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COMMITTEE OF EXPERTS ON THE
TRANSPORT OF DANGEROUS GOODS

REPORT OF THE COMMITTEE OF EXPERTS ON ITS SIXTEENTH SESSION
(3-12 December 1990)

Addendum 4

Annex 5 - Adopted text and amendments to chapters 9, 10, 11, 12 and 13 of the Recommendations on the Transport of Dangerous Goods (Sixth revised edition) (ST/SG/AC.10/1/Rev.6)

GE.90-24606/2746B

CHAPTER 9

(a) Amend the last sentence of paragraph 9.1.5 to read:

"The packagings used for organic peroxides and self-reactive substances should comply with the requirements for the medium danger category (Packing Group II) mentioned in 9.1.3."

(b) Insert a new paragraph 9.1.9 to read as follows:

"Packagings used for solids which may become liquid at temperatures likely to be encountered during transport should also be capable of containing the substance in the liquid state."

(c) Insert in paragraph 9.3.12 immediately after clause (b) the following new sentence:

"The inner receptacle of composite packagings may be tested without the outer packaging provided the test results are not affected."

(d) Amend the beginning of 9.4.4 to read:

"The letters 'V' or 'W' may follow the packaging code. The letter 'V' signifies a special packaging, see 9.7.1.7. The letter 'W' signifies that the packaging, although of the same type ..."

(e) Paragraph 9.7.1.6, add at the end:

"In addition, provided an equivalent level of performance is maintained, the following variations in inner packagings are allowed without further testing of the package:

(a) Inner packagings of equivalent or smaller size may be used provided:

(i) The inner packagings are of similar design to the tested inner packagings (e.g. shape - round, rectangular, etc.);

(ii) The material of construction of the inner packagings (glass, plastics, metal, etc.) offers resistance to impact and stacking forces equal to or greater than that of the originally tested inner packaging;

(iii) The inner packagings have the same or smaller openings and the closure is of similar design (e.g. screw cap, friction lid, etc.);

(iv) Sufficient additional cushioning material is used to take up void spaces and to prevent significant movement of the inner packagings;

(v) Inner packagings are oriented within the outer packaging in the same manner as in the tested package;

(b) A lesser number of the tested inner packagings, or of the alternative types of inner packagings identified in (a) above, may be used provided sufficient cushioning is added to fill the void space(s) and to prevent significant movement of the inner packagings."

(f) Insert a new paragraph 9.7.1.7 to read:

"9.7.1.7 Inner packagings of any type for solids or liquids may be assembled and transported without testing in an outer packaging under the following conditions:

(a) The outer packaging should have been successfully tested in accordance with 9.7.3 with fragile (e.g. glass) inner packagings using the Packing Group I drop height.

(b) The total combined gross mass of inner packagings should not exceed one half the gross mass of inner packagings used for the drop test in (a) above.

(c) The thickness of cushioning material between inner packagings and between inner packagings and the outside of the packaging should not be reduced below the corresponding thicknesses in the originally tested packaging; and when a single inner packaging was used in the original test, the thicknesses of cushioning between inner packagings should not be less than the thickness of cushioning between the outside of the packaging and the inner packaging in the original test. When either fewer or smaller inner packagings are used (as compared to the inner packagings used in the drop test), sufficient additional cushioning material should be used to take up void spaces.

(d) The outer packaging should have passed successfully the stacking test in 9.7.6 while empty. The total mass of identical packages should be based on the combined mass of inner packagings used for the drop test in (a) above.

(e) Inner packagings containing liquids should be completely surrounded with a sufficient quantity of absorbent material to absorb the entire liquid contents of the inner packagings.

(f) When the outer packaging is intended to contain inner packagings for liquids and is not leakproof, or is intended to contain inner packagings for solids and is not siftproof, a means of containing any liquid or solid contents in the event of leakage should be provided in the form of a leakproof liner, plastics bag or other equally efficient means of containment.

(g) For air transport, packagings should comply with 9.3.4.1.

(h) Packagings should be marked in accordance with 9.5 as having been tested to Packing Group I performance for combination packagings. The marked gross mass in kilogrammes should be the sum of the mass of the outer packaging plus one half of the mass of the inner packaging(s) as used for the drop test referred to in (a) above."

(g) Renumber paragraphs 9.7.1.7 and 9.7.1.8 as 9.7.1.8 and 9.7.1.9.

(h) Amend paragraph 9.7.2.1 to read:

"9.7.2.1 Tests should be carried out on packagings prepared as for transport including, with respect to combination packagings, the inner packagings used. Inner or single receptacles of packagings should be filled to not less than 98% of their capacity for liquids or 95% for solids. For combination packagings where the inner packaging is designed to carry liquids and solids, separate testing is required for both liquids and solid contents. The substances or articles to be transported in the packagings may be replaced by other substances or articles except where this would invalidate the results of the tests. For solids, when another substance is used it should have the same physical characteristics (mass, grain size, etc.) as the substance to be carried. It is permissible to use additives, such as bags of lead shot, to achieve the requisite total package mass, so long as they are placed so that the test results are not affected."

(i) The existing text of 9.7.2.3 should be retained, with the addition of the following note:

"Note. Average values should fall within these limits. Short-term fluctuations and measurement limitations may cause individual measurements to vary by up to ±5% relative humidity without significant impairment of test reproducibility."

CHAPTER 10

(a) In table 10.1:

In E3, column 3 delete: "steel, removable head (1A2) with coating other than lead".

In E102, E106, E112 and E119, column 3 under the heading "Boxes" insert in the appropriate line the terms "plastics, solid (4H2)".

In E137, insert in column 3 after the heading "Boxes" a new first line "fibreboard (4G)". In column 4 add Ppr "56";

Also in column 3 after "reconstituted wood" add "plastics, solid (4H2)".

(b) In table 10.2, Particular Packing Requirement 54:

For to accumulate read to generate and/or accumulate.

Delete the word "inner".

Insert a new particular packing requirement to read:

"56. Fibreboard boxes (4G) should not be used as outer packaging for UN 0106 or UN 0107."

CHAPTER 11

(1) Add to 11.3.3.3 (g):

"If the formulation is not thermally stable or a diluent other than type A is used for desensitization, the formulation should be defined as ORGANIC PEROXIDE TYPE F."

(2) In 11.3.8.1 add "metal" before "packagings".

CHAPTER 12

(a) In paragraph 12.1.1, first sentence, delete "except air transport".

(b) In paragraph 12.2.2, second sentence, delete "of being carried by land or sea and".

(c) Amend paragraph 12.22.6 (a) to read:

"with a degree of filling, for liquids having a viscosity of less than 2,680 centistokes at 20° C, of more than 20% but less than 80%, unless the shells of tank-containers are divided by partitions or surge plates, into sections of not more than 7,500 litres capacity;".

(d) Table 12.1:

(1) Insert a new column (3) headed "Division". Renumber columns (3) to (8) as (4) to (9).

(2) Amend existing entries as follows:

"UN 1005	col.(3)	2.3	col.(4)	8			
1009		2.2					
1010		2.1					
1011		2.1					
1012		2.1					
1017		2.3		5.1			
1018		2.2					
1020		2.2					
1027		2.1					
1028		2.2					
1029		2.2				new col.(8)	1.23
1030		2.1					
1032		2.1					
1033		2.1					
1036		2.1					
1037		2.1					
1040		2.3		2.1			
1041	col.(3)	2.3	col.(4)	2.1			
1055		2.1					
1061		2.1					
1062		2.3					
1063		2.1					
1064		2.3		2.1			
1067		2.3		5.1			

UN 1075	2.1
1077	2.1
1079	2.3
1082	2.1
1083	2.1
1085	2.1
1086	2.1
1087	2.1
1581	2.3
1582	2.3
1858	2.2
1912	2.2
1958	2.2
1969	2.1
1973	2.2
1974	2.2
1976	2.2
1978	2.1
1983	2.2
2517	2.1
2602	2.2 "

(3) In table 12.1 add the following entries:

"(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
1021	1-Chloro-1,2,2,2-tetra-fluoroethane (R.124)	2.2	blank	10.30 9.80 7.87 6.81	Allowed	Normal	1.20	blank
1978	Propane mixtures	2.1		see 12.24.6	Allowed	Normal	see 12.40	blank
3159	1,1,1,2-Tetrafluoro-ethane (R134a)	2.2	blank	17.7 15.7 13.8 12.1	Allowed	Normal	1.03	blank
3220	Pentafluoroethane (R.125)	2.2	blank	34.34 30.73 27.44 24.42	Allowed	Normal	0.95	blank "

(e) In table 12.2 amend the following entries in the columns shown:

"UN 1198, column (3) 3/III, column (4) 8

UN 1210, column (2) Printing Ink, flammable

UN 1325, column (2) Flammable solid, organic, n.o.s.

UN 1428, column (3) 4.3/I

UN 1459, column (3) 5.1/184

UN 1750, column (2) Chloroacetic acid solution
column (3) 6.1/II
column (4) 8
column (7) A/12.7.3

UN 1992, column (3) 3/129

UN 2257, column (3) 4.3/I

UN 2427, column (2) Potassium chlorate, aqueous solution

UN 2428, column (2) Sodium chlorate, aqueous solution

UN 2429, column (2) Calcium chlorate, aqueous solution

UN 2495, column (4) 6.1, 8

UN 2626, column (2) Chloric acid, aqueous solution with not more than 10% chloric acid

UN 2679, column (3) 8/184

UN 2965, column (3) 4.3/I
column (5) 4
column (7) N.A.
column (8) 12.9.3"

(f) Add the following new entries:

UN No.	(3)	(4)	(5)	(6)	(7)	(8)	(9)
"1599	6.1/III		2.65	12.5.2	A/12.7.2	N	12.22.2
1731	8/III		2.65	6 mm	A/12.7.2	N	12.22.2
1755	8/III		2.65	6 mm	A/12.7.3	N	12.22.2
1757	8/III		2.65	12.5.2	A/12.7.2	N	12.22.2
1761	8/III	6.1	2.65	12.5.2	A/12.7.2	N	12.22.2
1783	8/III		2.65	12.5.2	A/12.7.2	N	12.22.2
1787	8/III		2.65	6 mm	A/12.7.3	N	12.22.2
1788	8/III		2.65	6 mm	A/12.7.3	N	12.22.2
1789	8/III		2.65	6 mm	A/12.7.3	N	12.22.2
1814	8/III		2.65	12.5.2	A/12.7.2	N	12.22.2
1819	8/III		2.65	12.5.2	A/12.7.2	N	12.22.2
1824	8/III		2.65	12.5.2	A/12.7.2	N	12.22.2
2501	6.1/III		2.65	12.5.2	A/12.7.2	N	12.22.2
2564	8/III		2.65	12.5.2	A/12.7.2	N	12.22.2
2677	8/III		2.65	12.5.2	A/12.7.2	N	12.22.2
2681	8/III		2.65	12.5.2	A/12.7.2	N	12.22.2
2817	8/III	6.1	2.65	12.5.2	A/12.7.3	N	12.22.2
2818	8/III	6.1	2.65	12.5.2	A/12.7.2	N	12.22.2
2821	6.1/III		2.65	12.5.2	A/12.7.2	N	12.22.2
2837	8/III		2.65	12.5.2	A/12.7.2	N	12.22.2"

(g) Delete UN 1454, 1455, 1462, 1474, 1475, 1489, 1502, 1506, 1508, 1751.

(h) Add the following entries:

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
"2207	Isocyanates, n.o.s. or Isocyanate solutions, n.o.s., boiling-point not less than 300° C (9)	6.1/III	-	2.65	12.5.2	A/12.7.3	N	12.22.2
2478	Isocyanates, n.o.s. or Isocyanate solutions, n.o.s., flash-point less than 23° C (9)	3/II	6.1	4	12.5.2	N.A.	N	12.22.3
3176	Flammable solid, organic, molten, n.o.s.[7]	4.1/184		2.65	12.5.2	N.A.	N	12.22.5
3210	Chlorates, inorganic, aqueous solutions, n.o.s.	5.1/II		2.65	12.5.2	A/12.7.3	N	12.22.2
3211	Perchlorates, inorganic, aqueous solutions, n.o.s.	5.1/II		2.65	12.5.2	A/12.7.3	N	12.22.2
3213	Bromates, inorganic, aqueous solutions, n.o.s.	5.1/II		2.65	12.5.2	A/12.7.3	N	12.22.2
3214	Permanganates, inorganic, aqueous solutions, n.o.s.	5.1/II		2.65	12.5.2	A/12.7.3	N	12.22.2
3216	Persulphates, inorganic, aqueous solutions, n.o.s.	5.1/III		1.5	12.5.2	A/12.7.3	N	12.22.2
3218	Nitrates, inorganic, aqueous solutions, n.o.s.	5.1/184		2.65	12.5.2	A/12.7.3	N	12.22.2
3219	Nitrites, inorganic, aqueous solutions, n.o.s.	5.1/184		2.65	12.5.2	A/12.7.3	N	12.22.2
3250	Cloroacetic acid, molten	6.1/	8	2.65	12.5.2	N.A.	N	12.22.5"

CHAPTER 13

(a) Replace table 13.2 with the following:

"Table 13.2: LABELS FOR CLASS 2 GASES WITH SUBSIDIARY RISK(S)

Division	Subsidiary risk(s) shown in Chapter 2	Primary risk label (with Class number 2 in lower corner)	Subsidiary risk label(s)
2.1	None	2.1	None
2.2	None	2.2	None
	5.1	2.2	5.1
2.3	None	2.3	None
	2.1	2.3	2.1
	5.1	2.3	5.1
	5.1, 8	2.3	5.1, 8
	8	2.3	8
	2.1, 8	2.3	2.1, 8

(b) In paragraph 13.3.1 (b) amend "non-flammable, compressed gases" to read "non-flammable, non-toxic gases" and amend "St. Andrew's Cross" to "An 'X'".

(c) In paragraph 13.3.2 CHANGE "a good" to "an item of dangerous goods".

(d) Paragraph 13.3.3 from third sentence delete "except of Class 2" and "or the letter 'E'".

(e) Delete table 13.3.

(f) Amend paragraph 13.3.5 to read:

"Labels identifying primary risks should conform to models Nos. 1 to 9 illustrated in 13.5.1. Labels identifying subsidiary risks should display only the appropriate symbol and should conform to models Nos. 01 to 08 illustrated in 13.5.2."

(g) Amend paragraph 13.3.6 to read:

"Three separate lebels have been provided for Class 2, one for flammable gases of division 2.1 (red), one for non-flammable, non-toxic gases of division 2.2 (green) and one for toxic gases of division 2.3 (white). When the list of dangerous goods indicates that a Class 2 gas possesses

single or multiple subsidiary risks, labels should be used in accordance with table 13.2. In each case, the primary risk label shown in column 2 of that table should conform to 13.5.1 (models Nos. 2.1, 2.2 or 2.3)."

(h) Replace the last sentence of 13.4.3 with the following:

"Where a package is required to bear an 'EXPLOSIVE' subsidiary risk label, that label should conform to 13.5.2 (model No. 01)."

(i) Amend 13.4.4 to read:

"In the case of primary risk labels for Class 5, the division number of the substance should be shown in the bottom corner of the label. For all other primary risk labels, the class number of the substance or article should be shown in the bottom corner of the label. Specimens of the primary risk labels for each class are given in 13.5.1 (models Nos. 1 to 9)."

(j) Insert new paragraph 13.4.9 to read as follows:

"13.4.9 Gas cylinders for Class 2 may, on account of their shape, orientation and securing mechanisms for transport, bear labels representative of those specified in this section, which have been reduced in size, as appropriate, for display on the non-cylindrical part (shoulder) of such cylinders."

(k) Replace the current 13.5 with a new 13.5 as follows:

13.5 Specimen labels

13.5.1 Specimen primary risk labels

CLASS 1

(No.1)
Divisions 1.1, 1.2 and 1.3

Explosive substances or articles
Symbol (exploding bomb): black; Background: orange; figure "1" in bottom corner.

* Place for division and compatibility group

(No.1.4) Division 1.4 | (No.1.5) Division 1.5 | (No.1.6) Division 1.6

Background: orange; Figures: black; Numerals should be about 30 mm in height and be about 5 mm thick (for a label measuring 100 mm x 100 mm); figure "1" in bottom corner.

** Place for compatibility group

CLASS 2

(No.2.1)
Division 2.1

Flammable gases
Symbol (flame): black or white; Background: red; figure "2" in bottom corner.

(No.2.2)
Division 2.2

Non-flammable, non-taxic gases
Symbol (gas cylinder): black or white; Background: green; figure "2" in bottom corner.

(No.2.3)
Division 2.3

Toxic gases
Symbol (skull and crossbones) black; Background: white; figure "2" in bottom corner.

CLASS 3

(No.3)

Flammable liquids
Symbol (flame): black or white; Background: red; figure "3" in bottom corner.

CLASS 4

(No.4.1)
Division 4.1

Flammable solids
Symbol (flame): black;
Background: white with seven vertical red stripes;
Figure "4" in bottom corner.

(No.4.2)
Division 4.2

Substances liable to spontaneous combustion
Symbol (flame): black;
Background: upper half white; lower half red; figure "4" in bottom corner.

(No.4.3)
Division 4.3

Substances which in contact with water emit flammable gas.
Symbol (flame): black or white; Background: blue; figure "4" in bottom corner.

CLASS 5

(No.5.1)
Division 5.1

Oxidizing substances
Symbol (flame over circle): black; Background: yellow; figures "5.1" in bottom corner.

(No.5.2)
Division 5.2

Organic peroxides
Symbol (flame over circle): black; Background: yellow; figures "5.2" in bottom corner.

CLASS 6

(No.6.1)
Division 6.1

Poisonous (toxic) substances
Packing Groups: I and II
Symbol (skull and crossbones): black; Background: white; figure "6" in bottom corner.

(No.6.1A)
Division 6.1

Poisonous (toxic) substances
Packing Group III
The bottom half of the label may bear "Harmful" and the inscription: "Stow away from foodstuffs"
Symbol (An "X" over an ear of wheat) and Inscription: black; Background: white; figure "6" in bottom corner.

(No.6.2)
Division 6.2

Infectious substances
The bottom half of the label may bear: "Infectious Substance" and the inscription: "In the case of damage or leakage immediately notify Public Health authority"; Symbol (three crescents superimposed on a circle) and Inscription: black; Background: white; figure "6" in bottom corner.

CLASS 7

(No.7A) (No.7B) No.7C)

Radioactive material

7A Category I - White; Symbol (trefoil): black; Background: white; Text (mandatory) black in bottom half of label: "Radioactive"; "Contents ...", "Activity ...". One red vertical stripe must follow the word "Radioactive"; figure "7" in bottom corner.

7B Category II - Yellow; Symbol (threfoil): black; Background: upper half yellow with white border, bottom half white; Text (mandatory) black in bottom half of label: "Radioactive"; "Contents ..."; "Activity ..."; in a black outlined box - "Transport Index". Two red vertical stripes must follow the word "Radioactive"; figure "7" in bottom corner.

7C Category III - Yellow; Symbol (trefoil): black; Background: upper half yellow with white border, bottom half white; Text (mandatory) black in bottom half of label; "Radioactive"; "Contents ..."; "Activity ..."; in a black outlined box - "Transport Index". Three red vertical stripes must follow the word "Radioactive"; figure "7" in bottom corner.

CLASS 8

(No.8)

Corrosive substances
Symbol (liquids, spilling from two glass vessels and attacking a hand and a metal): black; upper half white, lower half black with white border; figure "8" in white in bottom corner.

CLASS 9

(No.9)

Miscellaneous dangerous substances
Symbol (seven vertical stripes in upper half): black;
Background: white; small figure "9" underlined in bottom corner.

13.5.2 Specimen subsidiary risk labels

(No.01) (No.03) (No.04.1)

(No.04.2) (No.04.3) (No.05)

(No.06.1 (No.08)
(Packing Groups I and II))

13.5.3 DISPLAY OF UN NUMBERS ON PLACARDS

* location of class or division number
** location of UN number

Figure 13.1

Figure 13.2

Figure 13.3

PLACARD FOR RADIOACTIVE MATERIALS OF CLASS 7

(No.7D)

Symbol (trefoil): black; Background: top half yellow with white border, bottom half white. The bottom half should show the appropriate UN number (see para.13.7.5) and/or the word "RADIOACTIVE"; and the figure "7" in the bottom corner.

Figure 13.4

DANGEROUS GOODS TRANSPORT DOCUMENT

In the box "Marks & number" etc., insert the words:

"PACKING GROUP;" after "UN NUMBER;"

(1) In Paragraph 13.6.1, clause (b) delete the third sentence.

Amend clause (c) to read:

"(c) The UN No. and, where assigned, the Packing Group for the substance or article;"

(m) In Paragraph 13.6.1.4 replace "flammable solids" with "self-reactive and related substances".

(n) Insert a new paragraph 13.6.1.5 to read:

"13.6.1.5 When organic peroxides and self-reactive substances are transported under conditions where notification is required (for organic peroxides see 11.3.2.5, 11.3.12.2, 12.551 and 12.553; for self-reactive substances see 14.2.2.3.3 and 14.2.2.9.1), a statement to this effect should be included in the transport document. A copy of the statement of approval of the classification for non-listed organic peroxides and self-reactive substances should be attached to the transport document."

Insert a new paragraph 13.6.1.6 to read:

"13.6.1.6 When a sample of an organic peroxide (see 11.3.2.6) or a self-reactive substance (see 14.2.2.3.5) is transported, a statement to this effect should be included in the transport document."

(o) Amend paragraph 13.6.6 to read:

"... of the form shown in figure 13.4 ...".

(p) Amend paragraph 13.7.1.2, second sentence, to read: "... is otherwise as shown in figure 13.3 ...".

(q) Amend paragraph 13.7.5, to read:

"- against a white background in the lower half of the placard (see figures 13.1 and 13.3); or

- on an orange rectangular panel not less than 120 mm high and 300 mm wide, with a 10 mm black border, to be placed immediately adjacent to the placard (see figure 13.2)."

(r) In paragraph 13.8.4, amend the end of the last sentence but two to read: "... the technical name of the goods and the applicable packing group."

and amend the last two sentences to read:

"The technical name should be shown in parentheses immediately following the proper shipping name, unless a national law or international convention prohibits its disclosure if it is a controlled substance. The particular 'N.O.S.' or 'generic' entries for which this supplementary information is considered necessary are marked by an asterisk at the end of the proper shipping name shown in column (a2) of the list in chapter 2."

(s) In paragraph 13.8.5, amend the end of the penultimate sentence to read:

"... need to be shown, excluding controlled substances when their disclosure is prohibited by national law or international convention."

(t) In paragraph 13.8.5.1, delete the reference to UN No. 1954.
