteries with organic electrolyte	<u>3551</u>	<u>9</u>		Miscellaneous — Lithium or sodium ion batteries		<u>A88</u> <u>A99</u> <u>A154</u> <u>A164</u> <u>A183</u> <u>[A201]</u> <u>A227</u> <u>A228</u>		<u>E0</u>	<u>FORBIDDEN</u>		<u>See [965] [9XX]</u>	
Sodium ion batteries contained in equipment with organic electrolyte	<u>3552</u>	<u>9</u>		Miscellaneous — Lithium or sodium ion batteries		<u>A48</u> <u>A88</u> <u>A99</u> <u>A154</u> <u>A164</u> <u>A185</u> <u>A227</u> <u>A228</u>		<u>E0</u>	<u>[967] [9XZ]</u>	<u>5 kg</u>	<u>[967] [9XZ]</u>	<u>35 kg</u>

Name	UN No.	Class or division	Subsidiary hazard	Labels	State variations	Special provisions	UN packing group	Excepted quantity	Passenger and cargo aircraft		Cargo aircraft only	
									Packing instruction	Max. net quantity per package	Packing instruction	Max. net quantity per package
1	2	3	4		6	7	8	9	10	11	12	13
<u>Sodium ion batteries packed with equipment with organic electrolyte</u>	<u>3552</u>	<u>9</u>		Miscellaneous – Lithium or sodium ion batteries		<u>A48</u> <u>A88</u> <u>A99</u> <u>A154</u> <u>A164</u> <u>A185</u> <u>A227</u> <u>A228</u>		<u>E0</u>	<u>[966] [9XY]</u>	<u>5 kg</u>	<u>[966] [9XY]</u>	<u>35 kg</u>
<u>Tetramethylammonium hydroxide, solid</u>	3423	<u>8.1</u>	<u>8</u>	Toxic & Corrosive		<u>A113</u> <u>A234</u>	<u>II</u>	<u>E2E5</u>	859 <u>Y844</u> <u>655</u>	15-kg 5-kg <u>1 kg</u>	863 <u>672</u>	50-kg <u>15 kg</u>
<u>Tetramethylammonium hydroxide aqueous solution with not less than 25% tetramethylammonium hydroxide</u>	<u>3560</u>	<u>6.1</u>	<u>8</u>	Toxic & Corrosive		<u>A113</u> <u>A233</u> <u>A234</u>	<u>I</u>	<u>E5</u>	<u>651</u>	<u>0.5 L</u>	<u>657</u>	<u>2.5 L</u>
<u>Tetramethylammonium hydroxide aqueous solution with more than 2.5% but less than 25% tetramethylammonium hydroxide</u>	1835	8	<u>6.1</u>	Corrosive & Toxic		<u>A3</u> <u>A113</u> <u>A233</u> <u>A234</u>	<u>II</u> <u>III</u>	<u>E2</u> <u>E4</u>	851 Y840 852 Y841	1 L 0.5 L 5-L 1-L	855 856	30 L 60 L
<u>Tetramethylammonium hydroxide aqueous solution with not more than 2.5% tetramethylammonium hydroxide</u>	<u>1835</u>	<u>8</u>		Corrosive		<u>A3</u> <u>A233</u> <u>A234</u>	<u>III</u>	<u>E1</u>	<u>852</u> <u>Y841</u>	<u>5 L</u> <u>1 L</u>	<u>856</u>	<u>60 L</u>
<u>Trifluoromethyltetrazole sodium salt in acetone with not less than 68% acetone, by mass</u>	<u>3555</u>	<u>3</u>		Liquid flammable		<u>A40</u>	<u>II</u>	<u>E0</u>	FORBIDDEN		FORBIDDEN	
<u>Vehicle, lithium ion battery powered</u>	<u>3556</u>	<u>9</u>		Miscellaneous – Lithium or sodium ion batteries		<u>A87</u> <u>A118</u> <u>A120</u> <u>A154</u> <u>A164</u> <u>A214</u>		<u>E0</u>	<u>952</u>	<u>No limit</u>	<u>952</u>	<u>No limit</u>
<u>Vehicle, lithium metal battery powered</u>	<u>3557</u>	<u>9</u>		Miscellaneous – Lithium or sodium ion batteries		<u>A87</u> <u>A118</u> <u>A120</u> <u>A154</u> <u>A164</u> <u>A214</u>		<u>E0</u>	<u>952</u>	<u>No limit</u>	<u>952</u>	<u>No limit</u>

Name	UN No.	Class or division	Subsidiary hazard	Labels	State variations	Special provisions	UN packing group	Excepted quantity	Passenger and cargo aircraft		Cargo aircraft only	
									Packing instruction	Max. net quantity per package	Packing instruction	Max. net quantity per package
1	2	3	4		6	7	8	9	10	11	12	13
<u>Vehicle, sodium ion battery powered</u>	<u>3558</u>	<u>9</u>		Miscellaneous — Lithium or sodium ion batteries		<u>A87</u> <u>A118</u> <u>A120</u> <u>A154</u> <u>A164</u> <u>A214</u> <u>A231</u>		<u>E0</u>	<u>952</u>	<u>No limit</u>	<u>952</u>	<u>No limit</u>

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Chapter 3

SPECIAL PROVISIONS

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Table 3-2. Special provisions

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UN Model Regulations, Chapter 3.3, SP 28 (see ST/SG/AC.10/50/Add.1):

A40 (28) This substance may be transported under provisions of Class 3 or Division 4.1 only if it is so packed that the percentage of diluent will not fall below that stated at any time during transport (see 2:3.1.4 and 2:4.2.4). In cases where the diluent is not stated, the substance must be packed so that the amount of explosive substance does not exceed the stated value.

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Consequential amendment, changes adopted in UN Model Regulations, Chapter 3.3, SP 365 and 366

A69 The following are not subject to these Instructions when carried as cargo:
a) articles other than lamps, such as thermometers, switches and relays, each containing a total quantity of not more than 15 g of mercury or gallium, if they are installed as an integral part of a machine or apparatus and so fitted that shock or impact damage, leading to leakage of mercury or gallium, is unlikely to occur under normal conditions of transport.
b) articles other than lamps, each containing not more than 100 mg of mercury, gallium or inert gas and packaged so that the quantity of mercury, gallium or inert gas per package is 1 g or less.

The words "not restricted" and the special provision number A69 must be provided on the air waybill when an air waybill is issued.

Note.— For lamps containing dangerous goods, see Part 1;2.6.

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Consequential amendment, changes adopted in UN Model Regulations, Chapter 3.3, SP 310

A88 Pre-production prototypes of lithium batteries or cells or sodium ion cells or batteries, when these prototypes are transported for testing, or low production runs (i.e. annual production runs consisting of not more than 100 lithium batteries or cells or sodium ion cells or batteries) of lithium batteries or cells or sodium ion cells or batteries 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 and the requirements in Packing Instruction 910 of the Supplement are met.

A copy of the document of approval including the quantity limitations must accompany the consignment. Transport in accordance with this special provision must be noted on the dangerous goods transport document.

Irrespective of the limit specified in column 13 of Table 3-1, the cell or battery as prepared for transport may have a mass exceeding 35 kg.

TIs UN

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 Consequential amendment, changes adopted in UN Model Regulations, Chapter 3.3, SP 310

- A99 Irrespective of the quantity limits for cargo aircraft specified in column 13 of Table 3-1, and in Section I of Packing Instructions 965, 966, 967, 968, 969 and 970, a lithium or sodium ion cell or battery (i.e. UN 3090, ~~or~~ UN 3480 or UN 3551), including when packed with equipment or contained in equipment (i.e. UN 3091, ~~or~~ UN 3481 or UN 3552) that meets the other requirements of Section I of the applicable packing instruction, may have a mass exceeding 35 kg, if approved by the appropriate authority of the State of Origin and the State of the Operator and the requirements in Packing Instruction 974 of the Supplement are met.

A copy of the document of approval must accompany the consignment. Transport in accordance with this special provision must be noted on the dangerous goods transport document.

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 UN Model Regulations, Chapter 3.3, SP 280 (see ST/SG/AC.10/50/Add.1):

- A115 (280) This entry applies to safety devices for vehicles, vessels or aircraft, e.g. air bag inflators, air bag modules, seat belt pretensioners, and pyromechanical devices and which contain dangerous goods of Class 1 or dangerous goods of other classes and when transported as component parts and if these articles as presented for transport have been tested in accordance with test series 6 (c) of Part I of the UN *Manual of Tests and Criteria*, with no explosion of the device, no fragmentation of the device casing or pressure receptacle, and no projection hazard or thermal effect which would significantly hinder firefighting or other emergency response efforts in the immediate vicinity.

This entry does not apply to life saving appliances described in Packing Instruction 955 (UN Nos. 2990 and 3072) or to fire suppressant dispersing devices (UN Nos. 0514 and 3559).

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 UN Model Regulations, Chapter 3.3, SP 252 (see ST/SG/AC.10/50/Add.1):

- A129 (252) ~~Provided the ammonium nitrate remains in solution under all conditions of transport, aqueous solutions of ammonium nitrate, with not more than 0.2 per cent combustible material, in a concentration not exceeding 80 per cent are not subject to these Instructions when carried as cargo.~~ Ammonium nitrate hot concentrated solutions can be transported under this entry provided:

- a) the solution contains not more than 93 per cent ammonium nitrate;
- b) the solution contains at least 7 per cent water;
- c) the solution contains not more than 0.2 per cent combustible material;
- d) the solution contains no chlorine compounds in quantities such that the chloride ion level exceeds 0.02 per cent;
- e) the pH of an aqueous solution of 10 per cent of the substance is between 5 and 7, measured at 25°C; and
- f) the maximum allowable transport temperature of the solution is 140°C.

Ammonium nitrate hot concentrate solutions are not subject to these Instructions when carried as cargo, provided:

- a) the solution contains not more than 80 per cent ammonium nitrate;
- b) the solution contains not more than 0.2 per cent combustible material;
- c) the ammonium nitrate remains in solution under all conditions of transport; and
- d) the solution does not meet the criteria of any other class or division.

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UN Model Regulations, Chapter 3.3, SP 328 (see ST/SG/AC.10/50/Add.1):

A146 (328) This entry applies to fuel cell cartridges including when contained in equipment or packed with equipment. Fuel cell cartridges installed in or integral to a fuel cell system are regarded as contained in equipment. Fuel cell cartridge means an article that stores fuel for discharge into the fuel cell through a valve(s) that controls the discharge of fuel into the fuel cell. Fuel cell cartridges, including when contained in equipment, must be designed and constructed to prevent fuel leakage under normal conditions of transport.

Fuel cell cartridge design types using liquids as fuels must pass an internal pressure test at a pressure of 100 kPa (gauge) without leakage.

Except for fuel cell cartridges containing hydrogen in metal hydride which must be in compliance with A162, each fuel cell cartridge design type, including fuel cell cartridges installed in or integral to a fuel cell system, must be shown to pass a 1.2 metre drop test onto an unyielding surface in the orientation most likely to result in failure of the containment system with no loss of contents.

When lithium metal batteries, ~~or~~ lithium ion batteries or sodium ion batteries are contained in the fuel cell system, the consignment must be consigned under this entry and under the appropriate entries for UN 3091 **Lithium metal batteries contained in equipment**, ~~or~~ UN 3481 **Lithium ion batteries contained in equipment** or UN 3552 Sodium ion batteries contained in equipment.

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UN Model Regulations, Chapter 3.3, SP 376 (see ST/SG/AC.10/50/Add.1):

A154 (≈376) Lithium ion ~~cells or batteries and~~, lithium metal or sodium ion cells or batteries, identified as being defective for safety reasons, that have the potential of producing a dangerous evolution of heat, fire or short circuit are forbidden for transport (e.g. those being returned to the manufacturer for safety reasons or cells or batteries that cannot be diagnosed as defective prior to transport).

Lithium ion ~~cells or batteries and~~, lithium metal or sodium ion cells or batteries identified as being damaged such that they do not conform to the type tested according to the applicable provisions of the UN *Manual of Tests and Criteria* are forbidden for transport. For the purposes of this special provision, these may include, but are not limited to:

- a) cells or batteries that have leaked or vented;
- b) cells or batteries that cannot be diagnosed prior to transport; or
- c) cells or batteries that have sustained physical or mechanical damage.

In assessing a cell or battery as defective or damaged, an assessment or evaluation must be performed based on safety criteria from the cell, battery or product manufacturer or by a technical expert with knowledge of the cell's or battery's safety features. An assessment or evaluation may include, but is not limited to, the following criteria:

- a) acute hazard, such as gas, fire, or electrolyte leaking;
- b) the use or misuse of the cell or battery;
- c) signs of physical damage, such as deformation to cell or battery casing, or colours on the casing;
- d) external and internal short circuit protection, such as voltage or isolation measures;
- e) the condition of the cell or battery safety features; or
- f) damage to any internal safety components, such as the battery management system.

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UN Model Regulations, Chapter 3.3, SP 360 (see ST/SG/AC.10/50/Add.1):

A185 (360) Vehicles only powered by lithium metal ~~batteries or~~ lithium ion or sodium ion batteries must be assigned to ~~UN 3171 **Battery-powered vehicle**~~ UN 3556 **Vehicle, lithium ion battery powered** or UN 3557 **Vehicle, lithium metal battery powered** or UN 3558 **Vehicle, sodium ion battery powered**, as applicable.

Lithium batteries installed in cargo transport units, designed only to provide power external to the transport unit must be assigned to UN 3536 **Lithium batteries installed in cargo transport unit**.

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UN Model Regulations, Chapter 3.3, SP 397 (see ST/SG/AC.10/50/Add.1):

A195 (371) 1) This entry also applies to articles containing a small pressure receptacle with a release device. Such articles must comply with the following requirements:

- a) the water capacity of the pressure receptacle must not exceed 0.5 litres and the working pressure must not exceed 25 bar at 15°C;
 - b) the minimum burst pressure of the pressure receptacle must be at least four times the pressure of the gas at 15°C;
 - c) each article must be manufactured in such a way that unintentional firing or release is avoided under normal conditions of handling, packing, transport and use. This may be achieved by an additional locking device linked to the activator;
 - d) each article must be manufactured in such a way as to prevent hazardous projections of the pressure receptacle or parts of the pressure receptacle;
 - e) each pressure receptacle must be manufactured from material which will not fragment upon rupture;
 - f) the design type of the article must be subjected to a fire test. For this test, the provisions of paragraphs 16.6.1.2, except sub-paragraph g), 16.6.1.3.1 to 16.6.1.3.1.4, 16.6.1.3.6, 16.6.1.3.7 b) and 16.6.1.3.8 of the UN *Manual of Tests and Criteria* must be applied. It must be demonstrated that the article relieves its pressure by means of a fire degradable seal or other pressure relief device, in such a way that the pressure receptacle will not fragment and that the article or fragments of the article do not rocket more than 10 metres; and
 - g) the design type of the article must be subjected to the following test. A stimulating mechanism must be used to initiate one article in the middle of the packaging. There must be no hazardous effects outside the package such as disruption of the package, metal fragments or a receptacle which passes through the packaging.
- 2) The manufacturer must produce technical documentation of the design type, manufacture as well as the tests and their results. The manufacturer must apply procedures to ensure that articles produced in a series are made of good quality, conform to the design type and are able to meet the requirements in 1). The manufacturer must provide such information to the appropriate national authority on request.

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UN Model Regulations, Chapter 3.3, SP 388 (see ST/SG/AC.10/50/Add.1):

A214 (388) UN No. 3166 entries apply to vehicles powered by flammable liquid or flammable gas internal combustion engines or fuel cells.

Vehicles powered by a fuel cell engine must be assigned to UN 3166 **Vehicle, fuel cell, flammable gas powered** or UN 3166 **Vehicle, fuel cell, flammable liquid powered**, as appropriate. These entries include hybrid electric vehicles powered by both a fuel cell and an internal combustion engine with wet batteries, sodium batteries, lithium metal batteries or lithium ion batteries, transported with the battery(ies) installed.

TIs UN

Other vehicles which contain an internal combustion engine must be assigned to UN 3166 **Vehicle, flammable gas powered** or UN 3166 **Vehicle, flammable liquid powered**, as appropriate. These entries include hybrid electric vehicles powered by both an internal combustion engine and wet batteries, sodium batteries, lithium metal batteries or lithium ion batteries, transported with the battery(ies) installed.

If a vehicle is powered by a flammable liquid and a flammable gas internal combustion engine, it must be assigned to UN 3166 **Vehicle, flammable gas powered**.

Entry UN 3171 only applies to vehicles powered by wet batteries, metallic sodium batteries or sodium alloy batteries, ~~lithium metal batteries or lithium ion batteries and equipment powered by wet batteries or sodium batteries~~ transported with these batteries installed.

UN 3556 Vehicle, lithium ion battery powered, UN 3557 Vehicle, lithium metal battery powered and UN 3558 Vehicle, sodium ion battery powered, as applicable, apply to vehicles powered by lithium ion, lithium metal or sodium ion batteries transported with the batteries installed.

For the purpose of this special provision, vehicles are self-propelled apparatus designed to carry one or more persons or goods. Examples of such vehicles are cars, motorcycles, scooters, three- and four-wheeled vehicles or motorcycles, trucks, locomotives, bicycles (pedal cycles with a motor) and other vehicles of this type (e.g. self-balancing vehicles or vehicles not equipped with at least one seating position), wheelchairs, lawn tractors, self-propelled farming and construction equipment, boats and aircraft. ~~This includes vehicles transported in a packaging. In this case some parts of the vehicle may be detached from its frame to fit into the packaging.~~ When vehicles are transported in a packaging, some parts of the vehicle, other than the battery, may be detached from its frame to fit into the packaging.

Examples of equipment are lawnmowers, cleaning machines or model boats and model aircraft. Equipment powered by lithium metal batteries or lithium ion batteries must be assigned to UN 3091 **Lithium metal batteries contained in equipment** or UN 3091 **Lithium metal batteries packed with equipment** or UN 3481 **Lithium ion batteries contained in equipment** or UN 3481 **Lithium ion batteries packed with equipment**, as appropriate. Lithium ion batteries or lithium metal batteries installed in a cargo transport unit and designed only to provide power external to the cargo transport unit must be assigned to UN 3536 **Lithium batteries installed in cargo transport unit**.

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UN Model Regulations, Chapter 3.3, SP 399 (see ST/SG/AC.10/50/Add.1):

A226 (399) For articles that meet the definition for **Detonators, electronic** as described in Attachment 2 and assigned to UN Nos. 0511, 0512 and 0513, the entries for **Detonators, electric** (UN Nos. 0030, 0255 and 0456) may continue to be used until 30 June 2025.

UN Model Regulations, Chapter 3.3, SP 400 (see ST/SG/AC.10/50/Add.1):

A227 (400) Sodium ion cells and batteries and sodium ion cells and batteries contained in or packed with equipment, prepared and offered for transport, are not subject to other provisions of these Instructions if they meet the following:

- a) the cell or battery is short-circuited, in a way that the cell or battery does not contain electrical energy. The short-circuiting of the cell or battery must be easily verifiable (e.g. busbar between terminals);
- b) each cell or battery meets the provisions of 2;9.4 a), b), d), e) and f);
- c) each package must be marked according to 5;2.4.16;
- d) except when cells or batteries are installed in equipment, each package must be capable of withstanding a 1.2 m drop test in any orientation without damage to cells or batteries contained therein, without shifting of the contents so as to allow battery to battery (or cell to cell) contact and without release of contents;
- e) cells and batteries when installed in equipment must be protected from damage. When batteries are installed in equipment, the equipment must be packed in strong outer packagings constructed of suitable material of adequate strength and design in relation to the packaging's capacity and its intended use unless the battery is afforded equivalent protection by the equipment in which it is contained;
- f) each cell, including when it is a component of a battery, must only contain dangerous goods that are authorized to be transported in accordance with the provisions of 3;4.1.2, and the quantity of the

TIs UN

dangerous goods in the cell must not exceed the quantity specified in Table 3-1, column 11 for the limited quantity packing instruction.]

UN Model Regulations, Chapter 3.3, SP 401 (see ST/SG/AC.10/50/Add.1):

A228 (401) Sodium ion cells and batteries with organic electrolyte must be transported as UN 3551 or UN 3552 as appropriate. Sodium ion batteries with aqueous alkali electrolyte must be transported as UN 2795 **Batteries, wet, filled with alkali**, electric storage.

UN Model Regulations, Chapter 3.3, SP 402 (see ST/SG/AC.10/50/Add.1):

A229 (402) Substances transported under this entry must have a vapour pressure at 70°C not exceeding 1.1 MPa (11 bar) and a density at 50°C not lower than 0.525 kg/L.

UN Model Regulations, Chapter 3.3, SP 403 (see ST/SG/AC.10/50/Add.1):

A230 (403) Nitrocellulose (NC) membrane filters covered by this entry with NC content not exceeding 53 g/m² and a NC net weight not exceeding 300 g per inner packaging, are not subject to the requirements of these Instructions if they meet the following conditions:

- a) they are packed with paper separators of minimum 80 g/m² placed between each layer of NC membrane filters;
- b) they are packed to maintain the alignment of the NC membrane filters and the paper separators in any of the following configurations:
 - 1) rolls tightly wound and packed in plastic foil of minimum 80 g/m² or aluminium pouches with an oxygen permeability of equal or less than 0.1% according to standard ISO 15105-1:2007;
 - 2) Sheets packed in cardboard of min. 250 g/m² or aluminium pouches with an oxygen permeability of equal or less than 0.1% according to standard ISO 15105-1:2007;
 - 3) round filters packed in disc holders or cardboard packaging of minimum 250 g/m² or single packed in pouches of paper and plastic material of total minimum 100 g/m².

UN Model Regulations, Chapter 3.3, SP 404 (see ST/SG/AC.10/50/Add.1):

A231 (404) Vehicles powered by sodium ion batteries, containing no other dangerous goods, are not subject to other provisions of these Instructions, if the battery is short-circuited, in a way that the battery does not contain electrical energy. The short-circuiting of the battery must be easily verifiable (e.g. busbar between terminals).

UN Model Regulations, Chapter 3.3, SP 406 (see ST/SG/AC.10/50/Add.1):

[A23X (406) This entry may be transported in accordance with the limited quantity provisions of Chapter 3.4 when transported in pressure receptacles containing not more than 1 000 ml. The pressure receptacles shall meet the requirements of packing instruction P200 of 4.1.4.1 and have a test pressure capacity product not exceeding 15.2 MPa·L (152 bar·L). The pressure receptacles shall not be packed together with other dangerous goods.]

TIs UN

UN Model Regulations, Chapter 3.3, SP 407 (see ST/SG/AC.10/50/Add.1):

A232 (407) Fire suppressant dispersing devices are articles which contain a pyrotechnic substance, which are intended to disperse a fire extinguishing agent (or aerosol) when activated, and which do not contain any other dangerous goods. These articles, as packaged for transport, must fulfil the criteria for Division 1.4S, when tested in accordance with test series 6(c) of Section 16 of Part 1 of the UN *Manual of Tests and Criteria*. The device must be transported with either the means of activation removed or equipped with at least two independent means to prevent accidental activation.

Fire suppressant dispersing devices must only be assigned to Class 9, UN 3559 if the following additional conditions are met:

- a) the device meets the exclusion criteria in 2;1.5.2.4 b), c) and d);
- b) the suppressant must be deemed safe for normally occupied spaces in compliance with international or regional standards (e.g. NFPA2010);
- c) the article must be packaged in a manner such that when activated, temperatures of the outside of the package shall not exceed [200°C];
- d) This entry must be used only with the approval of the appropriate national authority of the State of manufacture.

This entry does not apply to UN 3268 **Safety devices**, electrically initiated described in Special Provision A115.

UN Model Regulations, Chapter 3.3, SP 408 (see ST/SG/AC.10/50/Add.1):

A233 (408) This entry applies only to aqueous solutions comprised of water, tetramethylammonium hydroxide (TMAH), and no more than 1 per cent other constituents. Other formulations containing tetramethylammonium hydroxide must be assigned to an appropriate generic or n.o.s. entry (e.g. UN 2927, **Toxic liquid, corrosive, organic, n.o.s.**, etc.), except as follows:

- a) Other formulations containing a surfactant in a concentration > 1% and with not less than 8.75% tetramethylammonium hydroxide must be assigned to UN 2927 **Toxic liquid, corrosive, organic, n.o.s.**, Packing Group I; and
- b) Other formulations containing a surfactant in a concentration > 1% and with more than 2.38% but less than 8.75% tetramethylammonium hydroxide must be assigned to UN 2927, **Toxic liquid, corrosive, organic, n.o.s.**, Packing Group II.

UN Model Regulations, Chapter 3.3, SP 409 (see ST/SG/AC.10/50/Add.1):

[A234 (409) The limits specified in Table 3-1 in the 2023-2024 Edition of these Instructions may continue to be applied until 31 December 2026.]

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