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**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

Thirtieth session  
Geneva, 4-12 (a.m.) December 2006  
Item 2 of the provisional agenda

TEXTS ADOPTED BY THE SUB-COMMITTEE AT ITS TWENTY-SEVENTH, TWENTY-  
EIGHTH AND TWENTY-NINTH SESSIONS

Draft amendments to the Recommendations  
on the Transport of Dangerous Goods  
(Model Regulations and Manual of Tests and Criteria)

This document contains the draft amendments to the fourteenth revised edition of the Recommendations on the Transport of Dangerous Goods, Model Regulations (ST/SG/AC.10/1/Rev.14) and to the fourth revision of the Recommendations on the Transport of Dangerous Goods, Manual of Tests and Criteria (ST/SG/AC.10/11/Rev.4 as amended by document ST/SG/AC.10/11/Rev.4/Amend.1), adopted by the Sub-Committee of Experts at its twenty-seventh, twenty-eighth and twenty-ninth sessions.

It contains two parts:

- Part 1: Draft amendments to the Recommendations on the  
Transport of Dangerous Goods, Model Regulations.....pages 2 - 34
- Part 2: Draft amendments to the Recommendations on the  
Transport of Dangerous Goods, Manual of Tests and Criteria. ....pages 35 - 41

**Part 1****DRAFT AMENDMENTS TO THE RECOMMENDATIONS ON THE TRANSPORT OF  
DANGEROUS GOODS, MODEL REGULATIONS  
(ST/SG/AC.10/1/Rev.14)****PART 1****Chapter 1.2**

1.2.1 Add the following new note after the definition of "*Recycled plastics material*":

*"NOTE: ISO 16103:2005 "Packaging – Transport packages for dangerous goods - Recycled plastics material", provides additional guidance on procedures to be followed in approving the use of recycled plastics material."*

(Reference Document: ST/SG/AC.10/C.3/56/Add.1)

**Chapter 1.4**

Table 1.4.1 Add a new fourth line for Class 1, Division 1.4 to read as follows:

"Class 1, Division 1.4      UN Nos. 0104, 0237, 0255, 0267, 0289, 0361, 0365,  
0366, 0440, 0441, 0455, 0456 and 0500".

(Reference Document: ST/SG/AC.10/C.3/56/Add.1)

Division 5.1: Amend the second entry to read as follows:

"Division 5.1    perchlorates, ammonium nitrate, ammonium nitrate fertilisers and ammonium nitrate emulsions or suspensions or gels, in bulk".

(Reference Document: ST/SG/AC.10/C.3/54, annex 3)

**PART 2****Chapter 2.1**

2.1.3.5.2 In Note 2, replace "*firework types and/or sub-divisions by the specification*" with "*fireworks specified*".

(Reference Document: ST/SG/AC.10/C.3/56/Add.1)

2.1.3.5.5 The amendment to the heading of the table does not apply to the English version.

(Reference Document: ST/SG/AC.10/C.3/56/Add.1)

In the table, against "Shell, spherical or cylindrical / preloaded mortar, shell in mortar", insert new third entry as follows:

<b>Specification</b>	<b>Classification</b>
colour shell: > 25% flash composition as loose powder and/or report effects	1.1G

(Reference Document: ST/SG/AC.10/C.3/58/Add.1)

## Chapter 2.2

2.2.2.1 (b) (ii) At the end after "does", add ". The oxidizing ability shall be determined by tests or by calculation in accordance with methods adopted by ISO (see ISO 10156:1996 and ISO 10156-2:2005)".

(Reference Document: *ST/SG/AC.10/C.3/58/Add.1*)

2.2.2.3 Amend to read as follows:

"2.2.2.3 Gases of Division 2.2 are not subject to these Regulations if they are transported at a pressure of less than 200 kPa at 20 °C and are not liquefied or refrigerated liquefied gases."

(Reference Document: *ST/SG/AC.10/C.3/58/Add.1*)

2.2.3 (d) At the end, add "(see ISO 10156:1996 and ISO 10156-2:2005)".

(Reference Document: *ST/SG/AC.10/C.3/58/Add.1*)

## Chapter 2.3

2.3.2.5 Insert "or environmentally hazardous" at the end of the second indent.

(Reference Document: *ST/SG/AC.10/C.3/56/Add.1*)

## Chapter 2.4

2.4.2.4.1 Replace "and UN 3380" with ", UN 3380 and UN 3474".

(Reference Document: *ST/SG/AC.10/C.3/58/Add.1*)

## Chapter 2.5

2.5.3.2.4 In the table, amend the entries listed below as follows:

Organic peroxide		Column	Amendment
DI-(2-ETHYLHEXYL) PEROXYDICARBONATE (Concentration ≤ 62 as a stable dispersion in water)	(3 <sup>rd</sup> row)	Number	Replace "3117" with "3119"
DI-(2-ETHYLHEXYL) PEROXYDICARBONATE (Concentration ≤ 52 as a stable dispersion in water)	(4 <sup>th</sup> row)	Delete	
tert-AMYLPEROXY-3,5,5- TRIMETHYLHEXANOATE		Packing method	Replace "OP5" with "OP7"
		Number	Replace "3101" with "3105"
DICUMYL PEROXIDE (Concentration > 52-100)	(1 <sup>st</sup> row)	Inert solid	Delete "≤ 57"

(Reference Document: *ST/SG/AC.10/C.3/58/Add.1*)

Insert the following new entries:

Organic peroxide	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
tert-AMYL PEROXYNEODECANOATE	≤ 47	≥ 53				OP8	0	+ 10	3119	
tert-BUTYL PEROXY 3,5,5- TRIMETHYLHEXANOATE	≤ 42			≥ 58		OP7			3106	
CUMYL PEROXYNEO- DECANOATE	≤ 87	≥ 13				OP7	- 10	0	3115	
2,2-DI-(tert-AMYLPEROXY)- BUTANE	≤ 57	≥ 43				OP7			3105	
1,1-DI-(tert-BUTYLPEROXY) CYCLOHEXANE	≤ 72		≥ 28			OP5			3103	30)
1,1-DI-(tert-BUTYLPEROXY) CYCLOHEXANE + tert-BUTYLPEROXY-2- ETHYLHEXANOATE	≤ 43 + ≤ 16	≥ 41				OP 7			3105	
1,1-DI-(tert-BUTYLPEROXY)- 3,3,5-TRIMETHYL- CYCLOHEXANE	≤ 90		≥ 10			OP5			3103	30)
DI-2,4-DICHLOROBENZOYL PEROXIDE	≤ 52 as a paste					OP8	+ 20	+ 25	3118	
3-HYDROXY-1,1- DIMETHYLBUTYL PEROXYNEODECANOATE	≤ 77	≥ 23				OP 7	- 5	+ 5	3115	
3-HYDROXY-1,1-DIMETHYL BUTYLPEROXYNEODECANO ATE	≤ 52 as a stable dispersion in water					OP 8	- 5	+ 5	3119	
3-HYDROXY-1,1-DIMETHYL- BUTYL PEROXYNE ODECANOATE	≤ 52	≥ 48				OP 8	- 5	+ 5	3117	
METHYL ISOPROPYL KETONE PEROXIDE(S)	See remark 31)	≥ 70				OP8			3109	31)
3,3,5,7,7-PENTAMETHYL- 1,2,4-TRIOXEPANE	≤ 100					OP8			3107	

(Reference Document: ST/SG/AC.10/C.3/58/Add.1)

After the table, add the following new notes:

"30) Diluent type B with boiling point > 130 °C.

31) Active oxygen ≤ 6.7%."

(Reference Document: ST/SG/AC.10/C.3/58/Add.1)

## Chapter 2.6

### 2.6.3.2.3.6 Renumber existing NOTE as NOTE 1.

In NOTE 1 (existing NOTE), add "*in the absence of any concern for infection (e.g. evaluation of vaccine induced immunity, diagnosis of autoimmune disease, etc.)*" after "*antibody detection in humans or animals*".

Add a new NOTE 2 to read as follows:

*"NOTE 2: For air transport, packagings for specimens exempted under this paragraph shall meet the conditions in (a) to (c)."*

*(Reference Document: ST/SG/AC.10/C.3/58/Add.1)*

2.6.3.5.2 Add at the end, before the note: "For the assignment, international, regional or national waste catalogues may be taken into account."

*(Reference Document: ST/SG/AC.10/C.3/58/Add.1)*

## **Chapter 2.8**

2.8.2.5 (c) (ii) In the first sentence, replace "corrosion rate on steel" with "corrosion rate on either steel" and insert "when tested on both materials" at the end.

Add a new note at the end to read as follows:

*"NOTE: Where an initial test on either steel or aluminium indicates the substance being tested is corrosive the follow up test on the other metal is not required."*

*(Reference Document: ST/SG/AC.10/C.3/54, annex 3)*

## **PART 3**

### **Chapter 3.2**

3.2.1 Amend the explanatory text for Column 7 to read as follows:

"Column 7 "Limited Quantities and Excepted Quantities" - above the horizontal line, this column provides the maximum quantity per inner packaging or article for transporting dangerous goods as limited quantities in accordance with Chapter 3.4. Below the horizontal line, this column provides an alphanumeric code described in section 3.5.1.2 and indicates the maximum quantity per inner and outer packaging for transporting dangerous goods as excepted quantities in accordance with Chapter 3.5. The word "None" above or below the horizontal line in this column means that the article or substance is not permitted to be transported as limited quantities or excepted quantities as applicable."

*(Reference Document: ST/SG/AC.10/C.3/58/Add.1)*

### **Dangerous goods list**

Amend the heading of Column (7) to read as follows:

"Limited quantities

---

Excepted quantities"

In column (7), add a horizontal line in each cell and insert, at the bottom of the cell under the line, alphanumeric codes as indicated below:

	Packing Group I	Packing Group II	Packing Group III
CLASS/ DIVISION	E-Code	E-Code	E-Code
1	None		
2.1	None		
2.2 <sup>a</sup> without subsidiary risk	[E1]		
2.3	None		
3 without subsidiary risk <sup>b</sup>	E3	E2	E1
3 with subsidiary risk	None	E2	E1
4.1 <sup>c</sup>	None	E2	E1
4.2	None	E2	E1
4.3	None	E2	E1
5.1	None	E2	E1
5.2 <sup>d</sup>	E2	E2	E2
6.1	E5	E4	E1
6.2	None		
7	None		
8 <sup>e</sup>	None	E2	E1
9	Not applicable	E2	E1

<sup>a</sup> For gases, the volume indicated for inner packagings refers to the water capacity of the inner receptacle and the volume indicated for outer packagings refers to the combined water capacity of all inner packagings within a single outer package;

<sup>b</sup> Desensitized explosives shall not be transported as excepted quantities;

<sup>c</sup> Self-reactive substances and desensitized explosives shall not be transported as excepted quantities;

<sup>d</sup> Division 5.2 dangerous goods may ONLY be transported as excepted quantities if in UN No. 3316, Chemical Kit or First Aid Kit;

<sup>e</sup> UN Nos. 2803 and 2809 shall not be transported as excepted quantities.

(Reference Document: ST/SG/AC.10/C.3/58/Add.1)

Delete "TP9" each time it appears in column (11) with the exception of UN 3375.

(Reference Document: ST/SG/AC.10/C.3/56/Add.1)

Delete "TP12" each time it appears in column (11).

(Reference Document: ST/SG/AC.10/C.3/56/Add.1)

Amend columns (10) and (11) for the following entries:

(1)	(2)	(5)	(10)	(11)
3129	Water-reactive liquid, corrosive, n.o.s.	I	T14	TP2 TP7
		II	T11	TP2
		III	T7	TP1
3148	Water-reactive liquid, n.o.s.	I	T9	TP2 TP7
		II	T7	TP2
		III	T7	TP1

(1)	(2)	(5)	(10)	(11)
3131	Water-reactive solid, corrosive, n.o.s.	I	T9	TP7 TP33
2813	Water-reactive solid, n.o.s.	I	T9	TP7 TP33

(Reference Document: *ST/SG/AC.10/C.3/56/Add.1*)

For UN Nos. 0504, 3354, 3355, 3356, 3357 and 3374, add "NONE" in column (7).

(Reference Document: *ST/SG/AC.10/C.3/58/Add.1*)

For UN Nos. 1170, 1987 and 1993, delete "330" in column (6).

(Reference Document: *ST/SG/AC.10/C.3/58/Add.1*)

For UN Nos. UN 1463, 1473, 1484, 1485, 1487, 1488, 1490, 1493, 1494, 1495, 1512, 1514, 1751, 2465, 2468, 2627 and 3247, add "B2" in column (9).

(Reference Document: *ST/SG/AC.10/C.3/58/Add.1*)

For UN Nos. 1851, 3248 and 3249, delete "PP6" in column (9).

(Reference Document: *ST/SG/AC.10/C.3/54, annex 3*)

For UN Nos. 3077 and 3082, add "335" in column (6).

(Reference Document: *ST/SG/AC.10/C.3/58/Add.1*)

For UN Nos. 3129, 3130 and 3148, replace "g/kg" with "ml/l" in column (7).

(Reference Document: *ST/SG/AC.10/C.3/58/Add.1*)

UN 0411 The amendment does not apply to the English version.

(Reference Document: *ST/SG/AC.10/C.3/56/Add.1*)

UN 1017 In column (4), add "5.1" in.

(Reference Document: *ST/SG/AC.10/C.3/58/Add.1*)

UN 1344 In column (2), add "(PICRIC ACID)" after "TRINITROPHENOL".

(Reference Document: *ST/SG/AC.10/C.3/56/Add.1*)

UN 1356 In column (2), add "(TNT)" after "TRINITROTOLUENE".

(Reference Document: *ST/SG/AC.10/C.3/56/Add.1*)

UN 1474 In column (6), add "332".

(Reference Document: *ST/SG/AC.10/C.3/58/Add.1*)

UN 1569 In column (10), replace "T3" with "T20" and in column (11), replace "TP33" with "TP2 TP13".

(Reference Document: *ST/SG/AC.10/C.3/58/Add.1*)

UN 1744 In column (8), replace "P601" with "P804" and in column (9), delete "PP82".

(Reference Document: *ST/SG/AC.10/C.3/58/Add.1*)

UN 2031 For packing group II, in column (2), add "at least 65%, but" after "with", in column (4), add "5.1", and in column (9), add "B14".

(Reference Document: ST/SG/AC.10/C.3/56/Add.1)

UN 2059 In column (8), for packing group II, add "IBC02" and for packing group III, add "IBC03".

(Reference Document: ST/SG/AC.10/C.3/56/Add.1)

UN 2823 In column (9), add "B3".

(Reference Document: ST/SG/AC.10/C.3/58/Add.1)

UN 2844 In column (9), delete "B2".

(Reference Document: ST/SG/AC.10/C.3/58/Add.1)

UN 3077 In column (10), add "BK2".

(Reference Document: ST/SG/AC.10/C.3/58/Add.1)

UN 3344 In column (2), add "(PENTAERYTHRITOL TETRANITRATE; PETN)" after "TETRANITRATE".

(Reference Document: ST/SG/AC.10/C.3/56/Add.1)

UN 3432 In column (9), add "B2 B4".

(Reference Document: ST/SG/AC.10/C.3/58/Add.1)

UN 3468 In column (2), add at the end: "or HYDROGEN IN A METAL HYDRIDE STORAGE SYSTEM CONTAINED IN EQUIPMENT or HYDROGEN IN A METAL HYDRIDE STORAGE SYSTEM PACKED WITH EQUIPMENT".

(Reference Document: ST/SG/AC.10/C.3/56/Add.1)

UN 3473 In column (2), replace "FUEL CELL CARTRIDGES" with "FUEL CELL CARTRIDGE or FUEL CELL CARTRIDGE CONTAINED IN EQUIPMENT or FUEL CELL CARTRIDGE PACKED WITH EQUIPMENT", in column (8), replace "P003" with "P004", and in column (9), delete "PP88".

(Reference Document: ST/SG/AC.10/C.3/58/Add.1)

Add the following new entries:

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
0505	SIGNALS DISTRESS, ship	1.4G				NONE	P135			
0506	SIGNALS DISTRESS, ship	1.4S				NONE	P135			
0507	SIGNALS, SMOKE	1.4S				NONE	P135			
0508	1-HYDROXYBENZOTRIAZOLE, ANHYDROUS, dry or wetted with less than 20% water, by mass	1.3C				NONE	P114(b)			

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
2031	NITRIC ACID, other than red fuming, with less than 65% nitric acid	8		II		1 L	P001 IBC02	PP81 B14	T8	TP2
3474	1-HYDROXYBENZOTRIAZOLE, ANHYDROUS, WETTED with not less than 20% water, by mass	4.1		I	28	NONE	P406			
3475	ETHANOL AND GASOLINE MIXTURE or ETHANOL AND MOTOR SPIRIT MIXTURE or ETHANOL AND PETROL MIXTURE, with more than 10% ethanol	3		II	333	1 L	P001 [IBC02]		T4	TP1
3476	FUEL CELL CARTRIDGE or FUEL CELL CARTRIDGE CONTAINED IN EQUIPMENT or FUEL CELL CARTRIDGE PACKED WITH EQUIPMENT, containing water-reactive substances	4.3			328 334	500 ml or 500 g	P004			
3477	FUEL CELL CARTRIDGE or FUEL CELL CARTRIDGE CONTAINED IN EQUIPMENT or FUEL CELL CARTRIDGE PACKED WITH EQUIPMENT, containing corrosive substances	8			328 334	1 L or 1 kg	P004			

(Reference Documents: ST/SG/AC.10/C.3/56/Add.1 + ST/SG/AC.10/C.3/58/Add.1)

### Chapter 3.3

3.3.1 **SP188** In (a), replace "lithium equivalent content is not more than 1.5 g" with "Watt-hour rating is not more than 20 Wh".

In (b), replace "aggregate lithium-equivalent content is not more than 8 g;" with "Watt-hour rating is not more than 100 Wh. Lithium ion batteries subject to this provision shall be marked with the Watt-hour rating on the outside case;".

In the last sentence, delete ", except in the case of a lithium ion cell the "lithium-equivalent content" in grams is calculated to be 0.3 times the rated capacity in ampere hours".

(Reference Document: ST/SG/AC.10/C.3/58/Add.1)

**SP198** Replace "UN 1210, UN 1263 and UN 3066" with "UN Nos. 1210, 1263, 3066, 3469 and 3470".

(Reference Document: ST/SG/AC.10/C.3/58/Add.1)

**SP199** Replace "are considered insoluble. See ISO 3711:1990." with "(see ISO 3711:1990) are considered insoluble and are not subject to these Regulations unless they meet the criteria for inclusion in another hazard class or division."

(Reference Document: ST/SG/AC.10/C.3/56/Add.1)

**SP328** Amend to read as follows:

"**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 shall be designed and constructed to prevent fuel leakage under normal conditions of transport.

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

Each fuel cell cartridge design type shall be shown to pass a 1.2 meter drop test onto an unyielding surface in the orientation most likely to result in failure of the containment system with no loss of contents."

*(Reference Document: ST/SG/AC.10/C.3/58/Add.1)*

**SP330** Delete.

*(Reference Document: ST/SG/AC.10/C.3/58/Add.1)*

Add the following new special provisions:

**"332** Magnesium nitrate hexahydrate is not subject to these Regulations.

*(Reference Document: ST/SG/AC.10/C.3/56/Add.1)*

**333** Ethanol and gasoline, motor spirit or petrol mixtures for use in spark-ignition engines (e.g. in automobiles, stationary engines and other engines) shall be assigned to this entry regardless of variations in volatility.

*(Reference Document: ST/SG/AC.10/C.3/58/Add.1)*

**334** A fuel cell cartridge may contain an activator provided it is fitted with two independent means of preventing unintended mixing with the fuel during transport.

*(Reference Document: ST/SG/AC.10/C.3/58/Add.1)*

**335** Mixtures of solids which are not subject to these Regulations and environmentally hazardous liquids or solids shall be classified as UN 3077 and may be transported under this entry, provided there is no free liquid visible at the time the substance is loaded or at the time the packaging or transport unit is closed. Each transport unit shall be leakproof when used as a bulk packaging. Sealed packets and articles containing less than 10 ml of an environmentally hazardous liquid, absorbed into a solid material but with no free liquid in the packet or article, or containing less than 10 g of an environmentally hazardous solid, are not subject to these Regulations."

*(Reference Document: ST/SG/AC.10/C.3/58/Add.1)*

## Chapter 3.5

Add a new Chapter 3.5 to read as follows:

### **"CHAPTER 3.5 DANGEROUS GOODS PACKED IN EXCEPTED QUANTITIES**

#### **3.5.1 Excepted quantities**

3.5.1.1 Excepted quantities of dangerous goods of certain classes, other than articles, meeting the provisions of this section are not subject to any other provisions of these Regulations except for:

- (a) the training requirements in Chapter 1.3;
- (b) the classification procedures and packing group criteria in Part 2, Classification;
- (c) the packaging requirements of 4.1.1.1, 4.1.1.2, 4.1.1.4, 4.1.1.4.1 and 4.1.1.6 in Part 4.

*NOTE: In the case of radioactive material, the requirements for radioactive material in excepted packages in 2.7.7.1.2.1 and 2.7.9.1 apply.*

3.5.1.2 Dangerous goods that may be carried as excepted quantities in accordance with these provisions are shown in column 7 of the dangerous goods list by means of an alphanumeric code as follows:

<b>Code</b>	<b>Inner packaging</b>	<b>Outer packaging</b>
None	Not permitted as Excepted Quantity	
E1	30g/30ml	1kg/1L
E2	30g/30ml	500g/500ml
E3	30g/30ml	300g/300ml
E4	1g/1ml	500g/500ml
E5	1g/1ml	300g/300ml

Excepted quantities of dangerous goods shall be transported in accordance with the provisions of sections 3.5.1.3 to 3.5.1.6.

3.5.1.3 Packagings used for the transport of dangerous goods in excepted quantities shall be in compliance with the following:

- (a) There shall be an inner packaging and each inner packaging shall be constructed of plastic (when used for liquid

dangerous goods it shall have a minimum thickness of not less than 0.2 mm), or of glass, porcelain, stoneware, earthenware or metal (see also 4.1.1.2) and the closure of each inner packaging shall be held securely in place with wire, tape or other positive means; any receptacle having a neck with moulded screw threads shall have a leak proof threaded type cap. The closure shall be resistant to the contents;

- (b) Each inner packaging shall be securely packed in an intermediate packaging with cushioning material in such a way that, under normal conditions of transport, they cannot break, be punctured or leak their contents. The intermediate packaging shall completely contain the contents in case of breakage or leakage, regardless of package orientation. For liquid dangerous goods, the intermediate packaging shall contain sufficient absorbent material to absorb the entire contents of the inner packaging. In such cases, the absorbent material may be the cushioning material. Dangerous goods shall not react dangerously with cushioning, absorbent material and packaging material or reduce the integrity or function of the materials;
- (c) The intermediate packaging shall be securely packed in a strong, rigid outer packaging (wooden, fibreboard or other equally strong material);
- (d) Each package type shall be in compliance with the provisions in 3.5.1.4;
- (e) Each package shall be of such a size that there is adequate space to apply all necessary markings; and
- (f) Overpacks may be used and may also contain packages of dangerous goods or goods not subject to these Regulations.

#### **3.5.1.4**      *Package tests*

3.5.1.4.1      The complete package as prepared for transport, with inner packagings filled to not less than 95% of their capacity for solids or 98% for liquids, shall be capable of withstanding, as demonstrated by testing which is appropriately documented, without breakage or leakage of any inner packaging and without significant reduction in effectiveness:

- (a) Drops onto a rigid, non-resilient flat and horizontal surface from a height of 1.8 m:

- (i) Where the sample is in the shape of a box, it shall be dropped in each of the following attitudes:
- flat on the base;
  - flat on the top;
  - flat on the longest side;
  - flat on the shortest side;
  - on a corner;
- (ii) Where the sample is in the shape of a drum, it shall be dropped in each of the following attitudes:
- diagonally on the top chime, with the centre of gravity directly above the point of impact;
  - diagonally on the base chime;
  - flat on the side.

*NOTE: Each of the above drops may be performed on different but identical packages.*

- (b) a force applied to the top surface for a duration of 24 hours, equivalent to the total weight of identical packages if stacked to a height of 3 m (including the drop sample).

3.5.1.4.2 For the purposes of testing, the substances to be transported in the packaging may be replaced by other substances except where this would invalidate the results of the tests. For solids, when another substance is used, it must have the same physical characteristics (mass, grain size, etc.) as the substance to be carried. In the drop tests for liquids, when another substance is used, its relative density (specific gravity) and viscosity should be similar to those of the substance to be transported.

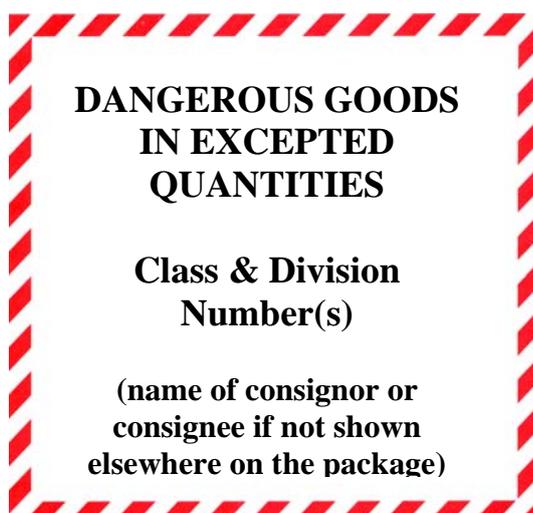
### **3.5.1.5 Marking of packages**

3.5.1.5.1 Packages containing excepted quantities of dangerous goods prepared in accordance with this Chapter shall be durably and legibly marked with the mark shown in Figure 3.5.1. The Class or Class and Division numbers of each of the dangerous goods contained in the package shall be shown in the mark. Where the name of the consignor or consignee is not shown elsewhere on the package this information shall be included within the mark.

3.5.1.5.2 For packages the dimensions of the mark shall be a minimum of 100 mm × 100 mm.

3.5.1.5.3 An overpack containing dangerous goods in excepted quantities shall display the markings required by 3.5.1.5.1, unless such markings on packages within the overpack are clearly visible.

Figure 3.5.1



Excepted quantities mark  
Black or red hatching on white or suitable contrasting background

**3.5.1.6**      *Maximum number of packages per transport unit*

The number of packages per transport unit shall not exceed 1 000.

**3.5.1.7**      *Documentation*

When a document is used it shall include the statement "Dangerous Goods in Excepted Quantities" and indicate the number of packages."  
(Reference Document: ST/SG/AC.10/C.3/58/Add.1)

**PART 4**

**Chapter 4.1**

4.1.1.3      Add the following new paragraph at the end:

"However, IBCs manufactured before 1 January 2011 and conforming to a design type which have not passed the vibration test of 6.5.6.13 may still be used."  
(Reference Document: ST/SG/AC.10/C.3/58/Add.1)

4.1.1.10      In the last sentence before the table, delete "Metal".  
(Reference Document: ST/SG/AC.10/C.3/56/Add.1)

4.1.4.1      **P001** and **P002**      Delete PP6.  
(Reference Document: ST/SG/AC.10/C.3/54, annex 3)

**P003**      Delete PP88.  
(Reference Document: ST/SG/AC.10/C.3/58/Add.1)

**P114(b)** Add the following new special packing provision:

**"PP48** For UN No. 0508, metal packagings shall not be used."

In special packing provision **PP50**, replace "For UN 0160 and UN 0161" with "For UN Nos. 0160, 0161 and 0508" and replace "required" with "necessary".

*(Reference Document: ST/SG/AC.10/C.3/58/Add.1)*

**P200** In paragraph (3) (b), amend the second sentence to read as follows:

"The use of test pressures and filling ratios other than those in the table is permitted, except where (4), special packing provision "o" applies, provided that

(a) the criterion of (4), special packing provision "r" is met when applicable; or

(b) the above criterion is met in all other cases."

*(Reference Document: ST/SG/AC.10/C.3/58/Add.1)*

In paragraph (4), in the third paragraph of special packing provision "k", replace "assemblies (groups)" with "groups".

*(Reference Document: ST/SG/AC.10/C.3/56/Add.1)*

In paragraph (4), insert a new special packing provision "r" to read as follows:

"r: The filling ratio of this gas shall be limited such that, if complete decomposition occurs, the pressure does not exceed two thirds of the test pressure of the pressure receptacle."

*(Reference Document: ST/SG/AC.10/C.3/58/Add.1)*

In paragraph (4), amend special packing provision "n" to read as follows:

"n: Cylinders and individual cylinders in a bundle shall contain not more than 5 kg of the gas. When bundles containing UN 1045 Fluorine, compressed are divided into groups of cylinders in accordance with special packing provision 'k' each group shall contain not more than 5 kg of the gas."

*(Reference Document: ST/SG/AC.10/C.3/56/Add.1)*

In paragraph (4), add a new paragraph at the end of special packing provision "z" to read as follows:

"Mixtures containing UN 2192 germane, other than mixtures of up to 35% germane in hydrogen or nitrogen or up to 28% germane in helium or

argon, shall be filled to a pressure such that, if complete decomposition of the germane occurs, two thirds of the test pressure of the pressure receptacle shall not be exceeded."

(Reference Document: *ST/SG/AC.10/C.3/58/Add.1*)

In Table 2, for UN 1017 add "5.1" in column "Subsidiary risk".

(Reference Document: *ST/SG/AC.10/C.3/58/Add.1*)

In Table 2, for UN 2192 replace "1.02" with "0.064" in column "Filling ratio" and add ", r" in column "Special packing provisions".

(Reference Document: *ST/SG/AC.10/C.3/58/Add.1*)

In Table 2, modify column "Filling ratio" as follows:

UN No.	Name	Test pressure, bar	Filling ratio
1011	Butane	10	0.52
1020	Chloropentafluoroethane (R115)	25	1.05
1035	Ethane	120	0.30
1035	Ethane	300	0.40
1048	Hydrogen bromide	60	1.51
1973	R502	31	1.01
1976	Octafluorocyclobutane (RC318)	11	1.32
1982	Tetrafluoromethane (R14)	200	0.71
1982	Tetrafluoromethane (R14)	300	0.90
2035	1,1,1-trifluoroethane (R143a)	35	0.73
[2192	Germane	250	1.00]
2198	Phosphorus pentafluoride	300	1.25
2424	Octafluoropropane (R218)	25	1.04
2599	R503	42	0.17
2599	R503	31	0.12
2599	R503	100	0.64
3220	Pentafluoroethane (R125)	36	0.87

(Reference Document: *ST/SG/AC.10/C.3/56/Add.1* + *ST/SG/AC.10/C.3/58/Add.1*)

**P406** Add the following new special packing provision:

**"PP48** For UN No. 3474, metal packagings shall not be used."

(Reference Document: *ST/SG/AC.10/C.3/58/Add.1*)

**P601** In (2), delete "or additionally, for UN 1744 only, in polyvinylidene fluoride (PVDF) inner packagings,".

Delete PP82.

(Reference Document: *ST/SG/AC.10/C.3/58/Add.1*)

**P620** In (a) (i) and (ii), replace "watertight" with "leakproof".

(Reference Document: *ST/SG/AC.10/C.3/56/Add.1*)

Amend sub-paragraph (b) to read as follows:

"A rigid outer packaging. The smallest external dimension shall be not less than 100 mm."

(Reference Document: ST/SG/AC.10/C.3/58/Add.1)

In additional requirement 2 (b), replace "6.3.1.1" with "6.3.3".

(Reference Document: ST/SG/AC.10/C.3/56/Add.1)

**P621** In the second sentence, delete "and the special provisions of 4.1.8".

(Reference Document: ST/SG/AC.10/C.3/56/Add.1, consequential amendment)

**P650** In (6), replace "6.3.2.5" with "6.3.5.3" and "6.3.2.2 to 6.3.2.4" with "6.3.5.2".

(Reference Document: ST/SG/AC.10/C.3/56/Add.1)

Add new packing instructions **P004** and **P804** to read as follows:

<b>P004</b>	<b>PACKING INSTRUCTION</b>	<b>P004</b>
This instruction applies to fuel cell cartridges, and fuel cell cartridges contained in equipment or packed with equipment.		
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:		
<ol style="list-style-type: none"> <li>(1) For fuel cell cartridges, packagings conforming to the packing group II performance level; and</li> <li>(2) For fuel cell cartridges contained in equipment or packed with equipment, strong outer packaging. Large robust equipment (see 4.1.3.8) containing fuel cell cartridges may be transported unpackaged. 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. Fuel cell cartridges which are installed in equipment shall be protected against short circuit and the entire system shall be protected against inadvertent operation.</li> </ol>		

(Reference Document: ST/SG/AC.10/C.3/58/Add.1)

<b>P804</b>	<b>PACKING INSTRUCTION</b>	<b>P804</b>
This instruction applies to UN 1744.		
The following packagings are authorized provided the general provisions of 4.1.1 and 4.1.3 are met and the packagings are hermetically sealed:		
<ol style="list-style-type: none"> <li>(1) Combination packagings with a maximum gross mass of 25 kg, consisting of one or more glass inner packaging(s) with a maximum capacity of 1.3 litres each and filled to not more than 90% of their capacity; the closure(s) of which shall be physically held in place by any means capable of preventing back-off or loosening by impact or vibration during transport, together with cushioning and absorbent material sufficient to absorb the entire contents of the glass inner packaging(s), further packed in 1A2, 1B2, 1N2, 1H2, 1D, 1G, 4A, 4B, 4C1, 4C2, 4D, 4F, 4G or 4H2 outer packagings.</li> </ol>		

**P804** **PACKING INSTRUCTION** **P804**

(2) Combination packagings consisting of metal or polyvinylidene fluoride (PVDF) inner packagings, not exceeding 5 litres in capacity individually packed with absorbent material sufficient to absorb the contents and inert cushioning material in 1A2, 1B2, 1N2, 1H2, 1D, 1G, 4A, 4B, 4C1, 4C2, 4D, 4F, 4G or 4H2 outer packagings with a maximum gross mass of 75 kg. Inner packagings shall not be filled to more than 90% of their capacity. The closure of each inner packaging shall be physically held in place by any means capable of preventing back-off or loosening of the closure by impact or vibration during transport;

(3) Packagings consisting of:

Outer packagings:

Steel or plastic drums, removable head (1A2 or 1H2) tested in accordance with the test requirements in 6.1.5 at a mass corresponding to the mass of the assembled package either as a packaging intended to contain inner packagings, or as a single packaging intended to contain solids or liquids, and marked accordingly;

Inner packagings:

Drums and composite packagings (1A1, 1B1, 1N1, 1H1 or 6HA1) meeting the requirements of Chapter 6.1 for single packagings, subject to the following conditions:

- (a) The hydraulic pressure test shall be conducted at a pressure of at least 3 bar (gauge pressure);
- (b) The design and production leakproofness tests shall be conducted at a test pressure of 0,3 bar;
- (c) They shall be isolated from the outer drum by the use of inert shock-mitigating cushioning material which surrounds the inner packaging on all sides;
- (d) Their capacity shall not exceed 125 litres;
- (e) Closures shall be of a screw type that are:
  - (i) Physically held in place by any means capable of preventing back –off or loosening of the closure by impact or vibration during transport;
  - (ii) Provided with a cap seal;
- (f) The outer and inner packagings shall be subjected periodically to an internal inspection and leakproofness test according to (b) at intervals of not more than two and a half years; and
- (g) The outer and inner packaging shall bear in clearly legible and durable characters:
  - (i) the date (month, year) of the initial test and the latest periodic test and inspection of the inner packaging;
  - (ii) the name or authorized symbol of the expert performing the tests and inspections;

P804	PACKING INSTRUCTION	P804
<p>(4) Pressure receptacles may be used provided that the general provisions of 4.1.3.6 are met.</p> <ul style="list-style-type: none"><li>(a) They shall be subjected to an initial test and periodic tests every 10 years at a pressure of not less than 10 bar (gauge pressure);</li><li>(b) They shall be subjected periodically to an internal inspection and leakproofness test at intervals of not more than two and a half years;</li><li>(c) Pressure receptacles may not be equipped with any pressure relief device;</li><li>(d) Each pressure receptacle shall be closed with a plug or valve(s) fitted with a secondary closure device; and</li><li>(e) The materials of construction for the pressure receptacle, valves, plugs, outlet caps, luting and gaskets shall be compatible with each other and with the contents.</li></ul>		

*(Reference Document: ST/SG/AC.10/C.3/58/Add.1)*

4.1.4.2 **IBC01, IBC02 and IBC03** Delete the additional requirement.

*(Reference Document: ST/SG/AC.10/C.3/56/Add.1)*

**IBC02** Add a new special packing provision to read as follows:

**"B14** For UN 2031 with more than 55% nitric acid, the permitted use of rigid plastics IBCs and of composite IBCs with a rigid plastics inner receptacle, shall be two years from their date of manufacture."

*(Reference Document: ST/SG/AC.10/C.3/58/Add.1)*

**IBC03** In the special packing provision B11, insert at the beginning "Notwithstanding the provisions of 4.1.1.10".

*(Reference Document: ST/SG/AC.10/C.3/56/Add.1)*

**IBC05, IBC06, IBC07 and IBC08** In special packing provision **B2**, delete "packing group II".

*(Reference Document: ST/SG/AC.10/C.3/58/Add.1)*

**IBC520** For UN No 3109, in the entry for tert-Butyl peroxy-3,5,5-trimethylhexanoate, not more than 32% in diluent type A (third entry), replace "32%" with "37%".

For UN No 3119, in the entry for Di-(2-ethylhexyl) peroxydicarbonate, not more than 52%, stable dispersion, in water (ninth entry), replace "52%" with "62%".

Insert the following new entries:

UN No.	Organic peroxide	Type of IBC	Maximum quantity (litres)	Control temperature	Emergency temperature
3109	tert-Butyl peroxybenzoate, not more than 32% in diluent type A	31A	1250		
3109	1,1-Di-(tert-Butylperoxy)cyclohexane, not more than 37% in diluent type A	31A	1250		
3119	tert-Amyl peroxyvalerate, not more than 32% in diluent type A	31A	1250	+10	+15
3119	tert-Butyl peroxyneodecanoate, not more than 52%, stable dispersion, in water	31A	1250	-5	+5
3119	Di-(2-neodecanoylperoxyisopropyl)-benzene, not more than 42%, stable dispersion, in water	31A	1250	-15	-5
3119	3-Hydroxy-1,1-dimethylbutylperoxyneodecanoate, not more than 52%, stable dispersion, in water	31A	1250	-15	-5

(Reference Document: ST/SG/AC.10/C.3/58/Add.1)

4.1.6.1.2 Delete the third and fourth sentences ("Pressure receptacles for UN 1001 acetylene ... compatible with the pressure receptacles").

(Reference Document: ST/SG/AC.10/C.3/58/Add.1)

4.1.8 Replace "**(Division 6.2)**" with "**of Category A (Division 6.2, UN 2814 and UN 2900)**".

(Reference Document: ST/SG/AC.10/C.3/56/Add.1)

4.1.8.2 Replace "liquids shall be filled into packagings, including IBCs, which" with "liquids shall only be filled into packagings which".

(Reference Document: ST/SG/AC.10/C.3/56/Add.1)

4.1.8.3 Delete "For UN 2814 and UN 2900," and "and assignment to UN 2814 or UN 2900".

(Reference Document: ST/SG/AC.10/C.3/56/Add.1)

4.1.8.4 Delete "thoroughly" and add "to nullify any hazard" after "sterilized".

(Reference Document: ST/SG/AC.10/C.3/56/Add.1)

4.1.8.5 Replace with the text of existing 6.3.2.8.

(Reference Document: ST/SG/AC.10/C.3/56/Add.1)

## Chapter 4.2

Wherever it appears, replace the word "shipper" with "consignor" (*apply to 4.2.1.9.1 (twice), 4.2.2.7.1, 4.2.3.6.1 and 4.2.4.5.*).

(Reference Document: ST/SG/AC.10/C.3/58/Add.1)

4.2.5.2.6 **T23** For UN 3119, in the entry for Di-(3,5,5-trimethyl-hexanoyl)peroxide, not more than 38% in diluent type A, add "or type B" after "type A".

Insert the following new entry:

UN No	Substance	Min. test pressure (bar)	Min. shell thickness (mm-reference steel)	Bottom opening requirements	Pressure-relief requirements	Degree of filling	Control temp.	Emergency temp.
3119	tert-Amyl peroxyneodecanoate, not more than 47% in diluent type A						-10	-5

(Reference Document: ST/SG/AC.10/C.3/58/Add.1)

4.2.5.3 Delete TP12.

(Reference Document: ST/SG/AC.10/C.3/56/Add.1)

## PART 5

### Chapter 5.2

5.2.1.7.1 In the third indent, delete "open".

(Reference Document: ST/SG/AC.10/C.3/56/Add.1)

5.2.1.7.2 (a) Insert "except for cryogenic receptacles" after "pressure receptacles".

(Reference Document: ST/SG/AC.10/C.3/56/Add.1)

5.2.1.7.2 (d) Insert "A, IP-2, IP-3," before "B(U)".

(Reference Document: ST/SG/AC.10/C.3/54, annex 3)

5.2.2.2.1.1 Replace "They shall have a line of the same colour as the symbol, 5 mm inside the edge and running parallel with it." with "They shall have a line 5 mm inside the edge and running parallel with it. In the upper half of a label the line shall have the same colour as the symbol and in the lower half it shall have the same colour as the figure in the bottom corner".

(Reference Document: ST/SG/AC.10/C.3/58/Add.1)

5.2.2.2.1.3 Amend to read as follows:

"5.2.2.2.1.3 With the exception of Divisions 1.4, 1.5 and 1.6, the upper half of the label shall contain the pictorial symbol and the lower half shall contain the class or division number and the compatibility group letter as appropriate. The label may include text such as the UN number or words describing the hazard class or division (e.g. "flammable") in accordance with 5.2.2.2.1.5 provided the text does not obscure or detract from the other required label elements."

(Reference Document: ST/SG/AC.10/C.3/56/Add.1)

5.2.2.2.1.6 Insert a new-sub paragraph (c) to read as follows:

"(c) the Division 5.2 label, where the symbol may be shown in white; and".

Consequential amendments:

5.2.2.2.1.6 (b) Delete "and".

5.2.2.2.1.6 (c) Renumber as (d).

5.2.2.2.2 Under the labels for Division 2.1, replace "5.2.2.2.1.6 (c)" with "5.2.2.2.1.6 (d)".

(Reference Document: ST/SG/AC.10/C.3/58/Add.1)

### Chapter 5.3

5.3.2.1.2 (a) Amend to read as follows:

"(a) Against a white background in the area below the pictorial symbol and above the class or division number and the compatibility group letter in a manner that does not obscure or detract from the other required label elements (see Figures 5.3.1 and 5.3.2); or".

(Reference Document: ST/SG/AC.10/C.3/56/Add.1)

### Chapter 5.5

5.5.2.2 Replace "When the fumigated unit has been ventilated to remove harmful concentrations of fumigant gas, the warning sign shall be removed." with "The marking, as required by this paragraph, shall remain on the unit until the following provisions are met:

(a) The fumigated unit has been ventilated to remove harmful concentrations of fumigant gas; and

(b) The fumigated goods or materials have been unloaded."

(Reference Document: ST/SG/AC.10/C.3/58/Add.1)

Figure 5.5.1 In the Fumigation warning sign, insert "VENTILATED ON (date)" before "DO NOT ENTER".

(Reference Document: ST/SG/AC.10/C.3/58/Add.1)

### PART 6

6.1.1.4. 6.3.2.2, 6.5.4.1 and 6.6.1.2 At the end, add a new note to read as follows:

**"NOTE:** EN ISO 16106:2006 "Packaging – Transport packages for dangerous goods – Dangerous goods packagings, intermediate bulk containers (IBCs) and large packagings – Guidelines for the application of EN ISO 9001" provides acceptable guidance on procedures which may be followed."

(Reference Document: ST/SG/AC.10/C.3/58/Add.1)

## Chapter 6.1

[6.1.3.1 (a) Replace the first sentence after the symbol with: "This symbol shall not be used for any purpose other than certifying that a packaging complies with the relevant regulations in Chapter 6.1, 6.2, 6.3, 6.5 or 6.6".]

(Reference Document: ST/SG/AC.10/C.3/56/Add.1)

6.1.5.3.4 Amend to read as follows:

### "6.1.5.3.4 Target

The target shall be a non-resilient, horizontal and flat surface, massive enough to be immovable and rigid enough to be non-deformable under test conditions, and shall be:

- integral with a mass at least 50 times that of the heaviest package to be tested,
- flat, such that no two points on its surface differ in level by more than [2 mm],
- rigid, such that it will not be deformed by more than [0,1 mm] when an area of 100 mm<sup>2</sup> is loaded statically with 10 kg anywhere on the surface, and
- sufficiently large to ensure that the test package falls entirely upon the surface."

(Reference Document: ST/SG/AC.10/C.3/58/Add.1)

## Chapter 6.2

6.2.1.1 Insert a new paragraph 6.2.1.1.9 with the heading "*Additional requirements for the construction of pressure receptacles for acetylene*" and with the text of the third and fourth sentences of existing 4.1.6.1.2 ("Pressure receptacles for UN 1001 acetylene ... compatible with the pressure receptacles").

(Reference Document: ST/SG/AC.10/C.3/58/Add.1)

6.2.1.1.6 Replace "Manifolds shall be designed such that they are protected from impact." with "Manifold assemblies (e.g. manifold, valves, and pressure gauges) shall be designed and constructed such that they are protected from impact damage and forces normally encountered in transport. Manifolds shall have at least the same test pressure as the cylinders."

Replace "means shall be provided" with "each pressure receptacle shall have an isolation valve".

(Reference Document: ST/SG/AC.10/C.3/56/Add.1)

6.2.1.3.1 Amend to read as follows:

"6.2.1.3.1 Valves, piping and other fittings subjected to pressure, excluding pressure relief devices, shall be designed and constructed so that the burst pressure is at least 1.5 times the test pressure of the pressure receptacle."

(Reference Document: ST/SG/AC.10/C.3/56/Add.1)

6.2.2.1.3 In the table, delete the last entry (ISO 11118:1999).

(Reference Document: ST/SG/AC.10/C.3/58/Add.1)

6.2.2.4 Amend the three first entries of the table to read as follows:

ISO 6406:2005	Seamless steel gas cylinders – Periodic inspection and testing
ISO 10461:2005	Seamless aluminium-alloy gas cylinders – Periodic inspection and testing
ISO 10462:2005	Transportable cylinders for dissolved acetylene – Periodic inspection and maintenance

(Reference Document: ST/SG/AC.10/C.3/58/Add.1)

[6.2.2.7.1 (a) Replace the first sentence after the symbol with: "This symbol shall not be used for any purpose other than certifying that a packaging complies with the relevant regulations in Chapter 6.1, 6.2, 6.3, 6.5 or 6.6".]

(Reference Document: ST/SG/AC.10/C.3/56/Add.1)

### Chapter 6.3

In the title, replace "SUBSTANCES" with "INFECTIOUS SUBSTANCES OF CATEGORY A".

(Reference Document: ST/SG/AC.10/C.3/56/Add.1)

Sections 6.3.1 to 6.3.3 Amend as follows:

#### "6.3.1 General

6.3.1.1 The requirements of this Chapter apply to packagings intended for the transport of infectious substances of Category A.

#### 6.3.2 Requirements for packagings

6.3.2.1 The requirements for packagings in this section are based on packagings, as specified in 6.1.4, currently used. In order to take into account progress in science and technology, there is no objection to the use of packagings having specifications different from those in this Chapter provided that they are equally effective, acceptable to the competent authority and able successfully to withstand the tests described in 6.3.5. Methods of testing other than those described in these Regulations are acceptable, provided they are equivalent.

6.3.2.2 Packagings shall be manufactured and tested under a quality assurance programme which satisfies the competent authority in order to ensure that each packaging meets the requirements of this Chapter.

6.3.2.3 *Text of existing 6.3.1.3.*

### **6.3.3 Code for designating types of packagings**

6.3.3.1 The codes for designating types of packagings are set out in 6.1.2.7.

6.3.3.2 The letters "U" or "W" may follow the packaging code. The letter "U" signifies a special packaging conforming to the requirements of 6.3.5.1.6. The letter "W" signifies that the packaging, although, of the same type indicated by the code is manufactured to a specification different from that in 6.1.4 and is considered equivalent under the requirements of 6.3.2.1".  
(Reference Document: ST/SG/AC.10/C.3/56/Add.1)

Add new Sections 6.3.4 and 6.3.5 as follows:

### **"6.3.4 Marking**

*NOTE 1: The marking indicates that the packaging which bears it corresponds to a successfully tested design type and that it complies with the requirements of this Chapter which are related to the manufacture, but not to the use, of the packaging.*

*NOTE 2: The marking is intended to be of assistance to packaging manufacturers, reconditioners, packaging users, carriers and regulatory authorities.*

*NOTE 3: The marking does not always provide full details of the test levels, etc., and these may need to be taken further into account, e.g. by reference to a test certificate, to test reports or to a register of successfully tested packagings.*

6.3.4.1 Each packaging intended for use according to these Regulations shall bear markings which are durable, legible and placed in a location and of such a size relative to the packaging as to be readily visible. For packages with a gross mass of more than 30 kg, the markings or a duplicate thereof shall appear on the top or on a side of the packaging. Letters, numerals and symbols shall be at least 12 mm high, except for packagings of 30 litres or 30 kg capacity or less, when they shall be at least 6 mm in height and for packagings of 5 litres or 5 kg or less when they shall be of an appropriate size.

6.3.4.2 *Text of existing 6.3.1.1, with the following modifications:*

At the beginning, replace "6.3.2" with "6.3.5".

In (a), add at the end: "This symbol shall not be used for any purpose other than certifying that a packaging complies with the relevant regulations in Chapter 6.1, 6.2, 6.3, 6.5 or 6.6;"

In (g), replace "6.3.2.9" with "6.3.5.1.6".

At the end, delete the text after sub-paragraphs (a) to (g).

6.3.4.3 Marking shall be applied in the sequence shown in 6.3.4.2 (a) to (g); each element of the marking required in these sub-paragraphs shall be clearly separated, e.g. by a slash or space, so as to be easily identifiable. For examples, see 6.3.4.4.

Any additional markings authorized by a competent authority shall still enable the parts of the mark to be correctly identified with reference to 6.3.4.1.

6.3.4.4 *Text of existing 6.3.1.2, with the following modifications:*

In the marking, replace "01" with "06".  
Replace "6.3.1.1" with "6.3.4.2" (twice).  
Replace "(e)," with "(e) and".

6.3.5 *Heading of existing 6.3.2.*

### **6.3.5.1 Performance and frequency of tests**

6.3.5.1.1 The design type of each packaging shall be tested as provided in this section in accordance with procedures established by the competent authority.

6.3.5.1.2 Each packaging design type shall successfully pass the tests prescribed in this Chapter before being used. A packaging design type is defined by the design, size, material and thickness, manner of construction and packing, but may include various surface treatments. It also includes packagings which differ from the design type only in their lesser design height.

#### Consequential amendments:

6.1.5.1.2 *Replace the first sentence with "Each packaging design type shall successfully pass the tests prescribed in this Chapter before being used."*

6.5.6.1.1 *Replace the first sentence with "Each IBC design type shall successfully pass the tests prescribed in this Chapter before being used."*

6.6.5.1.2 *Replace the first sentence with "Each large packaging design type shall successfully pass the tests prescribed in this Chapter before being used."*

6.3.5.1.3 Tests shall be repeated on production samples at intervals established by the competent authority.

6.3.5.1.4 Tests shall also be repeated after each modification which alters the design, material or manner of construction of a packaging.

6.3.5.1.5 *Text of existing 6.3.2.7, with the following modifications:*

Replace "of inner packagings or inner packagings of lower net mass" with "or lower net mass of primary receptacles".  
Delete ", bags".

6.3.5.1.6 *Text of existing 6.3.2.9, with the following modifications:*

At the beginning, replace "Inner" with "Primary", "intermediate (secondary)" with "secondary" and "outer" with "rigid outer".

In (a), replace "intermediate/outer packaging combination" with "rigid outer packaging", "6.3.2.3" with "6.3.5.2.2" and "inner" with "primary".

In (b), replace "inner" with "primary" (twice).

In (c), replace "inner" with "primary" (seven times) and "intermediate" with "secondary" (twice). Add "spaces" at the end.

In (d), replace "outer" with "rigid outer" and "inner receptacles" with "packagings".

In (e), replace "inner" with "primary" (twice).

In (f), replace "outer" with "rigid outer" and "inner" with "primary" (twice).

In (g), replace "6.3.1.1" with "6.3.4.2" (twice).

6.3.5.1.7 The competent authority may at any time require proof, by tests in accordance with this section, that serially-produced packagings meet the requirements of the design type tests.

6.3.5.1.8 Provided the validity of the test results is not affected and with the approval of the competent authority, several tests may be made on one sample.

### 6.3.5.2 *Preparation of packagings for testing*

6.3.5.2.1 *Text of existing 6.3.2.2, with the following modifications:*

Replace "98% capacity" with "not less than 98 % of its capacity".

Add a new note at the end to read as follows:

***NOTE:** The term water includes water/antifreeze solution with a minimum specific gravity of 0.95 for testing at – 18 °C.*

6.3.5.2.2 *Tests and number of samples required*

### Tests required for packaging types

Type of packaging <sup>a</sup>			Tests required					Stack 6.1.5.6
Rigid outer packaging	Primary receptacle		Water spray 6.3.5.3.6.1	Cold conditioning 6.3.5.3.6.2	Drop 6.3.5.3	Additional drop 6.3.5.3.6.3	Puncture 6.3.5.4	
	Plastics	Other	No. of samples	No. of samples	No. of samples	No. of samples	No. of samples	
	Fibreboard box	x		5	5	10	Required on one sample when the packaging is intended to contain dry ice.	2
		x	5	0	5	2		
Fibreboard drum	x		3	3	6	2		
		x	3	0	3	2		
Plastics box	x		0	5	5	2		
		x	0	5	5	2		
Plastics	x		0	3	3	2	Required on three samples when testing a "U"- marked packaging as defined in 6.3.5.1.6 for	

drum/ jerrican		x	0	3	3		2	specific provisions.
Boxes of other material	x		0	5	5		2	
		x	0	0	5		2	
Drums/ jerricans of other material	x		0	3	3		2	
		x	0	0	3		2	

<sup>a</sup> "Type of packaging" categorizes packagings for test purposes according to the kind of packaging and its material characteristics.

**NOTE 1:** In instances where a primary receptacle is made of two or more materials, the material most liable to damage determines the appropriate test.

**NOTE 2:** The material of the secondary packagings are not taken into consideration when selecting the test or conditioning for the test.

Explanation for use of the table:

If the package to be tested consists of a fibreboard outer box with a plastics primary receptacle, five samples must undergo the water spray test (see 6.3.5.3.6.1) prior to dropping and another five must be conditioned to – 18 °C (see 6.3.5.3.6.2) prior to dropping. If the package is to contain dry ice then one further single sample shall be dropped five times after conditioning in accordance with 6.3.5.3.6.3.

Packagings prepared as for transport shall be subjected to the tests in 6.3.5.3 and 6.3.5.4. For outer packagings, the headings in the table relate to fibreboard or similar materials whose performance may be rapidly affected by moisture; plastics which may embrittle at low temperature; and other materials such as metal whose performance is not affected by moisture or temperature.

### 6.3.5.3 Drop test

6.3.5.3.1 Samples shall be subjected to free-fall drops from a height of 9 m onto a non-resilient, horizontal, flat, massive and rigid surface in conformity with 6.1.5.3.5.

6.3.5.3.2 Where the samples are in the shape of a box; five shall be dropped one in each of the following attitudes:

(Reference Document: ST/SG/AC.10/C.3/58/Add.1)

- (a) flat on the base;
- (b) flat on the top;
- (c) flat on the longest side;
- (d) flat on the shortest side;
- (e) on a corner.

6.3.5.3.3 Where the samples are in the shape of a drum, three shall be dropped one in each of the following attitudes:

- (a) diagonally on the top chime, with the centre of gravity directly above the point of impact;
- (b) diagonally on the base chime;
- (c) flat on the side.

6.3.5.3.4 While the sample shall be released in the required orientation, it is accepted that for aerodynamic reasons the impact may not take place in that orientation.

6.3.5.3.5 Following the appropriate drop sequence, there shall be no leakage from the primary receptacle(s) which shall remain protected by cushioning/absorbent material in the secondary packaging.

6.3.5.3.6 *Special preparation of test sample for the drop test*

6.3.5.3.6.1 *Fibreboard - The water spray test*

Fibreboard outer packagings: The sample shall be subjected to a water spray that simulates exposure to rainfall of approximately 5 cm per hour for at least one hour. It shall then be subjected to the test described in 6.3.5.3.1.

6.3.5.3.6.2 *Plastics material – Cold Conditioning*

Plastics primary receptacles or outer packagings: The temperature of the test sample and its contents shall be reduced to -18 °C or lower for a period of at least 24 hours and within 15 minutes of removal from that atmosphere the test sample shall be subjected to the test described in 6.3.5.3.1. Where the sample contains dry ice, the conditioning period shall be reduced to 4 hours.

6.3.5.3.6.3 *All packages containing dry ice – Additional drop test*

Where the packaging is intended to contain dry ice, a test additional to that specified in 6.3.5.3.1 and, when appropriate, in 6.3.5.3.6.1 or 6.3.5.3.6.2 shall be carried out. One sample shall be stored so that all the dry ice dissipates and then that sample shall be dropped in one of the attitudes described in 6.3.5.3.2 which shall be that most likely to result in failure of the packaging.

#### **6.3.5.4 Puncture test**

6.3.5.4.1 *Packagings with a gross mass of 7 kg or less*

*Text of existing 6.3.2.6 (a), with the following modification:*  
Replace "not exceeding 38 mm" with "of 38 mm".

6.3.5.4.2 *Packagings with a gross mass exceeding 7 kg*

*Text of existing 6.3.2.6 (b), with the following modifications:*

In the fourth sentence, replace "the primary receptacle(s) and the outer surface" with "the centre of the primary receptacle(s) and the outer surface".

In the fifth sentence, insert "with its top face lowermost" before "in a vertical free fall".

In the last but one sentence, replace "the steel rod would penetrate" with "the steel rod would be capable of penetrating".

In the last sentence, replace "there shall be no leakage" with "penetration of the secondary packaging is acceptable provided that there is no leakage".

6.3.5.5 *Heading of existing 6.3.3*6.3.5.5.1 *Text of existing 6.3.3.1, with the following modifications:*

At the beginning, insert "written" before "test report".

In the 4<sup>th</sup> indent, replace "the test report" with "the test and of the report".

Amend the 8<sup>th</sup> indent to read as follows: "8. Test contents;".

6.3.5.5.2 *Text of existing 6.3.3.2."*

*(Reference Document: ST/SG/AC.10/C.3/56/Add.1)*

**Chapter 6.5**

[6.5.2.1.1 (a) Insert a new sentence after the symbol to read as follows: "This symbol shall not be used for any purpose other than certifying that a packaging complies with the relevant regulations in Chapter 6.1, 6.2, 6.3, 6.5 or 6.6.".]

*(Reference Document: ST/SG/AC.10/C.3/56/Add.1)*

6.5.2.2.1 Add the following new entry to the table and the following new note b after the table:

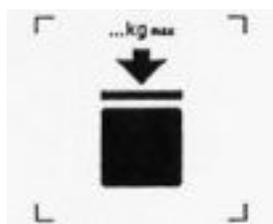
Additional marking	Category of IBC				
	Metal	Rigid Plastics	Composite	Fibreboard	Wooden
Maximum permitted stacking load <sup>b</sup>	X	X	X	X	X

<sup>b</sup> See 6.5.2.2.2.

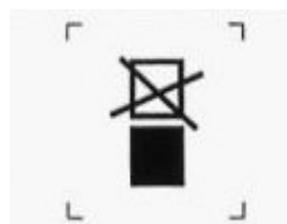
*(Reference Document: ST/SG/AC.10/C.3/58/Add.1)*

6.5.2.2.2 Add a new 6.5.2.2.2 to read as follows and renumber subsequent paragraphs accordingly:

"6.5.2.2.2 The maximum permitted stacking load applicable when the IBC is in use shall be displayed on a symbol as follows:



IBCs capable of being stacked



IBCs NOT capable of being stacked

The symbol shall be not less than 100 mm x 100 mm, be durable and clearly visible. The letters and numbers indicating the mass shall be at least 12 mm high.

The mass marked above the symbol shall not exceed the load imposed during the design type test (6.5.6.6.4) divided by 1.8.

**NOTE:** *The provisions of 6.5.2.2.2 shall apply to all IBCs manufactured, repaired or remanufactured on or after 1 January 2011.*

*(Reference Document: ST/SG/AC.10/C.3/58/Add.1)*

6.5.4.4.2 In the first sentence, add "at least equally effective as the test prescribed in 6.5.6.7.3" after "a suitable leakproofness test". After the sub-paragraphs (a) and (b), replace "For this test the IBC need not have its closures fitted." with "For this test the IBC shall be fitted with the primary bottom closure."

*(Reference Document: ST/SG/AC.10/C.3/56/Add.1)*

6.5.6.3.5 Amend the eight first columns of the table to read as follows (3 last columns unchanged):

Type of IBC	Vibration <sup>f</sup>	Bottom lift	Top lift <sup>a</sup>	Stacking <sup>b</sup>	Leak-proofness	Hydraulic pressure	Drop
Metal:							
11A, 11B, 11N	-	1st <sup>a</sup>	2nd	3rd	-	-	4th <sup>e</sup>
21A, 21B, 21N	-	1st <sup>a</sup>	2nd	3rd	4th	5th	6th <sup>e</sup>
31A, 31B, 31N	1st	2nd <sup>a</sup>	3rd	4th	5th	6th	7th <sup>e</sup>
Flexible <sup>d</sup>	-	-	x <sup>c</sup>	x	-	-	x
Rigid plastics:							
11H1, 11H2	-	1st <sup>a</sup>	2nd	3rd	-	-	4th
21H1, 21H2	-	1st <sup>a</sup>	2nd	3rd	4th	5th	6th
31H1, 31H2	1st	2nd <sup>a</sup>	3rd	4th	5th	6th	7th
Composite:							
11HZ1, 11HZ2	-	1st <sup>a</sup>	2nd	3rd	-	-	4th <sup>e</sup>
21HZ1, 21HZ2	-	1st <sup>a</sup>	2nd	3rd	4th	5th	6th <sup>e</sup>
31HZ1, 31HZ2	1st	2nd <sup>a</sup>	3rd	4th	5th	6th	7th <sup>e</sup>
Fibreboard	-	1st	-	2nd	-	-	3rd
Wooden	-	1st	-	2nd	-	-	3rd

Insert a new note f after the table to read as follows:

<sup>f</sup> *Another IBC of the same design may be used for the vibration test."*

*(Reference Document: ST/SG/AC.10/C.3/58/Add.1)*

6.5.6.5.5 (a) Amend to read as follows:

"(a) Metal, rigid plastics and composite IBCs: the IBC remains safe for normal conditions of transport, there is no observable permanent deformation of the IBC, including the base pallet, if any, and no loss of contents;"

*(Reference Document: ST/SG/AC.10/C.3/56/Add.1)*

6.5.6.7.3 Delete the last sentence.

*(Reference Document: ST/SG/AC.10/C.3/56/Add.1)*

6.5.6.9.3 Amend the first sentence to read as follows: "The IBC shall be dropped on its base onto a non-resilient, horizontal, flat, massive and rigid surface in conformity with the requirements of 6.1.5.3.4, in such a manner as to ensure that the point of impact is that part of the base of the IBC considered to be the most vulnerable."

*(Reference Document: ST/SG/AC.10/C.3/58/Add.1)*

6.5.6.9.5 Add a new sub-paragraph (d) to read as follows:

"(d) All IBCs: no damage which renders the IBC unsafe to be transported for salvage or for disposal, and no loss of contents. In addition, the IBC shall be capable of being lifted by an appropriate means until clear of the floor for five minutes."

*(Reference Document: ST/SG/AC.10/C.3/56/Add.1)*

6.5.6.13 Add a new 6.5.6.13 to read as follows and renumber the subsequent paragraphs accordingly:

**"6.5.6.13      *Vibration test***

6.5.6.13.1      *Applicability*

For all IBCs used for liquids, as a design type test.

***NOTE:*** *This test applies to design types for IBCs manufactured after 31 December 2010.*

6.5.6.13.2      *Preparation of the IBC for test*

A sample IBC shall be selected at random and shall be fitted and closed as for transport. IBCs shall be filled with water to not less than 98% of their maximum capacity.

6.5.6.13.3 *Test method and duration*

6.5.6.13.3.1 The IBC shall be placed in the center of the test machine platform with a vertical sinusoidal, double amplitude (peak-to peak displacement) of 25 mm  $\pm$  5%. If necessary, restraining devices shall be attached to the platform to prevent the specimen from moving horizontally off the platform without restricting vertical movement.

6.5.6.13.3.2 The test shall be conducted for one hour at a frequency that causes the IBC to be raised from the vibrating platform to such a degree that a metal shim can be completely inserted [at a point between the IBC and the test platform]. The frequency may need to be adjusted after the initial set point to prevent the packaging from going into resonance. Nevertheless, the test frequency shall continue to allow placement of the metal shim under the IBC as described in this paragraph. The continuing ability to insert the metal shim is essential to passing the test. The metal shim used for this test shall be at least 1.6 mm thick, 50 mm wide, and be of sufficient length to be inserted between the IBC and the test platform a minimum of 100 mm to perform the test.

6.5.6.13.4 *Criteria for passing the test*

No leakage or rupture shall be observed."

Consequential amendments:

6.5.6.2.1 Replace "6.5.6.12" by "6.5.6.13".

6.5.6.2.3 Replace "6.5.6.13" by "6.5.6.14".

(Reference Document: ST/SG/AC.10/C.3/58/Add.1)

## Chapter 6.6

[6.6.3.1 (a) Insert a new sentence after the symbol to read as follows: "This symbol shall not be used for any purpose other than certifying that a packaging complies with the relevant regulations in Chapter 6.1, 6.2, 6.3, 6.5 or 6.6".]

(Reference Document: ST/SG/AC.10/C.3/56/Add.1)

6.6.5.3.4.3 Amend the first sentence to read as follows: "The large packaging shall be dropped onto a non resilient, horizontal, flat, massive and rigid surface in conformity with the requirements of 6.1.5.3.4, in such a manner as to ensure that the point of impact is that part of the base of the large packaging considered to be the most vulnerable."

(Reference Document: ST/SG/AC.10/C.3/58/Add.1)

## Chapter 6.7

6.7.5.3.2 In the last sentence, replace "isolated by a valve assemblies of not more than 3000 litres" with "divided into groups of not more than 3000 litres each isolated by a valve".

(Reference Document: ST/SG/AC.10/C.3/56/Add.1)

- 6.7.5.4.1 Replace "shall be isolated by a valve into assemblies of not more than 3000 litres. Each assembly shall be fitted" with "divided into groups of not more than 3000 litres each isolated by a valve. Each group shall be fitted".

*(Reference Document: ST/SG/AC.10/C.3/56/Add.1)*

## **PART 7**

### **Chapter 7.1**

- 7.1.3.2.3 Replace "and inorganic nitrates of Class 5.1 (UN Nos. 1942 and 2067)" with "(UN Nos. 1942 and 2067) and alkali metal nitrates (e.g. UN 1486) and alkaline metal nitrates (e.g. UN 1454)".

*(Reference Document: ST/SG/AC.10/C.3/58/Add.1)*

\* \* \*

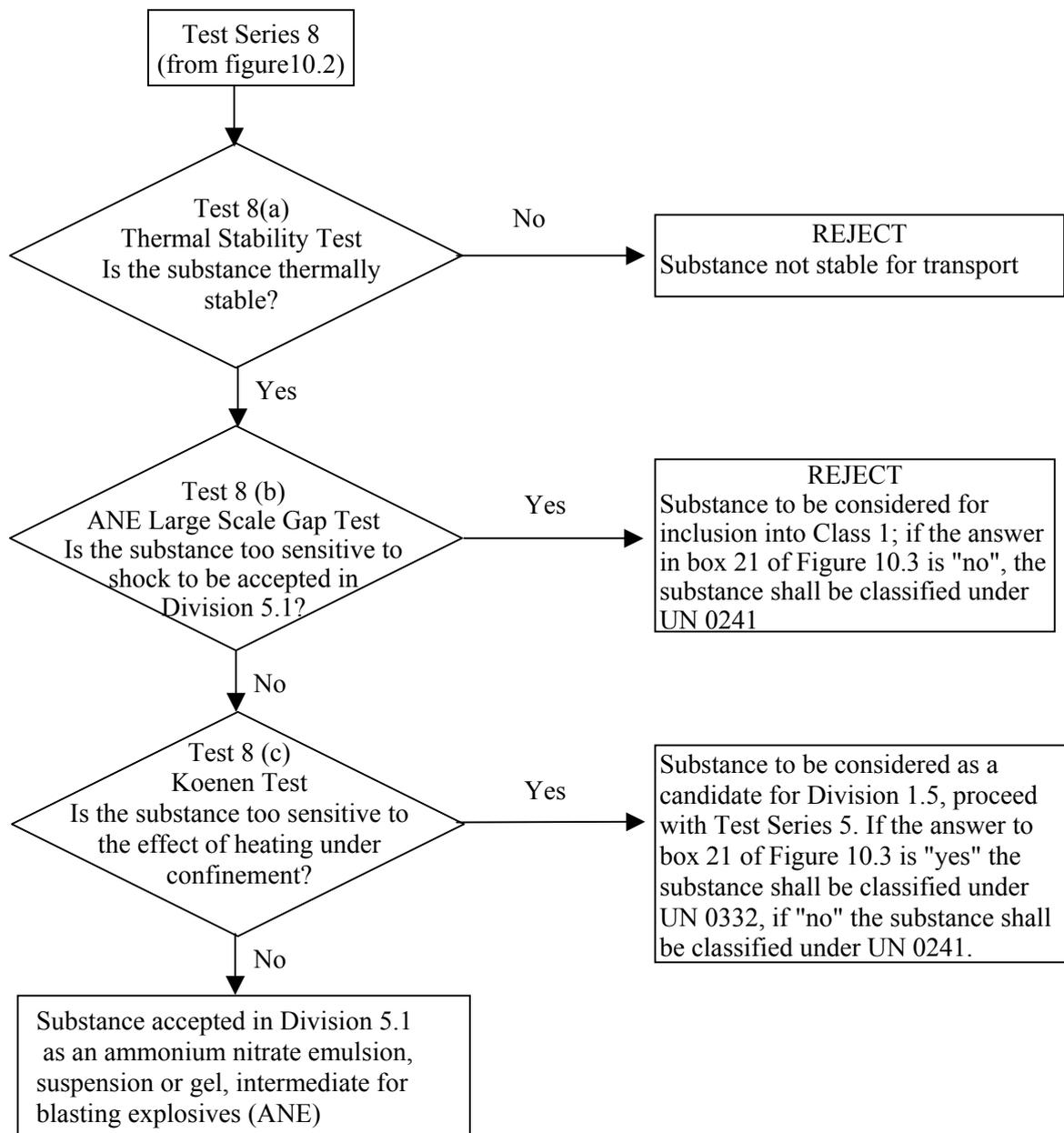
Part 2

**DRAFT AMENDMENTS TO THE UN RECOMMENDATIONS ON THE TRANSPORT  
OF DANGEROUS GOODS, MANUAL OF TESTS AND CRITERIA  
(ST/SG/AC.10/11/Rev.4 as amended by document ST/SG/AC.10/11/Rev.4/Amend.1)**

PART I

10.4.3.3 (a) Replace "a qualified explosives expert" with "the competent authority".  
(Reference Document: ST/SG/AC.10/C.3/54, annex 1)

Figure 10.4 Amend to read as follows:



(Reference Document: ST/SG/AC.10/C.3/54, annex 1)

11.5.1.2.1, 12.5.1.2.1, 18.6.1.2.1 and 25.4.1.2.1 In the second sentence, replace "of suitable quality" with "with the specification DC04 (EN 10027-1), or equivalent A620 (AISI/SAE/ASTM), or equivalent SPCEN (JIS G 3141)" and delete the third sentence.

Insert the following text at the end:

"For quality control of the steel tubes, 1% of the tubes from each production lot shall be subjected to quality control and the following data shall be verified:

- (a) The mass of the tubes shall be  $26.5 \pm 1.5$  g, tubes to be used in one test sequence shall not differ in mass by more than 1 g;
- (b) The length of the tubes shall be  $75 \pm 0.5$  mm;
- (c) The wall thickness of the tubes measured 20 mm from the bottom of the tube shall be  $0.5 \pm 0.05$  mm;
- (d) The bursting pressure as determined by quasi-static load through an incompressible fluid shall be  $30 \pm 3$  MPa."

(Reference Document: *ST/SG/AC.10/C.3/58/Add.1*)

Table 18.1 Against "8 (d)", replace "test" with "tests".

In note b after the table, replace "This test is" with "These tests are".

(Reference Document: *ST/SG/AC.10/C.3/58/Add.1*)

18.7.1 Replace "8 (d)" with "8 (d) (i)".

(Reference Document: *ST/SG/AC.10/C.3/58/Add.1*)

18.7.1.2 (a) Replace " $31 \pm 1$  cm" with " $310 \pm 10$  mm", " $61 \pm 1$  cm" with " $610 \pm 10$  mm" and " $38$  cm" with " $380$  mm" (twice).

(Reference Document: *ST/SG/AC.10/C.3/58/Add.1*)

Figure 18.7.1.1 Replace "1.2" with "10" (twice) and change the measurements to millimetres. Insert the following new sentence below the figure: "All measurements are in millimetres."

(Reference Document: *ST/SG/AC.10/C.3/58/Add.1*)

Add a new 18.7.2 to read as follows:

**18.7.2 Test 8 (d) (ii): Modified Vented Pipe Test**

18.7.2.1 Introduction

This test is not intended for classification but is included in this Manual for evaluating the suitability of bulk substances to be transported in tanks.

The modified vented pipe test is used to assess the effect of exposure of a candidate for "ammonium nitrate emulsion or suspension or gel, intermediate for blasting explosives" to a large fire under confined, vented conditions.

#### 18.7.2.2 *Apparatus and materials*

The following items are needed:

- (a) A vented vessel consisting of mild drawn steel pipe with an inner diameter of  $265 \pm 10$  mm, a length of  $580 \pm 10$  mm and a wall thickness of  $5.0 \pm 0.5$  mm. Both the top and the base plates are made from 300 mm square,  $6.0 \pm 0.5$  mm thick mild steel plates. The top and base plates are fixed to the pipe with a fillet weld with a thickness of at least 5 mm. The top plate has a vent diameter of [85] mm  $\pm 1.0$  mm. A further two small holes are drilled in the top plate to accommodate neatly thermocouple probes;
- (b) A concrete block about 400 mm square and 50 to 75 mm thick;
- (c) A metal stand for supporting the vessel at a height of 150 mm above the concrete block;
- (d) A gas burner capable of accommodating a propane flow rate of up to 60 g/min. This rests on the concrete block under the stand. A typical example of a suitable burner is a 32-jet Mongolian wok burner;
- (e) A sheet metal shield to protect the propane flame from side winds. This can be fabricated from approximately 0.5 mm thick galvanised sheet metal. The diameter of the wind shield is 600 mm and the height is 250 mm. Four adjustable vents 150 mm wide and 100 mm high are spaced equally around the shield to ensure adequate air reaches the gas flame;
- (f) Propane bottle(s) connected via a manifold and fed into a pressure regulator. Other fuel gases may be used providing the specified heating rate is obtained. The pressure regulator should reduce the propane bottle pressure from 600 kPa down to about 150 kPa. The gas then flows through a gas rotameter capable of measuring up to 60 g/min of propane and a needle valve. An electrical solenoid valve is used to switch the propane flow on and off remotely. Typically three 9 kg propane bottles will achieve the desired gas flow rate for the duration of up to five tests. The gas pressure and flow are regulated to give a heating rate of  $3.3 \pm 0.3$  K/min when measured by the calibration procedure;

- (g) Three thermocouples with 500 (2) and 100 (1) mm long stainless steel probes and fiber-glass coated lead wires;
- (h) A data-logger capable of recording the output from the thermocouples;
- (i) Cine or video cameras, preferably high speed and normal speed, to record events in colour;
- (j) Pure water for calibration;
- (k) The ANE to be tested;
- (l) Blast gauges, radiometers and associated recording equipment may also be used.

#### 18.7.2.3 *Calibration*

18.7.2.3.1 The vessel is filled to the 75% level (i.e. to a depth of 435 mm) with the pure water, and heated using the procedure specified in Section 18.7.1.4. Water is heated from ambient temperature up to 90 °C, monitoring temperature by the thermocouple in the water. Temperature-time data must fit a straight line whose slope will be the “calibration heating rate” for the given combination of vessel and heat source.

18.7.2.3.2 The gas pressure and flow must be regulated to give a heating rate of  $3.3 \pm 0.3$  K/min.

18.7.2.3.3 This calibration must be performed prior to the testing of any ANE substance, though the same calibration can be applied to any test conducted within a day of the calibration provided no change is made to the vessel construction or gas supply. New calibration has to be made every time that the burner is changed.

#### 18.7.2.4 *Procedure*

18.7.2.4.1 The concrete block is placed on a sandy base and levelled using a spirit level. The propane burner is positioned in the centre of the concrete block and connected to the gas supply line. The metal stand is placed over the burner.

18.7.2.4.2 The vessel is placed vertically on the stand and secured from tipping over. The vessel is filled to 75 % of its volume (to a height of 435 mm) with the ANE under test without tamping during loading. The initial temperature of the ANE must be recorded. The substance is carefully packed to prevent adding voids. The wind shield is positioned around the base of the assembly to protect the propane flame from heat dissipation due to side winds.

18.7.2.4.3 The thermocouple positions are as follows:

- the first 500 mm long probe (T1) in the gas flame;
- the second 500 mm long probe (T2) extending all the way into the vessel so that the tip is positioned 80 to 90 mm from the bottom of the vessel;
- the third 100 mm long probe (T3) in the headspace 20 mm into the vessel.

The thermocouples are connected to the data-logger and the thermocouple leads and data-logger are adequately protected from the test apparatus in case of explosion.

18.7.2.4.4 Propane pressure and flow is checked and adjusted to the values used during the water calibration described in Section 18.7.2.3. Video cameras and any other recording equipment are checked and started. Thermocouple functioning is checked and data logging is started, with a time set between thermocouple readings not exceeding 10 seconds, and preferably shorter. The test should not be performed under conditions where the wind speed exceeds 6 m/s. With higher wind speed, additional precautions against side winds are required to avoid dissipation of the heat.

18.7.2.4.5 The propane burner may be started locally or remotely and all workers immediately retreat to a safe location. Progress of the test is followed by monitoring thermocouple readings and closed circuit television images. The start time of the trial is defined by the time at which the flame thermocouple trace T1 first begins to rise.

18.7.2.4.6 The gas reservoir should be large enough to bring the substance to a possible reaction and provide a fire duration lasting beyond total consumption of the test sample. If the vessel does not rupture, the system should be allowed to cool down before carefully dismantling the test set-up.

18.7.2.4.7 The test outcome is determined by whether or not a rupture of the vessel is observed when the test reaches conclusion. Evidence of test conclusion is based on:

- The visual and aural observation of vessel rupture accompanied by loss of thermocouple traces, or
- The visual and aural observation of vigorous venting accompanied by peaking of both vessel thermocouple traces and no substance remains in the vessel, or
- The visual observation of decreased levels of fuming following the peaking of both vessel thermocouple traces at temperatures in excess of 300 °C and no substance remains in the vessel.

For the purposes of assessing results, the term "rupture" includes any failure of welds and any fracture of metal in the vessel.

18.7.2.4.8 The test is performed two times unless a positive result is observed.

18.7.2.5 *Test criteria and method of assessing results*

The test result is considered "+" and the substance should not be transported in tanks as a dangerous good of Class 5.1 if an explosion is observed in any trial. Explosion is evidenced by rupture of the vessel. Once the substance is consumed in both trials and no rupture of the vessel is observed, then the result is considered "-".

18.7.2.6 *Examples of results*

<b>Substances</b>	<b>Result</b>
76.0 ammonium nitrate / 17.0 water / 5.6 paraffin oil / 1.4 PIBSA emulsifier	-
84.0 ammonium nitrate / 9.0 water / 5.6 paraffin oil / 1.4 PIBSA emulsifier	+
67.7 ammonium nitrate / 12.2 sodium nitrate / 14.1 water / 4.8 paraffin oil / 1.2 PIBSA emulsifier	-
67.4 ammonium nitrate / 15.0 methylamine nitrate / 12.0 water / 5.0 glycol / 0.6 thickener	-
71.4 ammonium nitrate / 14.0 hexamine nitrate / 14.0 water / 0.6 thickener	-

".

(Reference Document: ST/SG/AC.10/C.3/58/Add.1)

### PART III

32.3.1.6 (b) Insert "or environmentally hazardous" at the end.

(Reference Document: ST/SG/AC.10/C.3/56/Add.1)

32.3.1.7 (c) In the table, replace "-5 and below" with "no limit".

(Reference Document: ST/SG/AC.10/C.3/54, annex 1)

38.3.2.2 In the definition of *Aggregate lithium content* delete "or lithium equivalent content".

Delete the definitions of *Equivalent lithium content* and *Lithium-equivalent content*.

In the definition of *Large battery*, insert the following phrase at the end ", or in the case of a lithium ion battery, means a battery with a Watt-hour rating of more than 6200 Wh."

In the definition of *Large cell*, insert the following phrase at the end ", or in the case of a lithium ion cell, means a cell with a Watt-hour rating of more than 150 Wh."

In the definition of *Small battery*, insert the following phrase at the end ", or in the case of a lithium ion battery, means a battery with a Watt-hour rating of not more than 6200 Wh".

In the definition of *Small cell*, insert the following phrase at the end ", or in the case of a lithium ion cell, means a cell with a Watt-hour rating of not more than 150 Wh".

Add a new definition to read as follows:

"*Watt-hour rating*, expressed in Watt-hours, is calculated by multiplying a cell's or battery's rated capacity, in ampere-hours, by its nominal voltage."

(Reference Document: ST/SG/AC.10/C.3/58/Add.1)

38.3.3 In the last sentence, replace "in which the aggregate lithium content of all anodes, when fully charged, is more than 500g" with "of a size comparable to a large battery".

(Reference Document: ST/SG/AC.10/C.3/58/Add.1)

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