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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

Fifty-fourth session

Geneva, 26 November-4 December 2018

Item 2 (a) of the provisional agenda

**Recommendations made by the Sub-Committee
on its fifty-first, fifty-second
and fifty-third sessions and pending issues:
review of draft amendments already
adopted during the biennium**

Consolidated list of draft amendments

Note by the secretariat*

This document contains a consolidated list of draft amendments adopted by the Sub-Committee of Experts at its fifty-first, fifty-second and fifty-third sessions, as follows:

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* In accordance with the programme of work of the ^{Sub}-Committee for 2017–2018 approved by the Committee at its seventh session (see ST/SG/AC.10/C.3/100, paragraph 98 and ST/SG/AC.10/44, para. 14).



Part I Draft amendments to the twentieth revised edition of the Recommendations on the Transport of Dangerous Goods, Model Regulations (ST/SG/AC.10/1/Rev.20)

Chapter 1.1

[1.1.1.2 Amend paragraph (c) to read as follows:

“(c) Lithium battery powered cargo tracking devices or data loggers attached to packages, overpacks or cargo transport units if they meet the following:

- (i) Each cell or battery meets the applicable provisions of 2.9.4;
- (ii) The batteries and cells are afforded protection by an outer casing of adequate strength and design or by the device in which they are contained to prevent damage under normal conditions of transport.”.]

(Reference document: ST/SG/AC.10/C.3/102/Add.1)

Chapter 1.2

1.2.1 Amend the definitions hereafter as follows:

Dose rate: Insert the following new definition, in alphabetical order:

“Dose rate means the ambient dose equivalent or the directional dose equivalent, as appropriate, per unit time, measured at the point of interest.”.

(Reference document: ST/SG/AC.10/C.3/2018/54)

1.2.1 Radiation level: Delete the entry.

(Reference document: ST/SG/AC.10/C.3/2018/54)

1.2.1 Transport index: In the first sentence after “SCO-I” add “or SCO-III”.

(Reference document: ST/SG/AC.10/C.3/2018/54)

Chapter 1.4

1.4.1 table, Add the new entries “0512” and “0513” to read as follows:

“Class 1, Division 1.4 UN Nos. 0104, 0237, 0255, 0267, 0289, 0361, 0365, 0366, 0440, 0441, 0455, 0456, 0500, 0512 and 0513”.

(Reference document: ST/SG/AC.10/C.3/106/Add.1)

1.4.3 In table 1.4.1, add the following new row after “Class 1, division 1.5”:

“Class 1, Division 1.6: explosives”.

(Reference document: ST/SG/AC.10/C.3/104/Add.1)

[1.4.3.1.2 In table 1.4.1, amend the line for Division 6.2 to read as follows:

Division 6.2	Infectious substances of Category A (UN 2814 and UN 2900) and medical waste of Category A (UN 3549)”.]
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(Reference document: ST/SG/AC.10/C.3/102/Add.1)

1.4.3.2.3 In footnote 2, replace “INFCIRC/225/Rev.4 (corrected), IAEA Vienna (1999)” by “INFCIRC/225/Rev.5, IAEA, Vienna (2011)”.

(Reference document: ST/SG/AC.10/C.3/106/Add.1)

Chapter 1.5

1.5.1.1 In the first sentence, replace “to persons” by “to people”. Amend the second and third sentences to read “These Regulations are based on the IAEA “Regulations for the Safe Transport of Radioactive material, 2018 Edition, IAEA Safety Standards Series No. SSR-6, (Rev.1) IAEA, Vienna 2018). Explanatory material can be found in “Advisory Material for the IAEA Regulations for the Safe Transport of Radioactive Material (2018 Edition)”, Safety Standard Series No. SSG-26, (Rev.1) IAEA Vienna (2019).”

(Reference document: ST/SG/AC.10/C.3/2018/54)

1.5.1.2 In the first sentence, replace “persons” by “people” and replace “from the effects of radiation in the transport” by “from harmful effects of ionizing radiation during the transport of radioactive material”.

In (b), replace “radiation levels” by “dose rate”.

In the last sentence, replace “Finally” by “Thirdly” and add the following new sentence at the end: “Finally, further protection is provided by making arrangements for planning and preparing emergency response to protect people, property and the environment.”.

(Reference document: ST/SG/AC.10/C.3/2018/54)

1.5.1.5.1 In sub-paragraph (a) after “5.2.1.7,” add “5.4.1.5.7.1 (f) (i) and (ii), 5.4.1.5.7.1 (i),” and after “7.1.8.3.1” add “7.1.8.4.3”.

(Reference document: ST/SG/AC.10/C.3/2018/54)

1.5.1.5.2 Delete the second sentence.

(Reference document: ST/SG/AC.10/C.3/2018/54)

1.5.2.4 In the last sentence replace “individual monitoring or workplace monitoring” by “workplace monitoring or individual monitoring”.

(Reference document: ST/SG/AC.10/C.3/2018/54)

1.5.4.2 In the second sentence, replace “through alternative means” by “through means alternative to the other provisions of these Regulations,” and replace “for single or a planned series of multiple consignments” by “for a single *consignment* or a planned series of multiple *consignments*”. In the third sentence, at the end, after “applicable requirements” add “in these Regulations”.

(Reference document: ST/SG/AC.10/C.3/2018/54)

1.5.6.1 In the introductory sentence, replace “radiation level” by “dose rate”. In (b), at the beginning, replace “carrier, consignor or consignee” by “*consignor, carrier, or consignee*”. In (b) (iii), replace “similar circumstances” by “the causes and circumstances similar to those”. In (b) (iv), replace “on corrective or protective actions” by “the corrective or protective actions”.

(Reference document: ST/SG/AC.10/C.3/2018/54)

Chapter 2.1

2.1.3.6.4 (b) In the Note, delete “such as described in ISO 12097-3” and add the following new sentence:

“One such method is described in ISO 14451-2 using a heating rate of 80 K/min.”

(Reference document: ST/SG/AC.10/C.3/106/Add.1)

Chapter 2.2

2.2.2.1 (a) (ii) Replace “ISO 10156:2010” by “ISO 10156:2017”.

(Reference document: ST/SG/AC.10/C.3/106/Add.1)

2.2.2.1 (b) (iii) In the Note, replace “ISO 10156:2010” by “ISO 10156:2017”.

(Reference document: ST/SG/AC.10/C.3/106/Add.1)

2.2.3 (a) and (d) Replace “ISO 10156:2010” by “ISO 10156:2017”.

(Reference document: ST/SG/AC.10/C.3/106/Add.1)

Chapter 2.4

2.4.3.2.3.1 In the Note, delete “except for type G”.

(Reference document: ST/SG/AC.10/C.3/106/Add.1)

Chapter 2.5

2.5.3.2.4 In the table, for “DI-(4-tert-BUTYLCYCLOHEXYL) PEROXYDICARBONATE”, for concentration “≤ 42 as a paste”, in column “Packing Method”, replace “OP7” by “OP8” and in column “Number (Generic entry)”, replace “3116” by “3118”.

(Reference document: ST/SG/AC.10/C.3/106/Add.1)

Chapter 2.6

2.6.1 (b) Delete “, rickettsiae”.

(Reference document: ST/SG/AC.10/C.3/106/Add.1)

2.6.3.1.1 Delete “, rickettsiae”.

(Reference document: ST/SG/AC.10/C.3/106/Add.1)

[2.6.3.1.6 Amend to read as follows:

“Medical or clinical wastes are wastes derived from the veterinary treatment of animals, the medical treatment of humans or from bio-research.”].

(Reference document: ST/SG/AC.10/C.3/102/Add.1)

[2.6.3.2.1 Replace “or UN 3373” by “, UN 3373 or UN 3549”].

(Reference document: ST/SG/AC.10/C.3/102/Add.1)

2.6.3.2.2.2, Note 3 Delete “, mycoplasmas, rickettsia”.

(Reference document: ST/SG/AC.10/C.3/106/Add.1)

[2.6.3.2.3.9 (a) In the parenthesis, after “UN 3291” add “and UN 3549”].

(Reference document: ST/SG/AC.10/C.3/102/Add.1)

[2.6.3.5.1 Amend to read as follows:

2.6.3.5.1 Medical or clinical waste containing:

(a) Category A infectious substances shall be assigned to UN 2814, UN 2900 or UN 3549 as appropriate. Solid medical waste containing Category A infectious substances generated from the medical treatment of humans or veterinary treatment of animals may be assigned to UN 3549. The UN 3549 entry shall not be used for waste from bio-research or liquid waste;

(b) Category B infectious substances shall be assigned to UN 3291.”]

(Reference document: ST/SG/AC.10/C.3/102/Add.1)

Chapter 2.7

2.7.2.1.1 Replace “2.7.2.4.2” by “2.7.2.4”.

(Reference document: ST/SG/AC.10/C.3/2018/54)

Table 2.7.2.1.1 For UN 2913, in the Proper shipping name, replace “SCO-I or SCO-II” by “SCO-I, SCO-II or SCO-III”.

(Reference document: ST/SG/AC.10/C.3/2018/54)

2.7.2.2.2 In (a), replace “the International Basic Safety Standards for Protection against Ionizing Radiation and for the Safety of Radiation Sources, Safety Series No.115, IAEA, Vienna (1996)” by “Radiation Protection and Safety of Radiation Sources: International Basic Safety Standards, IAEA Safety Standards Series No. GSR Part 3, IAEA, Vienna (2014)”.

In (b), at the end, replace “the International Basic Safety Standards for Protection against Ionizing Radiation and for the Safety of Radiation Sources, Safety Series No.115, IAEA, Vienna (1996)” by “GSR Part 3”.

(Reference document: ST/SG/AC.10/C.3/2018/54)

2.7.2.2.3 Replace “daughter nuclide” by “progeny nuclide” (twice). At the end, replace “daughter nuclides” by “progeny nuclides”.

(Reference document: ST/SG/AC.10/C.3/2018/54)

Table 2.7.2.2.1 Add the following rows in proper order

Ba-135m	2×10^1	6×10^{-1}	1×10^2	1×10^6
Ge-69	1×10^0	1×10^0	1×10^1	1×10^6
Ir-193m	4×10^1	4×10^0	1×10^4	1×10^7
Ni-57	6×10^{-1}	6×10^{-1}	1×10^1	1×10^6
Sr-83	1×10^0	1×10^0	1×10^1	1×10^6
Tb-149	8×10^{-1}	8×10^{-1}	1×10^1	1×10^6
Tb-161	3×10^1	7×10^{-1}	1×10^3	1×10^6

In table note (b), at the end of the introductory sentence, add “(the activity to be taken into account is that of the parent nuclide only). After “Th-nat” and “U-nat”, insert a reference to footnote *. Footnote * reads: “* In the case of Th-natural, the parent nuclide is Th-232, in the case of U-natural the parent nuclide is U-238.”.

(Reference document: ST/SG/AC.10/C.3/2018/54)

2.7.2.3.1.2 In sub-paragraph (c) delete “that meet the requirements of 2.7.2.3.1.3.”. Under sub-paragraph (c), delete sub-paragraph (ii) and renumber sub-paragraph (iii) as (ii).

(Reference document: ST/SG/AC.10/C.3/2018/54)

2.7.2.3.1.3 Delete and add “2.7.2.3.1.3 Deleted”.

(Reference document: ST/SG/AC.10/C.3/2018/54)

2.7.2.3.2 In the introductory sentence before (a), replace “two” by “three”. Add the following new sub-paragraph (c):

“(c) SCO-III: A large solid object which, because of its size, cannot be transported in a type of package described in these Regulations and for which:

- (i) All openings are sealed to prevent release of radioactive material during conditions defined in 4.1.9.2.4.(e))
- (ii) The inside of the object is as dry as practicable;
- (iii) The non-fixed contamination on the external surfaces does not exceed the limits specified in 4.1.9.1.2.

The non-fixed contamination plus the fixed contamination on the inaccessible surface averaged over 300 cm² does not exceed 8×10^5 Bq/cm² for beta and gamma emitters and low toxicity alpha emitters, or 8×10^4 Bq/cm² for all other alpha emitters.”.

(Reference document: ST/SG/AC.10/C.3/2018/54)

2.7.2.3.3.5 (b) After “a free drop of 1.4 kg”, replace “through 1 m” by “from a height of 1 m”.

(Reference document: ST/SG/AC.10/C.3/2018/54)

2.7.2.3.3.5 (c) After “a free vertical drop of 1.4 kg”, replace “through 1 m” by “from a height of 1 m”.

(Reference document: ST/SG/AC.10/C.3/2018/54)

2.7.2.3.3.7 In sub-paragraph (b), replace “with specimen” by “and the specimen”. In sub-paragraph (e), replace “with the specimen” by “and the specimen”.

(Reference document: ST/SG/AC.10/C.3/2018/54)

2.7.2.3.3.8 In sub-paragraph (a), in (ii), replace “shall be heated” by “shall then be heated”.

(Reference document: ST/SG/AC.10/C.3/2018/54, as amended)

2.7.2.3.4.1 In sub-paragraph (a), replace “radiation level” by “dose rate”.

(Reference document: ST/SG/AC.10/C.3/2018/54)

2.7.2.3.5 In sub-paragraph (e), replace “limits provided in” by “the requirements of”.

(Reference document: ST/SG/AC.10/C.3/2018/54)

2.7.2.3.6 At the beginning, replace “A fissile material” by “Fissile material”.

(Reference document: ST/SG/AC.10/C.3/2018/54)

2.7.2.4.1.3 Add additional sub-paragraphs (e) and (f):

“(e) *Reserved*;

(f) If the package contains fissile material, one of the provisions of sub-paragraphs (a)–(f) of 2.7.2.3.5 shall apply.”

(Reference document: ST/SG/AC.10/C.3/2018/54)

2.7.2.4.1.4 Add additional sub-paragraph (c):

“(c) If the package contains fissile material, one of the provisions of subparagraphs (a) to (f) of 2.7.2.3.5 shall apply.”

Add “and” at the end of existing (b) (ii).

(Reference document: ST/SG/AC.10/C.3/2018/54)

2.7.2.4.1.7 Add additional sub-paragraph (e):

“(e) If the packaging has contained fissile material, one of the provisions of sub-paragraphs (a)–(f) of 2.7.2.3.5 or one of the provisions for exclusion in 2.7.1.3 shall apply.”

Transfer the “and” from the end of sub-paragraph (c) (ii) to the end of (d).

(Reference document: ST/SG/AC.10/C.3/2018/54)

Chapter 2.9

2.9.2 Under “Other substances or articles presenting a danger during transport...”, after “3359 FUMIGATED CARGO TRANSPORT UNIT”, add “3363 DANGEROUS GOODS IN ARTICLES or”

(Reference document: ST/SG/AC.10/C.3/104/Add.1)

2.9.4 (g) After “Manufacturers and subsequent distributors of cells or batteries” add “manufactured after 30 June 2003”.

(Reference document: ST/SG/AC.10/C.3/102/Add.1)

Chapter 3.2

Dangerous goods list

Add the following new entries:

(1)	(2)	(3)	(4)	(5)	(6)	(7a)	(7b)	(8)	(9)	(10)	(11)
0511	DETONATORS, ELECTRONIC programmable for blasting†	1.1B				0	E0	P131			
0512	DETONATORS, ELECTRONIC programmable for blasting†	1.4B				0	E0	P131			
0513	DETONATORS, ELECTRONIC programmable for blasting†	1.4S			347	0	E0	P131			

(Reference document: ST/SG/AC.10/C.3/106/Add.1)

(1)	(2)	(3)	(4)	(5)	(6)	(7a)	(7b)	(8)	(9)	(10)	(11)
[3549	MEDICAL WASTE, CATEGORY A, AFFECTING HUMANS, solid or MEDICAL WASTE, CATEGORY A, AFFECTING ANIMALS only, solid	6.2			395	0	E0	P622 LP622			]

(Reference document: ST/SG/AC.10/C.3/106/Add.1, replaces the amendment in annex II of document ST/SG/AC.10/C.3/102/Add.1)

(1)	(2)	(3)	(4)	(5)	(6)	(7a)	(7b)	(8)	(9)	(10)	(11)
1390	ALKALI METAL AMIDES	4.3		I	182	0	E0	P403 IBC04	B1	T9	TP7 TP33

(Reference document: ST/SG/AC.10/C.3/104/Add.1)

For UN Nos. 0340, 0341, 0342 and 0343, insert “393” in column (6).

(Reference document: ST/SG/AC.10/C.3/106/Add.1)

[For UN Nos. 1002, 1006, 1013, 1046, 1056, 1058, 1065, 1066, 1080, 1952, 1956, 2036, 3070, 3163, 3297, 3298 and 3299, in column (6), insert “392”.]

(Reference document: ST/SG/AC.10/C.3/104/Add.1)

For UN Nos. 1092, 1098, 1143, 1163, 1238, 1239, 1244, 1595, 1695, 1752, 1809, 2334, 2337, 2646 and 3023, in column (11) delete “TP35”.

(Reference document: ST/SG/AC.10/C.3/106/Add.1)

For UN Nos. 1135, 1182, 1251, 1541, 1580, 1605, 1670, 1810, 1834, 1838, 1892, 2232, 2382, 2474, 2477, 2481, 2482, 2483, 2484, 2485, 2486, 2487, 2488, 2521, 2605, 2606, 2644, 2668, 3079 and 3246, in column (11) delete “TP37”.

(Reference document: ST/SG/AC.10/C.3/106/Add.1)

For UN Nos. 1372, 1387, 1856, 1857 and 3360, in column (6), delete “117” and insert “123”.

(Reference document: ST/SG/AC.10/C.3/106/Add.1)

For UN 2381, in column (11) delete “TP39”.

(Reference document: ST/SG/AC.10/C.3/106/Add.1)

[For UN 2383, in column (6), delete “386”.]

(Reference document: : ST/SG/AC.10/C.3/104/Add.1)

[For UN 2522, in column (2), add “, STABILIZED” at the end and in column (6) add “386”.]

(Reference document: ST/SG/AC.10/C.3/104/Add.1)

For UN Nos. 2555, 2556, 2557 and 3380, insert “394” in column (6).

(Reference document: ST/SG/AC.10/C.3/106/Add.1)

For UN Nos. 3091 and 3481, insert “390” in column (6).

(Reference document: ST/SG/AC.10/C.3/106/Add.1)

For UN 3148, in column (11) delete “TP38”.

(Reference document: ST/SG/AC.10/C.3/106/Add.1)

For UN 3164, add “PP32” in column (9).

(Reference document: ST/SG/AC.10/C.3/104/Add.1)

For UN 3291, in column (5), delete “II”.

(Reference document: ST/SG/AC.10/C.3/104/Add.1)

For UN 3363, in column (2), at the beginning of the description, add “DANGEROUS GOODS IN ARTICLES or”.

(Reference document: ST/SG/AC.10/C.3/104/Add.1)

For UN 3529, in column (6), add “356”.

(Reference document: ST/SG/AC.10/C.3/106/Add.1)

Chapter 3.3

Special provision 239 Delete the last sentence.

(Reference document: ST/SG/AC.10/C.3/102/Add.1)

Special provision 301 In the first sentence, replace “machinery or apparatus” by “articles such as machinery, apparatus or devices”. In the second, third, fourth and fifth sentences and in the last sentence, replace “machinery or apparatus” by “articles”.

(Reference document: ST/SG/AC.10/C.3/104/Add.1)

Special provision 356 After “in vehicle, vessels” add “, machinery, engines” (twice). Replace “aircrafts” by “aircraft” (twice).

(Reference document: ST/SG/AC.10/C.3/106/Add.1)

Special provision 360 Replace “consigned under” by “assigned to” and add the following sentence at the end:

“Lithium batteries installed in cargo transport units, designed only to provide power external to the transport unit shall be assigned to entry UN 3536 LITHIUM BATTERIES INSTALLED IN CARGO TRANSPORT UNIT.”

(Reference document: ST/SG/AC.10/C.3/102/Add.1)

Special provision 363 (j) In the last paragraph, delete “in accordance with 5.3.1.1.2” and add the following new sentence, at the end: “Placards shall correspond to the class indicated in Column 3 of the Dangerous Goods List of Chapter 3.2 and shall conform to the specifications given in 5.3.1.2.1;”.

(Reference document: ST/SG/AC.10/C.3/106/Add.1)

Special provision 363 (k) In the last paragraph, delete “in accordance with 5.3.1.1.2” and add the following new sentence at the end: “Placards shall correspond to the class indicated in Column 3 of the Dangerous Goods List in Chapter 3.2 and shall conform to the specifications given in 5.3.1.2.1;”.

(Reference document: ST/SG/AC.10/C.3/106/Add.1)

Special provision 376 Amend the Note to read as follows:

“NOTE: In assessing a cell or battery as damaged or defective, an assessment or evaluation should 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.”.*

(Reference document: ST/SG/AC.10/C.3/106/Add.1)

Special provision 379 (d) (i) Replace “ISO 11114-1:2012” by “ISO 11114-1:2012 + Amd 1:2017”.

(Reference document: ST/SG/AC.10/C.3/102/Add.1)

Special provision 388 At the end of the seventh paragraph, add the following sentence:

“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 shall be assigned to the entry UN 3536 LITHIUM BATTERIES”.

(Reference document: ST/SG/AC.10/C.3/102/Add.1)

Add the following new special provisions:

“390 When a package contains a combination of lithium batteries contained in equipment and lithium batteries packed with equipment, the following requirements apply for the purposes of package marking and documentation:

(a) the package shall be marked “UN 3091 Lithium metal batteries packed with equipment”, or “UN 3481 Lithium ion batteries packed with equipment”, as appropriate. If a package contains both lithium ion batteries and lithium metal batteries packed with and contained in equipment, the package shall be marked as required for both battery types. However, button cell batteries installed in equipment (including circuit boards) need not be considered.

(b) the transport document shall indicate “UN 3091 Lithium metal batteries packed with equipment” or “UN 3481 Lithium ion batteries packed with equipment”, as appropriate. If a package contains both lithium metal batteries and lithium ion batteries packed with and contained in equipment, then the transport document shall indicate both “UN 3091 Lithium metal batteries packed with equipment” and “UN 3481 Lithium ion batteries packed with equipment.”.

(Reference document: ST/SG/AC.10/C.3/106/Add.1)

“393 The nitrocellulose shall meet the criteria of the Bergmann-Junk test or methyl violet paper test in the Manual of Tests and Criteria Appendix 10. Tests of type 3 (c) need not be applied.”

(Reference document: ST/SG/AC.10/C.3/106/Add.1)

“394 The nitrocellulose shall meet the criteria of the Bergmann-Junk test or methyl violet paper test in the Manual of Tests and Criteria Appendix 10.”

(Reference document: ST/SG/AC.10/C.3/106/Add.1)

“395 This entry shall only be used for solid medical waste of Category A transported for disposal.”.

(Reference document: ST/SG/AC.10/C.3/106/Add.1)

Appendix A

[In the table, for Division 6.2, under “Specific entries”, add the following new entries:

6.2		3549	MEDICAL WASTE, CATEGORY A, AFFECTING HUMANS, solid
6.2		3549	MEDICAL WASTE, CATEGORY A, AFFECTING ANIMALS only, solid

]

(Reference document: ST/SG/AC.10/C.3/102/Add.1)

Appendix B

In the definition of “Detonators”, replace “DETONATORS for blasting, both ELECTRIC and NON-ELECTRIC” by “DETONATORS for blasting, ELECTRIC, NON-ELECTRIC, and ELECTRONIC programmable”.

(Reference document: ST/SG/AC.10/C.3/106/Add.1)

Add the following new definition for “DETONATORS, ELECTRONIC programmable for blasting”:

“DETONATORS, ELECTRONIC programmable for blasting

Detonators with enhanced safety and security features, utilizing electronic components to transmit a firing signal with validated commands and secure communications. Detonators of this type cannot be initiated by other means.”

(Reference document: ST/SG/AC.10/C.3/106/Add.1)

Alphabetical index

[Add the following new entries in alphabetical order:

MEDICAL WASTE, CATEGORY A, AFFECTING HUMANS, solid	6.2	3549
MEDICAL WASTE, CATEGORY A, AFFECTING ANIMALS only, solid	6.2	3549

]

(Reference document: ST/SG/AC.10/C.3/102/Add.1)

Add the following new entry in alphabetical order:

DANGEROUS GOODS IN ARTICLES	9	3363
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(Reference document: ST/SG/AC.10/C.3/104/Add.1)

[In column “Name and description” for the entry “2-DIMETHYLAMINOETHYL-METHACRYLATE” add at the end “, STABILIZED”.]

(Reference document: ST/SG/AC.10/C.3/104/Add.1)

Chapter 4.1

[4.1.1 In the note, replace “(Division 6.2)” by “(Division 6.2, UN 2814 and UN 2900)”. Amend the end of the sentence to read “(P201 and LP02 for Class 2 and P620, P621, P622, IBC620, LP621 and LP622 for Division 6.2)”.]

(Reference document: ST/SG/AC.10/C.3/102/Add.1)

4.1.1.3 Add a new 4.1.1.3.1 to read as follows:

“4.1.1.3.1 Packagings, including IBCs and large packagings, may conform to one or more than one successfully tested design type and may bear more than one mark”.

(Reference document: ST/SG/AC.10/C.3/106/Add.1)

4.1.4.1, packing instruction P003 For packing instruction PP32, after “3358”, add “and robust articles consigned under UN 3164”.

(Reference document: ST/SG/AC.10/C.3/104/Add.1)

4.1.4.1, packing instruction P200 In (4), replace the reference on the last line to “ISO 24431:2006 Gas cylinders – Cylinders for compressed and liquefied gases (excluding acetylene) – Inspection at time of filling” by “ISO 24431:2016 Gas cylinders – Seamless, welded and composite cylinders for compressed and liquefied gases (excluding acetylene) – Inspection at time of filling”.

(Reference document: ST/SG/AC.10/C.3/102/Add.1)

[4.1.4.1 Add the following new packing instruction P622:

P622	PACKING INSTRUCTION	P622
This instruction applies to UN 3549.		
The following packagings are authorized provided the general provisions of 4.1.1 and 4.1.3 are met:		
Inner packagings	Intermediate packagings	Outer packagings
metal plastics	metal plastics	Boxes steel (4A) aluminium (4B) plywood (4D) fibreboard (4G) other metal (4N) plastics, solid (4H2) Drums steel (1A2) aluminium (1B2) plywood (1D) fibre (1G) other metal (1N2) plastics (1H2) Jerricans steel (3A2) aluminium (3B2) plastics (3H2)
The outer packaging shall conform to the packing group I performance level for solids.		

Additional requirements:

1. Fragile articles shall be contained in either a rigid inner packaging or rigid intermediate packagings.
2. Inner packagings containing sharps objects such as broken glass and needles shall be rigid and resistant to puncture.
3. The inner packaging, the intermediate packaging, and the outer packaging shall be capable of retaining liquids. Outer packagings that are not capable of retaining liquids by design shall be fitted with a liner or suitable measure of retaining liquids.
4. The inner packaging and/or the intermediate packaging may be flexible. When flexible packagings are used, they shall be capable of passing the impact resistance test to at least 165 g according to ISO 7765-1:1988 "Plastics film and sheeting – Determination of impact resistance by the free-falling dart method – Part 1: Staircase methods" and the tear resistance test to at least 480 g in both parallel and perpendicular planes with respect to the length of the bag in accordance with ISO 6383-2:1983 "Plastics – Film and sheeting – Determination of tear resistance – Part 2: Elmendorf method". The maximum net mass of each flexible inner packaging shall be 30kg.
5. Each flexible intermediate packaging shall contain only one inner packaging.
6. Inner packagings containing a small amount of free liquid may be included in intermediate packaging provided that there is sufficient absorbent or solidifying material in the inner or intermediate packaging to absorb or solidify all the liquid content present. Suitable absorbent material which may withstand the temperatures and vibrations liable to occur under normal conditions of transport shall be used.
7. Intermediate packagings shall be secured in outer packagings with suitable cushioning and/or absorbent material.

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(Reference document: ST/SG/AC.10/C.3/106/Add.1, replaces the amendment in annex II of document ST/SG/AC.10/C.3/102/Add.1)

4.1.4.1 Amend packing instruction P801 to read as follows:

P801	PACKING INSTRUCTION	P801
This instruction applies to UN Nos. 2794, 2795 or 3028.		
The following packagings are authorized, provided that the provisions of 4.1.1.1 , 4.1.1.2 , 4.1.1.6 , and 4.1.3 are met:		
(1) Rigid outer packagings, wooden slatted crates or pallets.		
Additionally, the following conditions shall be met:		
(a) Batteries stacks shall be in tiers separated by a layer of electrically non-conductive material; (b) Battery terminals shall not support the weight of other superimposed elements; (c) Batteries shall be packaged or secured to prevent inadvertent movement; (d) Batteries shall not leak under normal conditions of transport or appropriate measures shall be taken to prevent the release of electrolyte from the package (e.g. individually packaging batteries or other equally effective methods); and (e) Batteries shall be protected against short circuits.		
(2) Stainless steel or plastics bins may also be used to transport used batteries.		
Additionally, the following conditions shall be met:		
(a) The bins shall be resistant to the electrolyte that was contained in the batteries; (b) The bins shall not be filled to a height greater than the height of their sides; (c) The outside of the bins shall be free of residues of electrolyte contained in the batteries; (d) Under normal conditions of transport, no electrolyte shall leak from the bins; (e) Measures shall be taken to ensure that filled bins cannot lose their content; and (f) Measures shall be taken to prevent short circuits (e.g. batteries are discharged, individual protection of the battery terminals, etc.).		

(Reference document: ST/SG/AC.10/C.3/106/Add.1)

4.1.4.1, packing instruction P903 Add the following new paragraph (5):

“(5) For packaging containing both cells or batteries packed with equipment and contained in equipment:

(a) For cells and batteries, packagings that completely enclose the cells or batteries, then placed with equipment in a packaging conforming to the requirements in paragraph (1) of this packing instruction; or

(b) Packagings conforming to the requirements in paragraph (1) of this packing instruction, then placed with the equipment in a strong outer packaging constructed of suitable material, and of adequate strength and design in relation to the packaging capacity and its intended use. The outer packaging shall be constructed in such a manner as to prevent accidental operation during transport and need not meet the requirements of 4.1.1.3.

The equipment shall be secured against movement within the outer packaging.

Devices such as radio frequency identification (RFID) tags, watches and temperature loggers, which are not capable of generating a dangerous evolution of heat, may be transported when intentionally active in strong outer packagings. When active, these devices shall meet defined standards for electromagnetic radiation to ensure that the operation of the devices does not interfere with aircraft systems.”.

(Reference document: ST/SG/AC.10/C.3/106/Add.1)

4.1.4.1, packing instruction P907 In the text after the introductory sentence: in the first sentence, replace “machinery or apparatus” by “article”. In the second sentence replace “machinery or apparatus” by “an article”. In the fifth sentence replace “machinery or apparatus” by “article”. In the sixth sentence replace “machinery or apparatus” by “article”.

(Reference document: ST/SG/AC.10/C.3/106/Add.1, replaces the amendment in ST/SG/AC.10/C.3/104/Add.1, annex II)

4.1.4.2, Packing instruction IBC520 For UN No. 3119, insert the two following new entries:

UN No.	Organic peroxide	Type of IBC	Maximum quantity (litres)	Control temperature	Emergency temperature
3119	tert-Amyl peroxy-pivalate, not more than 42% as a stable dispersion in water	31HA1	1 000	0 °C	+10 °C
3119	tert-Butyl peroxy-pivalate, not more than 42% in a diluent type A	31HA1	1 000	+10 °C	+15 °C
		31A	1 250	+10 °C	+15 °C

(Reference document: ST/SG/AC.10/C.3/106/Add.1)

[4.1.4.3 Add the following new packing instruction LP622:

LP622		PACKING INSTRUCTION	LP622
This instruction applies to UN 3549.			
The following packagings are authorized provided the general provisions of 4.1.1 and 4.1.3 are met:			
Inner packagings	Intermediate packagings	Outer packagings	
metal plastics	metal plastics	steel (50A) aluminium (50B) plywood (50D) fibreboard (50G) other metal (50N) plastics (50H)	
The outer packaging shall conform to the packing group I performance level for solids.			
Additional requirement:			
1. Fragile articles shall be contained in either a rigid inner packaging or a rigid intermediate packagings. 2. Inner packagings containing sharps objects such as broken glass and needles shall be rigid and resistant to puncture. 3. The inner packaging, the intermediate packaging and the outer packaging shall be capable of retaining liquids. Outer packagings that are not capable of retaining liquids by design shall be fitted with a liner or suitable measure of retaining liquids. 4. The inner packaging and/or the intermediate packaging may be flexible. When flexible packagings are used, they shall be capable of passing the impact resistance test to at least 165g according to ISO 7765-1:1988 “Plastics film and sheeting – Determination of impact resistance by the free-falling dart method – Part 1: Staircase methods” and the tear resistance test to at least 480g in both parallel and perpendicular planes with respect to the length of the bag in accordance with ISO 6383-2:1983 “Plastics – Film and sheeting – Determination of tear resistance – Part 2: Elmendorf method”. The maximum net mass of each flexible inner packaging shall be 30kg. 5. Each flexible intermediate packaging shall contain only one inner packaging. 6. Inner packagings containing a small amount of free liquid may be included in intermediate packaging provided that there is sufficient absorbent or solidifying material in the inner or intermediate packaging to absorb or solidify all the liquid content present. Suitable absorbent material which may withstand the temperatures and vibrations liable to occur under normal conditions of transport shall be used. 7. Intermediate packagings shall be secured in outer packagings with suitable cushioning and/or absorbent material.			

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(Reference ST/SG/AC.10/C.3/106/Add.1, replaces the amendment in annex II of document ST/SG/AC.10/C.3/102/Add.1)

4.1.6.1.2 Replace "ISO 11114-1:2012" by "ISO 11114-1:2012 + Amd 1:2017".

(Reference document: ST/SG/AC.10/C.3/102/Add.1)

4.1.6.1.8 In the second sentence of the penultimate paragraph replace "annex A of ISO 10297:2006 or annex A of ISO 10297:2014" by "annex A of ISO 10297:2006, annex A of ISO 10297:2014 or annex A of ISO 10297 + Amd 1:2017".

(Reference document: ST/SG/AC.10/C.3/102/Add.1)

4.1.9.1.4 Add at the end the following new sentence: "This requirement does not apply to the internal surfaces of freight containers being used as packagings, either loaded or empty."

(Reference document: ST/SG/AC.10/C.3/2018/54)

4.1.9.1.8 Add additional sub-paragraph (e):

“(e) For packages intended to be used for shipment after storage, it shall be ensured that all packaging components and radioactive contents have been maintained during storage in a manner such that all the requirements specified in the relevant provisions of these Regulations and in the applicable certificates of approval have been fulfilled. “

(Reference document: ST/SG/AC.10/C.3/2018/54)

4.1.9.2.4 In the introductory sentence, replace “and SCO-I” by “, SCO-I and SCO-III”. Add the following new sub-paragraph (e):

- “(e) For SCO-III;
- (i) Transport shall be under exclusive use by road, rail, inland waterway or sea;
 - (ii) Stacking shall not be permitted;
 - (iii) All activities associated with the shipment, including radiation protection, emergency response and any special precautions or special administrative or operational controls that are to be employed during transport shall be described in a transport plan. The transport plan shall demonstrate that the overall level of safety in transport is at least equivalent to that which would be provided if the requirements of 6.4.7.14 (only for the test specified in 6.4.15.6, preceded by the tests specified in 6.4.15.2 and 6.4.15.3 had been met.
 - (iv) The requirements of 6.4.5.1 and 6.4.5.2 for a Type IP-2 package shall be satisfied, except that the maximum damage referred to in 6.4.15.4 may be determined based on provisions in the transport plan, and the requirements of 6.4.15.5 are not applicable.
 - (v) The object and any shielding are secured to the conveyance in accordance with 6.4.2.1.
 - (vi) The shipment shall be subject to multilateral approval.”.

(Reference document: ST/SG/AC.10/C.3/2018/54)

Chapter 4.2

Add the following new 4.2.3.7.3:

“4.2.3.7.3 The date at which the actual holding time ends shall be entered in the transport document (see 5.4.1.5.13).”

(Reference document: ST/SG/AC.10/C.3/106/Add.1)

4.2.5.3, special provision TP19 Amend to read as follows:

“TP19 At the time of construction, the calculated shell thickness shall be increased by 3 mm as a corrosion allowance. Shell thickness shall be verified ultrasonically at intervals midway between periodic hydraulic tests and shall never be lower than the calculated shell thickness.”.

(Reference document: ST/SG/AC.10/C.3/106/Add.1)

4.2.5.3 Delete portable tank instructions TP35, TP37, TP38 and TP39 and add “Deleted”.

(Reference document: ST/SG/AC.10/C.3/106/Add.1)

Chapter 5.1

5.1.5.1.2 Add additional sub-paragraph (e):

“(e) The shipment of SCO-III.”.

Transfer the “and” from the end of sub-paragraph (c) to the end of sub-paragraph (d).

(Reference document: ST/SG/AC.10/C.3/2018/54)

5.1.5.1.4 (b) At the end, replace “in the hands” by “in the possession”.

(Reference document: ST/SG/AC.10/C.3/2018/54)

5.1.5.3.1 In the introductory sentence, replace “or SCO-I” by “SCO-I or SCO-III”. In (a), replace “radiation level” by “dose rate” (twice) and replace “and SCO-I” by “, SCO-I or SCO-III”. In (b) replace “and SCO-I” by “, SCO-I and SCO-III”. At the end of (c), add “and the resulting number is the *TI* value (without unit).”.

(Reference document: ST/SG/AC.10/C.3/2018/54)

Table 5.1.5.3.1 In the title replace “and SCO-I” by “, SCO-I and SCO-III”.

(Reference document: ST/SG/AC.10/C.3/2018/54)

5.1.5.3.2 Amend to read as follows:

“The *TI* for each rigid overpack, freight container or conveyance shall be determined as the sum of the *TIs* of all the packages contained therein. For a shipment from a single consignor, the consignor may determine the *TI* by direct measurement of dose rate.

The *TI* for a non-rigid overpack shall be determined only as the sum of the *TIs* of all the packages within the overpack.”.

(Reference document: ST/SG/AC.10/C.3/2018/54)

5.1.5.3.4 In (b) replace “transport index” by “*TI*”.

(Reference document: ST/SG/AC.10/C.3/2018/54)

Chapter 5.2

5.2.1.5.6 Add the following sentence at the end:

“Any mark on the package made in accordance with the requirements of 5.2.1.5.4 (a) and (b) and 5.2.1.5.5 (c) relating to the package type that does not relate to the UN number and proper shipping name assigned to the consignment shall be removed or covered.”.

(Reference document: ST/SG/AC.10/C.3/2018/54)

5.2.2.2.1.1.2 Amend to read as follows:

“5.2.2.2.1.1.2 The label shall be in the form of a square set at an angle of 45 degrees (diamond-shaped). The minimum dimensions shall be 100 mm x 100 mm. There shall be a line inside the edge forming the diamond which shall be parallel and approximately 5 mm from the outside of that line to the edge of the label.”.

(Reference document: ST/SG/AC.10/C.3/102/Add.1)

5.2.2.1.12.2 In (d), replace “(no transport index entry is required for category I-WHITE)” by “(except for category I-WHITE)”.

(Reference document: ST/SG/AC.10/C.3/2018/54)

Chapter 5.3

5.3.1.1.5.1 After “Large freight containers carrying” add “unpackaged LSA-I material or SCO-I or”.

(Reference document: ST/SG/AC.10/C.3/2018/54)

5.3.2.1.1 Replace “LSA-1 or SCO-1 material” by “LSA-I material, SCO-I or SCO-III”.

(Reference document: ST/SG/AC.10/C.3/2018/54)

Chapter 5.4

5.4.1.5.7.1 Amend sub-paragraphs (d) and (e) to read:

“(d) The category of the package, overpack or freight container, as assigned per paragraph 5.1.5.3.4, i.e. I-WHITE, II-YELLOW, III-YELLOW;

(e) The TI as determined per paragraphs 5.1.5.3.1 and 5.1.5.3.2 (except for category I-WHITE);”.

In (j), replace “SCO-I and SCO-II” by “SCO-I, SCO-II and SCO-III”.

(Reference document: ST/SG/AC.10/C.3/2018/54)

Add the following new 5.4.1.5.13:

“5.4.1.5.13 *Actual holding time*

In the case of portable tanks carrying refrigerated liquefied gases the consignor shall enter in the transport document the date at which the actual holding time ends, in the following format:

“END OF HOLDING TIME: (DD/MM/YYYY)”.

(Reference document: ST/SG/AC.10/C.3/106/Add.1)

5.4.2.2 Delete at the end of the first sentence:

“one to the other”

(Reference document: ST/SG/AC.10/C.3/2018/54)

Chapter 5.5

5.5.3 At the end, in the text in parentheses, after “(UN 1951)”, add “or nitrogen”.

(Reference document: ST/SG/AC.10/C.3/104/Add.1)

5.5.3 Add the following new Note at the end:

“**NOTE:** *In the context of this section the term “conditioning” may be used in a broader scope and includes protection.*”.

(Reference document: ST/SG/AC.10/C.3/102/Add.1)

5.5.3.6.2 In Figure 5.5.2, amend the heading to read “Asphyxiation warning mark for cargo transport units”. Delete the reference to note ** and the corresponding note. In note *, at the beginning, replace “of the coolant/conditioner” by “or the name of the asphyxiant gas

used as the coolant/conditioner”. At the end of note * add “Additional information such as “AS COOLANT” or “AS CONDITIONER” may be added.”. At the end of 5.5.3.6.2, delete the Note.

(Reference document: ST/SG/AC.10/C.3/104/Add.1)

Chapter 6.1

[6.1.1.1 (e) At the end, add “except for UN 3549”.]

(Reference document: ST/SG/AC.10/C.3/102/Add.1)

6.1.3.1 (e) In the text of the note explaining the asterisk, after the clock, replace the second sentence with the following:

“In such a case and when the clock is placed adjacent to the UN design type mark, the indication of the year in the mark may be waived. However, when the clock is not placed adjacent to the UN design type mark, the two digits of the year in the mark and in the clock shall be identical.”.

(Reference document: ST/SG/AC.10/C.3/106/Add.1)

Add the following new 6.1.3.13:

“6.1.3.13 Where a packaging conforms to one or more than one tested packaging design type, including one or more than one tested IBC or large packaging design type, the packaging may bear more than one mark to indicate the relevant performance test requirements that have been met. Where more than one mark appears on a packaging, the marks must appear in close proximity to one another and each mark must appear in its entirety.”.

(Reference document: ST/SG/AC.10/C.3/106/Add.1, replaces the amendment in annex II of document ST/SG/AC.10/C.3/104/Add.1)

Add the following new 6.1.4.2.6:

“6.1.4.2.6 If materials used for body, heads, closures and fittings are not in themselves compatible with the contents to be transported, suitable internal protective coatings or treatments shall be applied. These coatings or treatments shall retain their protective properties under normal conditions of transport.”.

Renumber the existing 6.1.4.2.6 and 6.1.4.2.7 as 6.1.4.2.7 and 6.1.4.2.8.

(Reference document: ST/SG/AC.10/C.3/106/Add.1)

Add the following new 6.1.4.3.6:

“6.1.4.3.6 If materials used for body, heads, closures and fittings are not in themselves compatible with the contents to be transported, suitable internal protective coatings or treatments shall be applied. These coatings or treatments shall retain their protective properties under normal conditions of transport.”.

Renumber the existing 6.1.4.3.6 and 6.1.4.3.7 as 6.1.4.3.7 and 6.1.4.3.8.

(Reference document: ST/SG/AC.10/C.3/106/Add.1)

Chapter 6.2

[6.2.2.1.1 In the table, in the rows for “ISO 11119-3:2002” and “ISO 11119-3:2013” add the following new Note in the second column:

"NOTE: This standard shall not be used for linerless cylinders manufactured from two parts joined together".]

(Reference document: ST/SG/AC.10/C.3/106/Add.1)

6.2.2.1.1 In the table, after "ISO 11119-3:2013", add the following new row:

ISO 11119-4: 2016	Gas cylinders – Refillable composite gas cylinders – Design, construction and testing – Part 4: Fully wrapped fibre reinforced composite gas cylinders up to 150 l with load-sharing welded metallic liners	Until further notice
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(Reference document: ST/SG/AC.10/C.3/106/Add.1)

6.2.2.1.2 In the table, in the row containing "ISO 11119-3:2013", add the following new Note in the central column:

"NOTE: This standard shall not be used for linerless tubes manufactured from two parts joined together".]

(Reference document: ST/SG/AC.10/C.3/106/Add.1)

6.2.2.1.3 In the table, under "For the cylinder shell" add the following two new rows at the end:

ISO 4706:2008	Gas cylinders – Refillable welded steel cylinders – Test pressure 60 bar and below	Until further notice
ISO 7866:2012 + Cor 1:2014	Gas cylinders – Refillable seamless aluminum alloy gas cylinders – Design, construction and testing NOTE: Aluminum alloy 6351A or equivalent shall not be used	Until further notice

(Reference document: ST/SG/AC.10/C.3/106/Add.1)

6.2.2.1.3 Amend the headline of the second table to read as follows:

"For the acetylene cylinder including the porous material".

(Reference document: ST/SG/AC.10/C.3/106/Add.1)

6.2.2.2 Replace "ISO 11114-1:2012" by "ISO 11114-1:2012 + Amd 1:2017".

(Reference document: ST/SG/AC.10/C.3/102/Add.1)

6.2.2.3 In the first table, for ISO 10297:2014, in the column "Applicable for manufacture", replace "Until further notice" by "Until 31 December 2022". After the row for ISO 10297:2014 insert the following new row.

ISO 10297:2014 + Amd 1:2017	Gas cylinders – Cylinder valves – Specification and type testing;	Until further notice
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(Reference document: ST/SG/AC.10/C.3/102/Add.1)

6.2.2.3 In the row for ISO 14246:2014 replace "Until further notice" with "Until 31 December 2024". Insert the following new row after ISO 14246:2014:

ISO 14246:2014 + Amd 1:2017	Gas cylinders – Cylinder valves – Manufacturing tests and examinations	Until further notice
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(Reference document: ST/SG/AC.10/C.3/106/Add.1)

6.2.2.4 Delete the row for ISO 10462:2005.

(Reference document: ST/SG/AC.10/C.3/106/Add.1)

6.2.2.4 Add a new row at the end of the first table immediately after the row for ISO 22434:2006 as follows.

ISO 20475:2018	Gas cylinders – Cylinder bundles – Periodic inspection and testing	Until further notice
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(Reference document: ST/SG/AC.10/C.3/106/Add.1)

6.2.2.7.2 (c) Add the following new note:

“NOTE: For the purpose of this mark the country of approval means the country of the competent authority that authorized the initial inspection and test of the individual receptacle at the time of manufacture.”.

(Reference document: ST/SG/AC.10/C.3/106/Add.1)

6.2.2.9.2 (c) Add the following new Note:

“NOTE: For the purpose of this mark the country of approval means the country of the competent authority that authorized the initial inspection and test of the individual system at the time of manufacture.”.

(Reference document: ST/SG/AC.10/C.3/106/Add.1)

Chapter 6.3

[In the title of Chapter 6.3, at the end, add “(UN 2814 and UN 2900)”].

(Reference document: ST/SG/AC.10/C.3/102/Add.1)

[6.3.1.1 At the end, add “, UN 2814 and UN 2900”.]

(Reference document: ST/SG/AC.10/C.3/102/Add.1)

6.3.5.2.2 In “*Explanation for use of the table*”, at the end of the first paragraph, delete “five times after conditioning”.

(Reference document: ST/SG/AC.10/C.3/106/Add.1)

6.3.5.3.1 Add the following new title to this paragraph: “Drop height and target”.

(Reference document: ST/SG/AC.10/C.3/106/Add.1)

6.3.5.3.2 Add the following new title to this paragraph: “Number of test samples and drop orientation”. Renumber the text under this paragraph as “6.3.5.3.2.1”.

(Reference document: ST/SG/AC.10/C.3/106/Add.1)

6.3.5.3.3 Renumber as 6.3.5.3.2.2.

(Reference document: ST/SG/AC.10/C.3/106/Add.1)

Renumber paragraphs 6.3.5.3.4, 6.3.5.3.5, 6.3.5.3.6, 6.3.5.3.6.1, 6.3.5.3.6.2 and 6.3.5.3.6.3 as 6.3.5.3.3, 6.3.5.3.4, 6.3.5.3.5, 6.3.5.3.5.1, 6.3.5.3.5.2 and 6.3.5.3.5.3, respectively. Adapt the cross references accordingly as follows:

In 6.3.5.2.2, in the table, under “Explanation for the use of the table”, replace “6.3.5.3.6.1”, “6.3.5.3.6.2” and “6.3.5.3.6.3” by “6.3.5.3.5.1”, “6.3.5.3.5.2” and “6.3.5.3.5.3”, respectively.

In 6.3.5.3.6.3, renumber 6.3.5.3.5.3, replace “6.3.5.3.6.1” and “6.3.5.3.6.2” by “6.3.5.3.5.1” and “6.3.5.3.5.2”, respectively. At the end, replace “in 6.3.5.3.2” by “in 6.3.5.3.2.1 or in 6.3.5.3.2.2, as appropriate;”.

(Reference document: ST/SG/AC.10/C.3/106/Add.1)

Chapter 6.4

6.4.2.4 Delete “and finished”.

(Reference document: ST/SG/AC.10/C.3/2018/54)

6.4.2.8 Insert a the following new paragraph to read as follows:

“6.4.2.8 The design of the package shall take into account ageing mechanisms.”.

In 6.4.2, renumber subsequent paragraphs accordingly.

(Reference document: ST/SG/AC.10/C.3/2018/54)

6.4.4 Amend to read as follows:

“An excepted package shall be designed to meet the requirements specified in 6.4.2.1-6.4.2.12 and, in addition, the requirements of 6.4.7.2 if it contains fissile material allowed by one of the provisions of sub-paragraphs (a)–(f) of 2.7.2.3.5, and the requirements of 6.4.3 if carried by air.”.

(Reference document: ST/SG/AC.10/C.3/2018/54)

6.4.5.4.3 Delete “liquids and gases” in first sentence. Replace “Table 4.1.9.2.4” by “Table 4.1.9.2.5”.

(Reference document: ST/SG/AC.10/C.3/2018/54)

6.4.6.2 Replace “it would meet” by “the package would meet” in the introductory sentence.

(Reference document: ST/SG/AC.10/C.3/2018/54)

6.4.7.9 Replace “it shall be capable” by “the containment system shall be capable”.

(Reference document: ST/SG/AC.10/C.3/2018/54)

6.4.7.17 Amend to read as follows:

“A Type A package designed for gases shall prevent loss or dispersal of the radioactive contents if the package were subjected to the tests specified in 6.4.16, except for a Type A package designed for tritium gas or for noble gases.”

(Reference document: ST/SG/AC.10/C.3/2018/54)

6.4.8.2 Replace “Lessen the efficiency” by “Lessening of the efficiency”.

(Reference document: ST/SG/AC.10/C.3/2018/54)

6.4.8.8 In the first indent after the sub-paragraphs, replace “radiation level” by “dose rate”. Add “none-fixed” before “contamination limits” in the last sentence.

(Reference document: ST/SG/AC.10/C.3/2018/54)

6.4.9.1 Delete “Notwithstanding,” at the beginning of the second sentence.

(Reference document: ST/SG/AC.10/C.3/2018/54)

6.4.11.2 Replace “maximum mass” with “total mass” in sub-paragraph (c) (iv).

In sub-paragraph (d) replace “their total concentration” by “the total concentration of these materials”.

(Reference document: ST/SG/AC.10/C.3/2018/54)

6.4.11.8 In sub-paragraph (b) (i), after “between the valve” add “or the plug” and, at the end, after “the valves” add “and the plug”.

(Reference document: ST/SG/AC.10/C.3/2018/54)

6.4.11.11 Amend sub-paragraph (b) as follows:

“(b) In the assessment of 6.4.11.10, use of special features as specified in 6.4.11.8 is allowed provided that leakage of water into or out of the void spaces is prevented when the package is submitted to the Type C package tests specified in 6.4.20.1 followed by the water leakage test specified in 6.4.19.3.”

(Reference document: ST/SG/AC.10/C.3/2018/54)

6.4.12.1 Delete “LSA-III material, or” at the beginning of sub-paragraph (a).

(Reference document: ST/SG/AC.10/C.3/2018/54)

6.4.13 Amend the introductory sentence to read as follows:

“After each test or group of tests or sequence of the applicable tests, as appropriate, specified in 6.4.15 to 6.4.21:”

(Reference document: ST/SG/AC.10/C.3/2018/54)

6.4.15.4 In sub-paragraph (a), at the beginning, replace “of drop” by “of the drop,” and add a comma after “of the target”.

(Reference document: ST/SG/AC.10/C.3/2018/54)

6.4.15.6 In sub-paragraph (b) replace “of drop” by “of the drop” and add commas before “measured” and after “of the specimen”.

(Reference document: ST/SG/AC.10/C.3/2018/54)

6.4.17.2 In sub-paragraph (b), in the third sentence, replace “section” by “cross-section”.

(Reference document: ST/SG/AC.10/C.3/2018/54)

6.4.17.3 In sub-paragraph (b), replace “are everywhere decreasing” by “are decreasing in all parts of the specimen”.

(Reference document: ST/SG/AC.10/C.3/2018/54)

After 6.4.23.2 Add new paragraph 6.4.23.2.1 to read as follows:

“6.4.23.2.1 An application for approval of SCO-III shipments shall include:

(a) A statement of the respects in which, and of the reasons why, the consignment is considered SCO-III;

(b) Justification for choosing SCO-III by demonstrating that:

- (i) No suitable packaging currently exists;
- (ii) Designing and/or constructing a packaging or segmenting the object is not practically, technically or economically feasible;
- (iii) No other viable alternative exists;

- (c) A detailed description of the proposed radioactive contents with reference to their physical and chemical states and the nature of the radiation emitted;
- (d) A detailed statement of the design of the SCO-III, including complete engineering drawings and schedules of materials and methods of manufacture;
- (e) All information necessary to satisfy the competent authority that the requirements of 4.1.9.2.4 (e) and the requirements of 7.1.8.2, if applicable, are satisfied;
- (f) A transport plan;
- (g) A specification of the applicable management system as required in 1.5.3.1.”.

(Reference document: ST/SG/AC.10/C.3/2018/54, as amended)

6.4.23.4 Insert an additional sub-paragraph (f) to read as follows:

“(f) If the package is to be used for shipment after storage, a justification of considerations to ageing mechanisms in the safety analysis and within the proposed operating and maintenance instructions;”.

Renumber subsequent sub-paragraphs accordingly.

Add additional sub-paragraph (k) to read as follows:

“(k) For packages which are to be used for shipment after storage, a gap analysis programme describing a systematic procedure for a periodic evaluation of changes of Regulations, changes in technical knowledge and changes of the state of the package design during storage.”

(Reference document: ST/SG/AC.10/C.3/2018/54)

6.4.23.8 (c) Replace “calculative methods” by “calculations”.

(Reference document: ST/SG/AC.10/C.3/2018/54)

6.4.23.10 Replace “International Basic Safety Standards for Protection against Ionizing Radiation and for the Safety of Radiation Sources, Safety Series No.115, IAEA, Vienna (1996)” by “Radiation Protection and Safety of Radiation Sources: International Basic Safety Standards, IAEA Safety Standards Series No. GSR Part 3, IAEA, Vienna (2014)” in sub-paragraph (h).

(Reference document: ST/SG/AC.10/C.3/2018/54)

6.4.23.11 Delete sub-paragraph (d).

(Reference document: ST/SG/AC.10/C.3/2018/54, as amended)

6.4.23.12 In (a), replace “6.4.23.11 (a), (b), (c) and (d)” by “6.4.23.11 (a), (b) and (c)” and delete “including, if applicable, the symbol “-96””. At the end of the first sentence of (a), replace “identification marks” by “identification mark”.

(Reference document: ST/SG/AC.10/C.3/2018/54)

6.4.23.15 Replace “contents” with “package” in sub-paragraph (k) (iii).

(Reference document: ST/SG/AC.10/C.3/2018/54)

6.4.23.17 Replace “contents” with “package” in sub-paragraph (n) (iv).

Insert a new sub-paragraph (p) after 5.4.23.17 (o) and renumber subsequent sub-paragraphs accordingly:

“(p) For package designs subject to para. 6.4.24.2, a statement specifying those requirements of the current regulations with which the package does not conform;”.

(Reference document: ST/SG/AC.10/C.3/2018/54)

6.4.24 Amend the title over 6.4.24.1 to read “Packages not requiring competent authority approval of design under the 1985, 1985 (As Amended 1990), 1996 Edition, 1996 Edition (Revised), 1996 (As Amended 2003), 2005, 2009 Editions of IAEA Safety Series No. 6 and 2012 Edition of IAEA Safety Standards Serie No. SSR-6”.

6.4.24.1 Amend to read as follows:

“*Packages* not requiring *competent authority approval of design (excepted packages, Type IP-1, Type IP-2, Type IP-3 and Type A packages)* shall meet this Edition of these Regulations in full, except that:

(a) *Packages* that meet the requirements of the 1985 or 1985 (As Amended 1990) Editions of IAEA Regulations:

- (i) May continue in transport provided that they were prepared for transport prior to 31 December 2003 and are subject to the requirements of 6.4.24.4, if applicable; or
- (ii) May continue to be used, provided that all the following conditions are met:
 - They were not designed to contain uranium hexafluoride;
 - The applicable requirements of 1.5.3.1 of this Edition of these Regulations are applied;
 - The activity limits and classification in Section IV of this Edition of these Regulations are applied;
 - The requirements and controls for transport in Section V of this Edition of these Regulations are applied;
 - The *packaging* was not manufactured or modified after 31 December 2003;

(b) *Packages* that meet the requirements of the 1996 Edition, 1996 Edition (Revised), 1996 (As Amended 2003), 2005, 2009 or 2012 Editions of these Regulations:

- (i) May continue in transport provided that they were prepared for transport prior to 31 December 2025 and are subject to the requirements of 6.4.24.4, if applicable; or
- (ii) May continue to be used, provided that all the following conditions are met:
 - The applicable requirements of 1.5.3.1 of this Edition of these Regulations are applied;
 - The activity limits and classification in Section IV of this Edition of these Regulations are applied;
 - The requirements and controls for transport in Section V of this Edition of these Regulations are applied; and
 - The *packaging* was not manufactured or modified after 31 December 2025.”.

(Reference document: ST/SG/AC.10/C.3/2018/54)

Amend the title over 6.4.24.2 to read: “Package designs approved under the 1985, 1985 (As Amended 1990), 1996 Edition, 1996 Edition (Revised), 1996 (As Amended 2003), 2005,

2009 Editions of IAEA Safety Series No. 6 and 2012 Edition of IAEA Safety Standards Serie No. SSR-6”.

6.4.24.2 Amend to read as follows:

“Packages requiring competent authority approval of the design shall meet this Edition of these Regulations in full except that:

(a) Packagings that were manufactured to a package design approved by the competent authority under the provisions of 1985 or 1985 (As Amended 1990) Editions of IAEA Regulations may continue to be used provided that all of the following conditions are met:

- (i) The package design is subject to multilateral approval;
- (ii) The applicable requirements of 1.5.3.1 of this Edition of these Regulations are applied;
- (iii) The activity limits and classification in Section IV of this Edition of these Regulations are applied;
- (iv) The requirements and controls for transport in Section V of this Edition of these Regulations are applied;
- (v) For a package containing fissile material and transported by air, the requirement of 6.4.11.11 is met;

(b) Packagings that were manufactured to a package design approved by the competent authority under the provisions of the 1996 Edition, 1996 Edition (Revised), 1996 (As Amended 2003), 2005, 2009 and 2012 Editions of these Regulations may continue to be used provided that all of the following conditions are met:

- (i) The package design is subject to multilateral approval after 31 December 2025;
- (ii) The applicable requirements of 1.5.3.1 of this Edition of the Regulations are applied;
- (iii) The activity limits and material restrictions of Section IV of this Edition of these Regulations are applied;
- (iv) The requirements and controls for transport in Section V of this Edition of these Regulations are applied.”.

(Reference document: ST/SG/AC.10/C.3/2018/54)

6.4.24.4 Add the following new paragraph to read as follows:

“6.4.24.4 No new manufacture of *packagings* of a *package design* meeting the provisions of the 1996 Edition, 1996 Edition (Revised), 1996 (As Amended 2003), 2005, 2009 and 2012 Editions of these Regulations shall be permitted to commence after 31 December 2028.”.

Renumber current 6.4.24.4 and 6.4.24.5 as 6.4.24.5 and 6.4.24.6.

(Reference document: ST/SG/AC.10/C.3/2018/54)

6.4.24.6 (previously 6.4.24.5) Amend the title to read as follows: “Special form radioactive material approved under the 1985, 1985 (As Amended 1990), 1996 Edition, 1996 Edition (Revised), 1996 (As Amended 2003), 2005, 2009 Editions of IAEA Safety Series No. 6 and 2012 Edition of IAEA Safety Standards Serie No. SSR-6”.

(Reference document: ST/SG/AC.10/C.3/2018/54)

6.4.24.6 (previously 6.4.24.5) Amend to read as follows:

“6.4.24.6 Special form radioactive material manufactured to a design that had received unilateral approval by the competent authority under the 1985, 1985 (As Amended 1990), 1996 Edition, 1996 Edition (Revised), 1996 (As Amended 2003), 2005, 2009 and 2012 Editions of IAEA Regulations may continue to be used when in compliance with the mandatory management system in accordance with the applicable requirements of 1.5.3.1 . There shall be no new manufacture of special form radioactive material to a design that had received unilateral approval by the competent authority under the 1985 or 1985 (As Amended 1990) Editions of these Regulations. No new manufacture of special form radioactive material to a design that had received unilateral approval by the competent authority under the 1996 Edition, 1996 Edition (Revised), 1996 (As Amended 2003), 2005, 2009 and 2012 Editions of these Regulations shall be permitted to commence after 31 December 2025.”.

(Reference document: ST/SG/AC.10/C.3/2018/54)

Chapter 6.5

Add the following new 6.5.2.1.3:

“6.5.2.1.3 Where an IBC conforms to one or more than one tested IBC design type, including one or more than one tested packaging or large packaging design type, the IBC may bear more than one mark to indicate the relevant performance test requirements that have been met. Where more than one mark appears on a packaging, the marks must appear in close proximity to one another and each mark shall appear in its entirety.”.

(Reference document: ST/SG/AC.10/C.3/106/Add.1, replaces the amendment in annex II of document ST/SG/AC.10/C.3/104/Add.1)

6.5.2.2.1 Delete the last row in the table (Maximum permitted stacking load) and the corresponding footnote b.

(Reference document: ST/SG/AC.10/C.3/104/Add.1)

6.5.2.2.2 In the first sentence, delete “when the IBC is in use”.

(Reference document: ST/SG/AC.10/C.3/106/Add.1)

6.5.2.2.4 In the second paragraph, amend the second sentence to read as follows:

“In such a case, the date may be waived from the remainder of the marks.”.

(Reference document: ST/SG/AC.10/C.3/106/Add.1)

Chapter 6.6

6.6.3.3 In the first sentence, delete “when the large packaging is in use”.

(Reference document: ST/SG/AC.10/C.3/106/Add.1)

Add the following new 6.6.3.4:

“6.6.3.4 Where a large packaging conforms to one or more than one tested large packaging design type, including one or more than one tested packaging or IBC design type, the large packaging may bear more than one mark to indicate the relevant performance test requirements that have been met. Where more than one mark appears on a packaging, the marks must appear in close proximity to one another and each mark must appear in its entirety.”.

(Reference document: ST/SG/AC.10/C.3/106/Add.1, replaces the amendment in annex II of document ST/SG/AC.10/C.3/104/Add.1)

Chapter 6.7

6.7.2.12.2.1 and 6.7.3.8.1.1 Amend the definition of factor “U” to read:

“U = heat transfer coefficient of the insulation, in $\text{kW}\cdot\text{m}^{-2}\cdot\text{K}^{-1}$, at 38 °C”.

(Reference document: ST/SG/AC.10/C.3/106/Add.1)

6.7.5.2.3 In the first sentence, after “seamless steel” insert “or composite construction”.

(Reference document: ST/SG/AC.10/C.3/102/Add.1)

6.7.5.2.4 (a) Replace “ISO 11114-1:2012” by “ISO 11114-1:2012 + Amd 1:2017”.

(Reference document: ST/SG/AC.10/C.3/102/Add.1)

Chapter 7.1

[7.1.5.4.5 (b) At the end, add “or a means of replenishment is assured;”.]

(Reference document: ST/SG/AC.10/C.3/106/Add.1)

[7.1.5.4.5 (c) In the beginning, add “Thermal insulation and”. At the end, after “flammable vapours”, add “from the substances;”.]

(Reference document: ST/SG/AC.10/C.3/106/Add.1)

[7.1.5.4.5 (d) In the beginning, add “Thermal insulation and”.]

(Reference document: ST/SG/AC.10/C.3/106/Add.1)

[7.1.5.4.5 (e) In the beginning, add “Thermal insulation and”. At the end of paragraph (iii), after “flammable vapours”, add “from the substances.”.]

(Reference document: ST/SG/AC.10/C.3/106/Add.1)

7.1.8.2 Add the following new sentence after the first sentence:

“For SCO-III, the limits in Table 7.1.8.2 may be exceeded provided that the transport plan contains precautions which are to be employed during transport to obtain an overall level of safety at least equivalent to that which would be provided if the limits had been applied.”.

(Reference document: ST/SG/AC.10/C.3/2018/54)

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

“(b) The dose rate under routine conditions of transport shall not exceed 2 mSv/h at any point on the external surface of the vehicle or freight container, and 0.1 mSv/h at 2 m from the external surface of the vehicle or freight container, except for consignments transported under exclusive use by road or rail for which the radiation limits around the vehicle are set forth in 7.2.3.1.2(b) and (c).”

(Reference document: ST/SG/AC.10/C.3/2018/54)

7.1.8.5.5 At the beginning, delete “, tank, intermediate bulk container”.

(Reference document: ST/SG/AC.10/C.3/2018/54)

Chapter 7.2

7.2.3.1.1 In the introductory sentence, replace “consignments under exclusive use” by “unpackaged LSA-I material, SCO-I or SCO-III”.

(Reference document: ST/SG/AC.10/C.3/2018/54)

Part II Draft amendments to the sixth revised edition of the Recommendations on the Transport of Dangerous Goods, Manual of Tests and Criteria (ST/SG/AC.10/11/Rev.6) as amended by ST/SG/AC.10/11/Rev.6/Amend.1

General table of contents

- PART I: Delete “OF CLASS 1” at the end.
12. TEST SERIES 2: Replace “for inclusion in Class 1” with “for inclusion into the class of explosives”.
13. TEST SERIES 3: Amend the sentence between parentheses to read: “(To determine if a substance is an unstable explosive in the form it was tested)”.
14. TEST SERIES 4: At the end, after “too dangerous for transport” add “... and classified as a GHS unstable explosive”.
16. TEST SERIES 6: Replace “Class 1” with “the class of explosives”.
18. TEST SERIES 8: Replace “for inclusion in Division 5.1,” with “for classification as an oxidizing substance” and “suitability for transport” with “suitability for containment”.
- PART II: Replace “SELF-REACTIVE SUBSTANCES OF DIVISIONS 4.1 ADN ORGANIC PEROXIDES OF DIVISION 5.2” with “SELF-REACTIVE SUBSTANCES, ORGANIC PEROXIDES AND POLYMERIZING SUBSTANCES”.
- PART III: Add a new section 39 at the end, to read as follows:
- “39. CLASSIFICATION PROCEDURE AND CRITERIA RELATING TO SOLID AMMONIUM NITRATE BASED FERTILIZERS”.

(Reference document: ST/SG/AC.10/C.4/2018/1)

Section 1

- 1.1.1 Amend to read as follows:

“The purpose of the Manual of Tests and Criteria (hereafter referred to as the “Manual”) is to present the United Nations schemes for the classification of dangerous goods subject to transport regulations and hazardous substances and mixtures in accordance with the Globally Harmonized System of Classification and Labelling of Chemicals and to give descriptions of the test methods and procedures considered to be the most useful for providing classifiers with the necessary information to arrive at a proper classification. Although the term “classifier(s)” is used generically throughout the manual to indicate the entity providing the classification, in some sectors this may be limited specifically to a competent authority or designated testing authority, whereas in others it may allow for self-classification by manufacturers or suppliers. The sector for classification should be taken into account for each occurrence of this term to correctly identify the entity responsible for classification.”

(Reference document: ST/SG/AC.10/C.4/2018/1, as amended in ST/SG/AC.3/106/Add.1)

1.1.2 Current paragraph 1.1.2 becomes new paragraph 1.1.7.

Insert a new paragraph to 1.1.2 to read as follows:

“1.1.2 This Manual should be used in conjunction with the latest versions of:

- (a) the Recommendations on the Transport of Dangerous Goods (hereafter referred to as the Recommendations) and the Model Regulations annexed thereto (hereafter referred to as the Model Regulations) and;
- (b) the Globally Harmonized System of Classification and Labelling of Chemicals (hereafter referred to as the GHS).”.

1.1.3 Current paragraph 1.1.3 becomes new paragraph 1.1.8.

1.1.3 to 1.1.6 Insert the following new paragraphs:

“1.1.3 Definitions of terms used in the Manual may be found in Chapter 1.2 and Annex B of the Model Regulations and in the GHS. The term substance as it is used in this Manual includes substances, mixtures and solutions, unless otherwise stated.

1.1.4 The test methods and criteria in this Manual were originally developed to address classification for transport purposes, and therefore in previous editions of the Manual (up to the 7th revised edition) frequent reference is made to “as packaged for transport”. As for physical hazards the GHS refers to the tests contained in this Manual, to facilitate its use in the context of the GHS (i.e.: in sectors other than transport), the phrase “as offered for classification” is now used instead when appropriate. For example, if the classification to be determined is for products as packaged for transport, “as offered for classification” means “as offered for transport”. On the other hand, if the classification to be determined is for sectors other than transport in the context of the GHS, then “as offered for classification” means “in the condition relevant to the particular application, e.g. supply and use”. More details on the reasons for this change are provided below.

1.1.5 The outcome of the tests in this Manual is predominantly related to the intrinsic properties of the substance being tested. However the test results may also be affected by other physical parameters such as: density; particle size (distribution) and humidity. For some physical hazards the outcome of the tests and hence the classification can also be dependent on the quantity of the sample and the packaging.

1.1.6 For these reasons, the above mentioned parameters and circumstances should be taken into account when considering test results, particularly for classification for sectors other than transport.”.

1.1.7 (new, former 1.1.2) In the first sentence, delete “of Tests and Criteria” and “of products”. Amend the beginning of the third sentence to read: “Where appropriate, the competent authority...”.

1.1.8 (new, former 1.1.3) Delete “or Divisions for transport” and replace “Competent Authority” with “competent authority” and “Competent Authorities” with “competent authorities”.

1.1.9 Insert a new paragraph 1.1.9 to read as follows:

“1.1.9 The text and references throughout the Manual strive to be sector-neutral, but sometimes must be sector-specific. For example, Part IV is used for transport equipment, and Part V is used for sectors other than transport. Also, there is some sector-specificity within Parts I and II describing tests with packages as presented for transport. Explosives transport classifications to the Division level frequently apply only to a defined configuration, with the quantity and confinement (packaging) as prepared for transport. Sectors other than transport may build upon explosives transport classifications.”.

1.2 Current section 1.2 becomes new section 1.3.

Insert a new section 1.2 to read as follows:

“1.2 Hazard classes in the Model Regulations and in the GHS

1.2.1 Hazard classes in the Model Regulations

1.2.1.1 Substances and articles subject to the Model Regulations are assigned to one of nine classes according to the hazard or the predominant hazard they present for transport. Some of these classes are subdivided into divisions addressing a more specific type of hazard within a given class. The numerical order of the classes and divisions does not reflect the degree of hazard.

1.2.1.2 In addition, for packing purposes, some dangerous goods are assigned to one of three packing groups in accordance with the degree of hazard they present:

Packing group I: high hazard

Packing group II: medium hazard

Packing group III: low hazard

The packing group to which a substance is assigned is indicated in the Dangerous Goods List in Chapter 3.2 of the Model Regulations. Articles are not assigned to packing groups.

1.2.1.3 Dangerous goods meeting the criteria of more than one hazard class or division and which are not listed in the Dangerous Goods List are assigned to a transport class and division and subsidiary hazard(s) on the basis of the precedence of hazards characteristics.

1.2.1.4 Precedence of hazard characteristics for transport purposes

1.2.1.4.1 The precedence of hazard characteristics table in 2.0.3.3 of Chapter 2.0 of the Model Regulations may be used as a guide in determining the class of a substance having more than one hazard, when it is not named in the Dangerous Goods List in Chapter 3.2 of the Model Regulations. For goods having multiple hazards, which are not specifically listed by name in the Dangerous Goods List, the most stringent packing group denoted to the respective hazard of the goods takes precedence over other packing groups, irrespective of the precedence of hazard characteristics table.

1.2.1.4.2 The precedence of hazard characteristics of the following are not dealt with in the Precedence of hazard table in Chapter 2.0 of the Model Regulations, since these primary characteristics always take precedence:

- Substances and articles of Class 1;
- Gases of Class 2;
- Liquid desensitized explosives of Class 3;
- Self-reactive substances and solid desensitized explosives of Division 4.1;
- Pyrophoric substances of Division 4.2;
- Substances of Division 5.2;
- Substances of Division 6.1 with a packing group I inhalation toxicity;
- Substances of Division 6.2; and
- Radioactive material of Class 7.

(Reference document: ST/SG/AC.10/C.4/2018/1)

1.2.1.4.3 Self-reactive substances, type A to type G, should not be tested in the self-heating test N.4, as the test result will give a false positive result (i.e. temperature increase due to thermal decomposition rather than oxidative self-heating). Self-reactive substances of type G and organic peroxides of type G having properties of another hazard class (e.g. UN No. 3149) should be classified according to the requirements of that hazard class.

(Reference document: ST/SG/AC.10/C.4/2018/1, as amended in ST/SG/AC.10/C.3/106/Add.1)

1.2.2 Hazard classes in the GHS

The GHS addresses classification of substances by types of chemical hazards (e.g. flammability, toxicity, corrosivity) grouped into physical, health and environmental hazards. Each GHS hazard class corresponds to a type of hazard, and it is sometimes specific to a certain aggregation state (solid, liquid or gaseous). Most of the GHS hazard classes are further subdivided into hazard categories reflecting the severity of the hazard, with Category 1 indicating the most severe hazard.

1.2.3 Relationship between the Model Regulations and the GHS

1.2.3.1 Since the GHS addresses other sectors in addition to transport (e.g. storage, supply and use), it includes hazards not considered relevant to transport, such as several non-acute health hazards. Due to the differences in scope between the GHS and the Model Regulations not all hazards addressed in the GHS have their counterparts in the Model Regulations, and vice versa. For instance there is no specific hazard class in the GHS for radioactive material (Class 7 in transport) and some of the dangerous goods classified for transport in Class 9 are covered by other GHS hazard classes (e.g.: environmentally hazardous substances of Class 9 may fall under the GHS hazard class Hazardous to the aquatic environment).

1.2.3.2 In addition, while one transport class may cover several different types of hazards, GHS hazard classes usually address one type of hazard each. For instance, substances of Class 4 in transport belong to seven individual GHS hazard classes. Furthermore, while transport classes are identified by a number (1 to 9), GHS hazard classes are identified by a name reflecting the type of chemical hazard (e.g. “Flammable solids”). Moreover, the concept of precedence of hazards as defined in the Model Regulations (see 1.2.1.4) does not exist in the GHS.

1.2.3.3 The overarching correlation between GHS hazard classes and the transport classes addressed in the Model Regulations is indicated in Table 1.1. The table is indicative only and is not intended to be used as the sole basis in translating the classification of any substance or article between the GHS and the Model Regulations, or vice versa.

TABLE 1.1: CORRELATION BETWEEN HAZARD CLASSES IN THE GHS AND IN THE MODEL REGULATIONS

Hazard classes in the GHS	Hazard classes in the Model Regulations
Explosives, Divisions 1.1 to 1.6	Class 1, Divisions 1.1 to 1.6
Flammable gases, Category 1	Class 2, Division 2.1
Aerosols	Class 2, Division 2.1 and 2.2
Oxidizing gases	Class 2, Division 2.2 with subsidiary hazard 5.1
Gases under pressure	Class 2
Flammable liquids, category 1 to 3	Class 3
Flammable solids	Class 4, Division 4.1

Hazard classes in the GHS	Hazard classes in the Model Regulations
Self-reactive substances and mixtures	Class 4, Division 4.1
Pyrophoric liquids	Class 4, Division 4.2
Pyrophoric solids	Class 4, Division 4.2
Self-heating substances and mixtures	Class 4, Division 4.2
Substances and mixtures which, in contact with water, emit flammable gases	Class 4, Division 4.3
Oxidizing liquids	Class 5, Division 5.1
Oxidizing solids	Class 5, Division 5.1
Organic peroxides	Class 5, Division 5.2
Corrosive to metals	Class 8
Desensitized explosives	Class 3 (liquids)
	Class 4, Division 4.1 (solids)
Acute toxicity, Categories 1, 2 and 3	Class 6, Division 6.1 (solids and liquids)
	Class 2, Division 2.3 (gases)
Skin corrosion, Category 1	Class 8
Hazardous to the aquatic environment, Acute 1 and Chronic 1 and 2	Class 9 (environmentally hazardous substances)

"

(Reference document: ST/SG/AC.10/C.4/2018/1)

1.3 Delete current section 1.3 ("Precedence of hazards characteristics").

Former heading of 1.2 becomes new 1.3. The text remains unchanged.

1.3.1 (new, former 1.2.1) Amend to read as follows:

"1.3.1 The Manual is divided into five parts:

Part I: Relating to explosives;

Part II: Relating to self-reactive substances, organic peroxides and polymerising substances;

Part III: Relating to aerosols, desensitized explosives (relating to transport only), flammable liquids, flammable solids, pyrophoric liquids and solids, substances which in contact with water emit flammable gases, oxidizing liquids and solids, chemically unstable gases and gas mixtures, substances corrosive to metals, and substances and articles of transport Class 9 (ammonium nitrate fertilizers, lithium metal and lithium ion batteries) and solid ammonium nitrate based fertilizers;

Part IV: Test methods concerning transport equipment; and

Part V: Classification procedures, test methods and criteria relating to sectors other than transport."

The last paragraph of current 1.2.1 ("Part III ...screening procedures" becomes new paragraph 1.3.2.

1.3.2 (new, former last paragraph of 1.2.1) Delete the first sentence ("Part III ...Model Regulations").

Delete “a number of “before “appendices” and “the transport of” before “organic peroxides”.

Amend the end of the paragraph to read as follows: “... self-reactive substances, on screening procedures, on flash compositions tests for the classification of fireworks, response descriptors and the ballistic energy test for cartridges, small arms.”.

1.3.3 (new, former 1.2.2) Replace (twice) “Table 1.1” with “Table 1.2”.

In the table, third row, under “Test Series”, replace “L-T” with “C, L-U”.

1.3.4 Former paragraph 1.2.3 becomes new paragraph 1.3.4. The text of the paragraph remains unchanged.

1.4.1 Amend the end of the paragraph to read as follows: “toxicity data (see Chapter 1.5 and Annex 4 of the GHS for guidance on the preparation of Safety Data Sheets).”.

1.5.1 In the second sentence, replace “here” with “below”. In the last sentence, after “those prescribed,” insert “the deviation should be described and”.

1.5.2 Amend the end of the first sentence and the beginning of the second sentence to read as follows: “...should be representative of the substances being classified. The contents of active substance(s)...”.

1.5.4 Amend the end of the first sentence to read: “expected circumstances, e.g. of transport or storage.”. In the second sentence replace “the transport conditions” with “these circumstances” and “anticipated transport conditions” with “anticipated conditions”.

1.6.1 In the third sentence replace “Table 1.2” with “Table 1.3” and “Table 1.3” with “Table 1.4”. In the fourth sentence, amend “self-reactive substances and organic peroxides” to “self-reactive substances, organic peroxides and polymerising substances”. In the last but one sentence, delete “as only one test is given for each property”.

Current Table 1.2 becomes new Table 1.3, with the following changes:

Amend the title to read “RECOMMENDED TESTS IN PART I”.

For the thermal stability test at 75 °C under “Test code” replace “3 (c)” with “3 (c) (i)”.

Insert a new row under the current row for Test series 7 (I), as follows:

Test series	Test type	Test code	Test name
7	(I)	7 (I)	1.6 article (or component) fragment impact tests

Amend the end of note “a” under the table to read as follows: “... suitability for containment in portable tanks as an oxidizing substance.”.

Current Table 1.3 becomes new Table 1.4, with the following change: Amend the title to read “RECOMMENDED TESTS IN PART II”.

1.7.1 Amend the beginning of the first sentence to read: “Classifications for inclusion in the list of dangerous goods for transport in...”.

In the list under the introductory paragraph, replace “Substances and articles of Class 1” with “Explosive substances and articles” and delete “of Division 4.1” and “of Division 5.2”.

(Reference document: ST/SG/AC.10/C.3/106/Add.1)

Part I

- Part I In the title, delete “OF CLASS 1”.
- Table of contents In the title of section 10.4, replace “OF CLASS 1” with “OF THE CLASS OF EXPLOSIVES”.

Section 10

10.1.1 In the second sentence, after “the most useful for providing” delete “competent authorities with” and delete “for transport” at the end.

10.1.2 Amend to read as follows:

“The GHS class of explosives covers all sectors. Class 1 is a subset of this class and comprises explosives as presented for transport. The class of explosives also includes unstable explosives which are those explosives which are forbidden for transport. Goods of class 1 are assigned to one of the six divisions, depending on the type of hazard they present (see Chapter 2.1, paragraph 2.1.1.4 of the Model Regulations and Chapter 2.1, paragraph 2.1.2 of the GHS), and, for some regulatory purposes (e.g. transport), to one of the thirteen compatibility groups that identify the kinds of explosives that are deemed to be compatible. The general scheme for classifying a substance or article which is to be considered for inclusion in the class of explosives is illustrated in Figure 10.1. The assessment is in two stages. In the first stage, the potential of a substance or article to explode is ascertained and its chemical and physical stability and sensitivity are also determined. In order to promote uniform assessments by classifiers, it is recommended that, using the flow chart in Figure 10.2, data from suitable tests is analysed systematically with respect to the appropriate test criteria. If the substance or article is provisionally accepted into the class of explosives, it is then necessary to proceed to the second stage and assign it to the correct division by use of the flow charts of in figures 10.3 and 10.5. With the exception of compatibility groups N and S, for which test data is necessary, assignment to a compatibility group, when appropriate, is usually made without reference to testing. In the case of compatibility group S, the tests may be waived (where appropriate by the competent authority) if classification by analogy is based on test results for a comparable article.”.

10.1.3 Current paragraph 10.1.3 becomes new paragraph 10.1.4.

Insert the following new paragraph 10.1.3:

“10.1.3 Test Series 4 and 6 are performed as presented for transport. Explosives are unique in that the type of packaging and environment frequently have a decisive effect on the hazard and therefore on the assignment to a particular division (see Chapter 2.1 of the Model Regulations, introductory note 4). Additional considerations may therefore be necessary when transport classifications are used for other sectors.”.

10.1.4 (new, former 10.1.3) Amend the end of the first sentence and the beginning of the second sentence to read as follows: “so that an appropriate classification can be assigned. When appropriate this is done by the competent authority.”.

10.2.1 At the end of the first sentence, replace “Class 1” with “the class of explosives”. In the second sentence delete “of Division 4.1” and “of Division 5.2”. In the third sentence, insert “when appropriate” before “in the opinion”.

In (a) Delete “or a combination or mixture of substances”. Replace “combinations or mixtures” with “substances”.

In (b) Delete “(see paragraph 2.1.1.5 of the Model Regulations)”.

In (c) Delete “or a new combination or mixture of explosive substances”.

In (d) Replace “risk” with “hazard” (twice).

Delete the last sentence following sub-paragraphs (a) to (d) (“The classification...for transport”).

10.2.2 Amend to read as follows:

“10.2.2 The classifier of a new product should document adequate information concerning the names and characteristics of all explosive substances in the product and all relevant tests which have been done. This information should be furnished to the competent authorities, if required.”.

(Reference document: ST/SG/AC.10/C.3/106/Add.1)

10.3.1.1 In the first sentence replace “Class 1” with “the class of explosives”. Replace “product” with “substance or article”.

Amend the second sentence to read as follows: “This is decided by determining whether a substance provisionally accepted into the class of explosives is either too insensitive for inclusion in this class or is accepted as an unstable explosive (and considered too dangerous for transport); or whether the article or packaged article are accepted as an unstable explosive (and considered too dangerous for transport).”.

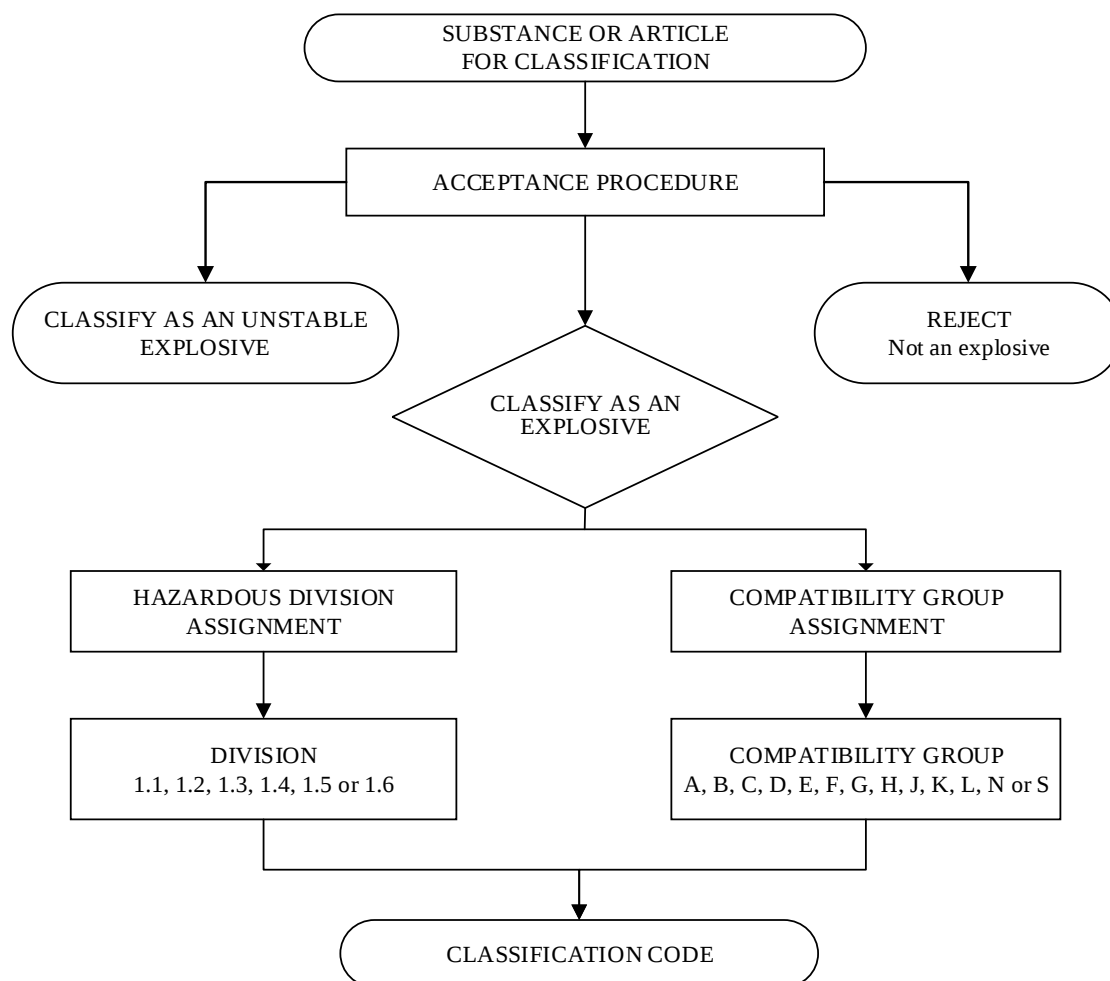
10.3.2.1 Replace “Class 1” with “the class of explosives”. Replace “four series, numbered 1 to 4,” by “four series (Test Series 1 to 4)”.

10.3.2.2 Amend the beginning of the sentence to read: “The question “Does it have explosive properties?” (box 5, Figure 10.2) is answered”.

10.3.2.3 Amend the first sentence to read as follows: “Series 2 tests are used to answer the question “Is it too insensitive for acceptance into this class?” (box 7, Figure 10.2).”.

Figure 10.1 Replace the figure and its heading with the following:

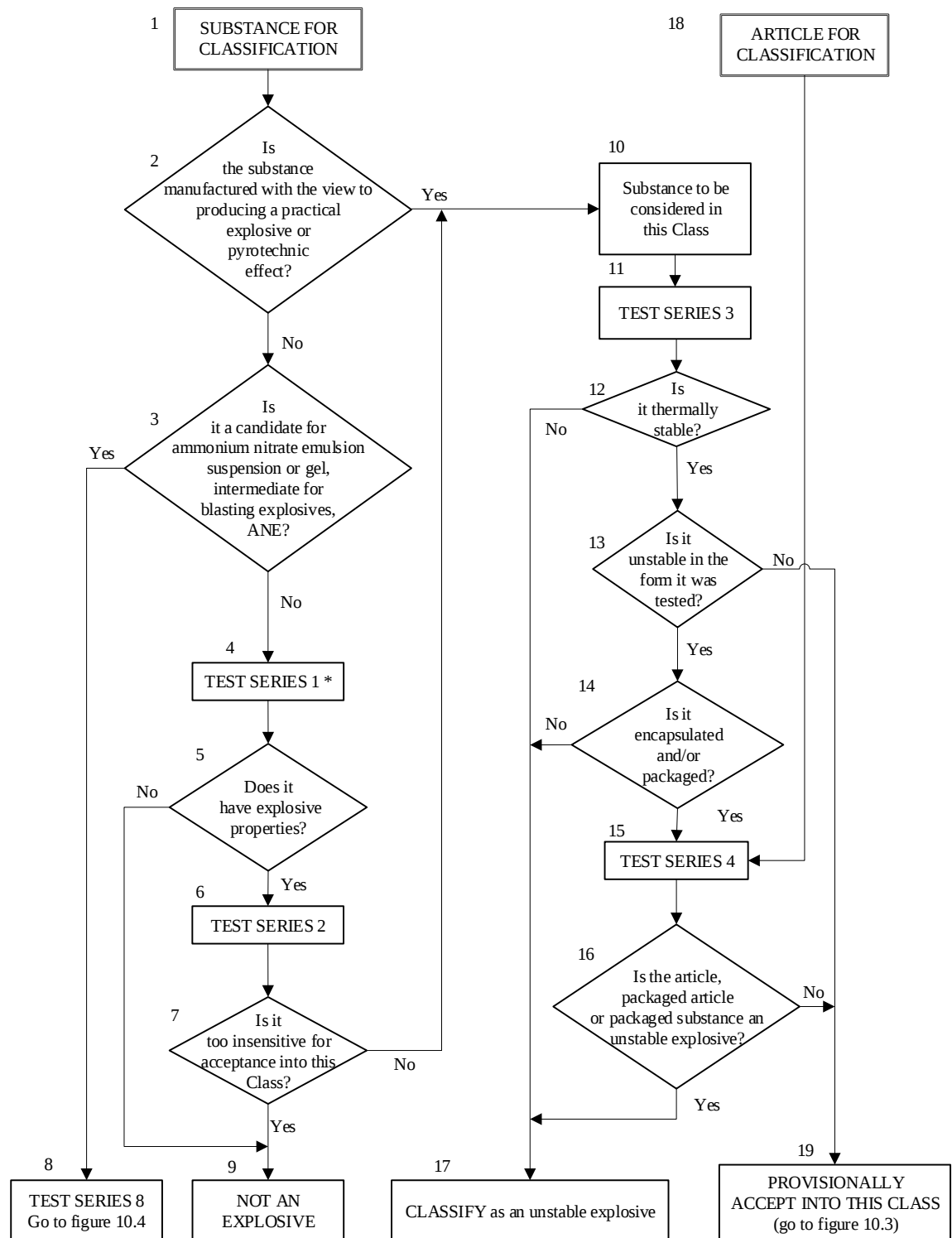
“Figure 10.1: OVERALL SCHEME OF THE PROCEDURE FOR CLASSIFYING A SUBSTANCE OR ARTICLE IN THE CLASS OF EXPLOSIVES



”

Figure 10.2 Replace current figure 10.2 and its heading with the following:

"Figure 10.2: PROCEDURE FOR PROVISIONAL ACCEPTANCE OF A SUBSTANCE OR ARTICLE IN THE CLASS OF EXPLOSIVES"



- 10.3.2.4 Amend the first sentence to read: "Test series 3 is used to answer the questions "Is it thermally stable?" (box 12, Figure 10.2) and "Is it unstable in the form it was tested?" (box 13, Figure 10.2).".
- 10.3.2.5 In the first sentence, replace "too dangerous for transport" with "an unstable explosive".
- 10.3.3.3 In the second sentence, insert ", where appropriate," after "authority". Amend the beginning of the last sentence to read: "If it is suspected (e.g. by the competent authority where appropriate), that the product...".
- 10.3.3.4 Amend the paragraph to read as follows:
 "10.3.3.4 Test series 1 indicates whether a substance has explosive properties. However, for a new substance not designed to have a practical explosive or pyrotechnic effect, it is more appropriate to start the testing procedure with test series 3. Test Series 3 involves relatively small sample sizes, which reduces the risk to test personnel. If the substance passes test series 3, as a practical matter the next step is the application of test series 2 which determines whether the substance is too insensitive for inclusion into the class of explosives. There is no real need to perform test series 1 at this point. Substances which fail test series 2 but pass test series 3 shall be subjected to the procedure for assignment to the appropriate division of explosives. It is important to note, however, that a substance which fails test series 2 may still be excluded from the class of explosives provided the substance is not designed to have a practical explosive or pyrotechnic effect, nor exhibits any hazardous effects in test series 6 of the assignment procedure as packaged."
- 10.3.3.5 Insert "for testing purposes" after "control components,".
- 10.4 In the title replace "Class 1" with "the class of explosives".
- 10.4.1.1 Amend the beginning and the end of the first sentence to read as follows: "Unless classified as unstable, explosives are ... Model Regulations and 2.1.2 of the GHS)."
 In the second sentence, replace the text between brackets with "(figures 10.3 and 10.5)", replace "and/or" with "and", and "Class 1" with "this class".
 Amend the beginning and the end of the third sentence to read as follows: "A substance or article is assigned to ... to which it has been subjected."
 Amend the last sentence to read as follows:
 "As indicated in box 39 of Figure 10.3, there is authority to exclude an article from the class of explosives by virtue of test results and the "explosives" definition (see paragraph 2.1.1.1 (b) of the Model Regulations and 2.1.1.2 (b) of the GHS). Specific criteria by which articles may be excluded from the class of explosives may be found in the Model Regulations (see paragraph 2.1.3.6.4).".
- 10.4.2.1 In the first sentence replace the text between brackets to read "(Test Series 5 to 7)". In the last sentence, replace "national authority" with "classifier".
- 10.4.2.2 Replace "(box 21, Figure 10.3)" with "(box 28, Figure 10.3)".

Figure 10.3 Replace the figure and its heading with the following:

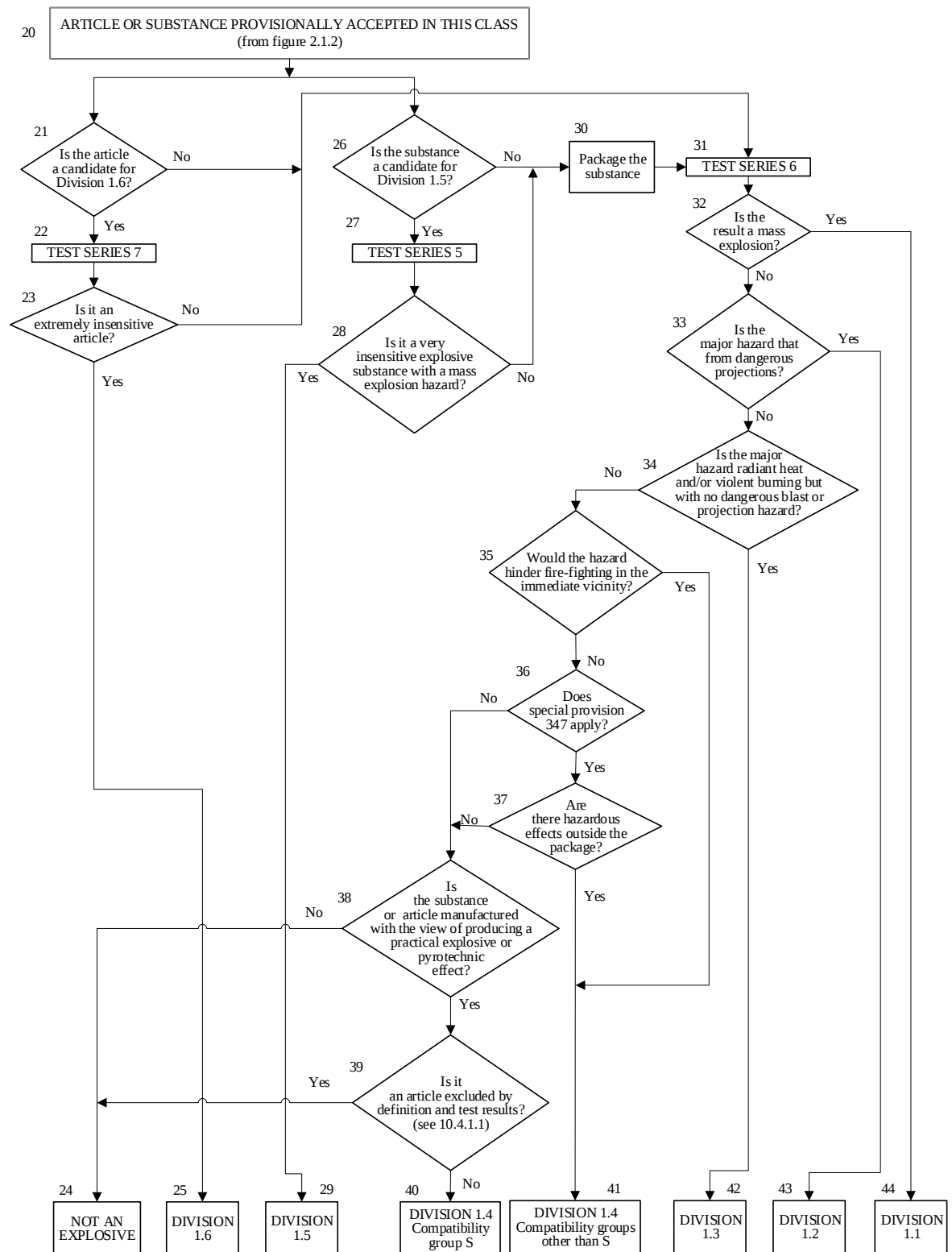
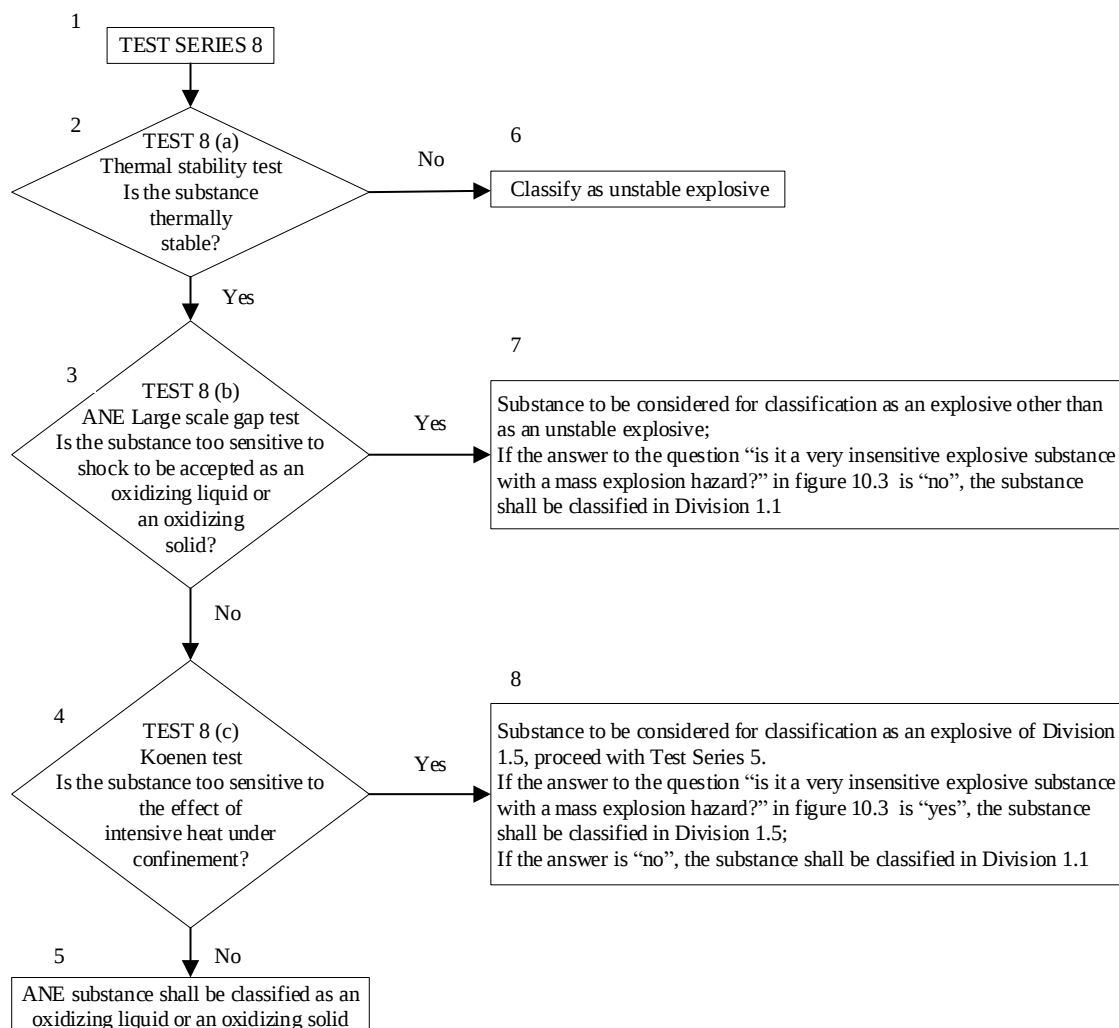
“Figure 10.3: PROCEDURE FOR ASSIGNMENT TO A DIVISION OF THE CLASS OF EXPLOSIVES

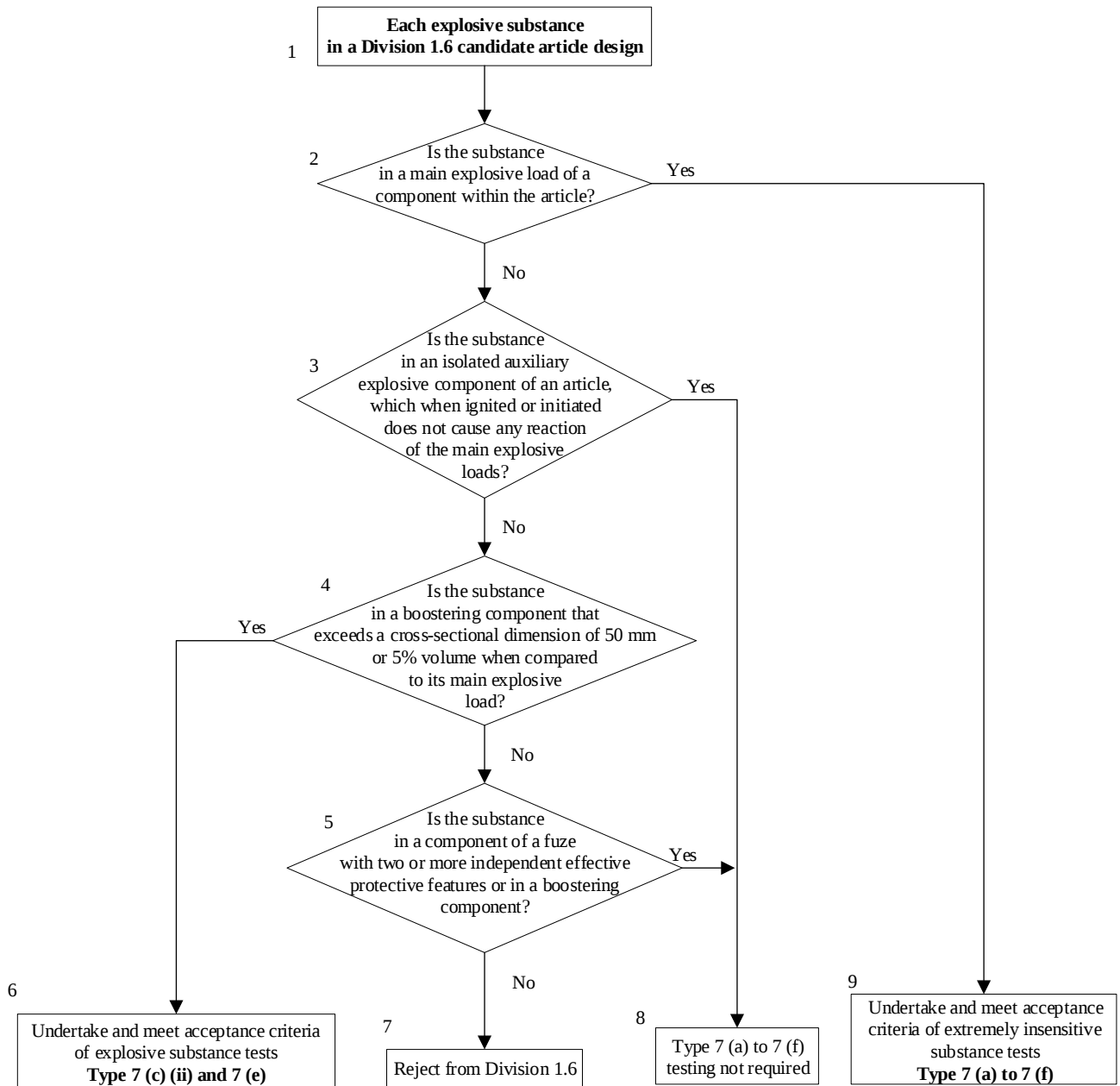
Figure 10.4 Replace current figure 10.4 with the following.

**“Figure 10.4:PROCEDURE FOR AMMONIUM NITRATE EMULSION,
SUSPENSION OR GEL, INTERMEDIATE FOR BLASTING EXPLOSIVES**



”

Figure 10.5 Replace current figure with the following:



- 10.4.2.3 In the first sentence:
- insert “, as appropriate,” after “series 6 tests”
 - Replace “behaviour of a product if a load is involved” with “behaviour of the explosive if it is involved”; and
 - amend the text between parenthesis to read: “(boxes 32, 33, 34, 35, 36 and 37 of Figure 10.3)”
- In the second sentence, replace:
- “a product” with “a substance or article in the transport configuration”; and
 - “should be excluded from Class 1 (boxes 35 and 36 of Figure 10.3)” with “can be excluded from the class of explosives (boxes 38 and 39 of Figure 10.3)”.
- 10.4.2.4 In the first sentence:
- delete “explosive” after “extremely insensitive”
 - Replace “(box 40, Figure 10.3)” with “(box 23, Figure 10.3)”; and
 - After “any candidate for Division 1.6”, replace “should pass one of each” with “shall pass one of each”
- For Type 7 (g), replace “as presented for transport” with “as presented for classification;” and delete the words: “which is in the condition”.
- 10.4.2.5 In the first sentence, replace:
- “Is the substance a candidate” with “Is it a candidate”
 - “emulsion or suspension” with “emulsion, suspension”, and
 - “(box 2 (a), Figure 10.2)” with “(box 3, Figure 10.2)”
- Amend the end of the last sentence to read as follows: “...of ANEs for containment in portable tanks as oxidizing substances”.
- 10.4.3.3 In the second sentence, replace “most disadvantageous” with “most severe”. In the third sentence replace “are to be carried” with “are classified”.
- In (a), replace “by the competent authority” with “, where appropriate by the competent authority,”.
- 10.4.3.4 In (a), replace:
- “articles are carried” with “articles are classified”; and
 - “in the package (see also section 10.4.3.4 (d))” with “in the package (see also sub-paragraph 10.4.3.4 (d) below)”.
- In (b), amend the end of the first sentence to read “...each type of 6 (a) test (see also sub-paragraph 10.4.3.4 (d) below)”.
- In (b) (i) replace “detonation and/or ignition” with “initiation”.
- 10.4.3.6 Replace “should be used” with “are used” and “establish that the explosive” with “establish that an explosive”.
- After “extremely insensitive” delete “detonating”.
- Replace “used to establish” with “are used to establish”.
- Insert “predominantly” before containing EIS(s).

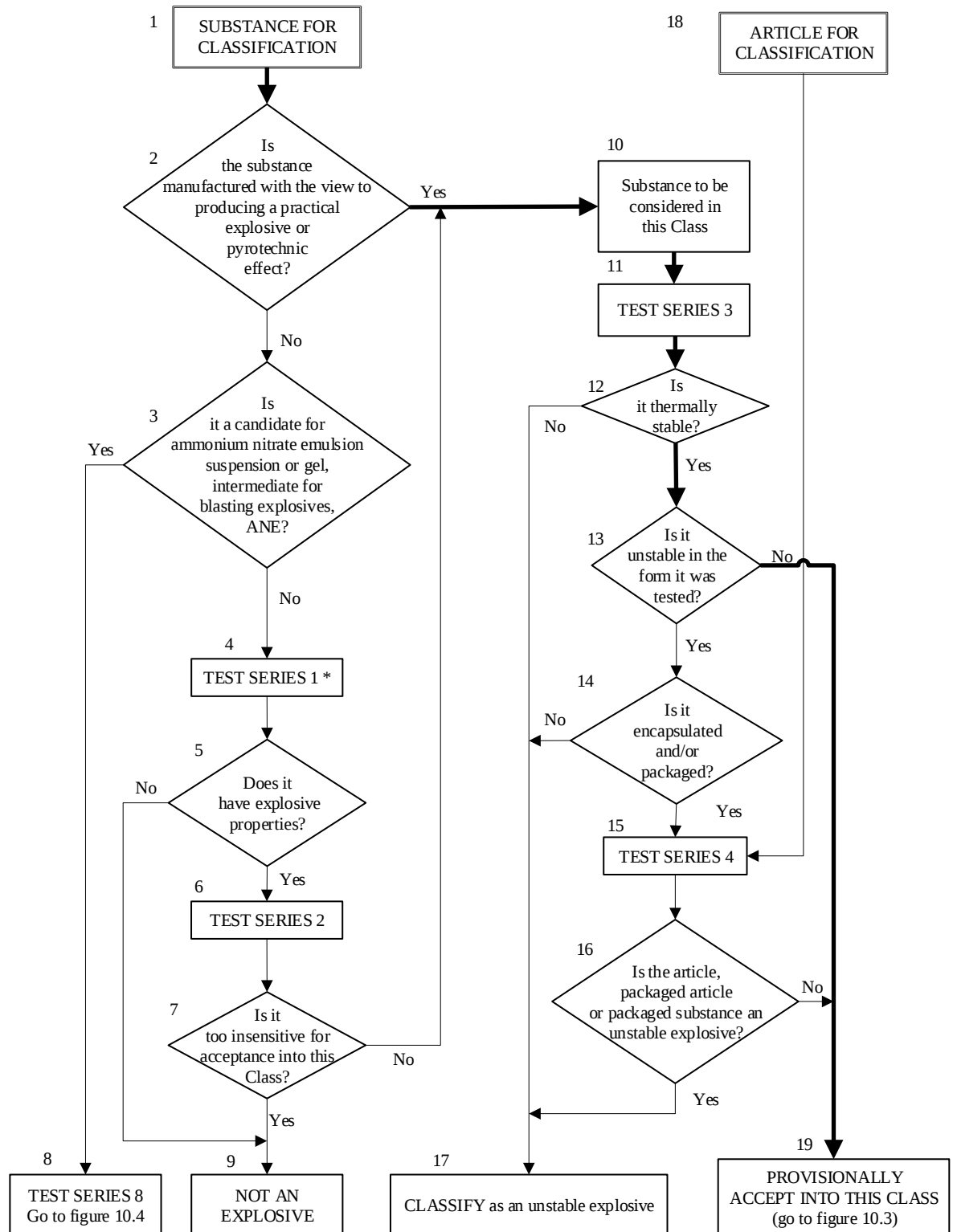
- 10.4.3.7 In the first sentence, replace “should be performed” with “are performed”.
- In the second sentence replace “for transport” with “for classification” and “the competent authority” with “the classifier”.
- Amend 10.4.3.7 (a) to read as follows: “Complex articles may contain multiple substances and test types 7 (a) to (f) shall be completed for all main explosive load and boosting component substances, as appropriate, within the article to be classified in Division 1.6.”
- In (b), delete the comma after “boosting” and replace “Box 3” with “Box 9” and “Box 24” with “Box 21”.
- In (c), replace “Box 4” with “Box 3”
- In (d), replace “Box 6” with “Box 4”, “Box 7” with “Box 6” and “Box 24” with “Box 21”.
- In (e), replace “Box 8” with “Box 5” and “Box 24” with “Box 21”.
- 10.4.3.8 Amend the end of the first sentence to read: “may be accepted as an oxidizing solid or liquid”.
- In the second sentence, replace “Class 1” with “the class of explosives”.
- 10.4.3.9 Delete the paragraph.
- 10.5.1 Replace “Class 1” with “the class of explosives” and amend the end of the paragraph to read as follows: “assignment procedures to “hexanitrostilbene (UN No.0392) and musk xylene (UN No. 2956), are given in figures 10.6 (a) to (d) and 10.7 (a) to (d)”.
- 10.5.2 Replace “Figure 10.10” with “Figure 10.8”.
- Figure 10.6 Insert the following new Figures 10.6 (a) to 10.6 (d):

“Figure 10.6 (a): RESULTS FROM THE APPLICATION OF THE PROVISIONAL ACCEPTANCE PROCEDURE IN THE CLASS OF EXPLOSIVES (FIGURE 10.2) TO HEXANITROSTILBENE		
1.	Name of substance:	Hexanitrostilbene
2.	General data	
2.1	Composition:	hexanitrostilbene
2.2	Molecular formula:	C ₁₄ H ₆ N ₆ O ₁₂
2.3	Physical form:	powder
2.4	Colour:	yellow orange
2.5	Apparent density:	1700 kg /m ³
2.6	Particle size:	0.1 – 0.3 mm
3.	Box 2:	Is the substance manufactured with the view to producing a practical explosive or pyrotechnic effect?
3.1	Answer:	Yes
3.2	Exit	Go to Box 10
4.	Box 10:	Substance to be considered in this class

**“Figure 10.6 (a):
RESULTS FROM THE APPLICATION OF THE PROVISIONAL
ACCEPTANCE PROCEDURE IN THE CLASS OF EXPLOSIVES
(FIGURE 10.2) TO HEXANITROSTILBENE**

5.	Box 11:	Test Series 3
5.1	Thermal stability:	75 °C/48 hour test (test 3 (c))
5.2	Sample conditions:	100 g of substance at 75 °C
5.3	Observations:	No ignition, explosion, self-heating or visible decomposition
5.4	Result:	"-", thermally stable
5.5	Impact sensitivity:	BAM fallhammer test (test 3 (a) (ii))
5.6	Sample conditions:	as received
5.7	Observations:	Limiting impact energy 5 J
5.8	Result:	"-", not unstable in the form it was tested
5.9	Friction sensitivity:	BAM friction test (test 3 (b) (i))
5.10	Sample conditions:	as received
5.11	Observations:	Limiting load > 240 N
5.12	Result:	"-", not unstable in the form it was tested
5.13	Ease of deflagration to detonation transition	Small scale burning test (test 3 (d))
5.14	Sample conditions:	Ambient temperature
5.15	Observations:	Ignites and burns
5.16	Result:	"-", not unstable in the form it was tested
5.17	Exit:	Go to box 12
6.	Box 12:	Is it thermally stable?
6.1	Answer from test 3(c):	Yes
6.2	Exit:	Go to box 13
7.	Box 13:	Is it unstable in the form it was tested?
7.1	Answer from Test Series 3:	No
7.2	Exit:	Go to box 19
8.	Conclusion:	PROVISIONALLY ACCEPT INTO THIS CLASS
8.1	Exit:	Apply procedure for assignment to a division of the class of explosives

**“Figure 10.6 (b):
FLOW CHART FOR THE PROVISIONAL ACCEPTANCE OF
HEXANITROSTILBENE IN THE CLASS OF EXPLOSIVES**

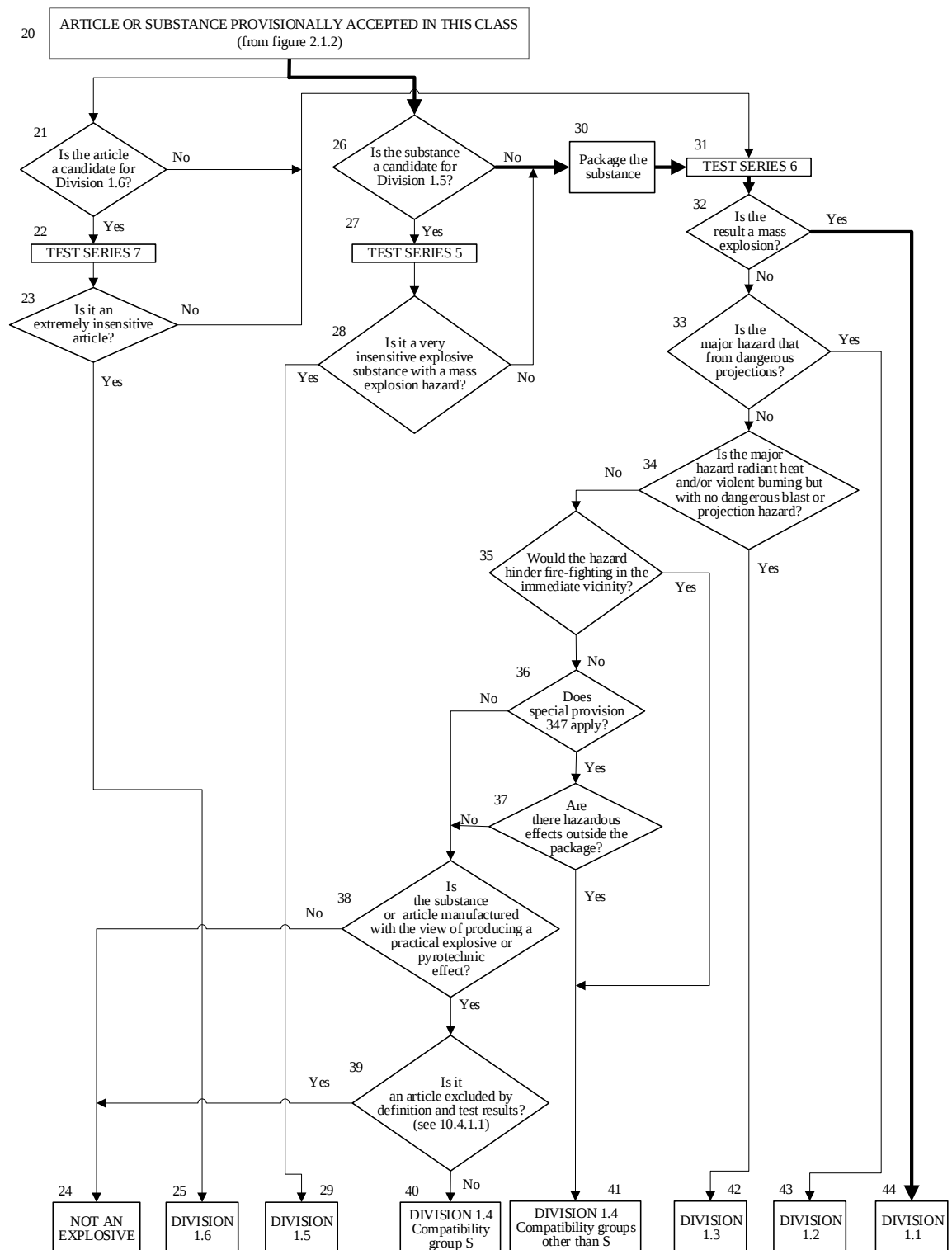


**“Figure 10.6 (c):
RESULTS FROM APPLICATION OF THE PROCEDURE FOR
ASSIGNMENT TO A DIVISION OF THE CLASS OF EXPLOSIVES
(FIGURE 10.3) TO HEXANITROSTILBENE**

1.Box 26:	Is the substance a candidate for Division 1.5?
1.1 Answer:	No
1.2 Result:	Package the substance (box 30)
1.3 Exit:	Go to box 31
2. Box 31:	Test Series 6
2.1 Effect of initiation in the package:	Test 6 (a) with detonator
2.2 Sample conditions:	Ambient temperature, 50 kg fibreboard drum
2.3 Observations:	Detonation, crater
2.4 Result:	Mass explosion
2.5 Effect of ignition between packages:	Test 6 (b) with detonator
2.6 Sample conditions:	Ambient temperature, 3 fibreboard drums
2.7 Observations:	Detonation, crater
2.8 Result:	Mass explosion
2.9 Effect of fire engulfment:	Test 6 (c) not required
3. Box 32:	Is the result a mass explosion?
3.1 Answer from Test Series 6	Yes
3.2 Exit	Go to box 44
4. Conclusion	Assign to Division 1.1

”

**“Figure 10.6 (d):
FLOW CHART FOR ASSIGNMENT TO A DIVISION OF THE CLASS OF
EXPLOSIVES OF HEXANITROSTILBENE**



”

Figure 10.7 (a) Current Figure 10.6 becomes Figure 10.7(a), as amended to read as follows:

**“Figure 10.7 (a):
RESULTS FROM THE APPLICATION OF THE PROVISIONAL
ACCEPTANCE PROCEDURE IN THE CLASS OF EXPLOSIVES
(FIGURE 10.2) TO MUSK XYLENE**

- | | | |
|-----------|---------------------------------------|--|
| 1. | Name of substance: | 5-tert-BUTYL-2,4,6-TRINITRO-m-XYLENE (MUSK XYLENE) |
| 2. | General data | |
| 2.1 | Composition: | 99% tert-butyl-2,4,6-trinitro-m-xylene |
| 2.2 | Molecular formula: | C ₁₂ H ₁₅ N ₃ O ₆ |
| 2.3 | Physical form: | Fine crystalline powder |
| 2.4 | Colour: | Pale yellow |
| 2.5 | Apparent density: | 840 kg /m ³ |
| 2.6 | Particle size: | < 1.7 mm |
| 3. | Box 2: | Is the substance manufactured with the view to producing a practical explosive or pyrotechnic effect? |
| 3.1 | Answer: | No |
| 3.2 | Exit | Go to Box 3 |
| 4. | Box 3: | Is it a candidate for ammonium nitrate emulsion, suspension or gel, intermediate for blasting explosives, ANE? |
| 4.1 | Answer: | No |
| 4.2 | Exit: | Go to Box 4 |
| 5. | Box 4: | Test Series 1 |
| 5.1 | Propagation of detonation: | UN gap test (test 1(a)) |
| 5.2 | Sample conditions: | Ambient temperature |
| 5.3 | Observations: | Fragmentation length 40 cm |
| 5.4 | Result: | "+", propagation of detonation |
| 5.5 | Effect of heating under confinement: | Koenen test (test 1(b)) |
| 5.6 | Sample conditions: | Mass 22.6 g |
| 5.7 | Observations: | Limiting diameter 5.0 mm
Fragmentation type "F" (time to reaction 52 s, duration of reaction 27 s) |
| 5.8 | Result: | "+", shows some explosive effects on heating under confinement |
| 5.9 | Effect of ignition under confinement: | Time/pressure test (test 1 (c) (i)) |
| 5.10 | Sample conditions: | Ambient temperature |
| 5.11 | Observations: | No ignition |
| 5.12 | Result: | "-", no effect on ignition under confinement |
| 5.13 | Exit: | Go to Box 5 |
| 6. | Box 5 | Does it have explosive properties? |

**“Figure 10.7 (a):
RESULTS FROM THE APPLICATION OF THE PROVISIONAL
ACCEPTANCE PROCEDURE IN THE CLASS OF EXPLOSIVES
(FIGURE 10.2) TO MUSK XYLENE**

6.1	Answer from Test	Yes
Series 1:		
6.2	Exit:	Go to box 6
7.	Box 6	Test Series 2
7.1	Sensitivity to shock:	UN gap test (test 2(a))
7.2	Sample conditions:	Ambient temperature
7.3	Observations:	No propagation
7.4	Result:	"-", not sensitive to shock
7.5	Effect of heating under confinement:	Koenen test (test 2(b))
7.6	Sample conditions:	Mass 22.6 g
7.7	Observations:	Limiting diameter 5.0 mm Fragmentation type "F" (time to reaction 52 s, duration of reaction 27 s)
7.8	Result:	"+", violent effect on heating under confinement
7.9	Effect of ignition under confinement	Time/pressure test (test 2 (c) (i))
7.10	Sample conditions:	Ambient temperature
7.11	Observations:	No ignition
7.12	Result:	"-", no effect on ignition under confinement
7.13	Exit:	Go to Box 7
8.	Box 7:	Is it too insensitive for acceptance into this class?
8.1	Answer from Test	No
Series 2:		
8.2	Conclusion	Substance to be considered in this Class (box 10)
8.3	Exit:	Go to Box 11
9.	Box 11:	Test Series 3
9.1	Thermal stability:	75 °C/48 hour test (test 3 (c))
9.2	Sample conditions:	100 g of substance at 75 °C
9.3	Observations:	No ignition, explosion, self-heating or visible decomposition
9.4	Result:	"-", thermally stable
9.5	Impact sensitivity:	BAM fallhammer test (test 3 (a) (ii))

**“Figure 10.7 (a):
RESULTS FROM THE APPLICATION OF THE PROVISIONAL
ACCEPTANCE PROCEDURE IN THE CLASS OF EXPLOSIVES
(FIGURE 10.2) TO MUSK XYLENE**

9.6	Sample conditions:	as received
9.7	Observations:	Limiting impact energy 25 J
9.8	Result:	"-", not unstable in the form it was tested
9.9	Friction sensitivity:	BAM friction test (test 3 (b) (i))
9.10	Sample conditions:	as received
9.11	Observations:	Limiting load > 360 N
9.12	Result:	"-", not unstable in the form it was tested
9.13	Ease of deflagration to detonation transition	Small scale burning test (test 3 (d))
9.14	Sample conditions:	Ambient temperature
9.15	Observations:	Ignites and burns slowly
9.16	Result:	"-", not unstable in the form it was tested
9.17	Exit:	Go to box 12
10.	Box 12:	Is it thermally stable?
10.1	Answer from test 3(c):	Yes
10.2	Exit:	Go to box 13
11.	Box 13:	Is it unstable in the form it was tested?
11.1	Answer from Test Series3	No
11.2	Exit:	Go to box 19
12.	Conclusion:	PROVISIONALLY ACCEPT INTO THIS CLASS
12.1	Exit:	Apply procedure for assignment to a division of the class of explosives

”

Figure 10.7 (b) Renummer current Figure 10.7 as 10.7 (b) as amended to read as follows:

**“Figure 10.7 (b):
FLOW CHART FOR THE PROVISIONAL ACCEPTANCE OF MUSK XYLENE IN
THE CLASS OF EXPLOSIVES**

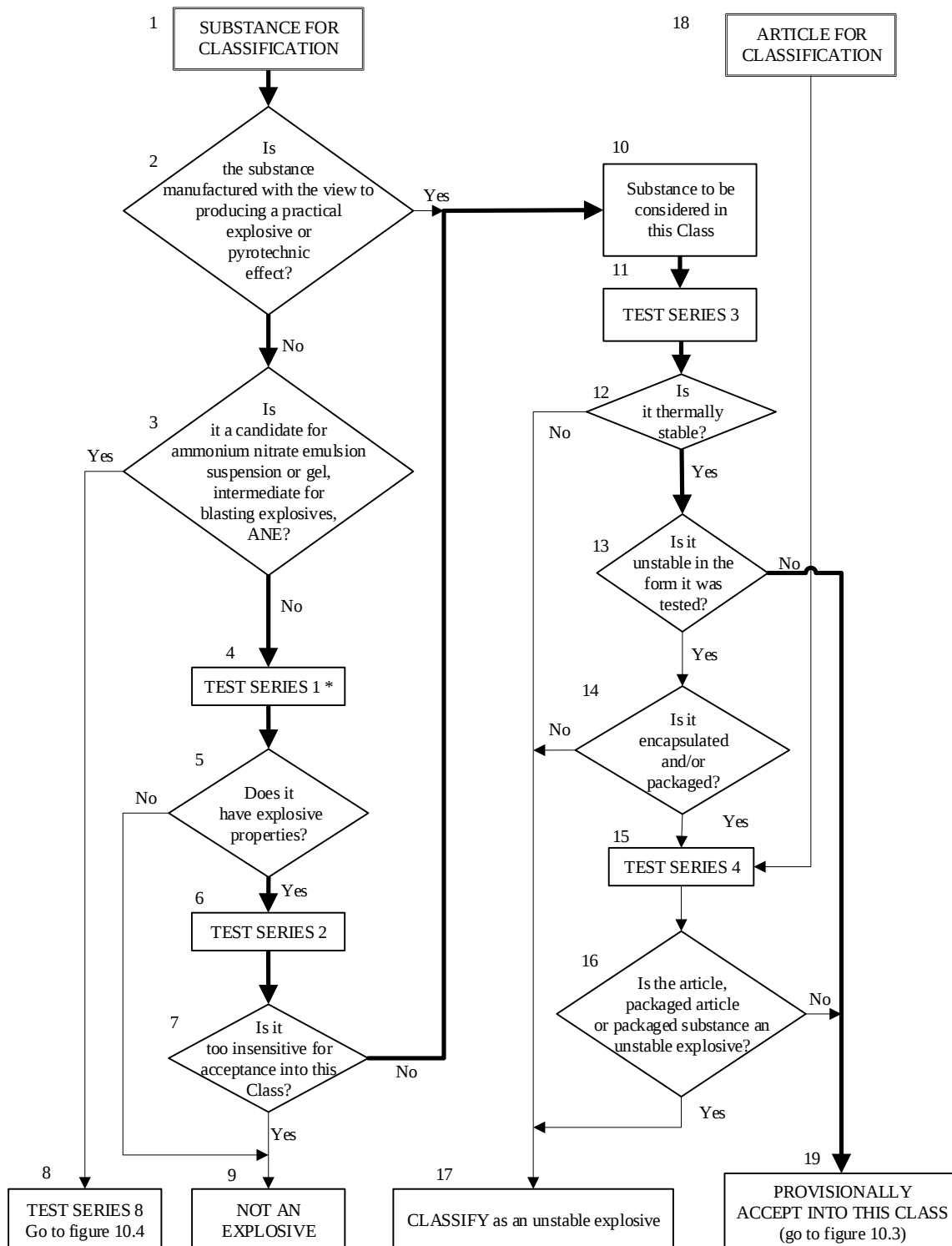


Figure 10.7 (c) Renumber current figure 10.8 as 10.7(c) and amend to read follows:

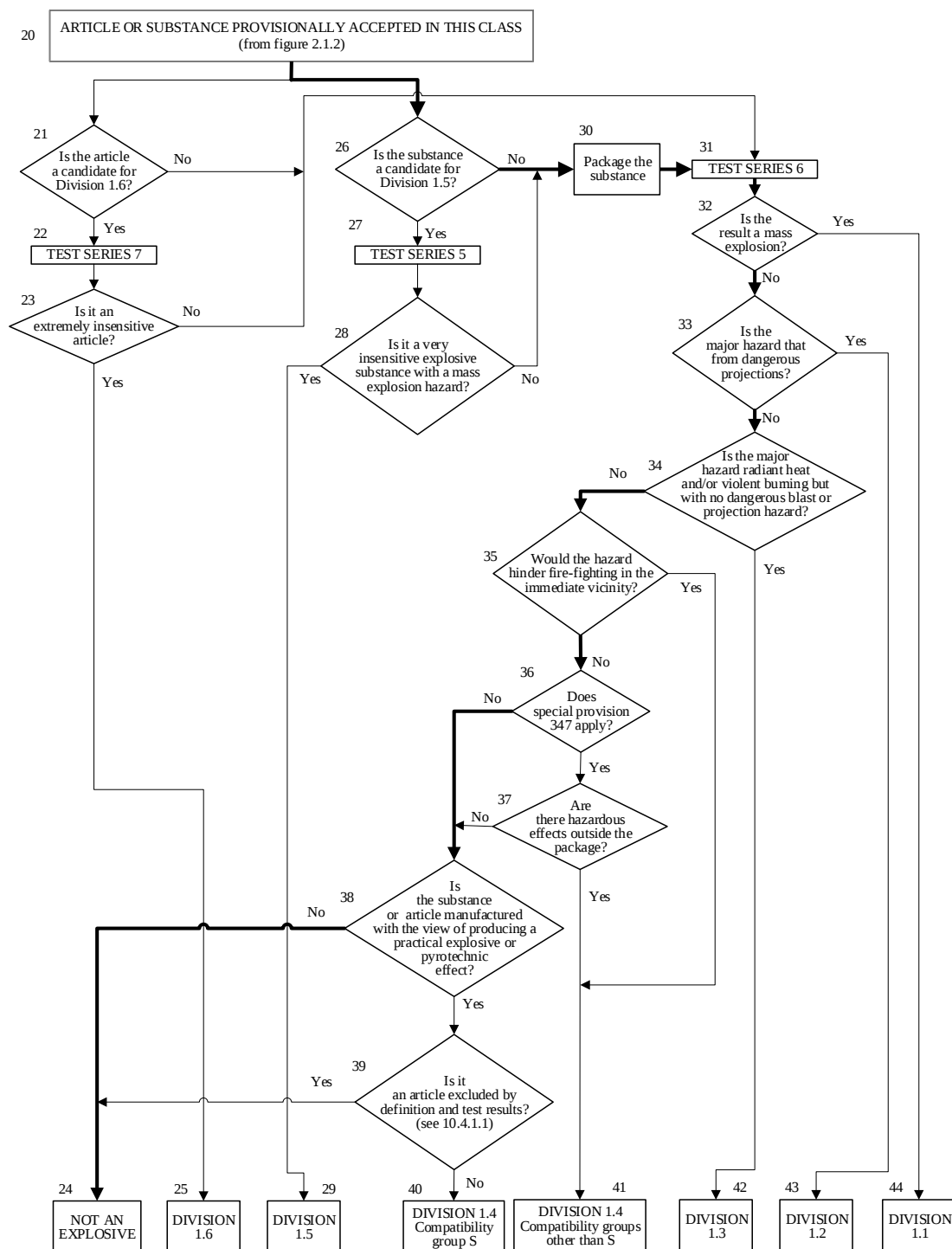
“Figure 10.7 (c): RESULTS FROM APPLICATION OF THE PROCEDURE FOR ASSIGNMENT TO A DIVISION OF THE CLASS OF EXPLOSIVES (FIGURE 10.3) OF MUSK XYLENE	
1. Box 26:	Is the substance a candidate for Division 1.5?
1.1 Answer:	No
1.2 Result:	Package the substance (box 30)
1.3 Exit:	Go to box 31
2. Box 31:	Test Series 6
2.1 Effect of initiation in the package:	Test 6 (a) with detonator
2.2 Sample conditions:	Ambient temperature, 50 kg fibreboard drum
2.3 Observations:	Only localised decomposition around detonator
2.4 Result:	No significant reaction
2.5 Effect on ignition in the package	Test 6 (a) with igniter
2.6 Sample conditions:	Ambient temperature, 50 Kg fibreboard drum
2.7 Observations:	Only localised decomposition around igniter
2.8 Result:	No significant reaction
2.9 Effect of propagation:	Type 6 (b) test not required as no effect outside package between packages in 6 (a) test
2.10 Effect of fire engulfment	Test 6 (c)
2.11 Sample conditions:	3 × 50 kg fibreboard drums mounted on steel frame above wooden crib fire
2.12 Observations:	Only show burning with black smoke occurred
2.13 Result:	No effects which would hinder fire fighting
2.14 Exit:	Go to box 32
3. Box 32	Is the result a mass explosion?
3.1 Answer from Test Series 6:	No
3.2 Exit:	Go to box 33
4. Box 33:	Is the major hazard that from dangerous projections?

**“Figure 10.7 (c):
RESULTS FROM APPLICATION OF THE PROCEDURE FOR
ASSIGNMENT TO A DIVISION OF THE CLASS OF EXPLOSIVES
(FIGURE 10.3) OF MUSK XYLENE**

4.1 Answer from Test Series 6:	No
4.2 Exit:	Go to box 34
5. Box 34:	Is the major hazard radiant heat and/or violent burning but with no dangerous blast or projection hazard?
5.1 Answer from Tests Series 6	No
5.2 Exit	Go to box 35
6. Box 35	Would the hazard hinder fire-fighting in the immediate vicinity?
6.1 Answer from Test Series 6:	No
6.2 Exit:	Go to box 36
7. Box 36	Does special provision 347 apply?
7.1 Answer:	No
7.2 Exit:	Go to box 38
8. Box 38	Is the substance or article manufactured with the view of producing a practical explosive or pyrotechnic effect?
8.1 Answer:	No
8.2 Exit:	Go to box 24
9. Conclusion:	NOT AN EXPLOSIVE
9.1 Exit:	Consider for another class/division

Figure 10.7 (d) Renumber current Figure 10.9 as 10.7(d), and amend to read as follows:

“Figure 10.7 (d): PROCEDURE FOR EXEMPTION OF MUSK XYLENE FROM THE CLASS OF EXPLOSIVES



”

Figure 10.8 Current Figure 10.10 becomes Figure 10.8.

(Reference document: ST/SG/AC.10/C.4/2018/1, as amended)

Section 32

32.5.1.1 At the end, delete “with a flash point of less than 23°C”.

(Reference document: ST/SG/AC.10/C.3/106/Add.1)

Section 38.3

38.3.5 (f) Amend sub-paragraph (ii) to read as follows:

“(ii) Mass of cell or battery;”.

(Reference document: ST/SG/AC.10/C.3/102/Add.1)

38.3.5 (f) Amend sub-paragraph (v) to read as follows:

“(v) Cell or battery model number or, alternatively, if the test summary is established for a product containing a cell or battery, the product model number;”.

(Reference document: ST/SG/AC.10/C.3/102/Add.1)

Section 41

41.2 At the beginning of the paragraph, replace “variation in container design” by “variations in portable tank or MEGC design”.

(Reference document: ST/SG/AC.10/C.3/104/Add.1)

41.3.1 In the introductory sentence and in (a) and (b), replace “container under test” by “prototype”.

(Reference document: ST/SG/AC.10/C.3/104/Add.1)

41.3.3.2 (a) In the first sentence, after “of 3000 Hz”, add “, and a resonant frequency of at least five times the sampling frequency”.

(Reference document: ST/SG/AC.10/C.3/104/Add.1)

41.3.3.2 (c) Replace the second sentence starting “The data acquisition system...” by “Aliasing must not exceed 1%, which may require the incorporation of an anti-aliasing filter into the data acquisition system;”

(Reference document: ST/SG/AC.10/C.3/104/Add.1)

41.3.4.1 In the introductory sentence and in paragraph (a), replace “container under test” by “prototype”,

(Reference document: ST/SG/AC.10/C.3/104/Add.1)

41.3.4.2 Replace “container” by “prototype”.

(Reference document: ST/SG/AC.10/C.3/104/Add.1)

41.3.4.3 In the first and third sentence, replace “container under test” by “prototype”.

(Reference document: ST/SG/AC.10/C.3/104/Add.1)

41.3.4.5 In the first sentence, replace “container under test” by “prototype”. In the second sentence, replace “container” by “portable tank or MEGC”.

(Reference document: ST/SG/AC.10/C.3/104/Add.1)

41.3.5.1 (b)(i) For “ ω_n ”, after “natural frequency”, replace (in-radians) by (radians/second).

(Reference document: ST/SG/AC.10/C.3/104/Add.1)

41.3.7 In the title, delete “for portable tanks with frame length of 20 feet”.

(Reference document: ST/SG/AC.10/C.3/104/Add.1)

41.3.7.1 In the introductory sentence, replace “tank container under test” by “prototype” and “containers” by “portable tanks or MEGCs”.

(Reference document: ST/SG/AC.10/C.3/104/Add.1)

41.3.7.2 In the third sentence, replace “tank containers” by “prototype designs”.

(Reference document: ST/SG/AC.10/C.3/104/Add.1)

41.3.8 (b) and (c) Replace “container” by “prototype”.

(Reference document: ST/SG/AC.10/C.3/104/Add.1)

41.3.8 (f) Replace “container” by “the prototype”.

(Reference document: ST/SG/AC.10/C.3/104/Add.1)

Appendix 10

Insert a new appendix 10 to read as follows:

“APPENDIX 10

STABILITY TESTS FOR NITROCELLULOSE MIXTURES

1. Introduction

1.1 The Bergmann Junk test and the methyl violet paper test are used to determine whether nitrocellulose mixtures are considered to be stable for transport.

1.2 The methyl violet paper test is a qualitative test and determines the stability of a nitrocellulose mixture by examining the colour change of reagent paper over a period of time.

1.3 The Bergmann-Junk test is a quantitative stability test applicable to all types of nitrocellulose mixtures (NC). The test measures the quantity of NO gas per g NC given off by nitrocellulose heated for two hours at 132°C determined by titration with alkali. The expression “NO gas” comprises all types of NO-gas formed during the heating for 2 hours at 132°C. The Bergmann Junk test method allows a reliable and reproducible quantitative assessment of chemical stability. Thus this test is the preferred method.

2. Bergmann-Junk test

2.1 Introduction

The Bergmann-Junk test is a quantitative stability test applicable to all types of nitrocellulose (NC). The test measures the quantity of NO gas per g of NC given off by

1 (one) or 2 (two) gram(s) of nitrocellulose heated for two hours at $132^{\circ}\text{C} \pm 1^{\circ}\text{C}$ (*Plasticised NC: 3 (three) grams are heated for 1 hour*) as determined by titration with alkali.

2.2 Apparatus and materials

2.2.1 Analytical balance, precision 10 mg or better.

2.2.2 Bergman-Junk tube made of clear glass, approximately 17.5 mm inner diameter, 19.5 mm, outer diameter, and 270 mm to 350 mm long fitted with a condensing chamber. Several different types of suitable condensing chambers are commercially available. (for examples see figures A10.1 and A10.2).

2.2.3 Stability bath: Oil or suitable fluid bath or metal block capable of maintaining the temperature of the stability tubes at $132^{\circ}\text{C} \pm 1^{\circ}\text{C}$ or better. The temperature of the bath should be monitored with a calibrated thermometer or thermocouple (precision 0.1°C) which is located in one of the test wells.

2.2.4 The following apparatus is required:

- 10 cm³ semi-automatic pipette or equivalent.
- 250 cm³ conical flash with wide neck.
- 50 cm³ test tube.
- Titration burette 10 ml to 25 ml; or automated potentiometric titration apparatus with pH-electrode and calibrated class A burette

2.2.5 Sodium hydroxide (NaOH) solution 0.01 mol/l, specification 0.009998 to 0.01002 mol/l for manual titration with a standard burette, or 0.1 mol/l for the titration with an automated potentiometric titration apparatus with pH-electrode and calibrated class A burette, with factor determined to obtain the exact molarity of the sodium hydroxide solution.

2.2.6 Suitable pH indicator e.g. methyl orange, methyl red, methyl red/methylene blue or R8 B3 coloured indicating fluid (Tacchiro). Solution composed of 1% alcohol mixed with 8 g of methyl red and 3 g of purple methyl (if manual titration is used).

2.2.7 Fully deionized or distilled water with a conductivity $< 1 \mu\text{S/cm}$ (micro Siemens /cm).

2.3 Procedure

2.3.1 Weigh 1 (one) or 2 (two) gram(s) of dry nitrocellulose to an accuracy of 0.01 g. (*Weigh 3 (three) grams of plasticised NC to an accuracy of 0.01 g*). The moisture content of the sample must be below 1 % after the drying process and at the time, when it is introduced in the tube. (Drying conditions must be chosen, which avoid a decomposition of the nitrocellulose, e.g. 50°C in a vacuum oven) With the help of a funnel introduce this into the tube which must be dry and clean. Wipe the ground section thoroughly and adjust the condensing chamber making sure that the above is well greased with silicone grease; it may also not be greased.

2.3.2 Measure out 15 ml to 50 ml of distilled water, depending on the condenser type, in a test tube and pour into the bulbs of the condenser. Ensure that no water enters the stability tube.

2.3.3 Make sure that the stability bath has reached a temperature of $132^{\circ}\text{C} \pm 1^{\circ}\text{C}$ and then insert each tube into one of the apertures in the bath. The depth of immersion of the tube will vary depending on the type of stability bath used but must be between 110 mm and 220 mm. Make a note of the time at which the experiment begins.

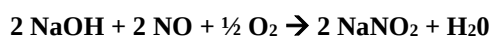
2.3.4 Maintain the tubes at a temperature of $132\text{ }^{\circ}\text{C} \pm 1\text{ }^{\circ}\text{C}$ for two hours unless pronounced fuming is observed. If fuming occurs, the test shall be stopped immediately and the duration of the heating period noted.

2.3.5 After two hours at 132°C (*1 hour for plasticised NC*) remove the tube from the bath, place it in its stand and allow to cool behind a safety screen. During this time some water may be drawn into the lower tube. After 30 min cooling transfer the contents of the condensing chamber into the lower tube and rinse the condensing chamber with distilled water.

2.3.6 Transfer the contents of the lower tube into the conical flask and rinse with distilled water. The total amount of liquid should not be more than 175 ml.

2.3.7 Titrate with $c_{\text{NaOH}} = 0.01\text{ mol/l}$ sodium hydroxide solution until the color of the indicator changes.

2.3.8 *Calculations*



$$V_{\text{NO}} = \frac{c_{\text{NaOH}} \times C_{\text{NaOH}} \times V_{\text{NO,m}}}{m_{\text{NC}}} = \frac{C_{\text{NaOH}} \times 0.224}{m_{\text{NC}}} = C_{\text{NaOH}} \times 0.224$$

where:

V_{NO} = volume of the evolved nitrogen oxide in cm^3/g nitrocellulose

C_{NaOH} = concentration of sodium hydroxide solution = 0.01 mol/l

C_{NaOH} = consumption of sodium hydroxide solution in ml.

$V_{\text{NO,m}}$ = molar volume of NO gas = 22.4 l/mol

m_{NC} = mass of nitrocellulose in g

If a sodium hydroxide solution with $c_{\text{NaOH}} =$ concentration of sodium hydroxide solution = 0.1 mol/l is used, the formula is:

$$V_{\text{NO}} = C_{\text{NaOH}} \times 2.24$$

The formula is based on the assumption that nitrogen oxide evolves as NO and that NO is an ideal gas; according on the ideal gas law, 1 mol of gas occupies a volume of 22.4 l .

The total absence of acidity in the water is verified by a mock test; otherwise the value determined by the mock test is subtracted.

Also aliquot portions of the water containing the NO gas may be used, resulting in different factors in the formula.

2.4 Test criteria and method of assessing results

2.4.1 The test result is considered "+" and the substance is classified as unstable if the quantity of NO gas given off is more than 2.5 ml/g of NC. If the quantity of NO gas given off is less than or equal to 2.5 ml/g , of NC the result is "-" and the substance is classified as stable.

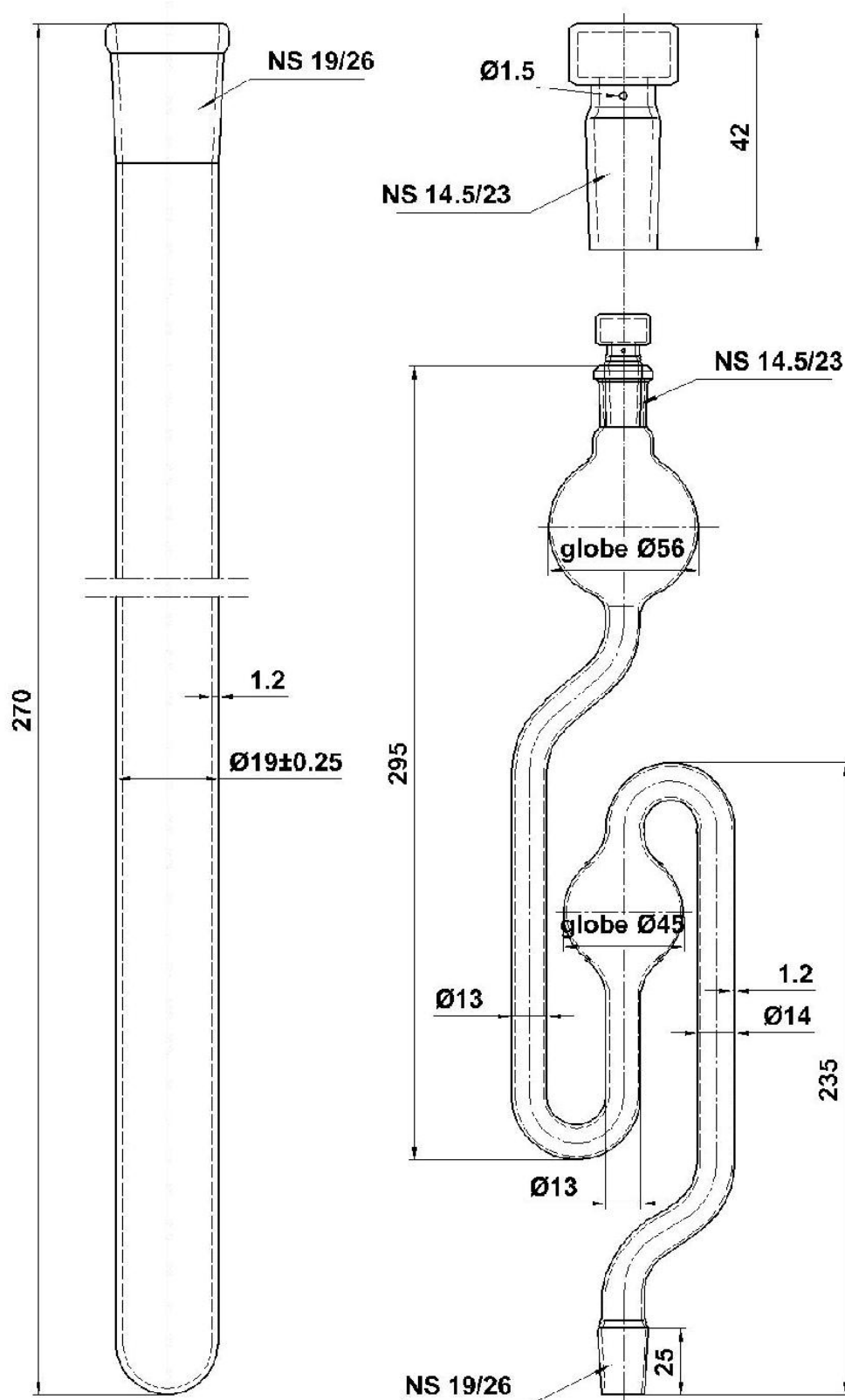
2.5 Examples of results

Quantity of NO gas/g of NC	Result
2.6 ml	+
2.5 ml	-

Figure A10.1: Condensing chamber for Bergmann Junk test example 1



Figure A10.2: Condensing chamber for Bergmann Junk test example 2



3. Methyl violet paper test (134.5°C heat test)

3.1 Introduction

The stability of nitrocellulose is tested by examining the colour change of reagent paper over a period of time.

3.2 Apparatus and materials

3.2.1 Apparatus

The following equipment shall be used in the apparatus for 134.5°C heat test (methyl violet paper test):

- (a) Analytical balance, precision 0.01 g or better.
- (b) Stability bath: Water-ethylene glycol bath, oil bath, or metal block oven capable of maintaining the temperature of the stability tubes at $134.5 \pm 0.5^\circ\text{C}$. Temperature of bath has to be monitored with a calibrated thermometer or thermocouple (precision 0.1°C) which is located in a test tube filled with inert material (e.g., sand); the test tube is placed in one of the thermowells. The inner diameter of each thermowell in the apparatus shall be 19 ± 0.5 mm. Depth of immersion of the stability test tubes shall be such that no more than 6 to 7 mm of the tubes project above the bath.
- (c) Stability test tubes made of clear glass, approximately 15 mm inner diameter; 18 mm outer diameter; and 290 mm length.
- (d) Powder funnel; metal or conductive plastic funnel with a long tube (to prevent electrostatic charging).
- (e) Corks, each containing one breather hole 4 mm in diameter (or notch of equivalent area).

3.2.2 Materials

3.2.2.1 A sample of dry nitrocellulose weighing 2.50 ± 0.01 g. The moisture content of the sample must be below 1% after the drying process and at the time, when it is introduced in the tube. Drying conditions must be chosen, which avoid a decomposition of the nitrocellulose, e.g. 50°C in a vacuum oven.

3.2.2.2 Standardized reagent methyl violet test papers approximately 70 ± 1.0 mm long and 20 ± 0.6 mm wide (see 6.16) or methyl violet test papers prepared and tested using the following method:

3.2.2.2.1 Preparation of the indicator solution

To prepare 100 ml of indicator solution (note: if different amount of solution is required, it can be prepared while maintaining these proportions): 0.250 g of basic rosaniline (equivalent to CAS number 632-99-5) is weighed into a porcelain dish, and about 10 ml of reagent grade acetic acid is added. The dish is heated on a water bath until all excess of acid is removed. In a 100 ml graduate cylinder, 0.168 g of crystal violet (equivalent to CAS number 548-62-9) is dissolved in 30 ml of high purity water and 5.0 g (4 ml) of reagent grade glycerine is added. The content of the porcelain dish is added to the cylinder using ethanol (minimum 95% v/v) and adjusted to produce 100 ml of solution. The solution is mixed thoroughly.

3.2.2.2.2 Preparation of the methyl violet paper

Sheets of paper are prepared by cutting filter papers (equivalent to Whatman 597, typically 580 mm × 580 mm with approximately 8.5 mg/cm²) into square parts that will fit into a low edge dish large enough to fit the cut sheet (typically cut in 4 square parts about 290 mm × 290 mm). In a fume-hood, the methyl violet solution is poured into the low edge dish. Separately, each cut sheet of paper is dipped completely into the solution for about 30 seconds. The strip is removed from the solution and the wet sheet of paper rotated vertically until the solution stops dripping (excess alcohol will evaporate in about 1 minute). The strip is hung up overnight to dry in a room free from deleterious fumes. When dry, the strips are cut in the size of 70 ± 1.0 mm long and 20 ± 0.6 mm wide. Once certified, they are kept in tightly closed amber glass bottles or opaque plastic bottles with a maximum of 200 papers per bottle. The bottle shall be kept closed, stored at room temperature, and out of direct light at all times except to briefly extract indicator papers.

3.2.2.2.3 Certification of the methyl violet paper

3.2.2.2.3.1 A minimum of one paper from each 200 max bottle is tested for the content in water and shall be 7.5 to 15% water content by oven drying. If required, the paper may be rehydrated by keeping the paper in a controlled humidity chamber controlled at 60 to 80% relative humidity until the correct water content is obtained.

3.2.2.2.3.2 To confirm that the reactivity of the methyl violet paper is acceptable, a minimum of 1 paper from each 200 max bottle shall be tested using nitrogen dioxide gas of known concentration in air between 1500 and 2500 ppm (v/v). The gas may be obtained already diluted and certified or obtained by dilution using pure nitrogen dioxide. The gas concentration shall be known with an accuracy of ± 2.5%.

3.2.2.2.3.3 Based on the concentration of the nitrogen dioxide gas, the required flowrate for an end-point centered at 55 min is given by:

Flowrate (ml/min) = 83636 / Gas concentration in ppm (v/v) of nitrogen dioxide gas.

3.2.2.2.3.4 The flowrate shall be maintained within ± 1.5 ml/min of the calculated value during the certification of the paper. The paper is tested using the standard gas and a cylindrical flow cell of about 30 ml containing one paper (the flow cell diameter is similar to the methyl violet paper width). The end-point is obtained when the paper is completely salmon pink after 55 ± 7 min.

3.2.2.2.3.5 Only the batches that meet those 2 criteria (water content and reaction time) will be considered certified methyl violet paper. The paper shall be stored at room temperature and in the shade. The maximum shelf-life of the indicator papers in a sealed bottle is 5 years. Once the bottle is open, the shelf-life of the bottle's contents is reduced to 1 year. After 1 year, the water content of the paper shall be verified and adjusted, if necessary. The bottle containing the verified indicator papers shall be given another 1 year of shelf-life. Under no circumstances shall the indicator paper shelf-life be extended beyond 5 years after manufacture.

3.3 Procedure

3.3.1 Sample and interior of test tubes shall not be touched by bare hands. The test is to be performed in duplicate; with further repetition of test if the two results of the duplicate measurement differ by more than 5 min.

3.3.2 Two portions of 2.5 ± 0.01 g each of dry nitrocellulose sample are transferred into the stability test tubes, preferably by a powder funnel. Each tube is tapped gently in order to settle the material, and any material adhering to the sides of the tubes is brushed down. If the nitrocellulose occupies a greater length than 5 cm, it has to be compressed to that length by

means of a flat headed rod. Into each tube a piece of the test paper is placed vertically so that the lower end of the paper is 25 mm above the specimen. Then a cork is placed in each tube. The two tubes are placed in the bath and maintained at a temperature of $134.5 \pm 0.5^{\circ}\text{C}$.

3.4 Test criteria and method of assessing results

3.4.1 In order to determine the test time, the test papers are examined after the first 20 min in the bath, and thereafter at 5 min intervals. For each examination of test papers, the tubes are lifted half way out of the bath to monitor test paper colour change, and quickly replaced.

3.4.2 When the test paper in any tube has changed colour completely to salmon pink, the test is considered complete.

3.4.3 The test time is then recorded (for example, if the violet paper is not completely changed in 25 min, but is completely changed in 30 min, the time of the test is recorded as 30 min). The test is discontinued when the salmon pink end point is attained in any of the papers.

3.4.4 The test result is considered "+" and the substance is classified as unstable if the test paper completely changes colour in less than 30 min. If the colour change exceeds 30 min the result is "-" and the substance is classified as stable.

3.5 Examples of results

Time	Result
25 min	+
35 min	-

”

(Reference document: ST/SG/AC.10/C.3/106/Add.1)
