ANNEX A — ANNEXE A

No. 8940. EUROPEAN AGREEMENT CONCERNING THE INTERNATIONAL CARRIAGE OF DANGEROUS GOODS BY ROAD (ADR). DONE AT GENEVA, ON 30 SEPTEMBER 1957[1]

ENTRY INTO FORCE of the Amendments to Annexes A[2] and B,[3] as amended, to the above-mentioned Agreement

The amendments were proposed by the United Kingdom of Great Britain and Northern Ireland and circulated by the Secretary-General to the Contracting Parties on 22 May 1989. They came into force on 1 January 1990, no objection having been notified to the Secretary-General within three months of the notification so circulated, in accordance with article 14 (3) of the Agreement.

AMENDMENTS TO GENERAL PROVISIONS TO ADR

Table of contents

Part II	–	LIST OF SUBSTANCES AND SPECIAL PROVISIONS FOR THE VARIOUS CLASSES	
Delete Classes 1a, 1b and 1c			
Insert:	Class 1	Explosive substances and articles	2100 et seq.
	Class 9	Miscellaneous dangerous substances and articles	2900 et seq.
Amend entry for Class 7 to read:			
	"Class 7	Radioactive material	2700 et seq.
Part III	–	APPENDICES TO ANNEX A	
Read as follows:			
Appendix A.1	A.	Stability and safety conditions relating to explosive substances and articles, inflammable solids and organic peroxides	3100 et seq.
	B.	Glossary of names in marginal 2101	3170 et seq.

[1] United Nations, *Treaty Series*, vol. 619, p. 77; for subsequent actions, see references in Cumulative Indexes Nos. 9, and 11 to 17, as well as annex A in volumes 1074, 1107, 1129, 1141, 1161, 1162, 1237, 1259, 1279, 1283, 1297, 1344, 1394, 1395, 1430, 1489 and 1505.

[2] *Ibid.*, vol. 731, p. 3, for subsequent actions, see references in Cumulative Indexes Nos. 12 to 17, as well as annex A in volumes 1074, 1107, 1162, 1259, 1283, 1297, 1395 and 1489.

[3] *Ibid.*, vol. 731, p. 3, for subsequent actions, see references in Cumulative Indexes Nos. 12 to 17, as well as annex A in volumes 1074, 1107, 1161, 1162, 1259, 1279, 1283, 1297, 1344, 1395 and 1489.

Appendices A.2 to A.5	unchanged	
Appendix A.6	Provisions relating to intermediate bulk containers (IBCs)	3600 et seq.
Appendix A.7	Provisions relating to radioactive material of Class 7	3700 et seq.
Appendices A.8 and A.9	unchanged	

Part I DEFINITIONS AND GENERAL PROVISIONS

2001 (1) Insert after "dynamic viscosity" under

Measurement of	SI Unit
Activity 4/	Bq (becquerel)
Dose equivalent 5/	Sv (sievert)

[4] For the sake of clarity, activity may also be indicated, in parentheses, in Ci (curie) (relationship between the units: 1 Ci = $3.7 \cdot 10^{10}$ Bq). By derogation from the conversion formula, rounded values may be given.

[5] For the sake of clarity, the dose equivalent may also be indicated, in parentheses, in rem (relationship between the units: 1 rem = 0.01 Sv).

2002 (1) In the third sentence, replace "1a, 1b, 1c," by "1,"; delete "2131, 2171,".

In the fourth sentence, replace "6.1 and 8" by "6.1, 8 and 9"; replace "2601 and 2801" by "2601, 2801 and 2901".

(2) In the first entry, replace "Class 1a" by "Class 1"; delete the second and third entries (Classes 1b and 1c);

In the entry for Class 7, amend "Radioactive substances" to read : "Radioactive material".

Insert the new entry:

"Class 9 Miscellaneous dangerous substances and articles Non-restrictive"

(3) At the end of the second and fourth sentences, add: "or in the provisions of Class 7."

(6) At the end, add the following sentence:

"For mixed packing of materials of Class 7, see marginal 3711 of Appendix A.7."

(8) After Note 2 to the introductory sentence, add Notes 3 and 4:

Note 3: The provisions of this subparagraph are not applicable to substances of Class 4.1, 1°(a). Solid wastes consisting of substances of Class 4.1, 1° (a) impregnated with inflammable liquids of Class 3, shall be classified under Class 4.1, 1° (b). [See note 1 to marginal 2401, 1° (a).]

Note 4: Solutions and mixtures having a specific activity exceeding 70 kBq/kg (2nCi/g) shall be substances of Class 7 [see marginal 2700(1)].

Under (b), subparagraph 2.2, amend "1a" to "1".

Amend subparagraph 2.3.1, second sentence, to read as follows:

"For Classes 3, 6.1, 8 and 9, account shall be taken of the degree of danger presented by the components as designated (a), (b) or (c) according to the criteria of those classes (see marginals 2300 (3), 2600 (1), 2800 (1) and 2900)."

Amend the table in subparagraph 2.3.1 to read as follows:

Class and, where applicable, letter	4.1	5.1 1/	6.1(a) 3/	6.1(b) 3/	6.1(c) 3/	8(a) 4/	8(b) 4/	8(c) 4/	9
3(a) 2/	Sol.Liq. 4.1 3(a)	3(a)	3(a)	3(a)	3(a)	3(a)	3(a)	3(a)	3(a)
3(b) 2/	Sol.Liq. 4.1 3(b)	3(b)	3(a)	3(b)	3(b)	3(a)	3(b)	3(b)	3(b)
3(c) 2/	Sol.Liq. 4.1 3(c)	3(c)	6.1(a)	6.1(b)	3(c) 5/	8(a)	8(b)	3(o)	3(c) 6/
4.1		Sol.Liq. 4.1 5.1	6.1(a)	6.1(b)	Sol.Liq. 4.1 6.1(c)	8(a)	8(b)	Sol.Liq. 4.1 8(c)	4.1 6/
5.1 1/			6.1(a)	6.1(b)	5.1	8(a)	8(b)	5.1	5.1 6/
6.1(a) 3/						6.1(a)	6.1(a)	6.1(a)	6.1(a)
6.1(b) 3/						8(a)	Sol.Liq. 6.1(b)8(b)	6.1(b)	6.1(b)
6.1(c) 3/						8(a)	8(b)	8(c)	6.1(c)6/
8 (a) 4/									8(a)
8 (b) 4/									8(b)
8 (c) 4/									8(c) 6/

Sol. = Solid mixtures.
Liq. = Liquid mixtures and solutions.

In Note 1, amend "1a" to "1 "

After Notes 2/ to 5/, unchanged, add:

6/ Solutions or mixtures containing polychlorinated biphenyls (PCBs) of Class 9, 2°(b), marginal 2901, should be classified in this Class under this item in so far as they do not also contain substances mentioned in footnotes 1/ to 4/ above. If they do contain these, they should be classified accordingly.

In the Note to subparagraph 2.3.2, add two more examples:

A mixture of hydrocarbons of Class 3, 31°(c) or 32°(c) and polychlorinated biphenyls (PCB) of Class 9, 2°(b) is to be placed in Class 9 under 2°(b).

A mixture of ethyleneimine of Class 3, 12° and polychlorinated biphenyls (PCB) of Class 9, 2°(b) is to be placed in Class 3 under 12°.

(9) Text of existing (10).

(10) Text of existing (11), the beginning amended to read as follows:

A non-radioactive substance (see the definition of radioactive material in marginal 2700 (1)) which is covered by ....

(11) Text of existing (12), the beginning amended to read as follows:

A non-radioactive substance (see the definition of radioactive material in marginal 2700 (1)) which is not listed ....

Add the following two paragraphs:

"(12) A radioactive substance whose specific activity exceeds 70 kBq/kg (2 nCi/g) and which

(a) meets the criteria for carriage under Schedule 1 of Class 7 and

(b) has hazardous properties covered by the title of any other class or classes,

shall be excluded from carriage if it is covered by the title of a restrictive class in which it is not listed.

(13) A radioactive substance whose specific activity exceeds 70 kBq/kg (2 nCi/g) and which

(a) meets the criteria for carriage under Schedule 1 of Class 7 and

(b) has hazardous properties covered by the title of any other class or classes

shall, in addition to meeting the requirements of Schedule 1 of Class 7, be subject to the conditions of carriage laid down –

(i) in the restrictive class, if one of the classes concerned is a restrictive class and the substance is listed in it,

or

(ii) in the class corresponding to the predominant danger exhibited by the substance during carriage, if none of the classes concerned is a restrictive class."

2003 (1) Under (b), amend A.2 to read:

"Special conditions of packing for substances and articles".

(2) – unchanged

Insert new text of (3) as follows:

"(3) For Class 7 the provisions are summarized in the form of schedules containing the following headings.

1. Materials.

2. Packaging/Package.

3. Package Maximum Radiation Level.

4. Contamination on Packages, Vehicles, Containers, Tanks and Overpacks.

5. Decontamination and Use of Vehicles, Equipment or Parts thereof.

6. Mixed Packing.

7. Mixed Loading.

8. Marking and Danger labels on Packages, Containers, Tanks and Overpacks.

9. Marking and Danger Labels on Vehicles other than Tank-vehicles.

10. Transport Documents.

11. Storage and Despatch.

12. Carriage of Packages, Containers, Tanks and Overpacks.

13. Other provisions."

Existing (3) becomes (4) and is amended as follows:

Appendix A.1: Stability and safety conditions relating to explosive substances and articles, inflammable solids and organic peroxides, together with glossary of names in marginal 2101;

Appendices A.2, A.3, A.5: unchanged;

Appendix A.6: Provisions relating to intermediate bulk containers (IBCs);

Appendix A.7: Provisions relating to radioactive materials of Class 7;

Appendix A.9: unchanged;

Appendices A.4 and A.8 are reserved.

Text of existing (4) is deleted.

2007 Under (c), replace "1a, 1b, 1c," by "1,".

CLASS 1

EXPLOSIVE SUBSTANCES AND ARTICLES

1. List of substances and articles

2100 (1) Among the substances and articles covered by the heading of Class 1, only those listed in marginal 2101 are to be accepted for carriage, and then only subject to the provisions of this Annex and Annex B and Appendix A.1. These substances and articles to be accepted for carriage under certain conditions are to be considered as substances and articles of ADR.

(2) Class 1 comprises:

(a) Explosive substances: solid or liquid substances (or mixtures of substances) capable by chemical reaction of producing gases at such a temperature and pressure and at such a speed as to cause damage to the surroundings.

Pyrotechnic substances: substances or mixtures of substances designed to produce an effect by heat, light, sound, gas or smoke or a combination of these as the result of non-detonating self-sustaining exothermic chemical reactions.

Notes. 1. Explosive substances which are unduly sensitive or are liable to spontaneous reaction are not to be accepted for carriage.

2. Substances which are not themselves explosive but which may form an explosive mixture of gas, vapour or dust are not substances of Class 1.

3. Excluded from Class 1 are: water- or alcohol-wetted explosives of which the water or alcohol content exceeds the limits indicated in marginal 2101 – these explosives are assigned to Class 4.1 (marginal 2401 7°(a), 20° and 21°)- and those explosives which, on the basis of their predominant hazard, are assigned to Class 5.2.

(b) Explosive articles: articles containing one or more explosive substances and/or pyrotechnic substances.

Note. Devices containing explosive and/or pyrotechnic substances in such small quantity or of such a character that their inadvertent or accidental ignition or initiation during carriage would not cause any manifestation external to the device by projection, fire, smoke, heat or loud noise are not subject to the requirements of Class 1.

(c) Substances and articles not mentioned under (a) or (b) above which are manufactured with a view to producing a practical effect by explosion or pyrotechnic means.

(3) Explosive substances and articles shall have been assigned to a name in marginal 2101 in accordance with the test methods for the determination of explosive properties and the classification procedures set out in Appendix A.1 and they shall meet the conditions appropriate to that name.

(4) Substances and articles of Class 1, other than empty packagings, uncleaned, of 51°, shall have been assigned to a division in accordance with paragraph (6) of this marginal and to a compatibility group in accordance with paragraph (7).

The division shall be based on the results of the tests described in Appendix A.1, applying the definitions in paragraph (6).

The compatibility group shall be determined in accordance with the definitions in paragraph (7).

The classification code shall consist of the division number and the compatibility group letter.

(5) Substances and articles of Class 1 are assigned to packing group II (see Appendix A.5).

(6) Definition of divisions:

1.1 Substances and articles which have a mass explosion hazard. (A mass explosion is an explosion which affects almost the entire load virtually instantaneously).

1.2 Substances and articles which have a projection hazard but not a mass explosion hazard;

1.3 Substances and articles which have a fire hazard and either a minor blast hazard or a minor projection hazard or both, but not a mass explosion hazard,

(a) combustion of which gives rise to considerable radiant heat; or

(b) which burn one after another, producing minor blast or projection effects or both;

1.4 Substances and articles which present only a slight risk of explosion in the event of ignition or initiation during carriage. The effects are largely confined to the package and no projection of fragments of appreciable size or range is to be expected. An external fire must not cause virtually instantaneous explosion of almost the entire contents of the package.

1.5 Very insensitive substances having a mass explosion hazard which are so insensitive that there is very little probability of initiation or of transition from burning to detonation under normal conditions of carriage. As a minimum requirement they must not explode in the external fire test.

(7) Definition of compatibility groups of substances and articles:

A Primary explosive substance

B Article containing a primary explosive substance and not having two or more effective protective features

C Propellant explosive substance or other deflagrating explosive substance or article containing such explosive substance

D Secondary detonating explosive substance or black powder or article containing a secondary detonating explosive substance, in each case without means of initiation and without a propelling charge, or article containing a primary explosive substance and having two or more effective protective features

E Article containing a secondary detonating explosive substance, without means of initiation, with a propelling charge (other than one containing an inflammable liquid or gel or hypergolic liquids)

F Article containing a secondary detonating explosive substance with its own means of initiation, with a propelling charge (other than one containing an inflammable liquid or gel or hypergolic liquids) or without a propelling charge

G Pyrotechnic substance, or article containing a pyrotechnic substance, or article containing both an explosive substance and an illuminating, incendiary, tear- or smoke-producing substance (other than a water-activated article or one which contains white phosphorus, phosphides, a pyrophoric substance, an inflammable liquid or gel or hypergolic liquids)

H Article containing both an explosive substance and white phosphorus

J Article containing both an explosive substance and an inflammable liquid or gel

K Article containing both an explosive substance and a toxic chemical agent

L Explosive substance or article containing an explosive substance and presenting a special risk (e.g. due to water activation or the presence of hypergolic liquids, phosphides or a pyrophoric substance) necessitating isolation of each type

S Substance or article so packed or designed that any hazardous effects arising from accidental functioning are confined within the package unless the package has been degraded by fire, in which case all blast or projection effects are limited to the extent that they do not significantly hinder or prevent fire-fighting or other emergency response efforts in the immediate vicinity of the package

Notes. 1. A substance or article, . . packed in a specified packaging, may be assigned to one compatibility group only. Since the criterion of compatibility group S is empirical, assignment to this group is necessarily linked to the tests for assignment of a classification code.

2. Articles of compatibility groups D or E may be fitted or packed together with their own means of initiation provided that such means have at least two effective protective features designed to prevent an explosion in the event of accidental functioning of the means of initiation. Such packages shall be assigned to compatibility groups D or E.

3. Articles of compatibility groups D or E may be packed together with their own means of initiation, which do not have two effective protective features (i.e. means of initiation assigned to compatibility group B), provided that they comply with the requirements of marginal 2104 (6). Such packages shall be assigned to compatibility groups D or E.

4. Articles may be fitted or packed together with their own means of ignition provided that the means of ignition cannot function during normal conditions of carriage.

5. Articles of compatibility groups C, D and E may be packed together. Such packages shall be assigned to compatibility group E.

(8) Substances of compatibility group A, articles of compatibility group K and substances or articles of compatibility group L in accordance with paragraph (7) of this marginal are not to be accepted for carriage.

(9) For the purposes of the requirements of this Class and by derogation from Appendix A.5, marginal 3510 (3), the term "package" shall also include an unpackaged article in so far as that article is accepted for carriage unpackaged.

2101 The substances and articles of Class 1 to be accepted for carriage are listed in table 1 below:

Explosive substances and articles can be assigned to the various names in marginal 2101 only if their properties, composition, construction and anticipated use correspond to one of the descriptions contained in Appendix A.1.

Table 1

Item	Identification number and name of the substance or article 1/	Classification code, in accordance with marginal 2100 (6) and (7)	Packing	
			Packing methods (see marginal 2103 (5))	Special packing requirements (see marginal 2103 (6))
1	2	3	4	5
1°	ARTICLES CLASSIFIED AS 1.1 B			
	0029 Detonators, non-electric, for blasting	1.1 B	E 105	19, 20, 21, 22, 24, 34
	0030 Detonators, electric, for blasting	1.1 B	E 104	17
	0073 Detonators for ammunition	1.1 B	E 128	23, 36
	0106 Fuzes, detonating	1.1 B	E 137	38
	0225 Boosters with detonator	1.1 B	E 108	23
	0360 Detonator assemblies, non-electric, for blasting	1.1 B	E 105A	25, 26
	0377 Primers, cap-type	1.1 B	E 142	39, 40, 41
2°	SUBSTANCES CLASSIFIED AS 1.1 C			
	0160 Powder, smokeless	1.1 C	E 22	8, 9, 10
	0433 Powder cake (powder paste), wetted, with not less than 17% alcohol by mass	1.1 C	E 103	-
3°	ARTICLES CLASSIFIED AS 1.1 C			
	0271 Charges, propelling, for rocket motors	1.1 C	E 22	8, 9, 10
	0273 Charges, propelling, for rocket motors, composite mixtures	1.1 C	E 22	8, 9, 10
	0279 Charges, propelling, for cannon	1.1 C	E 119	-
	0280 Rocket motors	1.1 C	E 146	-
	0326 Cartridges for weapons, blank	1.1 C	E 112	13
4°	SUBSTANCES CLASSIFIED AS 1.1 D			
	0004 Ammonium picrate, dry or wetted with less than 10% water by mass	1.1 D	E 2	1, 2
	0027 Black powder (gunpowder), granular or as a meal	1.1 D	E 4	-
	0028 Black powder (gunpowder), compressed, or black powder (gunpowder), in pellets	1.1 D	E 5	-

1	2	3	4	5
4° (cont.)	0072 Cyclotrimethylenetrinitramine (cyclonite; hexogen; RDX), wetted with not less than 15% water by mass	1.1 D	E 6a)	-
	0075 Diethyleneglycol dinitrate, desensitized with not less than 25% non-volatile water-insoluble phlegmatizer by mass	1.1 D	E 103	-
	0076 Dinitrophenol, dry or wetted with less than 15% water by mass	1.1 D	E 2	1, 2
	0078 Dinitroresorcinol, dry or wetted with less than 15% water by mass	1.1 D	E 2	1, 2
	0079 Hexanitrodiphenylamine (dipicrylamine; hexyl)	1.1 D	E 11	-
	0081 Explosive, blasting, type A Note: Substances containing more than 40% liquid nitric esters must satisfy the exudation test specified in Appendix A.1, marginal 3101 (4)	1.1 D	E 8	-
	0082 Explosive, blasting, type B	1.1 D	E 8	-
	0083 Explosive, blasting, type C	1.1 D	E 10	-
	0084 Explosive, blasting, type D	1.1 D	E 11	-
	0118 Hexolite, dry or wetted with less than 15% water by mass	1.1 D	E 13	-
	0133 Mannitol hexanitrate (nitromannite), wetted with not less than 40% water by mass, or a mixture of alcohol and water	1.1 D	E 14	-
	0143 Nitroglycerine, desensitized with not less than 40% non-volatile water-insoluble phlegmatizer by mass	1.1 D	E 103	-
	0144 Nitroglycerine solution in alcohol, with more than 1% but not more than 10% nitroglycerine Note: For alcoholic solutions of nitroglycerine with a concentration of not more than 5% by mass under special conditions of packing, see Class 3, (marg. 2301,8°)	1.1 D	E 17	47

1	2	3	4	5
4' (cont.)	0146 Nitrostarch, dry or wetted with less than 20% water by mass	1.1 D	E 19	7
	0147 Nitro urea	1.1 D	E 2	1
	0150 Pentaerythrite tetranitrate (pentaerythritol tetranitrate, PETN) wetted with not less than 25% water by mass, or desensitized with not less than 15% phlegmatizer by mass	1.1 D	E 6	-
	0151 Pentolite, dry or wetted with less than 15% water by mass	1.1 D	E 13	-
	0153 Trinitroaniline (picramide)	1.1 D	E 2	1
	0154 Trinitrophenol (picric acid), dry or wetted with less than 30% water by mass	1.1 D	E 2	1, 2
	0155 Trinitrochlorobenzene (picryl chloride)	1.1 D	E 2	1
	0207 Tetranitroanilline	1.1 D	E 2	1
	0208 Trinitrophenylmethylnitramine (tetryl)	1.1 D	E 11	-
	0209 Trinitrotoluene (TNT), dry or wetted with less than 30% water by mass	1.1 D	E 26	53
	0213 Trinitroanisole	1.1 D	E 2	1
	0214 Trinitrobenzene, dry or wetted with less than 30% water by mass	1.1 D	E 2	1
	0215 Trinitrobenzoic acid, dry or wetted with less than 30% water, by mass	1.1 D	E 11	-
	0216 Trinitro-m-cresol	1.1 D	E 2	1, 2
	0217 Trinitronaphthalene	1.1 D	E 2	1
	0218 Trinitrophenetole	1.1 D	E 2	1
	0219 Trinitroresorcinol (styphnic acid), dry or wetted with less than 20% water by mass(or mixture of alcohol and water)	1.1 D	E 2	1, 2
	0220 Urea nitrate, dry or wetted with less than 20% water by mass	1.1 D	E 2	1
	0222 Ammonium nitrate containing more than 0.2% combustible substances, including any organic substance calculated as carbon, to the exclusion of any other added substance	1.1 D	E 1	-

1	2	3	4	5
4° (cont.)	0223 Ammonium nitrate fertilizer, which is more liable to explode than ammonium nitrate with 0.2% combustible substances, including any organic substance calculated as carbon, to the exclusion of any other added substance	1.1 D	E 1	-
	0226 Cyclotetramethylenetetranitramine (HMX, octogen), wetted with not less than 15% water by mass	1.1 D	E 6a)	-
	0241 Explosive, blasting, type E	1.1 D	E 8	
	0266 Octolite (Octol), dry or wetted with less than 15% water by mass	1.1 D	E 13	-
	0282 Nitroguanidine (picrite), dry or wetted with less than 20% water by mass	1.1 D	E 18	-
	0340 Nitrocellulose, dry or wetted with less than 25% water (or alcohol) by mass	1.1 D	E 103	-
	0341 Nitrocellulose, unmodified or plasticized with less than 18% plasticizing substance by mass	1.1 D	E 103	-
	0385 5-Nitrobenzotriazol	1.1 D	E 2	1
	0386 Trinitrobenzenesulphonic acid	1.1 D	E 2	1, 2
	0387 Trinitrofluorenone	1.1 D	E 2	1
	0388 Trinitrotoluene (TNT) and trinitrobenzene mixtures or trinitrotoluene (TNT) and hexanitrostilbene mixtures	1.1 D	E 2	1
	0389 Trinitrotoluene (TNT) mixtures containing trinitrobenzene and hexanitrostilbene	1.1 D	E 2	1
	0390 Tritonal	1.1 D	E 2	1
	0391 Cyclotrimethylenetrinitramine (cyclonite, hexogen, RDX) and cyclotetramethylenetetranitramine (HMX, octogen) mixtures, wetted with not less than 15% water by mass, or cyclotrimethylenetrinitramine (cyclonite, hexogen, RDX) and cyclotetramethylenetetranitramine (HMX, octogen) mixtures desensitized with not less than 10% phlegmatizer by mass	1.1 D	E 6	-
	0392 Hexanitrostilbene	1.1 D	E 11	-

1	2	3	4	5
4° (cont.)	0393 Hexatonal, cast	1.1 D	E 13	-
	0394 Trinitroresorcinol (styphnic acid), wetted with not less than 20% water by mass (or mixture of water and alcohol)	1.1 D	E 24	2
	0401 Dipicryl sulphide dry or wetted with less than 10% water by mass	1.1 D	E 2	1
	0402 Ammonium perchlorate	1.1 D	E 2	1
	Note: Classification of this substance shall be in accordance with the results of the tests under Appendix A.1. Depending on the particle size and the packaging of the substance, see also Class 5.1. (marg. 2501 item 5°)			
	0411 Pentaerythrite tetranitrate (PETN) with not less than 7% wax by mass	1.1 D	E 22a)	11
	0483 Cyclotrimethylenetrinitramine (cyclonite, hexogen, RDX), desensitized	1.1 D	E 6	-
	0484 Cyclotetramethylenetetranitramine (octogen, HMX) desensitized	1.1 D	E 6	-
5°	ARTICLES CLASSIFIED AS 1.1 D			
	0034 Bombs with bursting charge	1.1 D	E 106	49
	0038 Bombs, photoflash	1.1 D	E 106	49
	0042 Boosters, without detonator	1.1 D	E 107	-
	0043 Bursters, explosive	1.1 D	E 109	28
	0048 Charges, demolition	1.1 D	E 117	-
	0056 Charges, depth	1.1 D	E 118	51
	0059 Charges, shaped, commercial, without detonator	1.1 D	E 120	30, 31
	0060 Charges, supplementary, explosive	1.1 D	E 122	-
	0065 Cord, detonating, flexible	1.1 D	E 124	33
	0099 Fracturing devices, explosive, without detonator, for oil wells	1.1 D	E 134	-
	0124 Jet perforating guns, charged, oil well, without detonator	1.1 D	E 140	-
	0137 Mines with bursting charge	1.1 D	E 106	49

1	2	3	4	5
5° (cont.)	0168 Projectiles with bursting charge	1.1 D	E 106	49
	0221 Warheads, torpedo, with bursting charge	1.1 D	E 106	49
	0284 Grenades, hand or rifle, with bursting charge	1.1 D	E 138	-
	0286 Warheads, rocket, with bursting charge	1.1 D	E 106	49
	0288 Charges, shaped, flexible, linear	1.1 D	E 121	32
	0290 Cord (fuse), detonating, metal clad	1.1 D	E 125	34
	0374 Sounding devices, explosive	1.1 D	E 153	46
	0408 Fuzes, detonating, with protective features	1.1 D	E 137	38
	0442 Charges, explosive, commercial without detonator	1.1 D	E 156	-
	0451 Torpedoes with bursting charge	1.1 D	E 146	-
	0457 Charges, bursting, plastics bonded	1.1 D	E 157	-
6°	ARTICLES CLASSIFIED AS 1.1 E			
	0006 Cartridges for weapons, with bursting charge	1.1 E	E 112	13
	0181 Rockets with bursting charge	1.1 E	E 146	-
	0329 Torpedoes with bursting charge	1.1 E	E 146	-
7°	ARTICLES CLASSIFIED AS 1.1 F			
	0005 Cartridges for weapons with bursting charge	1.1 F	E 112	13
	0033 Bombs, with bursting charge	1.1 F	E 106	49
	0037 Bombs, photoflash	1.1 F	E 106	49
	0136 Mines, with bursting charge	1.1 F	E 106	49
	0167 Projectiles with bursting charge	1.1 F	E 106	49
	0180 Rockets with bursting charge	1.1 F	E 146	-
	0292 Grenades, hand or rifle, with bursting charge	1.1 F	E 138	-
	0296 Sounding devices, explosive	1.1 F	E 153	46
	0330 Torpedoes with bursting charge	1.1 F	E 146	-
	0369 Warheads, rocket, with bursting charge	1.1 F	E 106	49

1	2	3	4	5
8'	SUBSTANCES CLASSIFIED AS 1.1 G 0094 Flash powder	1.1 G	E 20	55
9"	ARTICLES CLASSIFIED AS 1.1 G			
	0049 Cartridges, flash	1.1 G	E 115	-
	0121 Igniters	1.1 G	E 139	28
	0192 Signals, railway track, explosive	1.1 G	E 151	43, 44, 45
	0194 Signals, distress, ship	1.1 G	E 150	12
	0196 Signals, smoke, with explosive sound unit	1.1 G	E 150	12
	0333 Fireworks	1.1 G	E 129	37
	0418 Flares, surface	1.1 G	E 133	-
	0420 Flares, aerial	1.1 G	E 133	-
	0428 Articles, pyrotechnic for technical purposes	1.1 G	E 109	28
10'	ARTICLES CLASSIFIED AS 1.1 J			
	0397 Rockets, liquid fuelled, with bursting charge	1.1 J	E 103	-
	0399 Bombs with inflammable liquid, with bursting charge	1.1 J	E 103	-
	0449 Torpedoes, liquid fuelled, with or without bursting charge	1.1 J	E 146	-
11'	ARTICLES CLASSIFIED AS 1.2 B			
	0107 Fuzes, detonating	1.2 B	E 137	38
	0268 Boosters with detonator	1.2 B	E 108	23
	0364 Detonators, for ammunition	1.2 B	E 128	23, 36
12'	SUBSTANCES CLASSIFIED AS 1.2 C (Reserved)	1.2 C		
13'	ARTICLES CLASSIFIED AS 1.2 C			
	0281 Rocket motors	1.2 C	E 146	
	0328 Cartridges for weapons, inert projectile (cartridges, small arms)	1.2 C	E 112	13
	0381 Cartridges, power device	1.2 C	E 114	-
	0413 Cartridges for weapons, blank	1.2 C	E 112	13

1	2	3	4	5
13* (Cont.)	0414 Charges, propelling, for cannon	1.2 C	E 119	-
	0415 Charges, propelling, for rocket motors	1.2 C	E 22	8, 9, 10
	0416 Charges, propelling, for rocket motors, composite mixture	1.2 C	E 22	8, 9, 10
	0436 Rockets with expelling charge	1.2 C	E 146	-
14*	SUBSTANCES CLASSIFIED AS 1.2 D (Reserved)	1.2 D		
15*	ARTICLES CLASSIFIED AS 1.2 D			
	0035 Bombs with bursting charge	1.2 D	E 106	49
	0102 Cord, (fuse), detonating, metal clad	1.2 D	E 125	34
	0138 Mines with bursting charge	1.2 D	E 106	49
	0169 Projectiles with bursting charge	1.2 D	E 106	49
	0283 Boosters without detonator	1.2 D	E 107	-
	0285 Grenades, hand or rifle, with bursting charge	1.2 D	E 138	-
	0287 Warheads, rocket, with bursting charge	1.2 D	E 106	49
	0346 Projectiles with burster or expelling charge	1.2 D	E 106	49
	0375 Sounding devices, explosive	1.2 D	E 153	46
	0409 Fuzes, detonating, with protective features	1.2 D	E 137	38
	0439 Charges, shaped, commercial without detonator	1.2 D	E 120	30, 31
	0443 Charges, explosive, commercial without detonator	1.2 D	E 156	-
	0458 Charges, bursting, plastics bonded	1.2 D	E 157	-
16*	ARTICLES CLASSIFIED AS 1.2 E			
	0182 Rockets with bursting charge	1.2 E	E 146	-
	0321 Cartridges for weapons with bursting charge	1.2 E	E 112	13

1	2	3	4	5
17*	ARTICLES CLASSIFIED AS 1.2 F			
	0007 Cartridges for weapons, with bursting charge	1.2 F	E 112	13
	0204 Sounding devices, explosive	1.2 F	E 153	46
	0291 Bombs with bursting charge	1.2 F	E 106	49
	0293 Grenades, hand or rifle, with bursting charge	1.2 F	E 138	-
	0294 Mines with bursting charge	1.2 F	E 106	49
	0295 Rockets with bursting charge	1.2 F	E 146	-
	0324 Projectiles with bursting charge	1.2 F	E 106	49
	0426 Projectiles with burster or expelling charge	1.2 F	E 106	49
18*	SUBSTANCES CLASSIFIED AS 1.2 G (Reserved)	1.2 G		
19*	ARTICLES CLASSIFIED AS 1.2 G			
	0009 Ammunition, incendiary with or without burster, expelling charge or propelling charge	1.2 G	E 102	13, 48
	0015 Ammunition, smoke with or without burster, expelling charge or propelling charge	1.2 G	E 102	13, 48
	0018 Ammunition, tear-producing with burster, expelling charge or propelling charge	1.2 G	E 102	13, 48
	0039 Bombs, photoflash	1.2 G	E 106	49
	0171 Ammunition, illuminating with or without burster, expelling charge or propelling charge	1.2 G	E 102	13, 48
	0238 Rockets, line-throwing	1.2 G	E 147	-
	0313 Signals, smoke, with explosive sound unit	1.2 G	E 150	12
	0314 Igniters	1.2 G	E 139	-
	0334 Fireworks	1.2 G	E 130	-
	0372 Grenades, practice, hand or rifle	1.2 G	E 138	-
	0419 Flares, surface	1.2 G	E 133	-

1	2	3	4	5
19° (cont.)	0421 Flares, aerial	1.2 G	E 133	-
	0429 Articles, pyrotechnic for technical purposes	1.2 G	E 109	28
	0434 Projectiles with burster or expelling charge	1.2 G	E 106	-
20°	ARTICLES CLASSIFIED AS 1.2 H			
	0243 Ammunition, incendiary, white phosphorus, with burster, expelling charge or propelling charge	1.2 H	E 102	13, 48
	0245 Ammunition, smoke, white phosphorus with burster, expelling charge or propelling charge	1.2 H	E 102	13, 48
21°	ARTICLES CLASSIFIED AS 1.2 J			
	0395 Rocket motors, liquid fuelled	1.2 J	E 103	-
	0398 Rockets, liquid fuelled with bursting charge	1.2 J	E 103	-
	0400 Bombs with inflammable liquid, with bursting charge	1.2 J	E 103	-
22°	SUBSTANCES CLASSIFIED AS 1.3 C			
	0077 Dinitrophenolates of alkali metals, dry or wetted with less than 15% water by mass	1.3 C	E 2	1, 2
	0158 Potassium salts of aromatic nitro-derivatives, explosive	1.3 C	E 21	2
	0159 Powder-cake (powder paste), wetted with not less than 35% water by mass	1.3 C	E 19	7
	0161 Powder, smokeless	1.3 C	E 22	8, 9, 10
	0234 Sodium dinitro-o-cresolate, dry or wetted with less than 15% water by mass	1.3 C	E 2	1, 2
	0235 Sodium picramate, dry or wetted with less than 20% water by mass	1.3 C	E 2	1, 2
	0236 Zirconium picramate, dry or wetted with less than 20% water by mass	1.3 C	E 2	1, 2

1	2	3	4	5
22° (cont.)	0342 Nitrocellulose, wetted with not less than 25% alcohol by mass Note: For nitrocellulose with not less than 25% alcohol by mass and with a nitrogen content of not more than 12.6% by mass of the nitrocellulose, under special packing conditions, see Class 4.1 (marg. 2401, 7°).	1.3 C	E 15	-
	0343 Nitrocellulose, plasticized with not less than 18% plasticizer by mass Note: For nitrocellulose with not less than 18% plasticizer by mass and with a nitrogen content of not more than 12.6% by mass of the nitrocellulose, under special conditions of packing, see Class 4.1 (marg. 2401, 7°).	1.3 C	E 15	-
	0406 Dinitrosobenzene	1.3 C	E 25	-
23°	ARTICLES CLASSIFIED AS 1.3 C			
	0183 Rockets, with inert head	1.3 C	E 146	-
	0186 Rocket motors	1.3 C	E 146	-
	0242 Charges, propelling, for cannon	1.3 C	E 119	-
	0272 Charges, propelling, for rocket motors	1.3 C	E 22	8, 9, 10
	0274 Charges, propelling, for rocket motors, composite mixture	1.3 C	E 22	8, 9, 10
	0275 Cartridges, power device	1.3 C	E 114	-
	0277 Cartridges, oil well	1.3 C	E 113	-
	0327 Cartridges for weapons, blank (cartridges, small arms, blank)	1.3 C	E 112	13
	0417 Cartridges for weapons, inert projectile	1.3 C	E 112	13
	0437 Rockets with expelling charge	1.3 C	E 146	-
	0447 Cases, combustible, empty, without primer	1.3 C	E 116	-
24°	ARTICLES CLASSIFIED AS 1.3 F (Reserved)	1.3 F		

1	2	3	4	5
25*	SUBSTANCES CLASSIFIED AS 1.3 G			
	0305 Flash powder	1.3 G	E 20	55
26*	ARTICLES CLASSIFIED AS 1.3 G			
	0010 Ammunition, incendiary with or without burster, expelling charge or propelling charge	1.3 G	E 102	13, 48
	0016 Ammunition, smoke with or without burster, expelling charge or propelling charge	1.3 G	E 102	13, 48
	0019 Ammunition, tear-producing with burster, expelling charge or propelling charge	1.3 G	E 102	13, 48
	0050 Cartridges, flash	1.3 G	E 115	-
	0054 Cartridges, signal	1.3 G	E 115	-
	0092 Flares, surface	1.3 G	E 133	-
	0093 Flares, aerial	1.3 G	E 133	-
	0101 Fuze, instantaneous, non-detonating (quickmatch)	1.3 G	E 135	-
	0195 Signals, distress, ship	1.3 G	E 150	12
	0212 Tracers for ammunition	1.3 G	E 156	-
	0240 Rockets, line-throwing	1.3 G	E 147	-
	0254 Ammunition, illuminating, with or without burster, expelling charge or propelling charge	1.3 G	E 102	13, 48
	0299 Bombs, photoflash	1.3 G	E 106	49
	0315 Igniters	1.3 G	E 139	-
	0316 Fuzes, igniting	1.3 G	E 137	38
	0318 Grenades, practice, hand or rifle	1.3 G	E 138	-
	0319 Primers, tubular	1.3 G	E 143	-
	0335 Fireworks	1.3 G	E 130	-
	0424 Projectiles, inert with tracer	1.3 G	E 106	49
	0430 Articles, pyrotechnic for technical purposes	1.3 G	E 134	-

1	2	3	4	5
27*	ARTICLES CLASSIFIED AS 1.3 H			
	0244 Ammunition, incendiary, white phosphorus with burster, expelling charge or propelling charge	1.3 H	E 102	13, 48
	0246 Ammunition, smoke, white phosphorus with burster, expelling charge or propelling charge	1.3 H	E 102	13, 48
28*	ARTICLES CLASSIFIED AS 1.3 J			
	0247 Ammunition, incendiary, liquid or gel, with burster, expelling charge or propelling charge	1.3 J	E 102	13, 48
	0396 Rocket motors, liquid fuelled	1.3 J	E 103	-
	0450 Torpedoes, liquid fuelled, with inert head	1.3 J	E 146	-
29*	ARTICLES CLASSIFIED AS 1.4 B			
	0255 Detonators, electric, for blasting	1.4 B	E 104	18
	0257 Fuzes, detonating	1.4 B	E 137	38
	0267 Detonators, non-electric, for blasting	1.4 B	E 105	19, 20, 21, 22, 24, 54
	0361 Detonator assemblies, non-electric, for blasting	1.4 B	E 105A	25, 26
	0365 Detonators for ammunition	1.4 B	E 128	23, 36
	0378 Primers, cap type	1.4 B	E 142	39, 40, 41
30*	SUBSTANCES CLASSIFIED AS 1.4 C			
	0407 Tetrazol-1-acetic acid	1.4 C	E 25	-
	0448 5-Mercapto-tetrazol-1-acetic acid	1.4 C	E 25	-
31*	ARTICLES CLASSIFIED AS 1.4 C			
	0276 Cartridges, power device	1.4 C	E 114	-
	0278 Cartridges, oil well	1.4 C	E 113	-
	0338 Cartridges for weapons, blank (cartridges, small arms, blank)	1.4 C	E 112	13
	0339 Cartridges for weapons, inert projectile (cartridges, small arms)	1.4 C	E 112	13
	0379 Cases, cartridge, empty, with primer	1.4 C	E 116	-

1	2	3	4	5
31° (cont.)	0438 Rockets with expelling charge	1.4 C	E 146	-
	0446 Cases, combustible, empty, without primer	1.4 C	E 116	-
32°	SUBSTANCES CLASSIFIED AS 1.4 D (Reserved)	1.4 D		
33°	ARTICLES CLASSIFIED AS 1.4 D			
	0104 Cord (fuse), detonating, mild effect, metal clad	1.4 D	E 125	34
	0237 Charges, shaped, flexible, linear	1.4 D	E 121	32
	0289 Cord, detonating, flexible	1.4 D	E 124	33
	0344 Projectiles with bursting charge	1.4 D	E 106	49
	0347 Projectiles with burster or expelling charge	1.4 D	E 106	49
	0370 Warheads, rocket, with burster or expelling charge	1.4 D	E 106	49
	0410 Fuzes, detonating, with protective features	1.4 D	E 137	38
	0440 Charges, shaped, commercial, without detonator	1.4 D	E 120	30, 31
	0444 Charges, explosive, commercial without detonator	1.4 D	E 156	-
	0459 Charges, bursting, plastics bonded	1.4 D	E 157	-
34°	ARTICLES CLASSIFIED AS 1.4 E			
	0412 Cartridges for weapons, with bursting charge	1.4 E	E 112	13
35°	ARTICLES CLASSIFIED AS 1.4 F			
	0348 Cartridges for weapons, with bursting charge	1.4 F	E 112	13
	0371 Warheads, rocket, with burster or expelling charge	1.4 F	E 106	49
	0427 Projectiles, with burster or expelling charge	1.4 F	E 106	49
36°	SUBSTANCES CLASSIFIED AS 1.4 G (Reserved)	1.4 G		

1	2	3	4	5
37'	ARTICLES CLASSIFIED AS 1.4 G			
	0066 Cord, igniter	1.4 G	E 126	-
	0103 Fuse, igniter, tubular, metal clad	1.4 G	E 135	-
	0191 Signal devices, hand	1.4 G	E 150	12
	0197 Signals, smoke, without explosive sound unit	1.4 G	E 150	12
	0297 Ammunition, illuminating, with or without burster, expelling charge or propelling charge	1.4 G	E 102	13, 48
	0300 Ammunition, incendiary with or without burster, expelling charge or propelling charge	1.4 G	E 102	13, 48
	0301 Ammunition, tear-producing, with burster, expelling charge or propelling charge	1.4 G	E 102	13, 48
	0303 Ammunition, smoke with or without burster, expelling charge or propelling charge	1.4 G	E 102	13, 48
	0306 Tracers for ammunition	1.4 G	E 156	-
	0312 Cartridges, signal	1.4 G	E 115	-
	0317 Fuzes, igniting	1.4 G	E 137	38
	0320 Primers, tubular	1.4 G	E 143	-
	0325 Igniters	1.4 G	E 141	-
	0336 Fireworks,	1.4 G	E 130	-
	0362 Ammunition, practice	1.4 G	E 102	13, 48
	0363 Ammunition, proof	1.4 G	E 102	13, 48
	0403 Flares, aerial	1.4 G	E 133	-
	0425 Projectiles, inert with tracer	1.4 G	E 106	49
	0431 Articles, pyrotechnic for technical purposes	1.4 G	E 134	-
	0435 Projectiles with burster or expelling charge	1.4 G	E 106	-
	0452 Grenades, practice, hand or rifle	1.4 G	E 138	-
	0453 Rockets, line throwing	1.4 G	E 147	-

1	2	3	4	5
38*	SUBSTANCES CLASSIFIED AS 1.4 S (Reserved)	1.4 S		
39*	ARTICLES CLASSIFIED AS 1.4 S			
	0012 Cartridges for weapons, inert projectile (cartridges, small arms)	1.4 S	E 112	13
	0014 Cartridges for weapons, blank (cartridges, small arms, blank)	1.4 S	E 112	13
	0044 Primers, cap type	1.4 S	E 142	39, 40, 41
	0055 Cases, cartridge, empty, with primer	1.4 S	E 116	-
	0070 Cutters, cable, explosive	1.4 S	E 127	-
	0105 Fuse, safety	1.4 S	E 136	32
	0110 Grenades, practice, hand or rifle	1.4 S	E 138	-
	0131 Lighters, fuse	1.4 S	E 141	-
	0173 Release devices, explosive	1.4 S	E 145	-
	0174 Rivets, explosive	1.4 S	E 145	-
	0193 Signals, railway track, explosive	1.4 S	E 151	43, 44, 45
	0323 Cartridges, power device	1.4 S	E 114	-
	0337 Fireworks,	1.4 S	E 103	-
	0345 Projectiles, inert, with tracer	1.4 S	E 106	49
	0366 Detonators for ammunition	1.4 S	E 128	23, 36
	0367 Fusees, detonating	1.4 S	E 137	38
	0368 Fusees, igniting	1.4 S	E 137	38
	0373 Signal devices, hand	1.4 S	E 150	12
	0376 Primers, tubular	1.4 S	E 143	-
	0404 Flares, aerial	1.4 S	E 133	-
	0405 Cartridges, signal	1.4 S	E 115	-
	0432 Articles, pyrotechnic, for technical purposes	1.4 S	E 134	-
	0441 Charges, shaped, commercial, without detonator	1.4 S	E 120	30, 31

1	2	3	4	5
39' (cont.)	0445 Charges, explosive, commercial, without detonator	1.4 S	E 156	-
	0454 Igniters	1.4 S	E 141	-
	0455 Detonators, non-electric, for blasting	1.4 S	E 105	19, 20, 21, 22, 24, 54
	0456 Detonators, electric, for blasting	1.4 S	E 104	18
	0460 Charges, bursting, plastics bonded	1.4 S	E 157	-
40'	SUBSTANCES CLASSIFIED AS 1.5 D			
	0331 Explosive, blasting, type B	1.5 D	E 8/9	-
	0332 Explosive, blasting, type E	1.5 D	E 12	-
41'	ARTICLES CLASSIFIED AS 1.5 D (Reserved)	1.5 D		
		-	-	-
51'	Empty packagings, uncleaned	-	-	-

2. Conditions of carriage

A. Packages

1. General conditions of packing

2102 (1) Outer packagings, other than cradles and crates, shall conform to the requirements of Appendix A.5.

(2) In accordance with the provisions of marginals 2100 (5) and 3512, packagings of packing group II or I, marked "Y" or "X" shall be used for substances and articles of Class 1.

(3) The requirements of Appendix A.5, marginal 3500 (2), shall apply to the parts of packagings which are in direct contact with the contents.

(4) Nails, staples and other closure devices made of metal having no protective covering shall not penetrate to the inside of the outer packaging unless the inner packaging adequately protects the explosives against contact with the metal.

(5) The closure device of receptacles containing liquid explosives shall ensure a double protection against leakage.

(6) Inner packagings, fittings and cushioning materials and the placing of explosive substances or articles in packages shall be such that no dangerous movement may occur within packages during carriage.

(7) Where significant internal pressure is likely to develop in receptacles, such receptacles shall be so constructed that detonation is not possible by reason of increase in internal pressure from internal or external causes.

(8) Cushioning materials shall be suited to the nature of the contents; in particular, they must be absorbent if the contents are liquid or might exude liquid.

2. Special conditions of packing for substances and articles

2103 (1) Substances and articles shall be packed as indicated in marginal 2101, table 1, columns 4 and 5, and as set out in detail in paragraphs (5), table 2 and (6), table 3.

(2) If the body of steel drums is double-seamed, steps shall be taken to prevent the ingress of explosive substances into the recesses of the seams. The closure device of steel or aluminium drums shall include a suitable gasket. If the closure device includes a screw thread, the ingress of explosive substances into the screw thread shall not be possible.

(3) If metal-lined boxes are used for packing explosive substances, these boxes shall be made in such a way that the explosive substance cannot get between the liner and the sides or bottom of the box.

(4) Only hoops in hardwood shall be authorized for wooden barrels intended for the carriage of explosive substances.

(5)

Table 2

Packing methods

Note For the packing methods to be used for the various substances and articles, see marginal 2101, table 1, column 4

Method	Inner packagings	Outer packagings
E 1		
(a)	Not necessary	Bags paper, multiwall, water-resistant (5M2) textile, sift-proof (5L2) textile, water-resistant (5L3) woven plastics, sift-proof (5H2) water-resistant (5H3) plastics film (5H4)
(b)	Bags paper, kraft plastics Sheets plastics	Barrels, wooden removable head (2C2) Boxes natural wood, ordinary (4C1) plywood (4D) reconstituted wood (4F) Drums steel, removable head (1A2)
E 2	Receptacles metal paper plastics Sheets plastics	Barrels, wooden removable head (2C2) Boxes plywood (4D) reconstituted wood (4F) fibreboard (4G) natural wood, ordinary (4C1) Drums fibre (1G) Note: In addition, for 0219 of 4° (Trinitroresorcinol) plastics drums, removable head (1H2)

Method	Inner packagings	Outer packagings
E 4		
(a)	Receptacles fibreboard metal paper plastics textile, rubberized	Barrels, wooden removable head (2C2) Boxes fibreboard (4G) natural wood, sift-proof walls (4C2) plywood (4D) reconstituted wood (4F) Drums fibre (1G)
(b)	Optional	Drums aluminium, removable head (1B2) fibre (1G) steel, removable head (1A2), sift proof
E 5	Bags plastics Sheets paper, kraft paper, waxed	Boxes fibreboard (4G) natural wood, sift-proof walls (4C2) plywood (4D) reconstituted wood (4F)
E 6		
(a)	Wetted substances	
	1. Bags plastics textile, rubberized	Barrels, wooden removable head (2C2) Boxes fibreboard (4G) natural wood, ordinary (4C1) plywood (4D) reconstituted wood (4F) Drums steel, removable head (1A2) fibre (1G)
	2. Bags rubber textile textile, rubberized	Barrels, wooden removable head (2C2) Drums steel, removable head (1A2) fibre (1G)
	Intermediate: for (a) 2 Bags rubber textile, rubberized	
(b)	Desensitized substances	
	Same as for wetted substances except that any fibreboard boxes may be used as inner packaging and any textile bags as intermediate packaging.	

Method	Inner packagings	Outer packagings
E 8	Receptacles waterproof material Sheets waterproof	Barrels, wooden removable head (2C2) Boxes plywood (4D) reconstituted wood (4F) fibreboard (4G) natural wood, ordinary 4C1 Drums fibre (1G)
E 9	Bags oil-resistant Sheets plastics Cans metal	Bags paper, multiwall, water-resistant (5M2) textile, sift-proof (5L2) textile, water-resistant (5L3) woven plastics, without inner lining or coating (5H1) woven plastics, water-resistant (5H3) woven plastics, sift-proof (5H2) plastics film (5H4) Note: If bags in woven plastics (5H2 or 5H3), or bags in plastics film (5H4), are used, no inner packaging is necessary. Boxes fibreboard (4G) natural wood, ordinary (4C1) plywood (4D) reconstituted wood (4F) Drums fibre (1G) steel, removable head (1A2)
E 10	Bags paper, waxed plastics textile, rubberized Sheets paper, waxed plastics textile, rubberized	Barrels, wooden removable head (2C2) Boxes natural wood, ordinary (4C1) plywood (4D) reconstituted wood (4F)

Method	Inner packagings	Outer packagings
E 11	Bags paper, waxed plastics textile textile, rubberized Sheets paper, waxed plastics textile, textile, rubberized	Barrels, wooden removable head (2C2) Boxes fibreboard (4G) natural wood, ordinary (4C1) plywood (4D) reconstituted wood (4F) Drums fibre (1G)
E 12	Bags oil-resistant Sheets plastics	Bags paper, multiwall, water-resistant (5M2) woven plastics, sift-proof (5H2) woven plastics, without inner lining or coating (5H1) woven plastics, water-resistant (5H3) plastics film (5H4) textile, sift-proof (5L2) textile, water-resistant (5L3) Boxes plywood (4D) reconstituted wood (4F) fibreboard (4G) natural wood, ordinary (4C1) Drums fibre (1G) steel, removable head (1A2) plastics (1H2) Note: If bags in woven plastics (5H2 or 5H3), or bags in plastics film (5H4), or plastics drums (1H2), are used, no inner packaging is necessary.
E 13 (a)	Wetted substances Bags plastics Sheets plastics	Barrels, wooden removable head (2C2) Boxes fibreboard (4G) natural wood, ordinary (4C1) plywood (4D) reconstituted wood (4F) Drums fibre (1G)

Method	Inner packagings	Outer packagings
E 13 (cont.) (b)	Dry substances	
	Bags paper plastics Boxes fibreboard Sheets plastics	Barrels, wooden removable head (2C2) Boxes fibreboard (4G) natural wood, ordinary (4C1) plywood (4D) reconstituted wood (4F) Drums fibre (1G)
E 14	Bags rubber textile textile, rubberized	Barrels, wooden removable head (2C2) Drums steel, removable head (1A2)
	Intermediate: Bags rubber textile, rubberized	
E 15 (a)	Not necessary	Drums aluminium, removable head (1B2) steel, removable head (1A2)
(b)	Bags paper, waterproof plastics textile, rubberized	Barrels, wooden removable head (2C2) Boxes natural wood, ordinary (4C1) plywood (4D) reconstituted wood (4F) fibreboard (4G) Drums fibre (1G)
	Sheets plastics textile, rubberized	

Method	Inner packagings	Outer packagings
E 17	Cans metal Receptacles glass plastics	Boxes natural wood, ordinary (4C1) plywood (4D) reconstituted wood (4F)
E 18	Bags paper plastics Sheets plastics	Barrels, wooden removable head (2C2) Boxes fibreboard (4G) natural wood, ordinary (4C1) plywood (4D) reconstituted wood (4F) Drums fibre (1G) plywood (1D) steel, removable head (1A2)
E 19 (a)	Not necessary	Drums aluminium, removable head (1B2) steel, removable head (1A2) plastics, removable head (1H2)
(b)	Bags plastics Sheets plastics	Barrels, wooden removable head (2C2) Boxes natural wood, ordinary (4C1) plywood (4D) reconstituted wood (4F) Drums fibre (1G)
E 20	Receptacles metal plastics wooden	Boxes fibreboard (4G) natural wood, ordinary (4C1) steel, with liner (4A2) plywood (4D) reconstituted wood (4F) Drums fibre (1G)

Method	Inner packagings	Outer packagings
E 21	Boxes fibreboard Cans metal Receptacles paper, waterproof plastics, not liable to generate static electricity by contained substances	Boxes natural wood, sift-proof walls (4C2) plywood (4D) reconstituted wood (4F)
E 22		
(a)	Bags paper, kraft plastics textile textile, rubberized	Barrels, wooden removable head (2C2) Boxes plywood (4D) reconstituted wood (4F) fibreboard (4G) natural wood, ordinary (4C1) natural wood, sift-proof walls (4C2) Drums fibre (1G) plywood (1D)
(b)	Receptacles fibreboard metal plastics	Boxes fibreboard (4G) natural wood, ordinary (4C1) natural wood, sift-proof walls (4C2) plywood (4D) reconstituted wood (4F)
(c)	Not necessary	Drums steel, removable head (1A2) fibre (1G) plywood (1D) Jerricans steel, non-removable head (3A1) steel, removable head (3A2)
E 24		
(a)	Bags rubber textile, rubberized plastics	Boxes fibreboard (4G)

Method	Inner packagings	Outer packagings
E 24 (cont.) (b)	Bags rubber textile, rubberized plastics Intermediate: for (b) Bags rubber textile, rubberized plastics	Drums steel, removable head (1A2), with coating – other than lead
E 25	Bags plastics	Drums fibre (1G)
E 26	Receptacles metal paper plastics Sheets plastics Bags plastics	Barrels, wooden removable head (2C2) Boxes fibreboard (4G) natural wood, ordinary (4C1) plywood (4D) reconstituted wood (4F) Drums fibre (1G) Bags woven plastics, sift-proof (5H2)
E 102	As specified by the competent authority in the country of origin 2/	Boxes natural wood, ordinary (4C1) natural wood, ordinary (4C1), with liner steel (4A1) steel, with liner (4A2) plywood (4D) reconstituted wood (4F) fibreboard (4G) Crates 3/ (for large articles) Drums steel, removable head (1A2) fibre (1G)
E 103	As specified by the competent authority in the country of origin 2/	

Method	Inner packagings	Outer packagings
E 104	Receptacles fibreboard metal paper	Boxes fibreboard (4G) natural wood, ordinary (4C1) steel, with liner (4A2) plywood (4D) reconstituted wood (4F)
E 105	Receptacles fibreboard metal plastics Intermediate Boxes fibreboard wooden	Boxes fibreboard (4G) natural wood, ordinary (4C1) steel, with liner (4A2) plywood (4D) reconstituted wood (4F)
E 105A	Bags paper plastics Boxes fibreboard Receptacles fibreboard	Boxes fibreboard (4G) natural wood, ordinary (4C1) steel, with liner (4A2) plywood (4D) reconstituted wood (4F)
E 106	Not necessary	Boxes plywood (4D) reconstituted wood (4F) natural wood, ordinary (4C1) steel, (4A1) Cradles 4/ Crates 4/
E 107 (a)	Boosters which are finished articles consisting of closed metal, plastics or fibreboard receptacles that contain a detonating explosive, or consisting of a plastics-bonded detonating explosive.	
	Not necessary	Boxes fibreboard (4G) natural wood, ordinary (4C1) plywood (4D) reconstituted wood (4F)

Method	Inner packagings	Outer packagings
E 107 (cont.) (b)	Cast or pressed boosters in tubes or capsules without end closures.	
	Receptacles fibreboard metal plastics Sheets plastics paper	Boxes fibreboard (4G) natural wood, ordinary (4C1) plywood (4D) reconstituted wood (4F)
E 108	Dividing partitions in the outer packagings Receptacles metal plastics wooden	Boxes natural wood, ordinary (4C1) steel (4A1) plywood (4D) reconstituted wood (4F)
E 109	Receptacles metal plastics wooden	Boxes natural wood, ordinary (4C1) steel, with liner (4A2) plywood (4D) reconstituted wood (4F)
E 112	Not necessary	Boxes fibreboard (4G) plywood (4D) reconstituted wood (4F) natural wood, ordinary (4C1) steel (4A1) steel, with liner (4A2) Drums steel, removable head (1A2)
E 113	Receptacles fibreboard plastics metal	Boxes fibreboard (4G) natural wood, ordinary (4C1) plywood (4D) reconstituted wood (4F)
E 114	Receptacles fibreboard plastics wooden metal	Boxes plywood (4D) reconstituted wood (4F) fibreboard (4G) natural wood, ordinary (4C1) steel, with liner (4A2)

Method	Inner packagings	Outer packagings
E 115	Receptacles fibreboard metal plastics wooden Note: For articles of 37°, No. 0312 and 39°, No. 0405, receptacles, paper, Kraft, may also be used	Boxes fibreboard (4G) natural wood, ordinary (4C1) steel, with liner (4A2) plywood (4D) reconstituted wood (4F)
E 116	Dividing partitions in the outer packaging Boxes fibreboard plastics wooden Note: For small cases, (cartridge), plastics or textile bags may also be used	Boxes fibreboard (4G) natural wood, ordinary (4C1) steel (4A1) plywood (4D) reconstituted wood (4F)
E 117	Boxes fibreboard metal plastics wooden Cans metal	Boxes natural wood, ordinary (4C1) steel, with liner (4A2) plywood (4D) reconstituted wood (4F)
E 118	Not necessary	Cradles 5/ Crates 5/
E 119	Not necessary	Boxes natural wood, sift-proof walls (4C2) plywood (4D), reconstituted wood (4F) steel (4A1) steel, with liner (4A2) Drums - steel, removable head (1A2) Note: For cased charges, boxes in natural wood, ordinary (4C1), plywood (4D) and reconstituted wood (4F) may also be used.

Method	Inner packagings	Outer packagings
E 120	Dividing partitions in the outer packaging Tubes fibreboard other material	Boxes fibreboard (4G) natural wood, ordinary 4C1) plywood (4D) reconstituted wood (4F)
E 121	Not necessary	Boxes plywood (4D) reconstituted wood (4F) fibreboard (4G) natural wood, ordinary (4C1) steel, with liner (4A2)
E 122	Boxes fibreboard metal plastics wooden	Boxes plywood (4D) reconstituted wood (4F) fibreboard (4G) natural wood, ordinary (4C1) steel, with liner (4A2)
E 124	Reels	Boxes fibreboard (4G) natural wood, ordinary (4C1) plywood (4D) reconstituted wood (4F) Drums fibre (1G)
E 125	Bags plastics Reels Sheets paper, kraft plastics	Boxes fibreboard (4G) natural wood, ordinary (4C1) plywood (4D) reconstituted wood (4F)
E 126	Reels Receptacles fibreboard	Boxes fibreboard (4G) natural wood, ordinary (4C1) plywood (4D) reconstituted wood (4F)
E 127	Receptacles fibreboard	Boxes natural wood, ordinary (4C1) plywood (4D) reconstituted wood (4F) steel, with liner (4A2)

Method	Inner packagings	Outer packagings
E 128	Boxes fitted with dividing partitions fibreboard plastics wooden Trays fitted with dividing partitions fibreboard plastics wooden Cans fitted with dividing partitions metal	Boxes natural wood, ordinary (4C1) steel (4A1) plywood (4D) reconstituted wood (4F)
E 129	Receptacles fibreboard plastics Sheets paper	Boxes fibreboard (4G) natural wood, ordinary (4C1) plywood (4D) reconstituted wood (4F) Drums fibre (1G)
E 130	Receptacles fibreboard plastics Sheets paper	Boxes plywood (4D) reconstituted wood (4F) fibreboard (4G) natural wood, ordinary (4C1) Drums fibre (1G)
E 133	Dividing partitions in the outer packaging Receptacles metal plastics fibreboard Sheets paper, kraft	Boxes fibreboard (4G) plywood (4D) reconstituted wood (4F) natural wood, ordinary (4C1) steel (4A1) plastics, solid (4H2) Drums fibre (1G) plastics, removable head (1H2)
E 134	Receptacles fibreboard metal plastics wooden	Boxes fibreboard (4G) natural wood, ordinary (4C1) steel (4A1) plywood (4D) reconstituted wood (4F)

Method	Inner packagings	Outer packagings
E 135	Bags plastics Reels Sheets paper, kraft plastics	Boxes fibreboard (4G) natural wood, ordinary (4C1) plywood (4D) reconstituted wood (4F)
E 136	Not necessary	Boxes plywood (4D) reconstituted wood (4F) fibreboard (4G) natural wood, ordinary (4C1) steel, with liner (4A2) Drums fibre (1G)
E 137	Dividing partitions in the outer packaging Receptacles fibreboard metal plastics wooden Trays plastics wooden	Boxes natural wood, ordinary (4C1) steel (4A1) plywood (4D) reconstituted wood (4F)
E 138	As specified by the competent authority in the country of origin 6/	Boxes natural wood, ordinary (4C1) steel (4A1) plywood (4D) reconstituted wood (4F)
E 139	Receptacles metal plastics wooden	Boxes natural wood, ordinary (4C1) steel, with liner (4A2) plywood (4D) reconstituted wood (4F)
E 140	Bags water-resistant	Boxes fibreboard (4G) natural wood, ordinary (4C1) steel, with liner (4A2) plywood (4D) reconstituted wood (4F)

Method	Inner packagings	Outer packagings
E 141	Receptacles fibreboard metal wooden Sheets paper Trays plastics	Boxes fibreboard (4G) natural wood, ordinary (4C1) steel, with liner (4A2) plywood (4D) reconstituted wood (4F)
E 142	Boxes fibreboard metal plastics wooden Cans metal Trays fibreboard plastics Intermediate (Optional with inner boxes but mandatory with trays) Boxes fibreboard	Boxes natural wood, ordinary (4C1) steel, with liner (4A2) fibreboard (4G) plywood (4D) reconstituted wood (4F)
E 143	Boxes fibreboard metal wooden Tubes fibreboard Trays plastics	Boxes natural wood, ordinary (4C1) steel (4A1) plywood (4D) reconstituted wood (4F)
E 145	Receptacles fibreboard plastics wooden Note: For articles of 39°, No. 0174, metal receptacles may also be used	Boxes fibreboard (4G) natural wood, ordinary (4C1) steel, with liner (4A2) plywood (4D) reconstituted wood (4F)
E 146	Not necessary	As specified by the competent authority in the country of origin 7/

Method	Inner packagings	Outer packagings
E 147	Receptacles fibreboard metal	Boxes plywood (4D) reconstituted wood (4F) fibreboard (4G) natural wood, ordinary (4C1) Drums fibre (1G)
E 150	Boxes fibreboard Receptacles metal plastics Sheets paper, kraft	Boxes fibreboard (4G) natural wood, ordinary (4C1) steel (4A1) plywood (4D) reconstituted wood (4F) Drums fibre (1G)
E 151	Receptacles fibreboard metal plastics wooden	Boxes fibreboard (4G) natural wood, ordinary (4C1) steel (4A1) plywood (4D) reconstituted wood (4F) Drums fibre (1G)
E 153	Sheets fibreboard corrugated Tubes fibreboard Intermediate: Receptacles fibreboard metal plastics	Boxes natural wood, ordinary (4C1) steel (4A1) plywood (4D) reconstituted wood (4F)
E 156	Dividing partitions in the outer packaging Bags plastics Boxes fibreboard Tubes fibreboard plastics metal	Boxes fibreboard (4G) natural wood, ordinary (4C1) steel (4A1) steel, with liner (4A2) plywood (4D) reconstituted wood (4F)
E 157	Not necessary	Boxes natural wood, ordinary (4C1) plywood (4D) reconstituted wood (4F) steel (4A1)

(6) Table 3

Special packing requirements

Note: For the special packing requirements applicable to the various substances and articles, see marginal 2101, table 1, column 5

1.	Water soluble substances must be packed in waterproof receptacles.
2.	Packages must be lead free.
7.	Metal drums must be so constructed that explosion is not possible by reason of increase in internal pressure from internal or external causes.
8.	The inside of steel drums and jerricans must be galvanized, painted or otherwise protected. Bare steel must not come into contact with the substance.
9.	Drums or jerricans of steel must be made without pockets or crevices in which the substance could be trapped or nipped.
10.	Metal receptacles must be so constructed that the risk of explosion, by reason of increase in internal pressure from internal or external causes, is reduced.
11.	The inner packagings must be hermetically closed.
12.	Outer boxes of natural wood must be provided with tin-plate liner having a hermetically closed lid.
13.	Open ends of inner packagings must be fitted with padded end caps or the outer packaging must be padded.
17.	Not more than 100 articles may be packed in an inner packaging and not more than 5,000 articles in an outer packaging.
18.	The articles must be packed with wires folded or coiled on spools in such a manner that the detonators are protected by the wires. Not more than 10 articles may be assembled in one bundle or coiled on one spool. Not more than 100 articles may be packed in an inner packaging and not more than 2,000 in an outer packaging.
19.	Not more than 100 articles may be packed in an inner packaging.
20.	Intermediate packagings are required if more than 1,000 articles are packed in an outer packaging.
21.	Not more than 10 inner packagings may be packed in an intermediate packaging.

22.	The inner or intermediate packagings must be separated from the outer packaging by a gap of at least 25 mm using spacers (battens) or cushioning material, e.g. sawdust.
23.	The inner packagings must be separated from the outer packaging by a gap of not less than 25 mm filled with cushioning material, e.g. sawdust, wood wool.
24.	Articles in metal inner packagings must be secured by cushioning material at both ends.
25.	Not more than 500 non-electric detonator assemblies with detonating cord, for blasting, may be packed in an outer packaging.
26.	Not more than 1,000 non-electric detonator assemblies, for blasting, with safety fuse or shock tube may be packed in an outer packaging.
28.	Metal inner packagings must be padded with cushioning material.
30.	The shaped charges must be so packed that contact between them is prevented.
31.	The conical cavities of the shaped charges must face inwards in pairs or groups to minimize the shaped charge (jetting) effect in the event of accidental initiation.
32.	The ends of the articles must be sealed.
33.	The ends of the detonating cord must be sealed and tied fast.
34.	The ends of the detonating cord must be sealed. Spaces must be filled with cushioning material.
36.	The articles must be protected by cushioning to prevent any contact between them.
37.	Venturis of rockets (fireworks) must be plugged and means of ignition fully protected.
38.	The detonating fuses must be separated from each other in the inner packaging.
39.	Primers fitted with an anvil; composition not covered with a disc of metal foil or other material (varnished only): (a) The primers must be packed in rows in single layers on trays of fibreboard or plastics. (b) Not more than 500 primers must be packed in an inner packaging.

40.	Primers not fitted with an anvil, composition covered, or primers fitted with an anvil, encapsulated : not more than 5,000 primers may be packed in an inner packaging.
41.	The primers must be packed with shock absorbent layers of felt, paper or plastics to prevent propagation within the outer packaging.
43.	The articles must be separated to prevent contact between them and kept apart from the bottom, walls and lid of the outer packaging, e.g. by cushioning material.
44.	Where the articles are contained in magazines for fitting into automatic units, the magazine may replace the inner packaging provided adequate cushioning material is used.
45.	Tin-plate inner packagings must be sealed.
46.	The articles must be wrapped singly in corrugated fibreboard sheets or inserted in fibreboard tubes.
47.	Absorbent cushioning material must be inserted.
48.	Large articles without propelling charge and without means of ignition or initiation may be carried unpacked.
49.	Large articles without their means of initiation may be carried unpacked.
51.	Large articles may be carried unpacked.
53.	Bags, woven plastics, sift-proof (5H2), may be used only for flake or prilled TNT in the dry state and with a maximum net mass of 30 kg per package.
54.	Plastics inner packagings must not be liable to generate sufficient static electricity that a discharge could cause the packaged articles to function.
55.	Not more than 50 g of substance may be packed in an inner packaging.

3. Mixed packing

2104 (1) Substances and articles listed under the same identification number 8/ may be packed together. In this case, the most secure outer packaging shall be used.

(2) Except where otherwise specially provided below, substances and articles having different identification numbers may not be packed together.

(3) Substances and articles of Class 1 may not be packed together with substances of other Classes or with goods which are not subject to the provisions of ADR.

(4) Articles of compatibility groups C, D and E may be packed together.

(5) Articles of compatibility groups D or E may be packed together with their own means of initiation provided that such means have at least two effective protective features which prevent explosion of an article in the event of accidental functioning of the means of initiation.

(6) Articles of compatibility groups D or E may be packed together with their own means of initiation which do not have two effective protective features (i.e. means of initiation assigned to compatibility group B), provided that, in the opinion of the competent authority of the country of origin, 9/ the accidental functioning of the means of initiation does not cause the explosion of an article under normal conditions of carriage.

(7) Articles may be packed together with their own means of ignition provided that the means of ignition will not function under normal conditions of carriage.

(8) Goods with the identification numbers shown in table 4 may be included in the same package under the conditions indicated.

(9) For mixed packing, account must be taken of a possible amendment of the classification of packages in accordance with marginal 2100.

(10) For the description of goods in the transport document in the case of the mixed packing of substances and articles of Class 1, see marginal 2110 (4).

Class 1

Table 4 – Special conditions for mixed packing

Item	Item	2	4		9			19			22	23	26				37					39					
	Identification number	0160	0027	0028	0194	0333	0428	0238	0334	0429	0161	0136	0054	0195	0240	0335	0430	0191	0197	0312	0336	0431	0012	0014	0044	0337	0373	0405	0432
2	0160		B	B							B														B				
4	0027	B		B							B														B				
	0028	B	B								B														B				
9	0194						B	B		B		B	B	B	B		B	B	B	B		B					B	B	B
	0333								A							A					A					A			
	0428				B			B		B		B	B	B	B		B	B	B	B		B					B	B	B
19	0238				B		B			B		B	B	B	B		B	B	B	B		B					B	B	B
	0334					A										A					A					A			
	0429				B		B	B				B	B	B	B		B	B	B	B		B					B	B	B
22	0161	B	B	B																					B				
23	0136				B		B	B		B			B	B	B		B	B	B	B		B					B	B	B
26	0054				B		B	B		B		B		B	B		B	B	B	B		B					B	B	B
	0195				B		B	B		B		B	B		B		B	B	B	B		B					B	B	B
	0240				B		B	B		B		B	B	B			B	B	B	B		B					B	B	B
	0335					A			A												A					A			
	0430				B		B	B		B		B	B	B	B			B	B	B		B					B	B	B
37	0191				B		B	B		B		B	B	B	B		B		B	B		B					B	B	B
	0197				B		B	B		B		B	B	B	B		B	B		B		B					B	B	B
	0312				B		B	B		B		B	B	B	B		B	B	B			B					B	B	B
	0336					A			A							A										A			
	0431				B		B	B		B		B	B	B	B		B	B	B	B							B	B	B
39	0012																							A					
	0014																						A						
	0044	B	B	B							B																		
	0337					A			A							A					A								
	0373				B		B	B		B		B	B	B	B		B	B	B	B		B						B	B
	0405				B		B	B		B		B	B	B	B		B	B	B	B		B					B		B
	0432				B		B	B		B		B	B	B	B		B	B	B	B		B					B	B	

Explanations:

A: Substances and articles with these identification numbers may be included in the same package without any special limitation of mass.

B: Substances and articles with these identification numbers may be included in the same package up to a total mass of 50 kg of explosive substance.

4. Marking and danger labels on packages (see Appendix A.9)

2105 (1) Packages shall carry the identification number and one of the names of the substance or article underlined, in marginal 2101, table 1, column 2. For substances of 4°, Nos. 0081, 0082, 0083, 0084 and 0241, and substances of 40°, Nos. 0331 and 0332, the commercial name of the particular explosive shall be specified in addition to the type. For other substances and articles, the commercial or technical name may be added. This marking, which shall be clearly legible and indelible, shall be in an official language of the country of origin and also, if that language is not English, French or German, in English, French or German, unless any agreements concluded between the countries concerned in the transport operation provide otherwise.

(2) Packages containing substances or articles of 1° to 28° shall bear a label conforming to model No. 1. The classification code according to marginal 2101, table 1, column 3, shall be shown on the lower part of the label. Packages containing substances or articles of 29° to 39° shall bear a label conforming to model No. 1.4 and packages containing substances of 40° and articles of 41° shall bear a label conforming to model No. 1.5. The compatibility group according to marginal 2101, table 1, column 3, shall be shown on the lower part of the label.

(3) Packages containing substances and articles of:

4°, Nos. 0076 and 0143;

19°, No. 0018;

22°, No. 0077;

26°, No. 0019; and
37°, No. 0301

shall in addition bear a label conforming to model No. 6.1.

Packages containing articles of:

19°, Nos. 0015 and 0018; and

26°, Nos. 0016 and 0019; and
37°, No. 0301

shall in addition bear a label conforming to model No. 8.

2106–
2109

B. Particulars in the transport document

2110 (1) The description of the goods in the transport document shall conform to one of the identification numbers and one of the names underlined in marginal 2101, table 1, column 2. The description of the goods shall be underlined and followed by the classification code and Item No. (marginal 2101, table 1, columns 3 and 1) and completed by the net mass in kg of the explosive substance and the initials "ADR" (or RID) (e.g.: 0160 Powder, smokeless, 1.1 C, 2°, 4,600 kg, ADR).

(2) For substances of 4°, Nos. 0081, 0082, 0083, 0084 and 0241 and for substances of 40°, Nos. 0331 and 0332, the commercial name of the explosive shall be specified as well as the type of explosive. For other substances and articles, the commercial name or technical name may be added.

(3) For full loads, the transport document shall indicate the number of packages, the mass of each package in kg and the total net mass of explosive substance.

(4) For mixed packing of two different goods, the description of the goods in the transport document shall include the identification numbers and names underlined in marginal 2101, table 1, column 2 of both substances or articles. If more than two different goods are contained in the same package in conformity with marginal 2104, the transport document shall indicate under the description of the goods the identification numbers of all the substances and articles contained in the package, in the form, "Goods of Nos. ...".

2111–2114

C. Empty packagings

2115 (1) Empty packagings, uncleaned, of 51° shall be securely closed and be leakproof to the same degree as if they were full.

(2) Empty packagings, uncleaned, of 51° shall bear the same danger labels as if they were full.

(3) The entry in the transport document shall be: "Empty packagings, 1, 51° ADR". This entry shall be underlined.

D. Special provisions

2116 Substances and articles of Class 1, belonging to the armed forces of a Contracting Party, that were packaged prior to 1 January 1990 in accordance with the provisions of ADR in effect at that time may be carried after 1 January 1990 provided the packagings maintain their integrity and are declared as military goods packaged prior to

1 January 1990 in the transport document. The other provisions applicable as from 1 January 1990 for this Class shall be complied with.

E. Transitional measures

2117 Substances and articles of Class 1 may be transported until 31 December 1990 in accordance with the requirements for Classes 1a, 1b and 1c applicable until 31 December 1989. The transport document shall, in such cases, bear the inscription: "Transport in accordance with the ADR in force before 1 January 1990".

2118–
2199

Notes

1/ The identification numbers are taken from the United Nations Recommendations.

2/ If the country of origin is not a party to ADR, the approval shall require validation by the competent authority of the first ADR country reached by the consignment.

3/ Cradles and crates are not subject to the requirements of Appendix A.5.

4/ See footnote 3.

5/ See footnote 3.

6/ See footnote 2.

7/ See footnote 2.

8/ Identification number of the substance or article according to the United Nations Recommendations (see marginal 2101, footnote 1).

9/ See footnote 2.

CLASS 7 RADIOACTIVE MATERIAL

Introduction

2700 (1) Scope

(a) Among the materials with a specific activity of more than 70 kBq/kg (2 nCi/g) and articles containing such materials, only those listed in marginal 2701 are to be accepted for carriage and then only under the conditions set out in the appropriate schedules of marginal 2704 and in Appendix A.7 (marginals 3700 to 3799)[1/].

(b) The materials and articles referred to in a) are materials and articles of ADR.

Note: Cardiac pacemakers containing radioactive material, when they have been surgically implanted in medical patients, or radio-pharmaceuticals administered to a patient in the course of medical treatment, are not subject to the provisions of ADR.

1/ The provisions of Class 7 are based on the following principles and provisions of the International Atomic Energy Agency (IAEA):
Regulations for the Safe Transport of Radioactive Material, Safety Series No. 6, 1985 Edition, which also includes the general principles for Radiation Protection.
Regulations for the Safe Transport of Radioactive Material, Safety Series No. 6 Supplement 1988.
Explanations and further information about these regulations can be found in the following documents:-

1. IAEA 'Advisory Material for the Application of the IAEA Transport Regulations' Safety Series No. 37, 1987 Edition.
2. IAEA 'Explanatory Material for the Application of the IAEA Transport Regulations' Safety Series No. 7, 1987 Edition.
3. IAEA 'Basic Safety Standards for Radiation Protection' Safety Series No. 9, 1982 Edition.
4. IAEA 'Emergency Response Planning and Preparedness for Transport Accidents involving Radioactive Material' Safety Series No. 87, 1988 Edition.

(2) Definitions and Explanations

A_1 and A_2

1. A_1 shall mean the maximum activity of special form radioactive material permitted in a Type A package. A_2 shall mean the maximum activity of radioactive material, other than special form radioactive material, permitted in a Type A package. (See Appendix A.7, Table I).

Alpha Emitters of Low Toxicity

2. Low toxicity alpha emitters shall mean natural uranium; depleted uranium; natural thorium; uranium-235 or uranium-238, thorium-232, thorium-228 and thorium-230 when contained in ores and physical or chemical concentrates; radionuclides with a half life of less than ten days.

Approval

3. Multilateral approval shall mean approval by the relevant competent authority both of the country of origin of the design or shipment and of each country through or into which the consignment is to be transported.

4. Unilateral approval shall mean an approval of a design which is required to be given by the competent authority of the country of origin of the design only.

   If the country of origin is not a party to ADR, the approval shall require validation by the competent authority of the first ADR country reached by the consignment.

Container

5. A container for the carriage of material of this class shall be of a permanent enclosed character, rigid and strong enough for repeated use. It may be used as a packaging if the applicable provisions are met, and it may also be used to perform the functions of an overpack.

Containment system

6. Containment system shall mean the assembly of components of the packaging specified by the designer as intended to retain the radioactive material during transport.

Contamination

7. Contamination shall mean the presence of a radioactive substance on a surface in quantities in excess of 0.4 Bq/cm² (10^{-5} µCi/cm²) for beta and gamma emitters and low toxicity alpha emitters, or 0.04 Bq/cm² (10^{-6} µCi/cm²) for all other alpha emitters.

   Fixed contamination shall mean contamination other than non-fixed contamination.

   Non-fixed contamination shall mean contamination that can be removed from a surface during normal transport and handling.

Design

8. Design shall mean the description of special form radioactive material, package, or packaging which enables such an item to be fully identified. The description may include specifications, engineering drawings, reports demonstrating compliance with regulatory provisions, and other relevant documentation.

Exclusive use

9. Exclusive use shall mean the sole use, by a single consignor, of a vehicle or of a container with a minimum length of 6 m, in respect of which all initial, intermediate, and final loading and unloading is carried out in accordance with the directions of the consignor or consignee.

Fissile material

10. Fissile material shall mean uranium-233, uranium-235, plutonium-238, plutonium-239, plutonium-241, or any combination of these radionuclides. Unirradiated natural uranium and depleted uranium, and natural uranium or depleted uranium which has been irradiated in thermal reactors only, are not included in this definition.

Low specific activity material

11. Low specific activity (LSA) material shall mean radioactive material which by its nature has a limited specific activity, or radioactive material for which limits of estimated average specific activity apply. External shielding materials surrounding the LSA material shall not be considered in determining the estimated average specific activity.

LSA material shall be in one of three groups:

a) LSA-I

(i) Ores containing naturally occurring radionuclides (e.g. uranium, thorium), and uranium or thorium concentrates of such ores;

(ii) Solid unirradiated natural uranium or unirradiated depleted uranium or unirradiated natural thorium or their solid or liquid compounds or mixtures; or

(iii) Radioactive material, other than fissile material, for which the A_2 value is unlimited.

b) LSA-II

(i) Water with tritium concentration up to 0.8 TBq/l (20 Ci/l); or

(ii) Other material in which the activity is distributed throughout and the estimated average specific activity does not exceed 10^{-4} A_2/g for solids and gases, and 10^{-5} A_2/g for liquids.

c) LSA-III

Solids (e.g. consolidated wastes, activated material) in which:

(i) The radioactive material is distributed throughout a solid or a collection of solid objects, or is essentially uniformly distributed in a solid compact binding agent (such as concrete, bitumen, ceramic, etc.);

(ii) The radioactive material is relatively insoluble, or it is intrinsically contained in a relatively insoluble matrix, so that, even under loss of packaging, the loss of radioactive material per package by leaching when placed in water for seven days would not exceed 0.1 A_2; and

(iii) The estimated average specific activity of the solid, excluding any shielding material, does not exceed 2×10^{-3} A_2/g.

Maximum normal operating pressure

12. Maximum normal operating pressure shall mean the maximum pressure above atmospheric pressure at mean sea-level that would develop in the containment system in a period of one year under the conditions of temperature and solar radiation corresponding to environmental conditions of transport in the absence of venting, external cooling by an ancillary system, or operational controls during transport.

Overpack

13. Overpack shall mean an enclosure, such as a box or bag, which need not meet the provisions for a container and which is used by a single consignor to consolidate into one handling unit a consignment of two or more packages for convenience of handling, stowage, and carriage. Overpack is not identical to outer packaging as defined in marginal 3510.

Package

14. Performance standards applied to packages are graded to take into account conditions of transport characterized by the following severity levels:

- conditions likely to be encountered in routine transport (in incident-free conditions),

- conditions of transport taking minor mishaps into account and

- accident conditions of transport.

The performance standards include design provisions and tests. Each package shall be classified as follows:

a) Excepted package is a packaging containing radioactive material (see Appendix A.7, Table V) that is designed to meet the general design provisions for all packagings and packages (see marginal 3732).

b) (I) Industrial Package Type 1 (IP-1) is a packaging, tank or container containing LSA material or SCO, (see definitions 11 and 22) that is designed to meet the general design provisions for all packagings and packages (see marginal 3732).

(II) Industrial Package Type 2 (IP-2) is a packaging, tank or container containing LSA material or SCO (see definitions 11 and 22) that is designed to meet the general design provisions for all packagings and packages (see marginal 3732) and, in addition, the following specific design provisions:

(i) for a package, see marginal 3734,

(ii) for a tank, see marginal 3736 and Appendices B.1a and B.1b,

(iii) for a container, see marginal 3736.

(III) Industrial Package Type 3 (IP-3) is a packaging, tank or container containing LSA material or SCO, (see definitions 11 and 22) that is designed to meet the general design provisions for all packagings and packages (see marginal 3732) and, in addition, the following specific design provisions:

(i) for a package, see marginal 3735,

(ii) for a tank, see marginal 3736 and Appendices B.1a and B.1b,

(iii) for a container, see marginal 3736.

c) Type A Package is a packaging, tank or container containing an activity up to A_1 if Special Form Radioactive Material, or up to A_2 if not Special Form Radioactive Material, that is designed to meet the general design provisions for all packagings and packages (see marginal 3732) and the specific design provisions in marginal 3737 as appropriate.

d) Type B Package is a packaging, tank or container containing an activity that may be in excess of A_1, if Special Form Radioactive Material, or in excess of A_2 if not Special Form Radioactive Material, that is designed to meet the general design provisions for all packagings and packages (see marginal 3732) and the specific design provisions in marginal 3737 and, as appropriate, marginals 3738-3740.

Packaging

15. Packaging shall mean the assembly of components necessary to enclose the radioactive contents

completely. It may, in particular, consist of one or more receptacles, absorbent materials, spacing structures, radiation shielding, service equipment for filling, emptying, venting and pressure relief, and devices for cooling, for absorbing mechanical shocks, for providing handling and tiedown capability, for thermal insulation, and service devices integral to the package. The packaging may be a box, drum or similar receptacle, or may also be a container or tank consistent with definition 14.

Quality assurance

16. Quality assurance shall mean a systematic programme of controls and inspections applied by any organisation or body involved in the transport of radioactive material which is aimed at providing adequate confidence that the standard of safety prescribed in Appendix A.7 is achieved in practice.

Radiation level

17. Radiation level shall mean the corresponding dose equivalent rate expressed in millisievert per hour[1/].

Radioactive contents

18. Radioactive contents shall mean the radioactive material together with any contaminated solids, liquids and gases within the packaging.

Special arrangement

19. Special arrangement shall mean those provisions, approved by the competent authority, under which a consignment which does not satisfy all the applicable provisions of Schedules 5-12 of marginal 2704 may be transported. Consignments of this type require multilateral approval.

Special form radioactive material

20. Special form radioactive material shall mean either an indispersible solid radioactive material or a sealed capsule containing radioactive material (see marginal 3731).

1/ For the sake of clarity, the radiation level may also be indicated, in parentheses, in millirem per hour. It is recognized that millisievert or millirem are not the correct units that should apply to radiation exposure in all cases, nevertheless, these units are used exclusively for convenience.

Specific activity

21. Specific activity shall mean the activity of a radionuclide per unit mass of that nuclide. The specific activity of a material in which the radionuclide is essentially uniformly distributed is the activity per unit mass of the material.

Surface contaminated object

22. Surface contaminated object (SCO) shall mean a solid object which is not itself radioactive but which has radioactive material distributed on its surfaces. SCO shall be in one of two groups:

(a) SCO-I: A solid object on which:

(i) the non-fixed contamination on the accessible surface averaged over 300 cm^2 (or the area of the surface if less than 300 cm^2) does not exceed 4 Bq/cm^2 (10^{-4} $\mu Ci/cm^2$) for beta and gamma emitters and low toxicity alpha emitters or 0.4 Bq/cm^2 (10^{-5} $\mu Ci/cm^2$) for all other alpha emitters; and

(ii) the fixed contamination on the accessible surface averaged over 300 cm^2 (or the area of the surface if less than 300 cm^2) does not exceed 4×10^4 Bq/cm^2 (1 $\mu Ci/cm^2$) for beta and gamma emitters and low toxicity alpha emitters or 4×10^3 Bq/cm^2 (0.1 $\mu Ci/cm^2$) for all other alpha emitters; and

(iii) the non-fixed contamination plus the fixed contamination on the inaccessible surface averaged over 300 cm^2 (or the area of the surface if less than 300 cm^2) does not exceed 4×10^4 Bq/cm^2 (1 $\mu Ci/cm^2$) for beta and gamma emitters and low toxicity alpha emitters or 4×10^3 Bq/cm^2 (0.1 $\mu Ci/cm^2$) for all other alpha emitters.

(b) SCO-II: A solid object on which either the fixed or non-fixed contamination on the surface exceeds the applicable limits specified for SCO-I in (a) above and on which:

(i) the non-fixed contamination on the accessible surface averaged over 300 cm^2 (or the area of the surface if less than 300 cm^2) does not exceed 400 Bq/cm^2 (10^{-2} $\mu Ci/cm^2$) for beta and gamma emitters and low toxicity alpha emitters

or 40 Bq/cm² (10^{-3} µCi/cm²) for all other alpha emitters; and

(ii) the fixed contamination on the accessible surface averaged over 300 cm² (or the area of the surface if less than 300 cm²) does not exceed 8 x 10^5 Bq/cm² (20 µCi/cm²) for beta and gamma emitters and low toxicity alpha emitters or 8 x 10^4 Bq/cm² (2 µCi/cm²) for all other alpha emitters;

and

(iii) the non-fixed contamination plus the fixed contamination on the inaccessible surface averaged over 300 cm² (or the area of the surface if less than 300 cm²) does not exceed 8 x 10^5 Bq/cm² (20 µCi/cm²) for beta and gamma emitters and low toxicity alpha emitters or 8 x 10^4 Bq/cm² (2 µCi/cm²) for all other alpha emitters.

Transport index

23. Transport index (TI) shall mean a single number assigned to a package, overpack, tank or container, or to unpackaged LSA-I or SCO-I, which is used to provide control over both nuclear criticality safety and radiation exposure (see marginal 3715). It is also used to establish contents limits on certain packages, overpacks, tanks and containers; to establish categories for labelling; to determine whether transport under exclusive use shall be required; to establish spacing provisions during storage in transit; to establish mixed loading restrictions during transport under special arrangement and during storage in transit; and to define the number of packages allowed in a container or aboard a vehicle (see Section II of Appendix A.7.).

Unirradiated thorium

24. Unirradiated thorium shall mean thorium containing not more than 10^{-7} g of uranium-233 per gram of thorium 232.

Unirradiated uranium

25. Unirradiated uranium shall mean uranium containing not more than 10^{-6} g of plutonium per gram of uranium-235 and not more than 9 MBq (0.20 mCi) of fission products per gram of uranium-235.

Uranium - natural, depleted, enriched

26. Natural uranium shall mean chemically separated uranium containing the naturally occurring distribution of uranium isotopes (approximately 99.28 % uranium-238, and 0.72 % uranium-235). Depleted uranium shall mean uranium containing a lesser mass percentage of uranium-235 than in natural uranium. Enriched uranium shall mean uranium containing a greater mass percentage of uranium-235 than in natural uranium. In all cases, a very small mass percentage of uranium-234 is present.

2701 (1) List of Substances

Identification number[1] and name of the substance or object	Schedule
2910 Radioactive material, excepted package	
- instruments or articles	2
- limited quantity of material	1
- articles manufactured from natural or depleted uranium or natural thorium	3
- empty packaging	4
2912 Radioactive material, low specific activity (LSA), n.o.s.[2]	
- LSA-I	5
- LSA-II	6
- LSA-III	7
- under special arrangement	13
2913 Radioactive material, surface contaminated objects (SCO)	
- SCO-I and SCO-II	8
- under special arrangement	13
2918 Radioactive material, fissile, n.o.s.[2]	
- in Type IF, Type AF, Type B(U)F or Type B(M)F packages	12
- under special arrangement	13
2974 Radioactive material, special form n.o.s.[2]	
- in Type A packages	9
- in Type B(U) packages	10
- in Type B(M) packages	11
- under special arrangement	13

Identification number[1] and name of the substance or object	Schedule
2975 Thorium metal, pyrophoric	
- in Type A packages	9
- in Type B(U) packages	10
- in Type B(M) packages	11
- under special arrangement	13
2976 Thorium nitrate, solid	
- LSA-I	5
- LSA-II	6
- in Type A packages	9
- in Type B(U) packages	10
- in Type B(M) packages	11
- under special arrangement	13
2977 Uranium hexafluoride, fissile containing more than 1% uranium - 235	
- in approved packages	12
- under special arrangement	13
2978 Uranium hexafluoride, fissile excepted or non-fissile	
- LSA-I	5
- LSA-II	6
- under special arrangement	13
2979 Uranium metal, pyrophoric	
- in Type A packages	9
- in Type B(U) packages	10
- in Type B(M) packages	11
- under special arrangement	13

Identification number[1] and name of the substance or object	Schedule
2980 Uranyl nitrate hexahydrate solution	
- LSA-I	5
- LSA-II	6
- in Type A packages	9
- in Type B(U) packages	10
- in Type B(M) packages	11
- under special arrangement	13
2981 Uranyl nitrate, solid	
- LSA-I	5
- LSA-II	6
- in Type A packages	9
- in Type B(U) packages	10
- in Type B(M) packages	11
- under special arrangement	13
2982 Radioactive material n.o.s.[2]	
- in Type A packages	9
- in Type B(U) packages	10
- in Type B(M) packages	11
- under special arrangement	13

[1] These numbers are taken from the United Nations Recommendations.

[2] n.o.s. : not otherwise specified in this list.

(2) The materials and articles of this Class contain one or more of the radionuclides referred to in Section I of Appendix A.7 (marginals 3700 and 3701).

(3) The list hereunder sets out the schedules of marginal 2704:

1. Limited Quantities of Radioactive Material in Excepted Packages.

2. Instruments or Articles in Excepted Packages.

3. Articles Manufactured from Natural Uranium, Depleted Uranium or Natural Thorium as Excepted Packages.

4. Empty Packagings as Excepted Packages.

5. Low Specific Activity Material (LSA-I).

6. Low Specific Activity Material (LSA-II).

7. Low Specific Activity Material (LSA-III).

8. Surface Contaminated Objects (SCO-I and SCO-II).

9. Radioactive Material in Type A Packages.

10. Radioactive Material in Type B(U) Packages.

11. Radioactive Material in Type B(M) Packages.

12. Fissile Material.

13. Radioactive Material Transported under Special Arrangement.

(4) The provisions for the various types of consignment are contained in 13 headings in accordance with marginal 2003 (3):

(i) Common provisions for Schedules 1 to 4 are summarised in marginal 2702;

(ii) Common provisions for Schedules 5 to 13 are summarised in marginal 2703.

2702 Common Provisions for Schedules 1 to 4 of marginal 2704

1. MATERIALS

See appropriate schedule.

2. PACKAGING / PACKAGE

See appropriate schedule.

3. PACKAGE MAXIMUM RADIATION LEVEL

5 µSv/h (0.5 mrem/h) at the external surface of the package.

4. CONTAMINATION ON PACKAGES, VEHICLES, CONTAINERS, TANKS AND OVERPACKS

Non-fixed contamination on all external surfaces and in addition on the internal surfaces of vehicles and overpacks used for transporting excepted packages shall be kept as low as practicable and shall not exceed the following limits:

(a) Beta / gamma / low-toxicity alpha emitters

0.4 Bq/cm² (10^{-5} µCi/cm²)

(b) All other alpha emitters

0.04 Bq/cm² (10^{-6} µCi/cm²)

5. DECONTAMINATION AND USE OF VEHICLES, EQUIPMENT OR PARTS THEREOF

Vehicles, equipment or parts thereof which have become contaminated shall be decontaminated as soon as possible, and in any case before re-use, to levels not exceeding;

(i) for non-fixed contamination,

0.4 Bq/cm² (10^{-5} µCi/cm²) for beta and gamma emitters and low toxicity alpha emitters; and

0.04 Bq/cm² (10^{-6} µCi/cm²) for all other alpha emitters.

(ii) a radiation level of 5 µSv/h (0.5 mrem/h) at the surface due to fixed contamination.

6. MIXED PACKING

No provisions.

7. MIXED LOADING

No provisions.

8. MARKING AND DANGER LABELS ON PACKAGES, CONTAINERS, TANKS AND OVERPACKS

See appropriate schedule.

9. DANGER LABELS ON VEHICLES OTHER THAN TANK-VEHICLES

See appropriate schedule.

10. TRANSPORT DOCUMENTS

See appropriate schedule.

11. STORAGE AND DESPATCH

No provisions.

12. CARRIAGE OF PACKAGES, CONTAINERS, TANKS AND OVERPACKS

No provisions.

13. OTHER PROVISIONS

(a) Accident provisions: see marginals 2710, 3712 and 10 385.

(b) Damaged or leaking packages: see marginal 3712.

(c) Contamination surveys: see marginal 3712 (3).

(d) Quality assurance: see marginal 3766.

(e) Undeliverable consignments: see marginal 2715.

2703 Common Provisions for Schedules 5 to 13 of marginal 2704

1. MATERIALS

See appropriate schedule.

2. PACKAGING / PACKAGE

See appropriate schedule.

3. PACKAGE MAXIMUM RADIATION LEVEL

(a) The radiation levels for packages or overpacks not transported under exclusive use shall not exceed:

(i) 2 mSv/h (200 mrem/h) at the surface of the package, and

(ii) 0.1 mSv/h (10 mrem/h) at 1 metre from that surface.

(b) The surface radiation levels for packages or overpacks transported under exclusive use may exceed 2. mSv/h but under no circumstances shall exceed 10 mSv/h (1000 mrem/h), provided that:

(i) there is an enclosure which prevents unauthorized access to the load during transport; and

(ii) the package or overpack is secured to retain its position within the enclosure during routine transport; and

(iii) there are no loading or unloading operations between the beginning and end of the shipment.

4. CONTAMINATION ON PACKAGES, VEHICLES, CONTAINERS, TANKS AND OVERPACKS

Non-fixed contamination on all external surfaces and in addition on the internal surfaces of vehicles and overpacks used for transporting packages shall be kept as low as practicable and shall not exceed the following limits:

(a) Beta / gamma / low-toxicity alpha emitters:

0.4 Bq/cm² (10^{-5} µCi/cm²) for consignments which include excepted packages and / or non-radioactive goods;

4 Bq/cm² (10^{-4} µCi/cm²) for all other consignments.

(b) All other alpha emitters:

0.04 Bq/cm² (10^{-6} µCi/cm²) for consignments which include excepted packages and / or non-radioactive goods;

0.4 Bq/cm² (10^{-5} µCi/cm²) for all other consignments.

5. DECONTAMINATION AND USE OF VEHICLES, EQUIPMENT OR PARTS THEREOF

Vehicles, equipment or parts thereof which have become contaminated shall be decontaminated as soon as possible, and in any case before re-use, to levels not exceeding:

(i) for non-fixed contamination, see provisions under 4,

(ii) a radiation level of 5 µSv/h (0.5 mrem/h) at the surface due to fixed contamination.

6. MIXED PACKING

See marginal 3711 (1).

7. MIXED LOADING

(a) Material of Class 7 contained in packages bearing a label conforming to models Nos. 7A, 7B or 7C shall not be loaded together on the same vehicle with substances or articles of Class 1 or of Class 5.2 contained in packages bearing a label conforming to model Nos. 1, 1.4 or 1.5.

(b) In all other cases mixed loading is permitted. However, mixed loading in a consignment under exclusive use shall only be arranged for by the consignor.

8. MARKING AND DANGER LABELS ON PACKAGES, CONTAINERS, TANKS AND OVERPACKS

The following provisions apply to packages, containers, tanks and overpacks with non-fissile material. For packages containing fissile material and for containers and overpacks which contain packages with fissile material, see in addition Schedule 12.

(a) Packages and overpacks, other than containers or tanks.

(i) Such packages and overpacks shall, depending on the category (see marginal 3718), bear labels conforming to models Nos. 7A, 7B or 7C, completed in accordance with marginal 2706 (3). The labels shall be affixed to two opposite sides of the packages and overpacks.

(ii) Each label shall be marked with the maximum activity of the radioactive contents during transport.

(iii) Each yellow label shall be marked with the transport index for the package or overpack.

(iv) In the case of substances of the following identification numbers listed in marginal 2701 (1), the following additional labels shall also be affixed:

2975	Thorium metal, pyrophoric	Model No. 4.2
2979	Uranium metal, pyrophoric	
2976	Thorium nitrate, solid	Model No. 5
2981	Uranyl nitrate, solid	
2977	Uranium hexafluoride fissile, containing more than 1% uranium 235	Model No. 8
2978	Uranium hexafluoride, fissile excepted or non-fissile	
2980	Uranyl nitrate hexahydrate solution	

(v) Packages with a gross mass exceeding 50 kg

shall be plainly and durably marked with their permissible gross mass on the outside.

(vi) Any labels which do not relate to the contents shall be removed or covered.

(b) Containers, also when used as overpacks, and tanks.

(i) Such containers and tanks shall, depending on the category (see marginal 3718), bear labels conforming to models Nos. 7A, 7B or 7C, completed in accordance with marginal 2706 (3).

Tanks, as well as large containers containing packages other than excepted packages, shall in addition bear labels conforming to model No. 7D.

Instead of using labels conforming to model Nos. 7A, 7B or 7C, and in addition labels conforming to model No. 7D, enlarged labels conforming to model Nos. 7A, 7B or 7C with the dimensions of model No. 7D may alternatively be used.

The labels shall be affixed to all four sides of containers and tank-containers, and to both sides and the rear of tank-vehicles.

(ii) In the case of substances of the following identification numbers listed in marginal 2701 (1), the following additional labels shall also be affixed:

2975	Thorium metal, pyrophoric	Model No. 4.2
2979	Uranium metal, pyrophoric	
2976	Thorium nitrate, solid	Model No. 5
2981	Uranyl nitrate, solid	
2977	Uranium hexafluoride fissile, containing more than 1% uranium 235	Model No. 8
2978	Uranium hexafluoride, fissile excepted or non-fissile	
2980	Uranyl nitrate hexahydrate solution	

(iii) Tank-vehicles and tank-containers with a capacity of more than 3m³ shall be marked in accordance with marginal 10 500 and Appendix B.5.

(iv) Except for mixed loads, each label shall be marked with the maximum activity of the radioactive contents of the container or overpack during transport, totalled for the entire contents. For mixed loads, see marginal 2706 (3).

(v) Each yellow label shall be marked with the transport index for the container or overpack.

(vi) Containers and tanks shall be plainly and durably marked on the outside with their permissible gross mass.

(vii) Any marking or danger label which does not relate to the contents shall be removed or covered.

9. DANGER LABELS ON VEHICLES OTHER THAN TANK-VEHICLES

(a) (i) For consignments of packaged or unpackaged radioactive material, labels conforming to model No. 7D shall be affixed in a vertical orientation to the two side walls and the rear wall of the transport unit.

(ii) In the case of substances of the following identification numbers listed in marginal 2701 (1), the following additional labels shall also be affixed:

2975	Thorium metal, pyrophoric	Model No. 4.2
2979	Uranium metal, pyrophoric	
2976	Thorium nitrate, solid	Model No. 5
2981	Uranyl nitrate, solid	
2977	Uranium hexafluoride, fissile, containing more than 1% uranium 235	Model No. 8
2978	Uranium hexafluoride, fissile excepted or non-fissile	
2980	Uranyl nitrate hexahydrate solution	

(b) Any danger label which does not relate to the contents shall be removed or covered.

10. TRANSPORT DOCUMENTS

See appropriate schedule.

11. STORAGE AND DESPATCH

(a) Segregation during storage is required from other dangerous goods, and from persons and undeveloped photographic plates and films:

(i) for segregation from other dangerous goods - see the provisions under heading 7.

(ii) for segregation from persons, from packages marked 'FOTO' and from mailbags - see marginal 2711 for segregation tables.

(b) Total transport index limitation for storage except LSA-I:

(i) The number of category II-yellow and category III-yellow packages, overpacks, tanks and containers stored in any one place shall be so limited that the total sum of the transport indexes in any individual group of such packages, overpacks, tanks or containers does not exceed 50. Such groups shall be stored so as to maintain a spacing of at least 6 m from each other.

(ii) Where the transport index of a single package, overpack, tank or container exceeds 50 or the total transport index on a vehicle exceeds 50, storage shall be such as to maintain a spacing of at least 6 m from other packages, overpacks, tanks, containers or vehicles carrying radioactive material.

12. CARRIAGE OF PACKAGES, CONTAINERS, TANKS AND OVERPACKS

1) See appropriate schedule.

2) (a) Segregation during transport is required from other dangerous goods and from persons and undeveloped photographic films and plates: .

(i) for segregation from other dangerous goods - see the provisions under heading 7.

(ii) for segregation from persons, from packages marked 'FOTO' and from mailbags - see marginal 2711 for segregation tables.

(b) Total transport index limitation for carriage except LSA-I:

The total number of packages, overpacks, tanks and containers on a single vehicle shall be so limited, that the sum of the transport indexes does not exceed 50. For consignments under exclusive use this limit does not apply - see marginal 3711 (3).

(c) Any package or overpack having a transport index greater than 10 shall be transported only under exclusive use.

(d) Maximum radiation levels for vehicles:

(i) 2 mSv/h (200 mrem/h) at surface of vehicles,

(ii) 0.1 mSv/h (10 mrem/h) at 2 metres from surface of vehicles.

(iii) 0.02 mSv/h (2 mrem/h) at any normally occupied position in a vehicle, if personal monitoring devices are not used.

13. OTHER PROVISIONS

(a) Determination of transport index: see marginal 3715.

(b) Accident provisions: see marginals 2710, 3712 and 10 385.

(c) Damaged or leaking packages: see marginal 3712.

(d) Contamination surveys: see marginal 3712 (3).

(e) Quality Assurance: see marginal 3766.

(f) Undeliverable consignments: see marginal 2715.

(g) Transport equipment and operations: see Annex B, Part I and marginal 71 000 et seq.

SCHEDULE 1

2704 SCHEDULE 1

LIMITED QUANTITIES OF RADIOACTIVE MATERIAL IN EXCEPTED PACKAGES

Notes: 1. Radioactive material in quantities which offer a very limited radiation risk, may be transported in excepted packages.

2. For other hazardous properties, see the provisions in marginals 2002 (12) and (13), and 3770.

1. MATERIALS: 2910 Radioactive material, excepted package, limited quantity of material.

(a) Non-fissile radioactive material in amounts which do not exceed the limits specified in Table 1.

(b) Fissile material with an activity which does not exceed the limits specified in Table 1, and in addition, satisfying with regard to amounts, form and packaging the provisions given in marginal 3741 of Appendix A.7 allowing them to be regulated as non-fissile radioactive material packages.

Table 1 Activity Limits, in Terms of A_1 or A_2 Values for Excepted Packages Containing Radioactive Material 1/, 2/.

Nature of contents	Package limits
Solids:	
Special Form	10^{-3} A_1
Other Forms	10^{-2} A_2
Liquids	10^{-4} A_2
Gases:	
Tritium	2×10^{-2} A_2
Special Form	10^{-3} A_1
Other Forms	10^{-2} A_2

1/ For specific values of A_1 and A_2, see Table I of marginal 3700 of Appendix A.7.

2/ For mixtures of radionuclides, the methods for determining A_1 and A_2 are provided in marginal 3701 (8) of Appendix A.7.

2. PACKAGING / PACKAGE

Radioactive material in limited quantities may be transported in packagings, tanks and containers, provided that:

(a) The packaging shall be in accordance with the general provisions for all packagings and packages given in marginal 3732 of Appendix A.7 and in addition, for tanks, Appendices B.1a and B.1b.

(b) Packages containing fissile material shall meet at least one of the provisions specified in marginal 3741 of Appendix A.7.

(c) In particular, the package shall be designed so that during routine transport there shall be no leakage of radioactive contents.

(d) Radioactive material shall not be carrried in bulk.

3. PACKAGE MAXIMUM RADIATION LEVEL

See marginal 2702.

4. CONTAMINATION ON PACKAGES, VEHICLES, CONTAINERS, TANKS AND OVERPACKS

See marginal 2702.

5. DECONTAMINATION AND USE OF VEHICLES, EQUIPMENT OR PARTS THEREOF

See marginal 2702.

6. MIXED PACKING

No provisions.

7. MIXED LOADING

No provisions.

8. MARKING AND DANGER LABELS ON PACKAGES, CONTAINERS, TANKS AND OVERPACKS

(a) Packages

(i) No labelling required.

(ii) The packaging shall be marked "radioactive" on an internal surface as a warning of the presence of radioactive material on opening the package.

(b) Containers

No provisions.

(c) Tanks

See Appendix B.1a / B.1b, marginal 211 760 / 212 760 and Appendix B.5.

(d) Overpacks

No provisions.

9. DANGER LABELS ON VEHICLES OTHER THAN TANK-VEHICLES

No provisions.

10. TRANSPORT DOCUMENTS

The transport document shall include the description "2910 Radioactive material, excepted package, limited quantity of material, 7, Schedule 1, ADR (or RID)". This description shall be underlined.

11. STORAGE AND DESPATCH

No provisions.

12. CARRIAGE OF PACKAGES, CONTAINERS, TANKS AND OVERPACKS

No provisions.

13. OTHER PROVISIONS

See marginal 2702.

SCHEDULE 2

SCHEDULE 2

INSTRUMENTS OR ARTICLES IN EXCEPTED PACKAGES

Notes: 1. Specified quantities of radioactive material, which are enclosed in or form a component part of an instrument or other manufactured article, and which offer a very limited radiation risk, may be transported in excepted packages.

2. For other hazardous properties, see also the provisions in marginal 3770.

1. MATERIALS: 2910 Radioactive material, excepted package, instruments or articles.

(a) Instruments and manufactured articles such as clocks, electronic tubes or apparatus having as a component part radioactive material in amounts which do not exceed the item and package limits specified in columns 2 and 3 of Table 2, provided the radiation level at 10 cm from the external surface of any unpackaged instrument or article does not exceed 0.1 mSv/h (10 mrem/h).

(b) Instruments and manufactured articles having fissile material in amounts not exceeding the limits specified in Table 2, and in addition, satisfying with regard to amounts, form and packaging the provisions given in marginal 3741 of Appendix A.7 allowing them to be regulated as non-fissile radioactive material packages, provided the radiation level at 10 cm from the external surface of any unpackaged instrument or article does not exceed 0.1 mSv/h (10 mrem/h).

2. PACKAGING / PACKAGE

(a) The packaging shall be in accordance with the general provisions for all packagings and packages given in marginal 3732 of Appendix A.7.

(b) Packages containing fissile material shall meet at least one of the provisions specified in marginal 3741 of Appendix A.7.

(c) The instruments and articles shall be securely packed.

(d) Transport of unpackaged radioactive material is not allowed.

Table 2 Activity Limits, in Terms of A_1 or A_2 Values for Excepted Packages Containing Instruments and Articles 1/, 2/.

Nature of Contents	Item Limits	Package Limits
Solids:		
Special Form	10^{-2} A_1	A_1
Other Forms	10^{-2} A_2	A_2
Liquids	10^{-3} A_2	10^{-1} A_2
Gases:		
Tritium	2×10^{-2} A_2	2×10^{-1} A_2
Special Form	10^{-3} A_1	10^{-2} A_1
Other Forms	10^{-3} A_2	10^{-2} A_2

1/ For specific values of A_1 and A_2, see Table I of marginal 2708 of Appendix A.7.

2/ For mixtures of radionuclides, the methods for determining A_1 and A_2 are provided in marginal 2701 (8) of Appendix A.7.

3. PACKAGE MAXIMUM RADIATION LEVEL

See marginal 2702.

4. CONTAMINATION ON PACKAGES, VEHICLES, CONTAINERS, TANKS AND OVERPACKS

See marginal 2702.

5. DECONTAMINATION AND USE OF VEHICLES, EQUIPMENT OR PARTS THEREOF

See marginal 2702.

6. MIXED PACKING

No provisions.

7. MIXED LOADING

No provisions.

8. MARKING AND DANGER LABELS ON PACKAGES, CONTAINERS, TANKS AND OVERPACKS

(a) Instruments or articles

Each instrument or article (except radioluminescent time-pieces or devices) shall bear the marking "Radioactive".

(b) Packages

No provisions.

(c) Containers

No provisions.

(d) Tanks

Not applicable.

(e) Overpacks

No provisions.

9. DANGER LABELS ON VEHICLES OTHER THAN TANK-VEHICLES

No provisions.

10. TRANSPORT DOCUMENTS

The transport document shall include the description "2910 Radioactive material, excepted package, instruments or articles, 7, Schedule 2, ADR (or RID)". This description shall be underlined.

11. STORAGE AND DESPATCH

No provisions.

12. CARRIAGE OF PACKAGES, CONTAINERS, TANKS AND OVERPACKS

No provisions.

13. OTHER PROVISIONS

See marginal 2702.

SCHEDULE 3

SCHEDULE 3

ARTICLES MANUFACTURED FROM NATURAL URANIUM, DEPLETED URANIUM OR NATURAL THORIUM AS EXCEPTED PACKAGES

Notes: 1. Articles manufactured from unirradiated natural uranium, unirradiated depleted uranium or unirradiated natural thorium which offer a very limited radiation risk may be transported as excepted packages.

2. For other hazardous properties, see also the provisions in marginal 3770.

1. MATERIALS: 2910 Radioactive material, excepted package, articles manufactured from natural uranium or depleted uranium or natural thorium.

Manufactured articles in which the sole radioactive material is unirradiated natural uranium, unirradiated depleted uranium or unirradiated natural thorium, provided that the outer surface of the uranium or thorium is enclosed in an inactive sheath made of metal or some other substantial material.

Note: Such articles may for example be unused packagings intended for the transport of radioactive material.

2. PACKAGING / PACKAGE

The article serving as a packaging shall be in accordance with the general provisions for all packagings and packages given in marginal 3732 of Appendix A.7.

3. PACKAGE MAXIMUM RADIATION LEVEL

See marginal 2702.

4. CONTAMINATION ON PACKAGES, VEHICLES, CONTAINERS, TANKS AND OVERPACKS.

See marginal 2702.

5. DECONTAMINATION AND USE OF VEHICLES, EQUIPMENT OR PARTS THEREOF

See marginal 2702.

6. MIXED PACKING

No provisions.

7. MIXED LOADING

No provisions.

8. MARKING AND DANGER LABELS ON PACKAGES, CONTAINERS, TANKS AND OVERPACKS

(a) Packages

No provisions.

(b) Containers

No provisions.

(c) Tanks

Not applicable.

(d) Overpacks

No provisions.

9. DANGER LABELS ON VEHICLES OTHER THAN TANK-VEHICLES

No provisions.

10. TRANSPORT DOCUMENTS

The transport document shall include the description "2910 Radioactive material, excepted package, articles manufactured from natural uranium or depleted uranium or natural thorium, 7, Schedule 3, ADR (or RID)". This description shall be underlined.

11. STORAGE AND DESPATCH

No provisions.

12. CARRIAGE OF PACKAGES, CONTAINERS, TANKS AND OVERPACKS

No provisions.

13. OTHER PROVISIONS

See marginal 2702.

SCHEDULE 4

SCHEDULE 4

EMPTY PACKAGINGS AS EXCEPTED PACKAGES

Notes: 1. Empty uncleaned packagings which have been used for the transport of radioactive material and which offer a very limited radiation risk, may be transported as excepted packages.

2. For other hazardous properties, see also the provisions in marginal 3770.

1. MATERIALS: 2910 Radioactive material, excepted package, empty packaging

(a) Empty uncleaned packagings include empty uncleaned containers or tanks which have been used for the transport of radioactive material.

(b) If the packaging contains any uranium or thorium in its structure, the provision specified in paragraph 2 (c) below shall apply.

(c) The internal non-fixed contamination levels (activity of the residual contents) shall not exceed:

(i) for beta / gamma / low-toxicity alpha emitters,

400 Bq/cm² (10^{-2} µCi/cm²);

(ii) for all other alpha emitters,

40 Bq/cm² (10^{-3} µCi/cm²).

2. PACKAGING / PACKAGE

(a) The packaging shall be in accordance with the general provisions for all packagings and packages given in marginal 3732 of Appendix A.7.

(b) The packaging shall be in a well-maintained condition and securely closed.

(c) If the empty packaging includes natural uranium or depleted uranium or natural thorium in its structure, the outer surface of the uranium or thorium shall be covered with an inactive sheath made of metal or some other substantial material.

(d) Any labels displayed to meet marginal 2706 shall no longer be visible.

3. PACKAGE MAXIMUM RADIATION LEVEL

See marginal 2702.

4. CONTAMINATION ON PACKAGES, VEHICLES, CONTAINERS, TANKS AND OVERPACKS

See marginal 2702.

5. DECONTAMINATION AND USE OF VEHICLES, EQUIPMENT OR PARTS THEREOF

See marginal 2702.

6. MIXED PACKING

No provisions.

7. MIXED LOADING

No provisions.

8. MARKING AND DANGER LABELS ON PACKAGES, CONTAINERS, TANKS AND OVERPACKS

(a) Packages

(i) No marking or labelling required.

(ii) Packages permanently marked in accordance with marginal 2705 need not have these markings removed.

(b) Containers

No provisions.

(c) Tanks

See Appendix B.1a / B.1b, marginal 211 760 / 212 760 and Appendix B.5.

(d) Overpacks

No provisions.

9. DANGER LABELS ON VEHICLES OTHER THAN TANK-VEHICLES

No provisions.

10. TRANSPORT DOCUMENTS

The transport document shall include the description "2910 Radioactive material, excepted package, empty packaging, 7, Schedule 4, ADR (or RID)". This description shall be underlined.

11. STORAGE AND DESPATCH

No provisions.

12. CARRIAGE OF PACKAGES, CONTAINERS, TANKS AND OVERPACKS

No provisions.

13. OTHER PROVISIONS

See marginal 2702.

SCHEDULE 5

LOW SPECIFIC ACTIVITY MATERIAL (LSA-I)

Notes: 1. LSA-I is the first of three groups of radioactive material which by its nature has a limited specific activity or for which limits of estimated average specific activity apply.

2. Fissile material is not permitted to be transported as LSA-I material.

3. For other hazardous properties, see also the provisions in marginal 3770.

1. MATERIALS: 2912 Radioactive material, low specific activity (LSA-I), n.o.s.

2976 Thorium nitrate, solid.

2978 Uranium hexafluoride, fissile excepted or non-fissile.

2980 Uranyl nitrate hexahydrate solution.

2981 Uranyl nitrate, solid.

Low specific activity material (LSA-I): radioactive material for which the radiation level at 3 m from the unshielded contents of a single package or in a single load of unpackaged material shall not exceed 10 mSv/h (1000 mrem/h) and meeting also one of the following descriptions:

(a) Ores containing naturally occurring radionuclides (e.g. uranium, thorium), or

(b) Uranium and thorium concentrates of ores containing naturally occurring radionuclides, or

(c) Solid unirradiated natural uranium or depleted uranium or natural thorium, or

(d) Solid or liquid compounds or mixtures of unirradiated natural uranium or depleted uranium or natural thorium, or

(e) Non-fissile radioactive material for which the A_2 value is unlimited.

2. PACKAGING / PACKAGE

(a) LSA-I material may be transported in packagings, tanks and containers, provided that:

(i) the packaging, which may be a tank or container, meets the design provisions for industrial packages IP-1 or IP-2 (see marginal 3733 or 3734 and in addition, for tanks, marginal 3736 and Appendices B.1a and B.1b) as appropriate for the form of the LSA-I material as specified in Table 3 and

(ii) the material is loaded into the packaging so that, in routine transport, there will be no escape of contents and no loss of shielding.

Table 3 Industrial Package Provisions for LSA-I Material

Contents	Exclusive Use	Not Under Exclusive Use
Solids	IP-1	IP-1
Liquids	IP-1	IP-2

(b) LSA-I material may be transported in bulk if:

(i) for other than natural ores, it is transported so that, in routine transport, there will be no escape of contents from the vehicle and no loss of shielding, and it is transported under exclusive use, or

(ii) for natural ores, it is transported in a vehicle under exclusive use.

3. PACKAGE MAXIMUM RADIATION LEVEL

See marginal 2703.

4. CONTAMINATION ON PACKAGES, VEHICLES, CONTAINERS, TANKS AND OVERPACKS

(a) See marginal 2703.

(b) Overpacks or containers dedicated to the transport of LSA-I material under exclusive use shall be excepted from (a) above with regard to internal contamination only for as long as they remain under that exclusive use.

5. DECONTAMINATION AND USE OF VEHICLES, EQUIPMENT OR PARTS THEREOF

(a) See marginal 2703.

(b) A vehicle dedicated to the transport of LSA-I material under exclusive use shall be excepted from (a) above with regard to internal contamination only for as long as it remains in that exclusive use.

6. MIXED PACKING

See marginal 2703.

7. MIXED LOADING

See marginal 2703.

8. MARKING AND DANGER LABELS ON PACKAGES, CONTAINERS, TANKS AND OVERPACKS

(a) See marginal 2703.

(b) For tanks, see Appendix B.1a / B.1b, marginal 211 760 / 212 760 and Appendix B.5.

9. DANGER LABELS ON VEHICLES OTHER THAN TANK-VEHICLES

See marginal 2703.

10. TRANSPORT DOCUMENTS

(a) For a summary of the approval and notification provisions, see marginal 2716.

(b) The transport document shall include:

(i) the identification number and the name as per heading 1, together with the words "Radioactive material, low specific activity (LSA-I), 7, Schedule 5, ADR (or RID)", e.g. "2976 Thorium nitrate, solid, radioactive material, low specific activity (LSA-I), 7, Schedule 5, ADR (or RID)"; or

(ii) in the case of material not otherwise specified, "2912 Radioactive material, low specific activity (LSA-I), n.o.s., 7, Schedule 5, ADR (or RID)".

This description shall be underlined. Further details specified in marginals 2709 and 2710 shall also be included.

11. STORAGE AND DESPATCH

(a) See marginal 2703.

(b) Total transport index limitation for storage: none.

12. CARRIAGE OF PACKAGES, CONTAINERS, TANKS AND OVERPACKS

(a) See marginal 2703 12. 2), (a) to (d).

(b) Total activity in a single vehicle: no limit.

13. OTHER PROVISIONS

See marginal 2703.

SCHEDULE 6

SCHEDULE 6

LOW SPECIFIC ACTIVITY MATERIAL (LSA-II)

Notes: 1. LSA-II is the second of three groups of radioactive material which, by its nature, has a limited specific activity or for which limits of estimated average specific activity apply.

2. If fissile material is present, the provisions of Schedule 12 shall be met in addition to the provisions of this Schedule.

3. For other hazardous properties, see also the provisions in marginal 3770.

1. MATERIALS: 2912 Radioactive material, low specific activity (LSA-II), n.o.s.

2976 Thorium nitrate, solid.

2978 Uranium hexafluoride, fissile excepted or non-fissile.

2980 Uranyl nitrate hexahydrate solution.

2981 Uranyl nitrate, solid.

Low Specific Activity Material (LSA-II): radioactive material for which the radiation level at 3 m from the unshielded contents of a single package shall not exceed 10 mSv/h (1000 mrem/h) and meeting one of the following descriptions:

(a) Water with tritium concentration up to 0.8 TBq/l (20 Ci/l); or

(b) Solids and gases with activity distributed throughout of not more than 10^{-4} A_2/g; or

(c) Liquids with activity distributed throughout of not more than 10^{-5} A_2/g.

2. PACKAGING / PACKAGE

(a) LSA-II material must be transported in packagings, which may be tanks or containers.

(b) The packaging, tank or container shall meet the design provisions for industrial packages IP-2 or IP-3 (see marginal 3734 or 3735 and in addition, for tanks, marginal 3736 and Appendices B.1a and B.1b) as appropriate for the form of the LSA-II material as specified in Table 4.

(c) The material shall be loaded into the packaging, tank or container so that, in routine transport, there will be no escape of contents and no loss of shielding.

Table 4 Industrial Package Provisions for LSA-II Material

Contents	Exclusive Use	Not Under Exclusive Use
Solids	IP-2	IP-2
Liquids and gases	IP-2	IP-3

3. PACKAGE MAXIMUM RADIATION LEVEL

See marginal 2703.

4. CONTAMINATION ON PACKAGES, VEHICLES, CONTAINERS, TANKS AND OVERPACKS

(a) See marginal 2703.

(b) Overpacks or containers dedicated to the transport of LSA-II material under exclusive use may be excepted from (a) above with regard to internal contamination only for as long as they remain under that exclusive use.

5. DECONTAMINATION AND USE OF VEHICLES, EQUIPMENT OR PARTS THEREOF

(a) See marginal 2703.

(b) A vehicle dedicated to the transport of LSA-II material under exclusive use shall be excepted from (a) above with regard to internal contamination only for as long as it remains in that exclusive use.

6. MIXED PACKING

See marginal 2703.

7. MIXED LOADING

See marginal 2703.

8. MARKING AND DANGER LABELS ON PACKAGES, CONTAINERS, TANKS AND OVERPACKS

(a) See marginal 2703.

(b) For tanks, see Appendix B.1a / B.1b, marginal 211 760 / 212 760 and Appendix B.5.

9. DANGER LABELS ON VEHICLES OTHER THAN TANK-VEHICLES

See marginal 2703.

10. TRANSPORT DOCUMENTS

(a) For a summary of the approval and notification provisions see marginal 2716.

(b) The transport document shall include:

(i) the identification number and the name as per heading 1, together with the words "Radioactive material, low specific activity (LSA-II), 7, Schedule 6, ADR (or RID)" e.g. "2976 Thorium nitrate, solid, radioactive material, low specific activity (LSA-II), 7, Schedule 6, ADR (or RID)"; or

(ii) in the case of material not otherwise specified, "2912 Radioactive material, low specific activity (LSA-II), n.o.s., 7, Schedule 6, ADR (or RID)".

This description shall be underlined. Further details specified in marginals 2709 and 2710 shall also be included.

11. STORAGE AND DESPATCH

See marginal 2703.

12. CARRIAGE OF PACKAGES, CONTAINERS, TANKS AND OVERPACKS

(a) See marginal 2703 12. 2), (a) to (d).

(b) Total activity in a single vehicle shall not exceed the values specified in Table 5.

Table 5 Vehicle activity limits for LSA-II Material

Nature of contents	Vehicle limit
Non-combustible solids	No limit
Combustible solids, and all liquids and gases	100 x A_2

13. OTHER PROVISIONS

See marginal 2703.

SCHEDULE 7

LOW SPECIFIC ACTIVITY MATERIAL (LSA-III)

Notes: 1. LSA-III is the third of three groups of radioactive material which, by its nature, has a limited specific activity or for which limits of estimated average specific activity apply.

2. If fissile material is present, the provisions of Schedule 12 shall be met in addition to the provisions of this Schedule.

3. For other hazardous properties, see also the provisions in marginal 3770.

1. MATERIALS: 2912 Radioactive material, low specific activity (LSA-III), n.o.s.

Low Specific Activity Material (LSA-III): solid radioactive material for which the radiation level at 3 m from the unshielded contents of a single package shall not exceed 10 mSv/h (1000 mrem/h) and meeting the following conditions:

(a) the radioactive material is distributed throughout a solid or collection of solid objects or is essentially uniformly distributed in a solid compact binding agent, (e.g. concrete, bitumen, ceramic); and

(b) the radioactive material is relatively insoluble, or is intrinsically contained in a relatively insoluble matrix; and

(c) the estimated average specific activity does not exceed 2×10^{-3} A_2/g.

2. PACKAGING / PACKAGE

(a) LSA-III material must be transported in packagings which may be containers. Transport in tanks is not applicable.

(b) The packaging or container shall meet the design provisions for industrial packages IP-2 (see marginal 3734) if transported in exclusive use, or IP-3 (see marginal 3735) if not transported in exclusive use.

(c) The material shall be loaded into the packaging or container so that, in routine transport, there will be no escape of contents and no loss of shielding.

3. PACKAGE MAXIMUM RADIATION LEVEL

See marginal 2703.

4. CONTAMINATION ON PACKAGES, VEHICLES, CONTAINERS, TANKS AND OVERPACKS

(a) See marginal 2703.

(b) Overpacks or containers dedicated to the transport of LSA-III material under exclusive use may be excepted from (a) above with regard to internal contamination only for as long as they remain under that exclusive use.

5. DECONTAMINATION AND USE OF VEHICLES, EQUIPMENT OR PARTS THEREOF

(a) See marginal 2703.

(b) A vehicle dedicated to the transport of LSA-III material under exclusive use shall be excepted from (a) above with regard to internal contamination only for as long as it remains in that exclusive use.

6. MIXED PACKING

See marginal 2703.

7. MIXED LOADING

See marginal 2703.

8. MARKING AND DANGER LABELS ON PACKAGES, CONTAINERS, TANKS AND OVERPACKS

See marginal 2703.

9. DANGER LABELS ON VEHICLES OTHER THAN TANK-VEHICLES

See marginal 2703.

10. TRANSPORT DOCUMENTS

(a) For a summary of the approval and notification provisions see marginal 2716.

(b) The transport document shall include the description:

"2912, Radioactive Material, Low Specific Activity (LSA-III) n.o.s., 7, Schedule 7, ADR (or RID)".

This description shall be underlined. Further details specified in marginals 2709 and 2710 shall also be included.

11. STORAGE AND DESPATCH

See marginal 2703.

12. CARRIAGE OF PACKAGES, CONTAINERS, TANKS AND OVERPACKS

(a) See marginal 2703 12. 2), (a) to (d).

(b) Total activity in a single vehicle shall not exceed the values specified in Table 6.

Table 6 Vehicle activity limits for LSA-III Material

Nature of contents	Vehicle limit
Non-combustible solids	No limit
Combustible solids	100 x A_2

13. OTHER PROVISIONS

See marginal 2703.

SCHEDULE 8

SCHEDULE 8

SURFACE CONTAMINATED OBJECTS (SCO-I AND SCO-II)

Notes: 1. A surface contaminated object (SCO) is a solid object which is not itself radioactive but which has radioactive material distributed on its surfaces. Surface contaminated objects shall be in one of two groups, either SCO-I or SCO-II, depending on the maximum allowable contamination level (see Table 7).

2. If fissile material is present the provisions of Schedule 12 shall be met in addition to the provisions of this Schedule.

3. For other hazardous properties, see also the provisions in marginal 3770.

1. MATERIALS: 2913 Radioactive material, surface contaminated objects (SCO-I) or (SCO-II)

(a) Solid, non-radioactive objects contaminated on the surface to a level not exceeding the contamination levels specified in Table 7 when the contamination is averaged over an area of 300 cm^2 (or the area of the surface if less than 300 cm^2).

Table 7 Allowable Surface Contamination for SCO

Type of contamination	Non-fixed on accessible surface	Fixed on accessible surface	Sum of fixed and non-fixed on the inaccessible surface
SCO-I			
Beta / gamma / low toxicity alpha emitters	4 Bq/cm^2 (10^{-4} µCi/cm^2)	4 x 10^4 Bq/cm^2 (1 µCi/cm^2)	4 x 10^4 Bq/cm^2 (1 µCi/cm^2)
All other alpha emitters	0.4 Bq/cm^2 (10^{-5} µCi/cm^2)	4 x 10^3 Bq/cm^2 (0.1 µCi/cm^2)	4 x 10^3 Bq/cm^2 (0.1 µCi/cm^2)
SCO-II			
Beta / gamma / low toxicity alpha emitters	400 Bq/cm^2 (10^{-2} µCi/cm^2)	8 x 10^5 Bq/cm^2 (20 µCi/cm^2)	8 x 10^5 Bq/cm^2 (20 µCi/cm^2)
All other alpha emitters	40 Bq/cm^2 (10^{-3} µCi/cm^2)	8 x 10^4 Bq/cm^2 (2 µCi/cm^2)	8 x 10^4 Bq/cm^2 (2 µCi/cm^2)

(b) The radiation level at 3 m from the unshielded content of a single package or from a single object

or collection of objects, if unpackaged, shall not exceed 10 mSv/h (1000 mrem/h).

2. PACKAGING / PACKAGE

(a) SCO-I and SCO-II may be transported in packagings provided that:

(i) the packaging, which may be a container, meets the design provisions for industrial packages IP-1 (see marginal 3733) for SCO-I, or IP-2 (see marginal 3734) for SCO-II; and

(ii) the objects are loaded into the packaging so that, in routine transport, there will be no escape of contents and no loss of shielding.

(b) SCO-I may be transported unpackaged, provided that:

(i) it is transported in a vehicle or container so that, in routine transport, there will be no escape of contents and no loss of shielding; and

(ii) it shall be transported under exclusive use if the contamination on the accessible and the inaccessible surfaces is greater than 4 Bq/cm² (10^{-4} µCi/cm²) for beta and gamma emitters and low toxicity alpha emitters or 0.4 Bq/cm² (10^{-5} µCi/cm²) for all other alpha emitters ;

and

(iii) measures shall be taken to ensure that radioactive material is not released into the vehicle if it is expected that non-fixed contamination exists on inaccessible surfaces in excess of 4 Bq/cm² (10^{-4} µCi/cm²) for beta and gamma emitters and low toxicity alpha emitters, or 0.4 Bq/cm² (10^{-5} µCi/cm²) for all other alpha emitters.

(c) SCO-II shall not be transported unpackaged.

3. PACKAGE MAXIMUM RADIATION LEVEL

See marginal 2703.

4. CONTAMINATION ON PACKAGES, VEHICLES, CONTAINERS, TANKS AND OVERPACKS

(a) See marginal 2703.

(b) Overpacks or containers dedicated to the transport of SCO under exclusive use may be excepted from (a) above with regard to internal contamination only for as long as they remain under that exclusive use.

5. DECONTAMINATION AND USE OF VEHICLES, EQUIPMENT OR PARTS THEREOF

(a) See marginal 2703.

(b) A vehicle dedicated to the transport of SCO under exclusive use shall be excepted from (a) above with regard to internal contamination only for as long as it remains in that specific exclusive use.

6. MIXED PACKING

See marginal 2703.

7. MIXED LOADING

See marginal 2703.

8. MARKING AND DANGER LABELS ON PACKAGES, CONTAINERS, TANKS AND OVERPACKS

See marginal 2703.

9. DANGER LABELS ON VEHICLES OTHER THAN TANK-VEHICLES

See marginal 2703.

10. TRANSPORT DOCUMENTS

(a) For a summary of the approval and notification provisions see marginal 2716.

(b) The transport document shall include the description:

"2913 Radioactive material, Surface Contaminated Object (SCO-I) or (SCO-II), 7, Schedule 8, ADR (or RID)".

This description shall be underlined. Further details specified in marginals 2709 and 2710 shall also be included.

11. STORAGE AND DESPATCH

See marginal 2703.

12. CARRIAGE OF PACKAGES, CONTAINERS, TANKS AND OVERPACKS

(a) See marginal 2703 12. 2), (a) to (d).

(b) Total activity in a single vehicle shall not exceed 100 x A_2.

13. OTHER PROVISIONS

See marginal 2703.

SCHEDULE 9

SCHEDULE 9

RADIOACTIVE MATERIAL IN TYPE A PACKAGES

Notes: 1. Radioactive material in quantities which offer a limited radiological risk (see marginal 2700 (2) 1.) may be carried in Type A packages, which shall be designed to withstand conditions of transport including minor mishaps.

2. If fissile material is present the provisions of Schedule 12 shall be met in addition to the provisions of this Schedule.

3. For other hazardous properties, see also the provisions in marginal 3770.

1. MATERIALS: 2974 Radioactive material, special form, n.o.s.

2975 Thorium metal, pyrophoric.

2976 Thorium nitrate, solid.

2979 Uranium metal, pyrophoric.

2980 Uranyl nitrate hexahydrate solution.

2981 Uranyl nitrate, solid.

2982 Radioactive material, n.o.s.

The contents of a Type A package shall be restricted to radioactive material:

(a) with an activity not exceeding A_1 (see marginals 3700 and 3701) if in special form, or

(b) with an activity not exceeding A_2 (see marginals 3700 and 3701) if other than in special form.

2. PACKAGING / PACKAGE

(a) The packaging, which may also be a tank or container, shall meet the provisions for Type A packages specified in marginal 3737 and in addition, for tanks, Appendices B.1a and B.1b.

(b) In particular, the Type A package shall be designed so that, under conditions of transport including minor mishaps, it will prevent loss or dispersal of the radioactive contents, and loss of shielding which would result in more than a 20%

increase in the external radiation level at any point.

(c) If the radioactive contents are special form radioactive material, competent authority approval of the design for the special form radioactive material is required.

(d) The outside of the Type A package shall incorporate a feature such as a seal, which is not readily breakable and which, while intact, will be evidence that it has not been opened.

3. PACKAGE MAXIMUM RADIATION LEVEL

See marginal 2703.

4. CONTAMINATION ON PACKAGES, VEHICLES, CONTAINERS, TANKS AND OVERPACKS

See marginal 2703.

5. DECONTAMINATION AND USE OF VEHICLES, EQUIPMENT OR PARTS THEREOF

See marginal 2703.

6. MIXED PACKING

See marginal 2703.

7. MIXED LOADING

See marginal 2703.

8. MARKING AND DANGER LABELS ON PACKAGES, CONTAINERS, TANKS AND OVERPACKS

(a) See marginal 2703.

(b) Each Type A package shall be legibly and durably marked on the outside with the words "TYPE A".

9. DANGER LABELS ON VEHICLES OTHER THAN TANK-VEHICLES

See marginal 2703.

10. TRANSPORT DOCUMENTS

(a) For a summary of the approval and notification provisions see marginal 2716.

(b) The transport document shall include:

(i) the identification number and the name as per heading 1, together with the words "Radioactive material in Type A package, 7, Schedule 9, ADR (or RID)", e.g. "2976 Thorium nitrate, solid, radioactive material in Type A package, 7, Schedule 9, ADR (or RID)"; or

(ii) in the case of material not otherwise specified, "2974 Radioactive material, special form, n.o.s., in Type A package, 7, Schedule 9, ADR (or RID)", or "2982 Radioactive material, n.o.s., in Type A package, 7, Schedule 9, ADR (or RID)", as the case may be.

This description shall be underlined. Further details specified in marginals 2709 and 2710 shall also be included.

11. STORAGE AND DESPATCH

See marginal 2703.

12. CARRIAGE OF PACKAGES, CONTAINERS, TANKS AND OVERPACKS

See marginal 2703.

13. OTHER PROVISIONS

See marginal 2703.

SCHEDULE 10

SCHEDULE 10

RADIOACTIVE MATERIAL IN TYPE B(U) PACKAGES

Notes: 1. Radioactive material which exceeds in quantity the Type A package limits may be carried in a Type B(U) package which shall be designed so that it is unlikely to release its radioactive contents or lose its shielding in accident conditions of transport.

2. If fissile material is present the provisions of Schedule 12 shall be met in addition to the provisions of this Schedule.

3. For other hazardous properties, see also the provisions in marginal 3770.

1. MATERIALS: 2974 Radioactive material, special form, n.o.s.

2975 Thorium metal, pyrophoric.

2976 Thorium nitrate, solid.

2979 Uranium metal, pyrophoric.

2980 Uranyl nitrate hexahydrate solution.

2981 Uranyl nitrate, solid.

2982 Radioactive material, n.o.s.

The limit on the total activity in a Type B(U) package shall be as is prescribed in the design approval certificate for that package.

2. PACKAGING / PACKAGE

(a) The packaging, which may also be a tank or container, shall meet the provisions for Type B packages specified in marginal 3738, the provisions for Type B(U) packages specified in marginal 3739 and in addition, for tanks, Appendices B.1a and B.1b.

(b) In particular, the Type B(U) package shall be designed so that:

(i) under conditions of transport including minor mishaps, it will restrict the loss or dispersal of the radioactive contents to no more than $A_2 \times 10^{-6}$ per hour, and prevent loss of shielding

which would result in more than a 20 % increase in the external radiation level at any point, and

(ii) it will be capable of withstanding the damaging effects of a transport accident as demonstrated by retaining containment integrity and shielding to the extent required by marginals 3738 and 3739.

(c) Approval of the design of Type B(U) packages in accordance with marginal 3752 is required by the competent authority of the country of origin of the design (unilateral approval).

(d) If the radioactive contents are special form radioactive material competent authority approval of the design for the special form radioactive material is required.

(e) The outside of the Type B(U) package shall incorporate a feature such as a seal, which is not readily breakable and which, while intact, will be evidence that it has not been opened.

3. PACKAGE MAXIMUM RADIATION LEVEL

See marginal 2703.

4. CONTAMINATION ON PACKAGES, VEHICLES, CONTAINERS, TANKS AND OVERPACKS

See marginal 2703.

5. DECONTAMINATION AND USE OF VEHICLES, EQUIPMENT OR PARTS THEREOF

See marginal 2703.

6. MIXED PACKING

See marginal 2703.

7. MIXED LOADING

See marginal 2703.

8. MARKING AND DANGER LABELS ON PACKAGES, CONTAINERS, TANKS AND OVERPACKS

(a) See marginal 2703.

(b) Each Type B(U) package shall be legibly and durably marked on the outside with:

(i) the identification mark allocated to that design by the competent authority,

(ii) a serial number to uniquely identify each packaging which conforms to that design,

(iii) the wording "TYPE B(U)", and

(iv) the trefoil symbol embossed or stamped on the outermost fire and water-resistant receptacle.

9. DANGER LABELS ON VEHICLES OTHER THAN TANK-VEHICLES

See marginal 2703.

10. TRANSPORT DOCUMENTS

(a) For a summary of the approval and notification provisions see marginal 2716.

(b) The transport document shall include:

(i) the identification number and the name as per heading 1, together with the words "Radioactive material in Type B(U) package, 7, Schedule 10, ADR (or RID)", e.g. "2976 Thorium nitrate, solid, radioactive material in Type B(U) package, 7, Schedule 10, ADR (or RID)"; or

(ii) in the case of material not otherwise specified, "2974 Radioactive material, special form, n.o.s., in Type B(U) package, 7, Schedule 10, ADR (or RID)", or "2982 Radioactive material, n.o.s., in Type B(U) package, 7, Schedule 10, ADR (or RID)", as the case may be.

This description shall be underlined. Further details specified in marginals 2709 and 2710 shall also be included.

(c) The unilateral approval certificate for the package design is required.

(d) Before each shipment of any Type B(U) package, the consignor shall be in possession of all the relevant competent authority approval certificates and shall ensure that copies of them have been submitted, before the first shipment, to the competent authority of each country through or into which the package is to be transported.

(e) Before each shipment where the activity is greater than 3×10^3 A_2 or 3×10^3 A_1, as appropriate, or 1000 TBq (20 kCi), whichever is the lower, the consignor must notify the competent authorities of all countries affected by the movement, preferably at least seven days in advance.

11. STORAGE AND DESPATCH

(a) See marginal 2703.

(b) The consignor shall have complied with the relevant pre-use and pre-shipment provisions of marginal 3710.

(c) Any provisions in the competent authority approval certificates shall be observed.

12. CARRIAGE OF PACKAGES, CONTAINERS, TANKS AND OVERPACKS

(a) See marginal 2703 12. 2), (a) to (d).

(b) If the average heat flux from a Type B(U) package could exceed 15 W/m^2, any special stowage provisions specified in the competent authority package approval certificate must be observed.

(c) If the temperature of the accessible surface of the Type B(U) package could exceed 50°C in the shade, carriage is permitted only under exclusive use, for which the surface temperature is limited to 85°C. Account may be taken of barriers or screens intended to give protection to transport workers without the barriers or screens being subject to any test.

13. OTHER PROVISIONS

See marginal 2703.

SCHEDULE 11

SCHEDULE 11

RADIOACTIVE MATERIAL IN TYPE B(M) PACKAGES

Notes: 1. Radioactive material which exceeds in quantity the Type A package limits may be carried in a Type B(M) package which shall be designed so that it is unlikely to release its radioactive contents or lose its shielding in accident conditions of transport.

2. If fissile material is present the provisions of Schedule 12 shall be met in addition to the provisions of this Schedule.

3. For other hazardous properties, see also the provisions in marginal 3770.

1. MATERIALS: 2974 Radioactive material, special form, n.o.s.

2975 Thorium metal, pyrophoric.

2976 Thorium nitrate, solid.

2979 Uranium metal, pyrophoric.

2980 Uranyl nitrate hexahydrate solution.

2981 Uranyl nitrate, solid.

2982 Radioactive material, n.o.s.

The limit on the total activity in a Type B(M) package shall be as is prescribed in the design approval certificate for that package.

2. PACKAGING / PACKAGE

(a) The packaging, which may also be a tank or container, shall meet the provisions for Type B packages specified in marginal 3738, the provisions for Type B(M) packages specified in marginal 3740 and in addition, for tanks, Appendices B.1a and B.1b.

(b) In particular, the Type B(M) package shall be designed so that:

(i) under conditions of transport including minor mishaps, it will restrict the loss or dispersal of the radioactive contents to no more than $A_2 \times 10^{-6}$ per hour, and prevent loss of shielding

which would result in more than a 20% increase in the external radiation level at any point, and

(ii) it will be capable of withstanding the damaging effects of a transport accident as demonstrated by retaining containment integrity and shielding to the extent required by marginals 3738 and 3739.

(c) Intermittent venting during transport may be permitted if compensating operational controls are approved by all the competent authorities involved.

(d) Supplementary operational controls necessary to ensure safety of the Type B(M) package during transport or to compensate for the deficiencies from the Type B(U) provisions and any restrictions on mode or conditions of transport shall be approved by all the competent authorities involved.

(e) Approval of the design of Type B(M) packages in accordance with marginal 3753 is required both by the competent authority of the country of origin of the design and of each country through or into which the packages are transported (multilateral approval).

(f) If the radioactive contents are special form radioactive material, competent authority approval of the design for the special form radioactive material is required.

(g) The outside of the Type B(M) package shall incorporate a feature such as a seal, which is not readily breakable and which, while intact, will be evidence that it has not been opened.

3. PACKAGE MAXIMUM RADIATION LEVEL

See marginal 2703.

4. CONTAMINATION ON PACKAGES, VEHICLES, CONTAINERS, TANKS AND OVERPACKS

See marginal 2703.

5. DECONTAMINATION AND USE OF VEHICLES, EQUIPMENT OR PARTS THEREOF

See marginal 2703.

6. MIXED PACKING

See marginal 2703.

7. MIXED LOADING

See marginal 2703.

8. MARKING AND DANGER LABELS ON PACKAGES, CONTAINERS, TANKS AND OVERPACKS

(a) See marginal 2703.

(b) Each Type B(M) package shall be legibly and durably marked on the outside with:

(i) the identification mark allocated to that design by the competent authority,

(ii) a serial number to uniquely identify each packaging which conforms to that design,

(iii) the wording "TYPE B(M)", and

(iv) the trefoil symbol embossed or stamped on the outermost fire and water-resistant receptacle.

9. DANGER LABELS ON VEHICLES OTHER THAN TANK-VEHICLES

See marginal 2703.

10. TRANSPORT DOCUMENTS

(a) For a summary of the approval and notification provisions see marginal 2716.

(b) The transport document shall include:

(i) the identification number and the name as per heading 1, together with the words "Radioactive material in Type B(M) package, 7, Schedule 11, ADR (or RID)", e.g. "2976 Thorium nitrate, solid, radioactive material in Type B(M) package, 7, Schedule 11, ADR (or RID)"; or

(ii) in the case of material not otherwise specified, "2974 Radioactive material, special form, n.o.s., in Type B(M) package, 7, Schedule 11, ADR (or RID)", or "2982 Radioactive material, n.o.s., in Type B(M) package, 7, Schedule 11, ADR (or RID)", as the case may be.

This description shall be underlined. Further details specified in marginals 2709 and 2710 shall also be included.

(c) The multilateral approval certificates for the package design are required.

(d) If the package is designed to allow for controlled intermittent venting or if the total contents exceed 3×10^3 A_2 or 3×10^3 A_1, as appropriate, or 1000 TBq (20 kCi), whichever is the lower, certificates of multilateral approval of shipment are required unless the competent authorities involved authorize transport by a specific provision in the certificates for approval of the package design.

(e) Before each shipment of any Type B(M) package, the consignor shall be in possession of all relevant approval certificates.

(f) Before each shipment, the consignor shall notify the competent authorities of all countries affected by the movement, preferably at least seven days in advance.

11. STORAGE AND DESPATCH

(a) See marginal 2703.

(b) The consignor shall have complied with the relevant pre-use and pre-shipment provisions of marginal 3710.

(c) Any provisions in the certificates of approval of the design or the shipment issued by the competent authorities involved must be observed.

12. CARRIAGE OF PACKAGES, CONTAINERS, TANKS AND OVERPACKS

(a) See marginal 2703 12. 2), (a) to (d).

(b) If the average surface heat flux from a Type B(M) package could exceed 15 W/m^2, any special stowage provisions specified in the competent authority package design approval certificate must be observed.

(c) If the temperature of the accessible surface of the Type B(M) package could exceed 50°C in the shade, carriage is permitted only under exclusive use, and as far as practicable the surface temperature is limited to 85°C. Account may be taken of barriers or screens intended to give protection to transport workers without the barriers or screens being subject to any test.

13. OTHER PROVISIONS

See marginal 2703.

SCHEDULE 12

SCHEDULE 12

FISSILE MATERIAL

Notes: 1. Radioactive material which is also fissile material must be packaged, transported and stored so as to meet the provisions for nuclear criticality safety, as stated in this Schedule, and the provisions appropriate to its radioactivity, as stated in Schedules 6 to 11, as appropriate.

2. For other hazardous properties, see also the provisions in marginal 3770.

1. MATERIALS: 2918 Radioactive material, fissile, n.o.s.

2977 Uranium hexafluoride, fissile containing more than 1.0% uranium-235.

Fissile material is uranium-233, uranium-235, plutonium-238, plutonium-239, plutonium-241, or any combination of the foregoing, except for unirradiated natural or depleted uranium and natural or depleted uranium which has been irradiated in thermal reactors only.

Consignments of fissile material shall also be in full compliance with the provisions of one of the other Schedules, as appropriate to the radioactivity of the consignment.

2. PACKAGING / PACKAGE

(a) The following materials are excepted from the special packaging provisions stated in this Schedule, but must meet the provisions of one of the other Schedules appropriate to the radioactivity of the material:

(i) Fissile material in quantity not exceeding 15 g per package under conditions fully described in marginal 3741 of Appendix A.7.

(ii) Hydrogenous solutions in concentrations and quantities limited in accordance with Table III of marginal 3703 of Appendix A.7.

(iii) Enriched uranium distributed homogeneously with not more than 1% of uranium-235, and with a total plutonium and uranium-233 content not exceeding 1% of the mass of uranium-235, provided that if

the uranium-235 is present in metallic, oxide or carbide forms, it must not form a lattice arrangement.

(iv) Material containing not more than 5 g of fissile material in any 10 litre volume.

(v) Packages containing not more than 1 kg of plutonium in which not more than 20% by mass consists of plutonium-239, plutonium-241 or any combination of those radionuclides.

(vi) Solutions of uranyl nitrate enriched in uranium-235 to a maximum of 2 % by mass with total plutonium and uranium-233 content not exceeding 0.1 % of the mass of uranium-235, and a minimum nitrogen to uranium atomic ratio of 2.

(b) Otherwise packages for fissile material shall meet the design provisions for the type of package necessary for the radioactivity of the fissile material and, in addition, shall meet the additional provisions for packages containing fissile material stated in marginal 3741 of Appendix A.7.

(c) Each design of package for fissile material must be approved by the competent authority of the country of origin of the design and by the competent authorities of each of the countries through or into which the package is to be transported, i.e. multilateral approval is required.

(d) The outside of packages for fissile material shall incorporate a feature such as a seal, which is not readily breakable and which, while intact, will be evidence that it has not been opened.

3. PACKAGE MAXIMUM RADIATION LEVEL

See appropriate Schedule.

4. CONTAMINATION ON PACKAGES, VEHICLES, CONTAINERS, TANKS AND OVERPACKS

See appropriate Schedule.

5. DECONTAMINATION AND USE OF VEHICLES, EQUIPMENT OR PARTS THEREOF

See appropriate Schedule.

6. MIXED PACKING

Only articles or documents which are necessary for the use of the radioactive contents are permitted in the package, provided that there is no interaction between them and the packaging or its contents that would reduce the safety (including nuclear criticality safety) of the package.

7. MIXED LOADING

See marginal 2703.

8. MARKING AND DANGER LABELS ON PACKAGES, CONTAINERS, TANKS AND OVERPACKS

(a) See appropriate Schedule.

(b) Packages shall be plainly and durably marked externally with:

(i) "Type A", "Type B(U)", "Type B(M)" as appropriate.

(ii) Competent authority identification mark.

9. DANGER LABELS ON VEHICLES OTHER THAN TANK-VEHICLES

See marginal 2703.

10. TRANSPORT DOCUMENTS

(a) For a summary of the approval and notification provisions see marginal 2716.

(b) The transport document shall include the description:

"2918 Radioactive material, fissile, n.o.s., in Type IF or Type AF or Type B(U)F or Type B(M)F package, 7, Schedule 12, ADR (or RID)"; or

"2977 Uranium hexafluoride, fissile, containing more than 1.0 % uranium-235, radioactive material in approved package, 7, Schedule 12, ADR (or RID)", as the case may be.

This description shall be underlined. Further details specified in marginals 2709 and 2710 shall also be included.

(c) The multilateral approval certificates for the fissile material package design are required.

(d) Before each shipment of any fissile material package, the consignor shall be in possession of all relevant approval certificates.

(e) Certificates of multilateral shipment approval are required for packages containing fissile material if the sum of the transport indexes of the packages in the consignment exceeds 50.

(f) For additional documentation provisions, see appropriate Schedule.

11. STORAGE AND DESPATCH

See marginal 2703.

12. CARRIAGE OF PACKAGES, CONTAINERS, TANKS AND OVERPACKS

(a) See marginal 2703 12. 2), (a) to (d).

(b) For consignments under exclusive use the total transport index limit shall be 100.

(c) Packages of fissile material for which the transport index for nuclear criticality control exceeds 0 shall not be carried in an overpack.

13. OTHER PROVISIONS

See marginal 2703.

SCHEDULE 13

SCHEDULE 13

RADIOACTIVE MATERIAL TRANSPORTED UNDER SPECIAL ARRANGEMENT

Note: Consignments of radioactive material which do not satisfy all of the applicable provisions of the Schedules 5 - 12 may be transported under special arrangement[1] subject to the implementation of special provisions approved by the competent authorities. These provisions shall ensure that the overall level of safety in transport and in-transit storage is at least equivalent to that which would be provided if all the applicable provisions had been met.

1. MATERIALS:

Materials with substance identification numbers 2912, 2913, 2918, 2974, 2975, 2976, 2977, 2978, 2979, 2980, 2981 and 2982, see marginal 2701.

Radioactive materials which may be shipped under special arrangement include any of those materials covered by Schedules 5 - 11 and, if applicable, Schedule 12.

2. PACKAGING / PACKAGE

(a) As authorised by the competent authority approval certificate for special arrangement.

(b) Multilateral approval is required.

3. PACKAGE MAXIMUM RADIATION LEVEL

As authorised by the competent authority approval certificate for special arrangement.

4. CONTAMINATION ON PACKAGES, VEHICLES, CONTAINERS, TANKS AND OVERPACKS

As authorised by the competent authority approval certificate for special arrangement.

5. DECONTAMINATION AND USE OF VEHICLES, EQUIPMENT OR PARTS THEREOF

See marginal 2703.

1/ The special arrangement should not be confused with the special agreement as covered by Article 4, paragraph 3, of the ADR and by marginals 2010 and 10 602.

6. MIXED PACKING

As authorised by the competent authority approval certificate for special arrangement.

7. MIXED LOADING

Mixed loading is only permitted if specially authorized by the competent authorities.

8. MARKING AND DANGER LABELS ON PACKAGES, CONTAINERS, TANKS AND OVERPACKS

(a) See marginal 2703. However consignments under special arrangement shall always bear III-YELLOW labels conforming to model No. 7C.

(b) In addition, other labelling and marking provisions approved by the competent authorities shall be fulfilled.

9. DANGER LABELS ON VEHICLES OTHER THAN TANK-VEHICLES

(a) See marginal 2703.

(b) In addition, other provisions approved by the competent authorities shall be fulfilled.

10. TRANSPORT DOCUMENTS

(a) For a summary of the approval and notification provisions see marginal 2716.

(b) The transport document shall include:

(i) the identification number as per heading 1 and the name as per marginal 2701, together with the words "Radioactive material, under special arrangement, 7, Schedule 13, ADR (or RID)", e.g. "2976 Thorium nitrate, solid, radioactive material, under special arrangement, 7, Schedule 13, ADR (or RID)"; or

(ii) in the case of material not otherwise specified, the identification number as per heading 1 and the name as per marginal 2701, together with the words "under special arrangement, 7, Schedule 13, ADR (or RID)", e.g. "2918 Radioactive material, fissile, n.o.s., under special arrangement, 7, Schedule 13, ADR (or RID)".

This description shall be underlined. Further details specified in marginals 2709 and 2710 shall also be included.

(c) Each consignment shall require multilateral approval.

(d) Before each shipment, the consignor shall be in possession of all relevant approval certificates.

(e) Before each shipment the consignor must notify the competent authorities of all countries affected by the movement, preferably at least seven days in advance.

11. STORAGE AND DESPATCH

(a) See marginal 2703.

(b) Specific storage and despatch provisions approved by the competent authorities shall be fulfilled.

(c) Unless specifically excepted by the competent authority approval certificates, the consignor shall have complied with the relevant pre-use and pre-shipment provisions of marginal 3710.

12. CARRIAGE OF PACKAGES, CONTAINERS, TANKS AND OVERPACKS

(a) See marginal 2703.

(b) Specific carriage provisions approved by the competent authorities shall be fulfilled.

13. OTHER PROVISIONS

See marginal 2703.

MARKING AND LABELLING

Note: For radioactive materials having other hazardous properties, the labelling shall also be in accordance with the provisions for the other hazardous properties (see marginal 3770 (3)).

2705 MARKING OF PACKAGES, INCLUDING TANKS AND CONTAINERS

(1) Each package of gross mass exceeding 50 kg shall have its permissible gross mass legibly and durably marked on the outside of the packaging.

(2) Each package which conforms to a Type A package design shall be legibly and durably marked on the outside of the packaging with "TYPE A".

(3) Each package which conforms to a design approved under marginals 3752-3755 shall be legibly and durably marked on the outside of the packaging with:

a) The identification mark allocated to that design by the competent authority;

b) A serial number to identify uniquely each packaging which conforms to that design; and

c) In the case of a Type B(U) or Type B(M) package design, with "TYPE B(U)" or "TYPE B(M)".

(4) Each package which conforms to a Type B(U) or Type B(M) package design shall have the outside of the outermost receptacle which is resistant to the effects of fire and water plainly marked by embossing, stamping, or other means resistant to the effects of fire and water with the trefoil symbol shown in model Nos. 7A to 7D.

2706 LABELLING OF PACKAGES, INCLUDING TANKS AND CONTAINERS, AND OF OVERPACKS

(1) Each package, overpack, tank and container shall bear the labels which conform to the model No. 7A, 7B or 7C according to the appropriate category. Any labels which do not relate to the contents shall be removed or covered. For radioactive materials having other dangerous properties see marginal 3770.

(2) The labels shall be affixed to two opposite sides of the outside of a package or overpack, on the outside of all four sides of a container or tank-container, or in the case of tank-vehicles to the two side walls and the rear wall of the transport unit.

(3) Each label shall be completed with the following information in a clear and indelible manner:

a) Contents:

i) Except for LSA-I material, the name of the radionuclide as taken from Table I of Appendix A.7, using the symbols prescribed therein. For mixtures of radionuclides, the most restrictive nuclides must be listed to the extent the space on the line permits. The group of LSA or SCO shall be shown following the name of the radionuclide. The terms "LSA-II", "LSA-III", "SCO-I" and "SCO-II" shall be used for this purpose.

ii) For LSA-I material, the term "LSA-I" is all that is necessary: the name of the radionuclide is not necessary.

b) Activity:

The maximum activity of the radioactive contents during transport expressed in units of becquerel (Bq) [and, if desired curie (Ci)] with the appropriate SI prefix. [See marginal 2001 (1)]. For fissile material, the total mass in units of gram (g) or multiples thereof, may be used in place of activity.

c) For overpacks, tanks, and containers, the 'contents' and 'activity' entries on the label shall bear the information required in a) and b) of this paragraph respectively, totalled together for the entire contents of the overpack, tank, or container except that on labels for overpacks or containers containing mixed loads of packages with different radionuclides, such entries may read "see transport document".

d) Transport index:

See marginal 3715 (3) (no transport index entry required for category I-WHITE).

2707 ADDITIONAL MARKING OF TANKS AND VEHICLES

See marginal 10 500 and Appendix B.5.

2708 ADDITIONAL LABELLING OF CONTAINERS, TANKS AND VEHICLES

(1) Tanks and large containers carrying packages other than excepted packages shall bear labels conforming to model No. 7D. However, instead of using a label conforming to model Nos. 7A, 7B or 7C together with a label conforming to model No. 7D, it is permitted as an alternative to use enlarged labels conforming to model Nos. 7A, 7B or 7C with the dimensions of model No. 7D. Every label shall be affixed in a vertical orientation on all four sides of a container or of a tank-container or, in the case of a tank-vehicle, to the two side walls and the rear wall of the transport unit.

(2) Vehicles carrying packages, overpacks, tank-containers or containers bearing any of the labels conforming to model Nos. 7A, 7B or 7C shall display the label conforming to model No. 7D on both sides and at the rear. In addition vehicles carrying consignments under exclusive use shall display the label conforming to model No. 7D on both sides and at the rear.

(3) Any labels which do not relate to the contents shall no longer be visible.

2709 ADDITIONAL PARTICULARS OF CONSIGNMENT

In addition to the description of the goods given in the relevant schedule, the consignor shall include in the transport document for each consignment of radioactive material the following information:

a) The words 'The nature of the goods and the packaging are in conformity with the provisions of ADR.';

b) The name or symbol of each radionuclide; or the most significant radionuclide;

c) A description of the physical and chemical form of the material, or a statement that the material is special form radioactive material. A generic description is acceptable for chemical form;

d) The maximum activity of the radioactive contents during transport expressed in units of becquerel (Bq) [and, if desired, curie (Ci)] with the appropriate SI prefix [see marginal 2001 (1)]. For fissile material, the total mass of fissile material in units of gram (g), or appropriate multiples thereof, may be used in place of activity;

e) The category of the package, i.e. I-WHITE, II-YELLOW or III-YELLOW;

f) The transport index (for categories II-YELLOW and III-YELLOW only);

g) For a consignment of fissile material, where all of the packages in the consignment are excepted under marginal 3703, the words "fissile excepted";

h) The identification mark for each competent authority approval certificate (special form radioactive material, special arrangement, package design, or shipment) applicable to the consignment;

i) For consignments of packages in an overpack or container, a detailed statement of the contents of each package within the overpack or container and, where appropriate, of each overpack or container in the consignment. If packages are to be removed from the overpack or container

at a point of intermediate unloading, appropriate transport documentation shall be made available; and

j) When a consignment is required to be shipped under exclusive use, the statement "exclusive use shipment".

2710 INSTRUCTION TO CARRIERS

(1) The consignor shall provide with the transport document information regarding actions, if any, that are required to be taken by the carrier. The information shall include at least the following points:

a) Supplementary operational provisions for loading, stowage, transport, handling and unloading of the package, overpack, container, or tank including any special stowage provisions for the safe dissipation of heat [see marginal 2712 (2)] or a statement that no such provisions are necessary;

b) Any necessary routeing instructions;

c) Written instructions appropriate to the consignment. See marginal 10 385 (1), (2) and (3) and marginal 71 385.

(2) In all cases where approval of the shipment or prior notification to the competent authority is required, the carriers must be informed, if possible, at least 15 days in advance and in any case at least 5 days in advance, in order that they may take in good time any measures required for the transport.

(3) The consignor shall be in a position to provide the certificates of the competent authorities to the carriers before loading, unloading, and any trans-shipment.

2711 TRANSPORT

Segregation during transport

(1) Packages, overpacks, containers and tanks shall be segregated during transport:

a) for radiation control purposes, from places occupied by persons in accordance with Table 8 and from undeveloped photographic film and mailbags, in accordance with Table 9;

Note: Mailbags shall be assumed to contain undeveloped film and plates and therefore be separated from radioactive material in the same way.

and

b) from other dangerous goods in accordance with marginal 2703, heading 7.

TABLE 8 MINIMUM DISTANCES BETWEEN PACKAGES OF CATEGORY II-YELLOW OR OF CATEGORY III-YELLOW AND PERSONS

Sum of transport indexes not more than	Minimum distances in metres, no shielding material intervening, from living accommodations or regularly occupied working space in the case of exposure time not exceeding 250 hours per annum
2	1.0
4	1.5
8	2.5
12	3.0
20	4.0
30	5.0
40	5.5
50	6.5

Note: The above table is based upon a dose limit of 5 mSv (500 mrem) in any 12 month period.

TABLE 9 MINIMUM DISTANCES BETWEEN PACKAGES OF CATEGORY II-YELLOW OR OF CATEGORY III-YELLOW AND PACKAGES BEARING THE WORD 'FOTO', OR MAILBAGS

Note: Mailbags shall be assumed to contain undeveloped film and plates and therefore be separated from radioactive material in the same way.

Total number of packages not more than:		Sum of transport indexes not more than:	Journey or storage duration, in hours							
			1	2	4	10	24	48	120	240
CATEGORY YELLOW III	II		Minimum distances in metres							
		0.2	0.5	0.5	0.5	0.5	1	1	2	3
		0.5	0.5	0.5	0.5	1	1	2	3	5
	1	1	0.5	0.5	1	1	2	3	5	7
	2	2	0.5	1	1	1.5	3	4	7	9
	4	4	1	1	1.5	3	4	6	9	13
	8	8	1	1.5	2	4	6	8	13	18
1	10	10	1	2	3	4	7	9	14	20
2	20	20	1.5	3	4	6	9	13	20	30
3	30	30	2	3	5	7	11	16	25	35
4	40	40	3	4	5	8	13	18	30	40
5	50	50	3	4	6	9	14	20	32	45

(2) Category II-YELLOW or category III-YELLOW packaages or overpacks shall not be carried in compartments of passenger coaches occupied by persons, except compartments reserved for persons authorized to accompany such packages or overpacks.

2712 STOWAGE FOR TRANSPORT

(1) Packages shall be so loaded in vehicles that they cannot shift dangerously, upset or fall.

(2) Provided that its average surface heat flux does not exceed 15 W/m2 and that the immediately surrounding cargo is not in sacks or bags, a package or overpack may be carried among packaged general cargo without any special stowage provisions except as may be specifically required by the competent authority in an applicable approval certificate.

(3) Except in the case of shipment under special arrangement, mixing of packages of different kinds of radioactive material, including fissile material, and mixing of different kinds of packages with different transport indexes is permitted without specific competent authority approval. In the case of shipments under special arrangement, mixing shall not be permitted except as specifically authorized under the special arrangement.

(4) The following provisions shall apply to the loading of tank-vehicles and the loading of packages, overpacks, tank-containers and containers on to vehicles:

a) The transport index of a tank-vehicle shall not exceed the limits in Table 10. The total number of packages, overpacks, tanks and containers aboard a single vehicle shall be so limited that the total sum of the transport indexes aboard the vehicle does not exceed the values shown in Table 10.

For consignments of LSA-I material there shall be no limit on the sum of the transport indexes.

b) The radiation level under conditions likely to be encountered in routine transport shall not exceed 2 mSv/h (200 mrem/h) at any point on, and 0.1 mSv/h (10 mrem/h) at 2 m from, the external surface of the vehicle.

(5) Any package or overpack having a transport index greater than 10 shall be transported only under exclusive use.

TABLE 10 TRANSPORT INDEX LIMITS FOR CONTAINERS AND VEHICLES

Type of container or vehicle	Limit on total sum of transport indexes in a single container or aboard a vehicle			
	Not under exclusive use		Under exclusive use	
	Non-fissile material	Fissile material	Non-fissile material	Fissile 1/ material
Small Container	50	50	not applicable	not applicable
Large Container	50	50	no limit	100 2/
Vehicle	50	50	no limit	100 2/

Notes: 1/ Provided that transport is direct from the consignor to the consignee without any intermediate in-transit storage if the TI exceeds 50.

2/ If the total transport index is greater than 50, the consignment shall be so handled and stowed that it is always separated from any other package, overpack, tank or container carrying radioactive material by at least 6 m. The intervening space between groups may be occupied by other goods in accordance with marginal 3711 (3).

2713 ADDITIONAL PROVISIONS

(1) For consignments under exclusive use, the radiation level shall not exceed:

a) 10 mSv/h (1000 mrem/h) at any point on the external surface of any package or overpack, and may only exceed 2 mSv/h (200 mrem/h) provided that:

i) There is an enclosure which prevents unauthorized access to the load during transport, and

ii) provisions are made to secure the package or overpack so that its position within the vehicle remains fixed during routine transport, and

iii) there are no loading or unloading operations between the beginning and end of the shipment;

b) 2 mSv/h (200 mrem/h) at any point on the outer surfaces of the vehicle including the upper and lower surfaces, or, in the case of an open vehicle at any point on the vertical planes projected from the outer edges of the vehicle, on the upper surface of the load, and on the lower external surface of the vehicle; and

c) 0.1 mSv/h (10 mrem/h) at any point 2 m from the vertical planes represented by the outer lateral surfaces of the vehicle, or, if the load is transported in an open vehicle, at any point 2 m from the vertical planes projected from the outer edges of the vehicle.

If the exclusive use conditions and the special additional provisions specified in sub-paragraph a) above do not apply, the radiation level at any point on any external surface of a package or overpack shall not exceed 2 mSv/h (200 mrem/h) and the transport index shall not exceed 10.

(2) The radiation level at any normally occupied position of the vehicle shall not exceed 0.02 mSv/h (2 mrem/h) unless the persons occupying such positions are provided with personal monitoring devices.

2714 STORAGE IN TRANSIT

(1) Packages, overpacks, containers and tanks shall be segregated during storage in transit:

a) For radiation exposure control purposes, from places occupied by persons, in accordance with Table 8 of marginal 2711 and from undeveloped photographic film and mailbags, in accordance with Table 9 of marginal 2711;

Note: Mailbags shall be assumed to contain undeveloped film and plates and therefore be separated from radioactive material in the same way.

and

b) From other dangerous goods in accordance with marginal 2703, heading 7.

(2) The number of category II-YELLOW and category III-YELLOW packages, overpacks, tanks and containers stored in any one place shall be so limited that the total sum of the transport indexes in any individual group of such packages, overpacks, tanks or containers does not exceed 50. Groups of such packages, overpacks, tanks and containers shall be stored so as to maintain a spacing of at least 6 m from other groups of such packages, overpacks, tanks or containers.

(3) If the transport index of a single package, overpack, tank or container exceeds 50 or the total transport index of a vehicle exceeds 50, as permitted in Table 10, storage shall be such as to maintain a spacing of at least 6 m from other groups of packages, overpacks, tanks, containers or vehicles carrying radioactive material.

(4) Consignments in which the only radioactive contents are LSA-I materials shall be excepted from the provisions of paragraphs (2) and (3) above.

(5) Except in the case of shipment under special arrangement, mixed loading of packages of different kinds of radioactive material, including fissile material, and mixed loading of different kinds of packages with different transport indexes is permitted without specific competent authority approval. In the case of shipment under special arrangement, mixed loading shall not be permitted except as specifically authorized under the special arrangement.

2715 UNDELIVERABLE CONSIGNMENTS

If neither the consignor nor the consignee can be identified, or if the consignment cannot be delivered to the consignee and the carrier has no instructions from the consignor, the consignment shall be placed in a safe location and the competent authority shall be informed as soon as possible, and a request made for instructions on further action.

2716 SUMMARY OF APPROVAL AND PRIOR NOTIFICATION PROVISIONS

Subject	Schedule Number	Competent Authority approval required		Consignor required to notify the competent authorities of the country of origin and of the countries en route [c] before each shipment	Marginals
		Country of origin	Countries en route [c]		
Calculation of unlisted A_1 and A_2 values	-	yes	yes	no	3750(f)
Excepted packages - package design - shipment	1 to 4	no no	no no	no no	3713
LSA material [b] and SCO [b] / Industrial packages types 1, 2 or 3 - package design - shipment	5 to 8	no no	no no	no no	2700(2), 3714,3733, 3734,3735, 3736
Type A packages [b] - package design - shipment	9	no no	no no	no no	2700(2), 3737
Type B(U) packages [b] - package design - shipment	10	yes no	no no	See note 1 See note 2	2700(2), 3719,3739, 3752
Type B(M) packages [b] - package design - shipment	11	yes See note 3	yes See note 3	no yes	2700(2), 3719,3740, 3753,3757
Packages for fissile material - package design - shipment	12	yes [c]	yes [c]	no	3741,3754, 3757
: sum of transport indexes not more than 50		no [d]	no [d]	See note 2	
: sum of transport indexes greater than 50		yes	yes	See note 2	
Special form radioactive material - design - shipment	- See note 4	yes See note 4	no See note 4	no See note 4	3731,3751, 3761
Special Arrangement - shipment	13	yes	yes	yes	3719,3758, 3762
Packages meeting the provisions of ADR applicable on 31 December 1989.					3755
- Type B(U)		yes	No, until 31 December 1995 Yes, as from 1 January 1996	See note 1	
- All others		yes	yes	See note 1	

(footnotes to Summary of Approval and Prior Notification Provisions)

a) Countries from, through or into which the consignment is transported.

b) If the radioactive contents are fissile material which is not excepted from the provisions for packages containing fissile material, then the provisions for fissile material packages apply, see marginal 3741.

c) Designs of packages for fissile material may also require approval in respect of one of the other items in the table.

d) Shipments may, however, require approval in respect of one of the other items in the table.

Note 1. Before first shipment of any package requiring competent authority approval of the design, the consignor must ensure that a copy of the approval certificate for that design has been submitted to the competent authority of each country en route: see marginal 3719 (1).

Note 2. Notification required if contents exceed 3 x 10^3 A_1, or 3 x 10^3 A_2, or 1000 TBq (20 kCi); see marginal 3719 (2).

Note 3. Multilateral approval of shipment required if contents exceed 3 x 10^4 A_1, or 3 x 10^3 A_2, or 1000 TBq (20 kCi); or if controlled intermittent venting is allowed, see marginal 3757.

Note 4. See approval and prior notification provisions for the applicable package.

2717 - 2799

CLASS 9

MISCELLANEOUS DANGEROUS SUBSTANCES AND ARTICLES

1. List of substances

2900 The heading of Class 9 covers substances and articles which, during carriage, present a danger not covered by the headings of other classes. Those substances and articles listed in marginal 2901 are subject to the conditions set out in marginals 2901 to 2920 and to the provisions of this annex and of Annex B. They are then considered as substances and articles of ADR. 1/

Substances of Class 9 which are listed under the various items of marginal 2901 shall be assigned to one of the following groups designated by the letter (b) or (c) according to their degree of danger:

letter (b) – dangerous substances

letter (c) – substances presenting a minor danger.

Note: For the classification of solutions and mixtures (such as preparations and wastes), see also marginal 2002 (8).

2901 A. Substances which, on inhalation as fine dust, may endanger health

1° Asbestos and mixtures containing asbestos, such as:

(b) 2212 Blue asbestos (crocidolite), 2212 brown asbestos (amosite or mysorite),

(c) 2590 White asbestos (chrysotile, actinolite, anthophyllite or tremolite)

Notes: 1. Talc containing tremolite and/or actinolite is a substance of 1° (c), No. 2590.

2. Asbestos which is immersed or fixed in a natural or artificial binder material (such as cement, plastics, asphalt, resins or mineral ore) and manufactured articles containing asbestos are not subject to the provisions of ADR.

B. Substances and apparatus which in the event of fire may form dioxins

2° Polychlorinated biphenyls (PCBs) and mixtures containing PCBs:

(b) 2315 Polychlorinated biphenyls

Note: Mixtures with a PCB content of not more than 50 mg/kg are not subject to the provisions of ADR.

3° Apparatus containing PCBs or PCB mixtures, such as transformers, condensers and hydraulic apparatus.

C. Empty packagings

Note: Empty packagings with residues from their previous contents adhering to the outside are not to be accepted for carriage.

11° Empty packagings, empty tank-vehicles, empty demountable tanks and empty tank-containers, uncleaned, having contained substances of Class 9.

2901a (1) Substances classified under (b) or (c) of 1° and 2° carried in conformity with the following provisions are not subject to the provisions for this class contained in this annex or in Annex B:

(a) Substances classified under letter (b) of each item:

liquids, up to 500 ml per inner packaging and up to 2 litres per package,

solids, up to 1 kg per inner packaging and up to 4 kg per package.

(b) Substances classified under letter (c) of each item:

liquids, up to 3 litres per inner packaging and up to 12 litres per package,

solids, up to 6 kg per inner packaging and up to 24 kg per package.

These quantities of substances shall be carried in combination packagings conforming at least to the conditions of marginal 3538.

The "General packing conditions" of marginal 3500 (1), (2) and (5) to (7) shall be complied with.

(2) Apparatus of 3° containing liquids of 2° (b), up to 500 ml per apparatus and up to 2 litres per package, are not subject to the provisions for this class contained in this annex or in Annex B. The apparatus shall, however, be packed in conformity with marginal 2905 (1) (a).

2. Provisions

A. Packages

1. General conditions of packing

2902 (1) Packagings shall satisfy the conditions of Appendix A.5, unless special conditions for the packing of certain substances are prescribed in section A.2.

(2) In accordance with the provisions of marginals 2900 and 3511 (2), the following shall be used:

packagings of packing groups II or I, marked with the letter "Y" or "X", for the dangerous substances classified under the letter (b) of each item;

packagings of packing groups III, II or I, marked with the letter "Z", "Y" or "X", for the less dangerous substances classified under the letter (c) of each item.

Note: For the carriage of substances of Class 9 in tank vehicles, demountable tanks or tank-containers, and for the carriage in bulk of solids of this class, see Annex B.

2. Special conditions of packing

2903 (1) Substances classified under (b) of the various items of marginal 2901 shall be packed:

(a) in steel drums conforming to marginal 3520, or

(b) in aluminium drums conforming to marginal 3521, or

(c) in steel jerricans conforming to marginal 3522, or

(d) in plastics drums or plastics jerricans conforming to marginal 3526, or

(e) in composite packagings (plastics material) conforming to marginal 3537, or

(f) in combination packagings conforming to marginal 3538.

Note: to (a), (b), (c) and (d): Simplified conditions are applicable to removable-head drums and jerricans for viscous substances having a viscosity of more than 200 mm^2/s at 23°C (see marginals 3512, 3553, 3554 and 3560) and for solids.

(2) Solid substances with a melting-point above 45°C may also be packed:

(a) in drums conforming to marginal 3523 for plywood or 3525 for fibreboard, if necessary with one or more sift-proof inner bags, or

(b) in water-resistant bags conforming to marginals 3533 for textile material, 3534 for woven plastics material, 3535 for plastics film or 3536 for water-resistant paper, provided the goods are dispatched as a full load or the bags are secured on pallets.

2904 (1) Substances classified under (c) of the various items of marginal 2901 shall be packed:

(a) in steel drums conforming to marginal 3520, or

(b) in aluminium drums conforming to marginal 3521, or

(c) in steel jerricans conforming to marginal 3522, or

(d) in plastics drums or plastics jerricans conforming to marginal 3526, or

(e) in composite packagings (plastics material) conforming to marginal 3537, or

(f) in combination packagings conforming to marginal 3538, or

(g) in composite packagings (glass, porcelain or stoneware) conforming to marginal 3539, or

(h) in light gauge metal packagings conforming to marginal 3540.

Note: to (a), (b), (c), (d) and (h): Simplified conditions are applicable to removable-head drums, jerricans and light gauge metal packagings for viscous substances having a viscosity of more than 200 mm^2/s at 23°C (see marginals 3512, 3552 to 3554 and 3560) and for solids.

(2) Solid substances with a melting-point above 45°C may also be packed:

(a) in drums conforming to marginal 3523 for plywood or 3525 for fibreboard, if necessary with one or more sift-proof inner bags, or

(b) in water-resistant bags conforming to marginals 3533 for textile material, 3534 for woven plastics material, 3535 for plastics film or 3536 for water-resistant paper.

2905 (1) Apparatus of 3° shall be packed:

(a) in leakproof packagings, or

(b) in leakproof containers.

(2) Apparatus of 3° may also be carried in leakproof receptacles (containment vessels) which must be able to hold at least 1.25 times the substances of 2°(b) present in the apparatus. There must be sufficient inert material in the receptacles to absorb at least 1.1 times the substances of 2°(b) which are contained in the apparatus. The apparatus and the receptacles shall be so designed as to avoid any leak of liquid under normal conditions of carriage.

2906–2910

3. Mixed packing

2911 (1) Substances covered by the same item number may be packed together in a combination packaging conforming to marginal 3538.

(2) Substances of different items of Class 9 in quantities not exceeding, per receptacle, 3 litres for liquids and/or 5 kg for solids, may be packed together and/or with goods not subject to the provisions of ADR, in a combination packaging conforming to marginal 3538.

(3) Substances of Class 9, in quantities not exceeding, per receptacle, 3 litres for liquids and/or 5 kg for solids, may be packed together in a combination packaging conforming to marginal 3538 with substances or articles of other classes, provided that mixed packing is also permitted for the substances and articles of these classes, and/or with goods which are not subject to the provisions of ADR, provided they do not react dangerously with one another.

(4) The following are considered dangerous reactions:

(a) combustion and/or giving off considerable heat,

(b) emission of inflammable and/or toxic gases,

(c) formation of corrosive liquids,

(d) formation of unstable substances.

(5) The provisions of marginals 2001 (7), 2002 (6) and (7) and 2902 shall be complied with.

(6) If wooden or fibreboard boxes are used, a package shall not weigh more than 100 kg.

4. Marking and danger labels on packages (see Appendix A.9)

2912 (1) Packages containing substances of this class shall bear a label conforming to model No. 9. Packages containing substances having a flash-point up to and including 55°C shall also bear a label conforming to model No. 3.

(2) Packages containing fragile receptacles not visible from the outside shall bear on two opposite sides a label conforming to model No. 12.

(3) Packages containing liquids in receptacles the closures of which are not visible from the outside shall bear on two opposite sides a label conforming to model No. 11.

2913

B. Particulars in the transport document

2914 The description of the goods in the transport document shall conform to one of the identification numbers and one of the names underlined in marginal 2901. The description of the goods must be underlined and followed by particulars of the class, the item number (together with the letter, if any) and the initials "ADR" (or "RID"), e.g. 9, 1° (b), ADR.

For the carriage of wastes (see marginal 2000 (4)), the description of the goods shall be: "Waste, containing ...", the component(s) which has/have been used for the classification of the waste under marginal 2002 (8) to be entered under its/their chemical name(s), for example: "Waste containing 2212 brown asbestos, 9, 1° (b), ADR". In general, not more than the two components which most predominantly contribute to the danger or dangers of a waste need be shown.

2915-
2919

C. Empty packagings

2920 (1) If the empty packagings, uncleaned, of 11° are bags, these shall be placed in boxes or waterproof bags to prevent any leakage of the substance.

(2) Other empty packagings, uncleaned, of 11° shall be closed in the same way and present the same degree of leakproofness as if they were full.

(3) Empty packagings, uncleaned, of 11° shall bear the same danger labels as if they were full.

(4) The description in the transport document shall conform to one of the names underlined in 11°, e.g. Empty packaging, 9, 11°, ADR. This description shall be underlined. In the case of empty tank-vehicles, empty demountable tanks and empty tank-containers, uncleaned, this description shall be completed by adding the words "Last load" together with the name and item number of the goods last loaded, for example: Last load: 2212 brown asbestos, 1° (b).

2921-
2999

Notes

1/ For the quantities of substances or articles of marginal 2901 which are not subject to the provisions for this class contained either in this annex or in Annex B, see marginal 2901a.

Amendments to Classes 2 - 8 (excluding Class 7)

CLASS 2

2201 Item 3°(at): For "boron chloride" read "boron trichloride"

2212 (3) (b) and (c): ditto

2219 (10) ditto

2220 (2) ditto

2222 (4) In the right-hand column, four times, replace "1a, 1b, 1c" by "1".

2237 (2) Amend example to read: "e.g. Last load, chlorine, 3°(at)".

CLASS 3

2301 Amend 4° and 5° to read:

"4° Solutions of nitrocellulose in mixtures of substances of 1° to 3° containing more than 20 % but not more than 55 % nitrocellulose with a nitrogen content not exceeding 12.6 % (nitrocellulose paints, lacquers and varnishes, collodion solutions, semi-collodion solutions and other nitrocellulose solutions)

(a) (existing text unchanged)
(b) ditto

Note 1 (existing Note, amended at end to read:)
... are substances of Class 1 (see marginal 2101, 4°, No. 0340, or 22°, No. 0342) or of Class 4.1
...

Note 2 Mixtures containing 20 % or less nitrocellulose with a nitrogen content not exceeding 12.6 % are substances of 5°.

5° Viscous substances such as: adhesives, enamels, paints, polishes, varnishes and certain colours for leathers and for rotogravures including substances containing 20.% or less nitrocellulose with a nitrogen content not exceeding 12.6 % such as nitrocellulose paints, lacquers and varnishes, collodion solutions, semi-collodion solutions and other nitrocellulose solutions.

(a)
(b) (existing text unchanged)
(c)

Note. Mixtures containing more than 20 % but not more than 55 % nitrocellulose with a nitrogen content not exceeding 12.6 % are substances of 4°.

Mixtures having a flash-point below 21°C and containing

- more than 55 % nitrocellulose, whatever their nitrogen content, or

- not more than 55 % nitrocellulose with a nitrogen content above 12.6 %,

are substances of Class 1 (see marginal 2101, 4°, No. 0340, or 22°, No. 0342) or of Class 4.1 (see marginal 2401, 7°(a))."

In the headings to the table under 5°(c), amend "1980" to "1984".

Add new items 7° and 8° as follows:

"7°(b) Nitroglycerine, solution in alcohol with not more than 1 % nitroglycerine.

8° Nitroglycerine, solution in alcohol with more than 1 % but not more than 5 % nitroglycerine.

Note Special packing conditions are applicable for this substance (see marginal 2303); see also Class 1, marginal 2101, 4°, No. 0144."

Section D Amend Note to read:

Note Non-toxic and non-corrosive solutions and homogeneous mixtures having a flash-point of 21°C or over (such as certain paints or varnishes, excluding substances containing more than 20 % nitrocellulose) shall not be subject ..."
(remainder unchanged, except that "1980" is amended to "1984")

Amend 33°(c) and 34°(c) to read:
"33°(c) Solutions of nitrocellulose in mixtures of substances of 31°(c) containing not more than 55 % nitrocellulose ..." (remainder unchanged)

"34°(c) Solutions of nitrocellulose in mixtures of substances of 32°(c) containing not more than 55 % nitrocellulose ..." (remainder unchanged)

Amend the Notes to 33°(c) and 34°(c) to read:
"... are substances of Class 1 (see marginal 2101, 4°, No. 0340, or 22°, No. 0342) or of Class 4.1 ..." (remainder unchanged)

41 After "Empty packagings" insert "including empty intermediate bulk containers (IBCs)"

2301a(1) In the last sentence before the Note, replace "(4)" by "(5)".

2302 Insert new paragraph (2) as follows:
"(2) Intermediate bulk containers (IBCs) shall satisfy the conditions of Appendix A.6."

Renumber existing paragraph (2) and amend it to read:
"(3) In accordance with the provisions of marginals 2300(3) and 3511(2) or 3600(3), the following shall be used:

- packagings of packing group I, marked with the letter "X", for the very dangerous substances classified under the letter (a) of each item;

- packagings of packing group II or I, marked with the letter "Y" or "X", or IBCs of packing group II, marked with the letter "Y", for the dangerous substances classified under the letter (b) of each item;

- packagings of packing group III, II or I, marked with the letter "Z", "Y" or "X", or IBCs of packing group III or II, marked with the letter "Z" or "Y", for the less dangerous substances classified under the letter (c) of each item.

Note (text of Note unchanged)

Insert new marginal 2303 as follows:
"2303 Nitroglycerine, solution in alcohol, of 8° shall be packed in metal cans of not more than 1 litre capacity each, overpacked in a wooden box capable of containing not more than 5 litres of solution. Metal cans shall be completely surrounded with absorbent cushioning material. Wooden boxes shall be completely lined with suitable material impervious to water and nitroglycerine.

Packagings of this kind shall satisfy the test requirements for combination packagings in accordance with Appendix A.5 for packing group II."

Existing 2303 becomes 2304(1); existing 2304 becomes 2304(2).

2306(1) Amend Note to read:
"Note to (a), (b), (c) and (d). Simplified conditions are applicable to removable-head drums and jerricans for viscous substannces having a viscosity of more than 200 mm^2/s at 23°C (see marginals 3512, 3553, 3554 and 3560)."

Add new paragraph (3) as follows:
"(3) Substances classified under (b) of the various items of 2301 which have a vapour pressure at 50°C of not more than 110 kPa (1.10 bar) may also be packed in metallic IBCs conforming to marginal 3611."

2307 Existing text becomes paragraph (1).
Add new Note 1 as follows:
"Note 1 to (a), (b), (c) and (d). Nitromethane of 31°(c) shall not be carried in removable-head

packagings."
Existing Note 1 becomes Note 2 and is amended to read the same as the Note to 2306(1) - see above.
Existing Note 2 becomes Note 3.

Add new paragraph (2) as follows:
"(2) Substances classified under (c) of the various items of 2301, with the exception of nitromethane of 31°(c), may also be packed in metallic IBCs conforming to marginal 3611."

2308(2) Amend the second sentence to read:
"Simplified conditions are appplicable to removable-head light gauge metal packagings for viscous substances having a viscosity of more than 200 mm^2/s at 23°C and for substances of 5°(c) (see marginals 3512, 3552 to 3554)."

Insert new Note 1 as follows:
"Note 1 Nitromethane of 31°(c) shall not be carried in removable-head packagings."
Existing Note becomes Note 2.

2309 Add Note as follows:
"Note For IBCs see, however, marginal 3601(8)."

2310 Amend to read:
"Packagings, including IBCs, containing ...
... in accordance with marginal 3500(8) or 3607(5)." (remainder unchanged)

2311 In the table of special conditions, insert:

"7° Nitroglycerine, 8° solution in alcohol	Mixed packing not permitted"

In the last column, replace "1a, 1b, 1c" by "1".

2312(1) In the first line, replace "6°" by "8°"

2322 In paragraphs (1) and (2), after "empty packagings," insert "including empty IBCs,".

CLASS 4.1

2401 7°(a) Insert at the beginning:
"Highly nitrated nitrocellulose (such as guncotton), i.e. with a nitrogen content of more than 12.6 %, well stabilized and containing in addition not less than 25 % water;"

Amend Note 1 to read:
"Note 1 Nitrocellulose in the dry state or wetted with less than 25 % water or alcohol is a substance of Class 1. Nitrocellulose with a nitrogen content of not more than 12.6 %, wetted with at least 25 % alcohol, is a substance of Class 1 unless it is packed in receptacles so constructed that explosion by reason of increased internal pressure is not possible."

7°(b) Amend end of Note to read:
"... of Class 1 (see marginal 2101, 4°, No. 0341, or 22°, No. 0343)."

Amend final sentence of 7° to read:
"For (a), see also Appendix A.1, marginal 3102(1); for (b) and (c), see also Appendix A.1, marginal 3102(2)."

Add new item 13°(a) and (b), with the text of the existing marginal 2171, 1°(a) and (b)

Add new items 20° and 21° as follows:
"20° The following water-wetted explosives:
ammonium picrate, wetted with not less than 10 % water by mass;
dinitroresorcinol, wetted with not less than 15 % water by mass;
nitroguanidine, wetted with not less than 20 % water by mass;
nitro-starch, wetted with not less than 20 % water by mass;
trinitrophenol, wetted with not less than 30 % water by mass;
silver picrate, wetted with not less than 30 % water by mass;
sodium picramate, wetted with not less than 20 % water by mass;
trinitrobenzene, wetted with not less than 30 % water by mass;
trinitrobenzoic acid, wetted with not less than 30 % water by mass;
trinitrotoluene (TNT), wetted with not less than 30 % water by mass;
urea nitrate, wetted with not less than 20 % water by mass;
urea nitrate mixtures, wetted with not less than 10 % water by mass and not less than 15 % inert inorganic material by mass;
zirconium picramate, wetted with not less than 20 % water by mass .

21° The following water-wetted explosives, toxic:
dinitrophenol, wetted with not less than 15 % water by mass;
dinitrophenolates, wetted with not less than 15 % water by mass;
sodium dinitroorthocresolate, wetted with not less than 15 % water by mass.

Note to 20° and 21°:
1. Explosives of 20° and 21° with a water content less than the limits quoted are substances of Class 1.
2. Other water-wetted explosives shall not be accepted for carriage as substances of Class 4.1.
3. The water shall be evenly distributed over the explosive. During carriage, no separation of the mixture shall occur that would prevent the inerting.

4. The water-wetted explosives shall not be capable of being brought to the point of detonation by the standard detonator */ and shall not be capable of being brought to the point of mass explosion by the effect of a powerful booster."

2402 Add new paragraph (5) as follows:
"(5) Intermediate bulk containers (IBCs) shall satisfy the conditions of Appendix A.6. Unless specified otherwise in the packing conditions for single substances, IBCs tested and approved for packing group III may be used."

2403(1) Add:
"...and may also be carried in metallic or flexible IBCs conforming to marginals 3611 or 3621."

2408(1) Amend end of subparagraph (b) to read:
"... placed in a wooden or fibreboard box or in a metal receptacle. Fibreboard boxes of type 4G shall meet the requirements of Appendix A.5. Only packagings of packing group II, marked with the letter "Y", may be used; or"

Amend end of subparagraph (d) to read:
"... wooden boxes; or"

Add new subparagraph (e) as follows:
"(e) in flexible IBCs conforming to marginal 3621 which are impervious to the vapours of the liquids contained."

2409(1) Amend end of subparagraph (c) to read:
"... rolling hoops; or"

Add new subparagraph (d) as follows:
"(d) in metallic IBCs conforming to marginal 3611. IBCs intended for the carriage of phosphorus pentasulphide shall be tested and approved for packing group II."

(2) Amend to read:
"Phosphorus sesquisulphide of 8° shall be packed:
(a) in leakproof metal receptacles, which shall be secured by cushioning materials in wooden boxes with closely fitting sides. A package shall not weigh more than 75 kg; or

(b) in metallic IBCs conforming to marginal 3611; the IBCs shall be tested and approved for packing group II."

*/ See "Recommendations on the Transport of Dangerous Goods, Tests and Criteria, Part I, Appendix 1" (ST/SG/AC.10/11), first edition.

2410 Add:
"... or in metallic or flexible IBCs conforming to marginals 3611 or 3621; the IBCs shall be tested and approved for packing group II."

2411(1) Add:
"...or in metallic or flexible IBCs conforming to marginals 3611 or 3621."

(2) Amend beginning to read:
"Wooden receptacles, bags and flexible IBCs are not, however, ..."

2412(1) Add:
"... or in metallic IBCs conforming to marginal 3611."

(2) Add to end of first sentence:
"... or in metallic or flexible IBCs conforming to marginals 3611 or 3621."

(4) Add:
"...or in metallic or flexible IBCs conforming to marginals 3611 or 3621."

Add new paragraphs (5), (6) and (7) as follows:

"(5) Articles of 13°(a) shall be packed in ..." (remaining text from existing marginal 2173(1)).

"(6) Articles of 13°(b) shall be packed in ..." (remaining text from existing marginal 2173(2)).

"(7) The packagings for substances of 20° and 21° shall fulfil the conditions of Appendix A.5. Only packagings of packing group I, marked with the letter "X", may be used.

Substances of 20° and 21° shall be packed:

(a) in removable-head drums made of plywood in conformity with marginal 3523, fibre in conformity with marginal 3525, or plastics material in conformity with marginal 3526, all with one or more moisture-proof inner bags; or

(b) in combination packagings in conformity with marginal 3538 with moisture-proof inner packagings. However, no inner or outer packagings made of metal shall be permitted.

The packagings shall be so designed that during carriage the water content of the explosive cannot diminish."

2413(2) Amend table of special conditions as follows:
In the heading of the second column, add:
"or article".

Insert the following entry:

"13° Matches	5kg	5kg	Shall not be packed together with substances of Classes 3, 4.1 and 4.2".

Insert new paragraph (3) as follows:
"(3) Substances of 20° and 21° shall not be combined in a package with other goods."

2414(1) Amend first sentencee to read:
"Packages containing substances of 1°(b), 4° to 8°, 20° and 21° shall bear a label conforming to model No. 4.1."

Insert a final sentence as follows:
"Packages containing substances of 21° shall also bear a label conforming to model No. 6.1."

2416(4) After "bags" insert "or in IBCs".

2424 Read:
"Uncleaned empty packagings which have contained substances of 20° or 21° are not to be accepted for carriage."

CLASS 4.2

2432 Insert new paragraph (6) as follows:
"(6) Intermediate bulk containers (IBCs) shall satisfy the conditions of Appendix A.6."

2438(2) Add at end of first sentence:
"... or in hermetically closed metallic IBCs conforming to marginal 3611, tested and approved for packing group II. However, for zinc dithionite IBCs tested and approved for packing group III may be used."

2439 Amend first sentence to read:
"Substances of 7° to 10° and 12° shall be enclosed in tightly closing packagings, or in metallic or flexible IBCs conforming to marginals 3611 or 3621, tested and approved for packing group III."

CLASS 4.3

2471 6° After "Empty packagings" insert "including empty intermediate bulk containers (IBCs)"

2472 Insert new paragraph (6) with same text as 2432(6) - see above.

2473(4) Replace the first sentence with the following:
"Substances of 1°(d) shall be packed in hermetically closed receptacles of metal, glass or a suitable plastics material, or in hermetically closed metallic IBCs conforming to marginal 3611, or in waterproof bags, or in moisture-proof flexible IBCs conforming to marginal 3621.

IBCs tested and approved for packing group II shall be used for substances of 1 (d). However, IBCs tested and approved for packing group III may be used for magnesium granules, coated."

2474(1) Insert new subparagraph (c) as follows:
"(c) Substances of 2 (a) and (d) may also be packed in metallic IBCs conforming to marginal 3611, tested and approved for packing group II. However, IBCs tested and approved for packing group III may be used for manganese calcium silicide (silico-manganese-calcium)."

2477 Insert new subparagraph (d) as follows:
"(d) in hermetically closed sheet steel IBCs conforming to marginal 3611, tested and approved for packing group II."

2498 In paragraphs (1) and (2), after "empty packagings" insert "including empty IBCs".

CLASS 5.1

2500 Amend Note 1 to read:
"Note 1 Unless specifically listed in Class 1, mixtures of oxidizing substances with combustible substances are not to be accepted for carriage if they manifest explosive properties (determined on the basis of the Test Manual - see marginal 3101(3))."

2501 6°(a) Amend end of Note 1 to read:
"... unless it is a substance of Class 1 (see marginal 2101, 4°, No. 0222)."

6°(e) Amend end of Note 2 to read:
"... applicable to Class 1 (see marginal 2101, 4°, No. 0223)."

11° After "Empty packagings" insert "including empty intermediate bulk containers (IBCs)".

2502 Add new paragraph (6) with same text as 2402(5) - see above.

2506 Add new paragraph (9) as follows:
"(9) Substances of 4° may also be packed in metallic IBCs conforming to marginal 3611. Solid substances of 4° may also be packed in flexible IBCs conforming to marginal 3621. The IBCs shall be tested and approved for packing group II."

2507 Add new paragraph (2) as follows:
"(2) Substances of 6°, 7° and 8° may also be packed in metallic or flexible IBCs conforming to marginals 3611 or 3621. IBCs intended for the carriage of substances of 7°(c) and 8° shall be tested and approved for packing group II."

2508(3) Amend end of subparagraph (b) to read:
"... paper; or"

Add new subparagraph (c) as follows:
"(c) in metallic or flexible IBCs conforming to marginals 3611 or 3621, tested and approved for packing group II."

2509(1) Amend subparagraph (b) to read:
"(b) in metal drums; or"

Add new subparagraph (c) as follows:
"(c) in metallic IBCs conforming to marginal 3611, tested and approved for packing group II."

2521 In paragraphs (1) and (2), after "Empty packagings" insert "including empty IBCs".

CLASS 5.2

2550 Delete Note 1; Note 2 becomes "Note".

2551 8° Amend end of Note 1 to read:
"... is a substance of 23°."

9° Amend end of Note 1 to read:
"... are substances of 24°."

17° Amend end of Note 1 to read:
"... is a substance of 25°."

Insert new items 23°, 24° and 25° as follows:
"23° Benzoyl peroxide
(a) in the dry state or with less than 10 % water;
(b) with less than 30 % phlegmatizer.

Note Benzoyl peroxide with not less than 10 % water or not less than 30 % phlegmatizer is a substance of 8°.

24° Cyclohexanone peroxides (1-hydroxy-1'-hydroperoxy dicyclohexyl peroxide, Bis-(1-hydroxycyclohexyl)-peroxide, and mixtures of these two compounds)
(a) in the dry state or with less than 5 % water;
(b) with less than 30 % phlegmatizer.

Note Cyclohexanone peroxides and their mixtures with not less than 5% water or not less than 30 % phlegmatizer are substances of 9°.

25° Parachlorobenzoyl peroxide
(a) in the dry state or with less than 10 % water;
(b) with less than 30 % phlegmatizer.

Note Parachlorobenzoyl peroxide with not less than 10 % water or not less than 30 % phlegmatizer

is a substance of 17°."

"Note For 1° to 22°..." becomes:
"Note For 1° to 25°..."

2554 Add new paragraph (8) as follows:
"(8) Substances of 23° to 25° shall be packed, not more than 500 g per bag, in firmly-tied bags made of a suitable pliant material; each bag shall be placed in a box made of fibreboard or fibre; these boxes, not more than 30 per packing case, shall be secured by cushioning materials in a wooden packing case with complete sides not less than 12 mm thick.

A package shall not weigh more than 25 kg."

2563(1) Amend to read as follows:
"(1) Packages containing substances of Class 5.2 shall bear two labels conforming to model No. 5. Packages containing substances of 23°, 24°, 25°, 46°(a), 47°(a) and 49°(a) shall also bear a label conforming to model No. 1."

CLASS 6.1

2600(2) Amend beginning to read:
"For the packaging requirements of marginals 2605(2), 2606(4) and 2607(3),..."

Marginal 2601, item 2, Note 2 should read:

"2. Solutions of hydrocyanic acid which do not conform to these conditions are not to be accepted for carriage."

2601 42° Delete Note 1; Note 2 becomes "Note".

58° Add:
"Note 3 Vanadium pentoxide, fused, is not subject to the provisions of ADR."

62°(c) Amend Note 2 to read:
"Lead salts and lead pigments which, when mixed in a ratio of 1:1000 with 0.07M hydrochloric acid and stirred for 1 hour at a temperature of 23°C±2°C, exhibit a solubility of 5 % or less are not subject to the provisions of ADR."

71° After Heptenophos, insert:

"Iprobenfos	-	-	-	100-95"

Amend entry for Paraoxon to read:

"Paraoxon	100->35	35->3.5	3.5-0.9	3.5-0.35"

After Pyrazoxon, insert:

"Quinalphos	-	100->52	52-13	52-5

75° Amend entry for Dinoterb acetate to read:

"Dinoterb acetate	-	-	100-30	100-12"

76° After Bendiocarb, insert:

"Benfuracarb	-	-	100-55	100-20"

After Metam-sodium, insert:

"Methasulfocarb	-	-	100-55	100-20"

83° After Blasticidin-S-3, insert:
"Cypermethrin - - 100-80 100-32"

91° After "Empty packagings insert "including empty intermediate bulk containers (IBCs)".

2601a In the last sentence, replace "(4)" by "(5)".

2602 Insert new paragraph (2) as follows:
"(2) Intermediate bulk containers (IBCs) shall satisfy the conditions of Appendix A.6."

Renumber and amend existing paragraph (2) to read:
"(3) In accordance with the provisions of marginals 2600(1) and 3511(2) or 3600(3), the following shall be used:

- packagings of packing group I, marked with the letter "X", for the highly toxic substances classified under the letter (a) of each item;

- packagings of packing group II or I, marked with the letter "Y" or "X", or IBCs of packing group II, marked with the letter "Y", for the toxic substances classified under the letter (b) of each item;

- packagings of packing group III, II or I, marked with the letter "Z", "Y" or "X", or IBCs of packing group III or II, marked with the letter "Z" or "Y", for the harmful substances classified under the letter (c) of each item.

Note (text of Note unchanged)

2606(1) Amend Note to read:
"Note to (a), (b), (c) and(d): Simplified conditions are applicable to removable-head drums and jerricans for viscous substances having a viscosity of more than 200 mm^2/s at 23°C and for solids (see marginals 3512, 3553, 3554 and 3560."

(2) Insert new paragraph (2) as follows:
"(2) Substances classified under (b) of the various items of 2601 which have a vapour pressure at 50°C of not more than 110 kPa (1.10 bar) may also be packed in metallic IBCs conforming to marginal 3611."

Existing paragraphs (2) and (3) become (3) and (4). Under (4), add new subparagraph (c) to read:
"(c) in flexible IBCs conforming to marginal 3621, with the exception of IBCs of types 13H1, 13L1 and 13M1, provided that transport is limited to full loads."

2607(1) Amend Note to read:
"Note to (a), (b), (c), (d) and (h). Simplified conditions are applicable to removable-head drums, jerricans and light gauge metal packagings for viscous substances having a viscosity of more than 200 mm^2/s at 23°C and for solids (see marginals 3512, 3552 to 3554 and 3560)."

(2) Insert new paragraph (2) as follows:
"(2) Substances classified under (c) of the various items of 2601 which have a vapour pressure at 50°C of not more than 110 kPa (1.10 bar) may also be packed in metallic IBCs conforming to marginal 3611."

Existing paragraph (2) becomes (3); add new sub-paragraph (c) as follows:
"(c) in flexible IBCs conforming to marginal 3621, with the exception of IBCs of types 13H1, 13L1 and 13M1."

2609 Amend beginning and end to read:
"Packagings, including IBCs, containing ...
... in accordance with marginal 3500(8) or 3607(5)."

2611 In the table of special condiitions, right-hand column, replace "1a, 1b, 1c" by "1".

2622(1) After "bags" insert "or flexible IBCs".

(2)) After "Empty packagings", insert "including
(3)) empty IBCs"

CLASS 8

2800(2) Amend beginning to read:
"For the packaging requirements of marginals 2805(2), 2806(3) and 2807(3), ..."

2801 9° Amend to read:
"9° Solutions of fluosilicic acid:

(b) aqueous solutions of fluosilicic acid (hydrofluosilicic acid) (H_2SiF_6);

(c) ..."

31°(c) Add Note as follows:
"Note Phthalic anhydride and tetrahydrophthalic anhydride containing 0.05 % or less of maleic anhydride are not subject to the provisions of ADR."

71° After "Empty packagings" insert "including empty intermediate bulk containers (IBCs)".

2801a In the last sentence, replace "(4)" by "(5)".

2802 Insert new paragraph (2) as follows:
"(2) Intermediate bulk containers (IBCs) shall satisfy the conditions of Appendix A.6."

Renumber and amend existing paragraph (2) to read:
"(3) In accordance with the provisions of marginals 2800(1) and 3511(2) or 3600(3), the following shall be used:

- packagings of packing group I, marked with the letter "X", for the highly corrosive substances classified under the letter (a) of each item;
- packagings of packing group II or I, marked with the letter "Y" or "X", or IBCs of packing group II, marked with the letter "Y", for the corrosive substances classified under the letter (b) of each item;
- packagings of packing group III, II or I, marked with the letter "Z", "Y" or "X", or IBCs of packing group III or II, marked with the letter "Z" or "Y", for the slightly corrosive substances classified under the letter (c) of each item.

Note" (text of Note unchanged).

2806(1) Amend Note 1 to read same as Note to 2606(1) - see above.

(2) Insert new paragraph (2) as follows:
"(2) Substances classified under (b) of the various items of 2801 which have a vapour pressure at 50°C of not more than 110 kPa (1.10 bar) may also be packed in metallic IBCs conforming to marginal 3611."

Existing paragraph (2) becomes (3); add new sub-paragraph (c) with the same text as 2606(4)(c).

2807(1) Amend Note to read same as Note to 2607(1).

(2) Insert new paragraph (2) as follows:
"(2) Substances classified under (c) of the various items of 2801 which have a vapour pressure at 50°C of not more than 110 kPa (1.10 bar) may also be packed in metallic IBCs conforming to marginal 3611."

Existing paragraph (2) becomes (3); add new sub-paragraph with same text as 2607(3)(c).

2808 Amend to read:
"Packagings, including IBCs, containing substances of 61° or 62° shall be fitted with a vent conforming to marginals 3500(8) or 3607(5) respectively."

2811 In the table of special conditions, right-hand column, replace "1a, 1b, 1c" by "1".

2822(1)) After "Empty packagings" insert "including
(2)) empty IBCs".

Marginal 2801a (1), penultimate sentence should read:

"These quantities of substances shall be carried in combination packagings which at least meet the conditions of marginal 3538." .

Appendix A.1

3000–3099

A. Stability and safety conditions relating to explosive substances and articles, inflammable solids and organic peroxides

3100 General

The following conditions are the minima for substances and articles to be accepted for carriage.

3101 Conditions relating to explosive substances and articles

(1) Testing for assignment to Class 1

Any substance or article having or suspected of having explosive properties shall be considered for assignment to Class 1 in accordance with the tests, procedures and criteria prescribed in Part I ("Tests and criteria for the classification of explosive substances and articles") of the "Recommendations on the Transport of Dangerous Goods: Tests and Criteria" published by the United Nations Organization as document ST/SG/AC.10/11, first edition (hereafter called the Test Manual).

A substance or article assigned to Class 1 can only be accepted for carriage when it has been assigned to a name listed in marginal 2101 and meets the criteria of the Test Manual.

(2) Classification

The substances and articles of Class 1 shall have been assigned to the appropriate division and compatibility group in accordance with the procedures and criteria prescribed in the Test Manual.

(3) Assignment to an item number, identification number and name

The substances and articles of Class 1 shall have been assigned to an item number, an identification number and a name listed in Table 1 of marginal 2101.

Interpretation of the names of substances and articles in the individual item numbers of Table 1 of marginal 2101 shall be based upon the glossary in marginal 3170.

(4) Exudation test

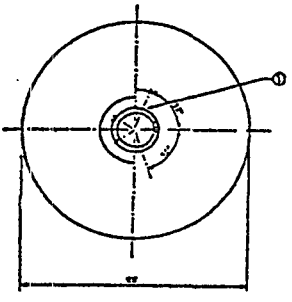
(a) Substances of item 4°, identification number 0081 (Explosive, blasting, type A) shall, if they contain more than 40% liquid nitric ester, in addition to the testing specified above satisfy the following exudation test.

3101 (cont'd) (b) The apparatus for testing blasting explosive for exudation (figs. 1 to 3) consists of a hollow bronze cylinder. This cylinder, which is closed at one end by a plate of the same metal, has an internal diameter of 15.7 mm and a depth of 40 mm. It is pierced by 20 holes 0.5 mm in diameter (four sets of five holes) on the circumference. A bronze piston, cylindrically fashioned over a length of 48 mm and having a length of 52 mm, can slide in the vertically placed cylinder: this piston, whose diameter is 15.6 mm, is loaded with a mass of 2,220 g so that a pressure of 120 kPa (1.20 bar) is exerted on the base of the cylinder.

(c) A small plug of blasting-explosive weighing 5 to 8 g, 30 mm long and 15 mm in diameter, is wrapped in very fine gauze and placed in the cylinder; the piston and its loading mass are then placed on it so that the blasting explosive is subjected to a pressure of 120 kPa (1.20 bar). The time taken for the appearance of the first signs of oily droplets (nitroglycerine) at the outer orifices of the cylinder holes is noted.

(d) The blasting explosive is considered satisfactory if the time elapsing before the appearance of the liquid exudations is more than five minutes, the test having been carried out at a temperature of 15°C to 25°C.

Test of blasting explosive for exudation



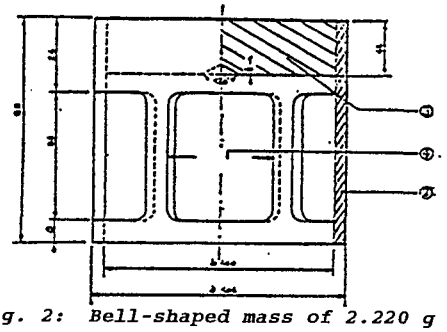


Fig. 2: Bell-shaped mass of 2.220 g capable of being suspended on the bronze piston

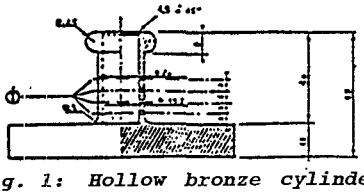


Fig. 1: Hollow bronze cylinder, closed at one md; plan and vertical section

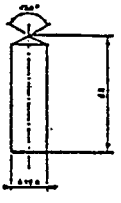


Fig 3: Cylindrical bronze piston

All dimensions in mm
(1) 4 sets of 5 holes of 0.5 diameter
(2) copper
(3) lead plate with central tapered recess on underside
(4) 4 openings, about 46 x 56, evenly spaced round periphery

3102 Conditions relating to certain substances in Class 4.1

(1) Re marginal 2401, 7° (a): Nitrocellulose heated for half an hour at 132°C must not give off visible yellowish-brown nitrous fumes. The ignition temperature must be above 180°C. See paragraphs (3) to (8), (9) (a) and (10) below.

(2) Re marginal 2401, 7° (b) and (c): 3 g of plasticized nitrocellulose, heated for one hour at 132°C, must not give off visible yellowish-brown nitrous fumes. The ignition temperature must be above 170°C. See paragraphs (3) to (8), (9) (b) and (10) below.

(3) The test procedures set out below are to be applied when differences of opinion arise as to the acceptability of substances for carriage by road.

(4) If other methods or test procedures are used to verify the conditions of stability prescribed above in this appendix, those methods must lead to the same findings as could be reached by the methods specified below.

(5) In carrying out the stability tests by heating described below, the temperature of the oven containing the sample under test must not deviate by more than 2°C from the prescribed temperature; the prescribed duration of a 30-minute or 60-minute test must be observed to within two minutes. The oven must be such that the required temperature is restored not more than five minutes after insertion of the sample.

(6) Before undergoing the tests in paragraphs (9) and (10), the samples must be dried for not less than 15 hours at the ambient temperature in a vacuum desiccator containing fused and granulated calcium chloride, the sample substance being spread in a thin layer; for this purpose, substances which are neither in powder form nor fibrous shall be ground, or grated, or cut into small pieces. The pressure in the desiccator must be brought below 6.6 kPa (0.066 bar).

(7) Before being dried as prescribed in paragraph (6) above, substances of marginal 2401, 7° (b) shall undergo preliminary drying in a well-ventilated oven, with its temperature set at 70°C until the loss of mass per quarter-hour is less than 0.3% of the original mass.

(8) Nitrocellulose of marginal 2401, 7 (a) shall first undergo preliminary drying as prescribed in paragraph (7) above; drying shall then be completed by keeping the nitrocellulose for at least 15 hours over concentrated sulphuric acid in a desiccator.

(9) Test of chemical stability under heat

(a) Test of the substance listed in paragraph (1) above.

(i) In each of two glass test tubes having the following dimensions:

length	350 mm
internal diameter	16 mm
thickness of wall	1.5 mm

is placed 1 g of substance dried over calcium chloride (if necessary the drying must be carried out after reducing the substance to pieces weighing not more than 0.05 g each). Both test tubes, completely covered with loose-fitting closures, are then so placed in an oven that at least four-fifths of their length is visible, and are kept at a constant temperature of 132°C for 30 minutes. It is observed whether nitrous gases in the form of yellowish-brown fumes clearly visible against a white background are given off during this time.

(ii) In the absence of such fumes the substance is deemed to be stable.

(b) Test of plasticized nitrocellulose (paragraph (2) above).

(i) 3 g of plasticized nitrocellulose are placed in glass test tubes, similar to those referred to in (a), which are then placed in an oven kept at a constant temperature of 132°C.

(ii) The test tubes containing the plasticized nitrocellulose are kept in the oven for one hour. During this time no yellowish-brown nitrous fumes must be visible. Observation and appraisal as in (a).

(10) Ignition temperature (see paragraphs (1) and (2) above)

(i) The ignition temperature is determined by heating 0.2 g of substance enclosed in a glass test tube immersed in a Wood's alloy bath. The test tube is placed in the bath when the latter has reached 100°C. The temperature of the bath is then progressively increased by 5°C per minute.

(ii) The test tubes must have the following dimensions:

length	125 mm
internal diameter	15 mm
thickness of wall	0.5 mm

and must be immersed to a depth of 20 mm.

(iii) The test must be repeated three times, the temperature at which ignition of the substance occurs, i.e., slow or rapid combustion, deflagration or detonation, being noted each time.

(iv) the lowest temperature recorded in the three tests is the ignition temperature.

3103 Conditions relating to organic peroxides

Testing for assignment to Class 5.2

An organic peroxide is only to be accepted for carriage if it has been assigned to a name in marginal 2551 and the criteria in the Test Manual are met. Assignment of an organic peroxide to a name in marginal 2551 shall be made in accordance with the tests, operational methods and criteria set out in Parts II and III ("Tests and criteria for the classification of organic peroxides") of the "Recommendations on the Transport of Dangerous Goods: Tests and Criteria" published by the United Nations Organization under the reference ST/SG/AC.10/11 and Add.1, first edition (Test Manual).

3104–
3169

B. Glossary of names in marginal 2101 (see also marginal 3101 (3))

3170 Note 1

The definitions in this glossary are not intended to replace the test procedures, nor to determine the hazard classification of a substance or article of Class 1. Assignment to the correct division and a decision on whether Compatibility Group S is appropriate must be based on testing of the product in accordance with the Test Manual specified in marginal 3101(1) or by analogy with similar products which have been tested and assigned in accordance with the procedures of the Test Manual.

Note 2

The figures given after the name refer to the relevant item and identification numbers in accordance with marginal 2101, separated by an oblique (e.g. 19°/0171).

For the classification code, see marginal 2100(4).

Ammunition, illuminating, with or without burster, expelling charge or propelling charge 19°/0171; 26°/0254; 37°/0297
Ammunition designed to produce a single source of intense light for lighting up an area. The term includes illuminating cartridges, grenades and projectiles; and illuminating and target identification bombs.

Note: The following articles: cartridges, signal; signal devices hand; signals, distress; flares, aerial; flares, surface are not included in this definition. They are listed separately.

Ammunition, incendiary, liquid or gel, with burster, expelling charge or propelling charge 28°/0247.
Ammunition containing liquid or gelatinous incendiary substance. Except when the incendiary substance is an explosive per se, it also contains one or more of the following: a propelling charge with primer and igniter charge; a fuze with burster or expelling charge.

Ammunition, incendiary, white phosphorus with burster, expelling charge or propelling charge 20°/0243; 27°/0244
Ammunition containing white phosphorus as incendiary substance. It also contains one or more of the following: a propelling charge with primer and igniter charge; a fuze with burster or expelling charge.

Ammunition, incendiary with or without burster, expelling charge or propelling charge 19°/0009; 26°/0010; 37°/0300
Ammunition containing incendiary composition. Except when the composition is an explosive per se, it also contains one or more of the following: a propelling charge with primer and igniter charge; a fuze with burster or expelling charge.

Ammunition, practice 37°/0362
Ammunition without a main bursting charge, containing a burster or expelling charge. Normally it also contains a fuze and a propelling charge.

Note: Grenades, practice are not included in this definition. They are listed separately.

Ammunition, proof 37°/0363
Ammunition containing pyrotechnic substances, used to test the performance or strength of new ammunition, weapon components or assemblies.

Ammunition, smoke, white phosphorus, with burster, expelling charge or propelling charge 20°/0245; 27°/0246
Ammunition containing white phosphorus as a smoke-producing substance. It also contains one or more of the following: a propelling charge with primer and igniter charge; a fuze with burster or expelling charge. The term includes grenades, smoke.

Ammunition, smoke with or without burster, expelling charge or propelling charge 19°/0015; 26°/0016; 37°/0303
Ammunition containing a smoke-producing substance such as chlorosulphonic acid mixture (CSAM), hexachloroethane (HC) or titanium tetrachloride (FM). Except when the substance is an explosive per se, the ammunition also contains one or more of the following: a propelling charge with primer and igniter charge; a fuze with burster or expelling charge. The term includes grenades, smoke.

Note: Signals, smoke are not included in this definition. They are listed separately.

Ammunition, tear-producing, with burster, expelling charge or propelling charge 19°/0018; 26°/0019; 37°/0301
Ammunition containing a tear-producing substance. It also contains one or more of the following: a pyrotechnic substance; a propelling charge with primer and igniter charge; a fuze with burster or expelling charge.

Articles, pyrotechnic, for technical purposes 9°/0428; 19°/0429; 26°/0430; 37°/0431; 39°/0432
Articles which contain pyrotechnic substances and are used for technical purposes such as heat generation, gas generation, theatrical effects, etc.

Note: The following articles: all ammunition; cartridges, signal; cutters, cable, explosive; fireworks; flares, aerial; flares, surface; release devices, explosive; rivets, explosive; signal devices, hand; signals, distress; signals, railway track, explosives; signals, smoke are not included in this definition. They are listed separately.

Black powder (gunpowder), compressed or Black powder (gunpowder), in pellets 4°/0028
Substance consisting of a pelletized form of black powder.

Black powder (gunpowder), granular or as meal 4°/0027
Substance consisting of an intimate mixture of charcoal or other carbon and either potassium nitrate or sodium nitrate, with or without sulphur.

Bombs, with inflammable liquid, with bursting charge 10°/0399; 21°/0400
Articles which are dropped from aircraft, consisting of a tank filled with inflammable liquid and bursting charge.

Bombs, photo-flash 5°/0038
Explosive articles which are dropped from aircraft to provide brief, intense illumination for photography. They contain a charge of detonating explosive without means of initiation or with means of initiation containing two or more effective protective features.

Bombs, photo-flash 7°/0037
Explosive articles which are dropped from aircraft to provide brief, intense illumination for photography. They contain a charge of detonating explosive with means of initiation not containing two or more effective protective features.

Bombs, photo-flash 19°/0039; 26°/0299
Explosive articles which are dropped from aircraft to provide brief, intense illumination for photography. They contain a photo-flash composition.

Bombs, with bursting charge 5°/0034; 15°/0035
Explosive articles which are dropped from aircraft, without means of initiation or with means of initiation containing two or more effective protective features.

Bombs with bursting charge 7°/0033; 17°/0291
Explosive articles which are dropped from aircraft, with means of initiation not containing two or more effective protective features.

Boosters, with detonator 1°/0225; 11°/0268
Articles consisting of a charge of detonating explosive with means of initiation. They are used to increase the initiating power of detonators or detonating cord.

Boosters, without detonator 5°/0042; 15°/0283
Articles consisting of a charge of detonating explosive without means of initation. They are used to increase the initiating power of detonators or detonating cord.

Bursters, explosive 5°/0043
Articles consisting of a small charge of explosive used to open projectiles or other ammunition in order to disperse their contents.

Cartridges, flash 9°/0049; 26°/0050
Articles consisting of a casing, a primer and flash powder, all assembled in one piece ready for firing.

Cartridges for weapons, blank 3°/0326; 13°/0413; 23°/0327; 31°/0338; 39°/0014
Ammunition consisting of a closed cartridge case with a centre or rim fire primer and a charge of smokeless or black powder but no projectile. It produces a loud noise and is used for training, saluting, propelling charge, starter pistols, etc. The term includes ammunition, blank.

Cartridges for weapons, inert projectile 13°/0328; 23°/0417; 31°/0339; 39°/0012
Ammunition consisting of a projectile without bursting charge but with a propelling charge with or without a primer. The articles may include a tracer, provided that the predominant hazard is that of the propelling charge.

Cartridges for weapons, with bursting charge 6°/0006; 16°/0321; 34°/0412
Ammunition consisting of a projectile with a bursting charge without means of initiation or with means of initiation containing two or more effective protective features; and a propelling charge with or without a primer. The term includes fixed (assembled) ammunition, semi-fixed (partially assembled) ammunition and separate loading ammunition when the components are packed together.

Cartridges for weapons, with bursting charge 7°/0005; 17°/0007; 35°/0348
Ammunition consisting of a projectile with a bursting charge with means of initiation not containing two or more effective protective features; and a propelling charge with or without a primer. The term includes fixed (assembled) ammunition, semi-fixed (partially assembled) ammunition and separate loading ammunition when the components are packed together.

Cartridges, oil well 23°/0277; 31°/0278
Articles consisting of a thin casing of fibreboard, metal or other material containing only propellant powder which projects a hardened projectile to perforate an oil well casing.

Note: Charges, shaped, commercial are not included in this definition. They are listed separately.

Cartridges, power device 13°/0381; 23°/0275; 31°/0276; 39°/0323
Articles designed to accomplish mechanical actions. They consist of a casing with a charge of deflagrating explosive and a means of ignition. The gaseous products of the deflagration produce inflation, linear or rotary motion or activate diaphragms, valves or switches or project fastening devices or extinguishing agents.

Cartridges, signal 26°/0054; 37°/0312; 39°/0405
Articles designed to fire coloured flares or other signals from signal pistols, etc.

Cartridges small arms 13°/0328; 31°/0339; 39°/0012
Ammunition consisting of a cartridge case fitted with a centre or rim fire primer and containing both a propelling charge and solid projectile. They are designed to be fired in weapons of calibre not larger than 19.1 mm. Shot-gun cartridges of any calibre are included in this description.

Note: Cartridges, small arms, blank, are not included in this definition. They are listed separately. Some military small arms cartridges are not included in this definition. They are listed under cartridges for weapons, inert projectile.

Cases, cartridge, empty, with primer 31°/0379; 39°/0055
Articles consisting of a cartridge case made from metal, plastics or other non-inflammable material, in which the only explosive component is the primer.

Cases, combustible, empty, without primer 23°/0447; 31°/0446
Articles consisting of a cartridge case made partly or entirely from nitrocellulose.

Charges, bursting, plastics bonded 5°/0457; 15°/0458; 33°/0459; 39°/0460
Articles consisting of a charge of detonating explosive, plastics bonded, manufactured in a specific form without a casing and without means of initiation. They are designed as components of ammunition such as warheads.

Charges, demolition 5°/0048
Articles containing a charge of a detonating explosive in a casing of fibreboard, plastics, metal or other material. The articles are without means of initiation or with means of initiation containing two or more effective protective features.

Note: The following articles: bombs; mines; projectiles are not included in this definition. They are listed separately.

Charges, depth 5°/0056
Articles consisting of a charge of detonating explosive contained in a drum or projectile without means of initiation or with means of initiation containing two or more effective protective features. They are designed to detonate under water.

Charges, explosive, commercial, without detonator 5°/0442; 15°/0443; 33°/0444; 39°/0445
Articles consisting of a charge of detonating explosive without means of initiation, used for explosive welding, jointing, forming and other metallurgical processes.

Charges, propelling, for cannon 3°/0279; 13°/0414; 23°/0242
Charges of propellant in any physical form for separate-loading ammunition for cannon.

Charges, propelling, for rocket motors 3°/0271; 13°/0415; 23°/0272
Articles consisting of a charge of propellant manufactured in a specific form without a casing. They are designed as components of rocket motors.

Charges, propelling, for rocket motors, composite mixture 3°/0273; 13°/0416; 23°/0274
Articles consisting of a charge of propellant, plastics bonded, manufactured in a specific form without a casing. They are designed as components of rocket motors.

Charges, shaped, commercial, without detonator 5°/0059; 15°/0439; 33°/0440; 39°/0441
Articles consisting of a casing containing a charge of detonating explosive with a cavity lined with rigid material, without means of initiation. They are designed to produce a powerful, penetrating jet effect.

Charges, shaped, flexible, linear, 5°/0288, 33°/0237
Articles consisting of a V-shaped core of a detonating explosive clad by a flexible sheath.

Charges, supplementary, explosive 5°/0060
Articles consisting of a small removable booster placed in the cavity of a projectile between the fuze and the bursting charge.

Cord, detonating, flexible 5°/0065; 33°/0289
Article consisting of a core of detonating explosive enclosed in spun fabric with or without plastics or other covering.

Cord (fuse) detonating, metal clad 5°/0290; 15°/0102
Article consisting of a core of detonating explosive clad by a soft metal tube with or without protective covering.

Cord (fuse) detonating, mild effect, metal clad 33°/0104
Article consisting of a core of detonating explosive clad by a soft metal tube with or without a protective covering. The quantity of explosive substance is so small that only a mild effect is manifested outside the cord.

Cord, igniter 37°/0066
Article consisting of textile yarns covered with black powder or another fast burning pyrotechnic composition and of a flexible protective covering; or it consists of a core of black powder surrounded by a flexible woven fabric. It burns progressively along its length with an external flame and is used to transmit ignition from a device to a charge or primer.

Cutters, cable, explosive 39°/0070
Articles consisting of a knife-edged device which is driven by a small charge of deflagrating explosive into an anvil.

Detonator assemblies, non-electric, for blasting 1°/0360; 29°/0361
Non-electric detonators assembled with and activated by such means as safety fuse, shock tube, flash tube or detonating cord. They may be of instantaneous design or incorporate delay elements. Detonating relays incorporating detonating cord are included.

Detonators, electric, for blasting 1°/0030; 29°/0255; 39°/0456
Articles specially designed for the initiation of blasting explosives. These detonators may be constructed to detonate instantaneously or may contain a delay element. Electric detonators are activated by an electric current.

Detonators for ammunition 1°/0073; 11°/0364; 29°/0365, 39°/0366
Articles consisting of a small metal or plastics tube containing explosives such as lead azide, PETN or combinations of explosives. They are designed to start a detonation train.

Detonators, non-electric, for blasting 1°/0029; 29°/0267; 39°/0455
Articles specially designed for the initiation of blasting explosives. These detonators may be constructed to detonate instantaneously or may contain a delay element. Non-electric detonators are activated by such means as shock tube, flash tube, safety fuse, other igniferous device or flexible detonating cord. Detonating relays without detonating cord are included.

Explosive, blasting, type A 4°/0081
Substances consisting of liquid organic nitrates such as nitroglycerine or a mixture of such ingredients with one or more of the following: nitrocellulose; ammonium nitrate or other inorganic nitrates; aromatic nitro-derivatives, or combustible materials, such as wood-meal and aluminium powder. They may contain inert components such as kieselguhr, and additives such as colouring agents and stabilizers. Such explosives may be in powdery, gelatinous, plastic or elastic form. The term includes dynamite; gelatine, blasting and gelatine dynamites.

Explosive, blasting, type B 4°/0082; 40°/0331
Substances consisting of (a) a mixture of ammonium nitrate or other inorganic nitrates with an explosive such as trinitrotoluene, with or without other substances such as wood-meal and aluminium powder, or (b) a mixture of ammonium nitrate or other inorganic nitrates with other combustible substances which are not explosive ingredients. In both cases they may contain inert components such as kieselguhr, and additives such as colouring agents and stabilizers. Such explosives must not contain nitroglycerine, similar liquid organic nitrates or chlorates.

Explosive, blasting, type C 4°/0083
Substances consisting of a mixture of either potassium or sodium chlorate or potassium, sodium or ammonium perchlorate with organic nitro-derivatives or combustible materials such as wood-meal or aluminium powder or a hydrocarbon. They may contain inert components such as kieselguhr and additives such as colouring agents and stabilizers. Such explosives must not contain nitroglycerine or similar liquid organic nitrates.

Explosive, blasting, type D 4°/0084
Substances consisting of a mixture of organic nitrated compounds and combustible materials such as hydrocarbons and aluminium powder. They may contain inert components such as kieselguhr and additives such as colouring agents and stabilizers. Such explosives must not contain nitroglycerine, similar liquid organic nitrates, chlorates or ammonium nitrate. The term generally includes plastic explosives.

Explosives, blasting, type E 4°/0241; 40°/0332
Substances consisting of water as an essential ingredient and high proportions of ammonium nitrate or other oxidizers, some or all of which are in solution. The other constituents may include nitro-derivatives such as trinitrotoluene, hydrocarbons or aluminium powder. They may contain inert components such as kieselguhr and additives such as colouring agents and stabilizers. The term includes explosives, emulsion; explosives, slurry and explosives, watergel.

Fireworks 9°/0333; 19°/0334; 26°/0335; 37°/0336; 39°/0337
Pyrotechnic articles designed for entertainment.

Flares, aerial 9°/0420; 19°/0421; 26°/0093; 37°/0403; 39°/0404
Articles containing pyrotechnic substances which are designed to be dropped from an aircraft to illuminate, identify, signal or warn.

Flares, surface 9°/0418; 19°/0419; 26°/0092
Articles containing pyrotechnic substances which are designed for use on the surface to illuminate, identify, signal or warn.

Flash powder 8°/0094; 25°/0305
Pyrotechnic substance which, when ignited, produces an intense light.

Fracturing devices, explosive, without detonator, for oil wells, 5°/0099
Articles consisting of a charge of detonating explosive contained in a casing without means of initiation. They are used to fracture the rock around a drill shaft to assist the flow of crude oil from the rock.

Fuse, igniter, tubular, metal clad 37°/0103
Article consisting of a metal tube with a core of deflagrating explosive.

Fuse, instantaneous, non-detonating (Quickmatch) 26°/0101
Article consisting of cotton yarns impregnated with fine black powder. It burns with an external flame and is used in ignition trains for fireworks, etc.

Fuse, safety 39°/0105
Article consisting of a core of fine grained black powder surrounded by a flexible woven fabric with one or more protective outer coverings. When ignited, it burns at a predetermined rate without any external explosive effect.

Fuzes, detonating 1°/0106; 11°/0107; 29°/0257; 39°/0367
Articles with explosive components designed to produce a detonation in ammunition. They incorporate mechanical, electrical, chemical or hydrostatic components to initiate the detonation. They generally incorporate protective features.

Fuzes, detonating, with protective features 5°/0408; 15°/0409; 33°/0410
Articles with explosive components designed to produce a detonation in ammunition. They incorporate mechanical, electrical, chemical or hydrostatic components to initiate the detonation. The detonating fuze must incorporate two or more effective protective features.

Fuzes, igniting 26°/0316; 37°/0317; 39°/0368
Articles with primary explosive components designed to produce a deflagration in ammunition. They incorporate mechanical, electrical, chemical or hydrostatic components to start the deflagration. They generally incorporate protective features.

Grenades, hand or rifle, with bursting charge 5°/0284; 15°/0285
Articles which are designed to be thrown by hand or to be projected by a rifle. They are without means of initiation or with means of initiation containing two or more effective protective features.

Grenades, hand or rifle, with bursting charge 7°/0292; 17°/0293
Articles which are designed to be thrown by hand or to be projected by a rifle. They are with means of initiation not containing two or more effective protective features.

Grenades, practice, hand or rifle 19°/0372; 26°/0318; 37°/0452; 39°/0110
Articles without a main bursting charge which are designed to be thrown by hand or to be projected by a rifle. They contain the priming device and may contain a spotting charge.

Hexatonal, cast 4°/0393
Substance consisting of an intimate mixture of cyclotrimethylene trinitramine (RDX), trinitrotoluene (TNT) and aluminium.

Hexolite, dry or wetted with less than 15% water, by mass 4°/0118
Substance consisting of an intimate mixture of cyclotrimethylene trinitramine (RDX) and trinitrotoluene (TNT). The term includes "Composition B".

Igniters 9°/0121; 19°/0314; 26°/0315; 37°/0325; 39°/0454
Articles containing one or more explosive substances designed to produce a deflagration in an explosive train. They may be actuated chemically, electrically or mechanically.

Note: The following articles: cord, igniter; fuse, igniter; fuse, instantaneous, non-detonating; fuzes, igniting; lighters, fuse; primers, cap type; primers, tubular are not included in this definition. They are listed separately.

Jet perforating guns, charged, oil well, without detonator 5°/0124
Articles consisting of a steel tube or metallic strip, into which are inserted shaped charges connected by detonating cord, without means of initiation.

Lighters, fuse 39°/0131
Articles of various design actuated by friction, percussion or electricity and used to ignite safety fuse.

Mines, with bursting charge 5°/0137; 15°/0138
Articles consisting normally of metal or composition receptacles filled with a detonating explosive, without means of initiation or with means of initiation containing two or more effective protective features. They are designed to be operated by the oassage of ships, vehicles or personnel. The term includes "Bangalore torpedoes".

Mines, with bursting charge 7°/0136; 17°/0294
Articles consisting normally of metal or composition receptacles filled with a detonating explosive, with means of initiation not containing two or more effective protective features. They are designed to be operated by the passage of ships, vehicles or personnel. The term includes "Bangalore torpedoes".

Octolite (Octol), dry or wetted with less than 15% water, by mass 4°/0266
Substance consisting of an intimate mixture of cyclotetramethylene tetranitramine (HMX) and trinitrotoluene (TNT).

Pentolite, dry or wetted with less than 15% water, by mass 4°/0151
Substance consisting of an intimate mixture of pentaerythrite tetranitrate (PETN) and trinitrotoluene (TNT).

Powder cake (powder paste), wetted with not less than 17% alcohol, by mass. Powder cake (powder paste), wetted with not less than 35% water, by mass 2°/0433; 22°/0159
Substance consisting of nitrocellulose impregnated with not more than 60% of nitroglycerine or other liquid organic nitrates or a mixture of these.

Powder, smokeless 2°/0160; 22°/0161
Substance generally based on nitrocellulose used as propellant. The term includes propellants with a single base (nitrocellulose (NC) alone), those with a double base (such as NC and nitroglycerine (NG)) and those with a triple base (such as NC/NG/nitroguanidine).

Note: Cast, pressed or bag-charges of smokeless powder are listed under charges, propelling.

Primers, cap type 1°/0377; 29°/0378; 39°/0044
Articles consisting of a metal or plastics cap containing a small amount of primary explosive mixture that is readily ignited by impact. They serve as igniting elements in small arms cartridges and in percussion primers for propelling charges.

Primers, tubular 26°/0319; 37°/0320; 39°/0376
Articles consisting of a primer for ignition and an auxiliary charge of deflagrating explosive such as black powder used to ignite the propelling charge in a cartridge case for cannon, etc.

Projectiles, inert with tracer 26°/0424; 37°/0425; 39°/0345
Articles such as a shell or bullet, which are projected from a cannon or other gun, rifle or other small arm.

Projectiles, with burster or expelling charge 15°/0346; 33°/0347
Articles such as a shell or bullet, which are projected from a cannon or other gun. They are without means of initiation or with means of initiation containing two or more effective protective features. They are used to scatter dyes for spotting or other inert materials.

Projectiles, with burster or expelling charge 17°/0426; 35°/0427
Articles such as a shell or bullet, which are projected from a cannon or other gun. They are with means of initiation not containing two or more effective protective features. They are used to scatter dyes for spotting or other inert materials.

Projectiles, with burster or expelling charge 19°/0434; 37°/0435
Articles such as a shell or bullet, which are projected from a cannon or other gun, rifle or other small arm. They are used to scatter dyes for spotting or other inert materials.

Projectiles, with bursting charge 5°/0168; 15°/0169; 33°/0344
Articles such as a shell or bullet, which are projected from a cannon or other gun. They are without means of initiation or with means of initiation containing two or more effective protective features.

Projectiles, with bursting charge 7°/0167; 17°/0324
Articles such as a shell or bullet, which are projected from a cannon or other gun. They are with means of initiation not containing two or more effective protective features.

Release devices, explosive 39°/0173
Articles consisting of a small charge of explosive with means of initiation and rods or links. They sever the rods or links to release equipment quickly.

Rivets, explosive 39°/0174
Articles consisting of a small charge of explosive inside a metallic rivet.

Rocket motors 3°/0280; 13°/0281; 23°/0186
Articles consisting of a charge of explosive, generally a solid propellant, contained in a cylinder fitted with one or more nozzles. They are designed to propel a rocket or a guided missile.

Rocket motors, liquid fuelled 21°/0395; 28°/0396
Articles consisting of a liquid fuel within a cylinder fitted with one or more nozzles. They are designed to propel a rocket or a guided missile.

Rockets, line throwing 19°/0238; 26°/0240; 37°/0453
Articles consisting of a rocket motor which is designed to extend a line.

Rockets, liquid fuelled, with bursting charge 10°/0397; 21°/0398
Articles consisting of a liquid fuel within a cylinder fitted with one or more nozzles and fitted with a warhead. The term includes guided missiles.

Rockets with bursting charge 6°/0181; 16°/0182
Articles consisting of a rocket motor and a warhead without means of initiation or with means of initiation containing two or more effective protective features. The term includes guided missiles.

Rockets, with bursting charge 7°/0180; 17°/0295
Articles consisting of a rocket motor and a warhead with means of initiation not containing two or more effective protective features. The term includes guided missiles.

Rockets, with expelling charge 13°/0436; 23°/0437; 31°/0438
Articles consisting of a rocket motor and a charge to expel the payload from a rocket head. The term includes guided missiles.

Rockets, with inert head 23°/0183
Articles consisting of a rocket motor and an inert head. The term includes guided missiles.

Signal devices, hand 37°/0191; 39°/0373
Portable articles containing pyrotechnic substances which produce visual signals or warnings. The term includes small surface flares such as highway or railway flares and small distress flares.

Signals, distress, ship 9°/0194; 26°/0195
Articles containing pyrotechnic substances designed to produce signals by means of sound, flame or smoke or any combination thereof

Signals, railway track, explosive 9°/0192; 39°/0193
Articles containing a pyrotechnic substance which explodes with a loud report when the article is crushed. They are designed to be placed on a rail.

Signals, smoke, with explosive sound unit 9°/0196; 19°/0313
Articles containing pyrotechnic substances which produce coloured smoke and in addition an audible signal.

Signals, smoke, without explosive sound unit 37°/0197
Articles containing a pyrotechnic substance as smoke-producing substance. They are designed to produce coloured smoke.

Sounding devices, explosive 5°/0374; 15°/0375
Articles consisting of a charge of detonating explosive, without means of initiation or with means of initiation containing two or more effective protective features. They are dropped from ships and function when they reach a predetermined depth or the sea bed.

Sounding devices, explosive 7°/0296; 17°/0204
Articles consisting of a charge of detonating explosive with means of initiation not containing two or more effective protective features. They are dropped from ships and function when they reach a predetermined depth or the sea bed.

Torpedoes, liquid fuelled, with inert head 28°/0450
Articles consisting of a liquid explosive system to propel the torpedo through the water, with an inert head.

Torpedoes, liquid fuelled, with or without bursting charge 10°/0449
Articles consisting of either a liquid explosive system to propel the torpedo through the water, with or without a warhead; or a liquid non-explosive system to propel the torpedo through the water, with a warhead.

Torpedoes, with bursting charge 5°/0451
Articles consisting of a non-explosive system to propel the torpedo through the water, and a warhead without means of initiation or with means of initiation containing two or more effective protective features.

Torpedoes, with bursting charge 6°/0329
Articles consisting of an explosive system to propel the torpedo through the water, and a warhead without means of initiation or with means of initiation containing two or more effective protective features.

Torpedoes, with bursting charge 7°/0330
Articles consisting of an explosive or non-explosive system to propel the torpedo through the water, and a warhead with means of initiation not containing two or more effective protective features.

Tracers for ammunition 26°/0212; 37°/0306
Sealed articles containing pyrotechnic substances, designed to reveal the trajectory of a projectile.

Tritonal 4°/0390
Substance consisting of trinitrotoluene (TNT) mixed with aluminium.

Warheads, rocket, with burster or expelling charge 33°/0370
Articles consisting of an inert payload and a small charge of detonating or deflagrating explosive, without means of initiation or with means of initiation containing two or more effective protective features. They are designed to be fitted to a rocket motor to scatter inert material. The term includes warheads for guided missiles.

Warheads, rocket, with burster or expelling charge 35°/0371
Articles consisting of an inert payload and a small charge of detonating or deflagrating explosive, with means of initiation not containing two or more effective protective features. They are designed to be fitted to a rocket motor to scatter inert material. The term includes warheads for guided missiles.

Warheads, rocket, with bursting charge 5°/0286; 15°/0287
Articles consisting of a detonating explosive, without means of initiation or with means of initiation containing two or more effective protective features. They are designed to be fitted to a rocket. The term includes warheads for guided missiles.

Warheads, rocket, with bursting charge 7°/0369
Articles consisting of a detonating explosive, with means of initiation not containing two or more effective protective features. They are designed to be fitted to a rocket. The term includes warheads for guided missiles.

Warheads, torpedo, with bursting charge 5°/0221
Articles consisting of a detonating explosive, without means of initiation or with means of initiation containing two or more effective protective features. They are designed to be fitted to a torpedo.

3171--
3199

ANNEX A

APPENDIX A.5

The Note under the main title of this appendix is amended to read:

"Note: These requirements apply to packagings containing substances and articles of Classes 1, 3, 4.1 (items 7°(a), 20° and 21°), 6.1, 8 or 9."

3552(5) Add new subparagraph (f) as follows:

"(f) No rupture is permitted in packagings for goods of Class 1 which would cause the spillage of loose explosive substances or articles from the outer packaging."

Add the following new marginal 3571:

"3571 Packagings which, while not complying with the provisions of this appendix or with those of Class 1 could, however, be used in conformity with the provisions of ADR applicable at 31 December 1989 for the corresponding substances and articles of Classes 1a, 1b and 1c may still be used during a transitional period of 5 years up to 31 December 1994 for the carriage of such substances or articles."

3572–
3599

Annex to Appendix A.5 – Section II

CLASS 3

Item	Substance	Standard Liquid
A.	Substances, not toxic and not corrosive, having a flash-point below 21°C	
Insert after 3°(b):		
4°(b)	Mixtures of substances of 3°(b) having a boiling point or initial boiling point exceeding 35°C, containing not more than 55% nitrocellulose with a nitrogen content not exceeding 12.6%.	Normal butyl acetate/ normal butyl acetate-saturated wetting solution and mixture of hydrocarbons.
D.	Substances, not toxic and not corrosive, having a flash-point between 21°C and 100°C inclusive.	
Insert after 32°(c):		
33°(c)	Mixtures of substances of 31°(c) containing not more than 55% nitrocellulose with a nitrogen content not exceeding 12.6%.	Normal butyl acetate/ normal butyl acetate-saturated wetting solution and mixture of hydrocarbons.

APPENDIX A.6

PROVISIONS RELATING TO INTERMEDIATE BULK CONTAINERS (IBCs)

Note: These provisions apply to IBCs the use of which is expressly authorized in the relevant classes for the carriage of certain dangerous substances.

Section 1 - General provisions applicable to all types of IBCs

3600 Definitions and designatory code system

(1) Definitions

"Intermediate Bulk Containers" (IBCs) are rigid, semi-rigid or flexible portable packagings, other than those specified in Appendix A.5, that:

(a) have a capacity of not more than 3.0 m^3 (3,000 litres)

(b) are designed for mechanical handling

(c) are resistant to the stresses produced in handling and transport as determined by the tests specified in this appendix.

Notes: 1. Tank-containers which meet the requirements of Appendix B.1b are not considered to be IBCs.

2. IBCs which meet the conditions of this Appendix are not considered to be "containers" for the purposes of ADR.

(2) Designatory code system for IBCs

The code consists of:

two Arabic numerals indicating the type of IBC as specified under (a) below;

a capital letter or letters (Latin characters) as specified under (b) below, indicating the nature of the material (e.g. metal, plastics, etc.);

where necessary, an Arabic numeral indicating the category of IBC within the type to which the IBC belongs.

For composite IBCs, two capital letters (Latin characters) shall be used. The first shall indicate the material of the inner receptacle of the IBC and the second that of the outer packaging of the IBC.

(a)

Type	For solids, discharged		for liquids
	by gravity or under pressure of 10 kPa (0.1 bar) or less	under pressure of more than 10 kPa (0.1 bar)	
Rigid	11	21	31
Semi-rigid	12	22	32
Flexible	13	–	–

(b) A. Steel (all types and surface treatments)

B. Aluminium

C. Natural wood

D. Plywood

F. Reconstituted wood

G. Fibreboard

H. Plastics material

L. Textile

M. Paper, multiwall

N. Metal (other than steel or aluminium)

(3) The IBC code shall be followed in the marking by a letter indicating the groups of substances for which the design type is approved, i.e.:

Y for substances of packing groups II and III;

Z for substances of packing group III.

Note: For packing groups, see marginal 3511(2).

3601 Constructional requirements

(1) IBCs shall be resistant to or adequately protected from deterioration due to the external environment.

(2) IBCs shall be so constructed and closed that none of the contents can escape under normal conditions of carriage.

(3) IBCs and their closures shall be constructed of materials compatible with their contents, or be protected internally, so that they are not liable:

(a) to be attacked by the contents so as to make their use dangerous;

(b) to cause the contents to react or decompose, or form harmful or dangerous compounds with the IBCs.

(4) Gaskets, where used, shall be made of materials not subject to attack by the contents of the IBCs.

(5) All service equipment shall be so positioned or protected as to minimize the risk of escape of the contents owing to damage during handling and transport.

(6) IBCs, their attachments and their service and structural equipment shall be designed to withstand, without loss of contents, the internal pressure of the contents and the stresses of normal handling and transport. IBCs intended for stacking shall be designed for stacking. Any lifting or securing features of IBCs shall be of sufficient strength to withstand the normal conditions of handling and transport without gross distortion or failure and shall be so positioned that no undue stress is caused in any part of the IBC.

(7) Where an IBC consists of a body within a framework it shall be so constructed that:

the body does not chafe or rub against the framework so as to cause material damage to the body,

the body is retained within the framework at all times,

the items of equipment are fixed in such a way that they cannot be damaged if the connections between body and frame allow relative expansion or movement.

(8) Where a bottom discharge valve is fitted, it shall be capable of being made secure in the closed position and the whole discharge system shall be suitably protected from damage. Valves having lever closures shall be able to be secured against accidental opening and the open or closed position shall be readily apparent. For IBCs containing liquids, a secondary means of sealing the discharge aperture shall also be provided, e.g. by a blank flange or equivalent device.

(9) New, reused or reconditioned IBCs shall be capable of passing the prescribed tests.

3602 Quality assurance

The IBCs shall be designed, manufactured and tested under a quality assurance programme which satisfies the competent authority, in order to ensure that each manufactured IBC meets the requirements of this appendix.

3603 Test requirements

(1) The design type of each IBC shall be tested and approved by the competent authority or by a body designated by that authority.

(2) Tests shall be successfully performed on each IBC design type before such an IBC is used. An IBC design type is defined by the design, size, material and thickness, manner of construction and means of filling and discharging but may include various surface treatments. It also includes IBCs which differ from the design type only in their lesser external dimensions.

(3) Tests shall be carried out on IBCs prepared as for dispatch. IBCs shall be filled as indicated in the individual sections. The substances to be carried in the IBCs may be replaced by other substances except where this would invalidate the results of the tests. For solids, when another substance is used it shall 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, provided they are placed so that the test results are not affected.

(4) In the drop tests for liquids, when another substance is used, its relative density and viscosity shall be similar to those of the substance to be carried. Water may also be used for the liquid drop test under the following conditions:

(a) where the substances to be carried have a relative density not exceeding 1.2, the drop heights shall be those shown under the relevant sections for the various types of IBCs;

(b) where the substances to be carried have a relative density exceeding 1.2, the drop heights shall be those shown in the relevant sections for the various types of IBCs multiplied by the ratio of the relative density of the substance to be carried, rounded off to the first decimal, to 1.2, i.e.

$$\frac{\text{relative density}}{1.2} \times \text{specified drop height.}$$

(5) Every IBC intended to contain liquids shall undergo the leakproofness test prescribed under the relevant sections for the various types of IBCs:

(a) before it is first used for transport,

(b) after any reconditioning, before it is reused for transport.

(6) The competent authority may at any time require proof, by tests in accordance with this appendix, that IBCs meet the requirements of the design type tests.

3604 Test report

The test report shall include the test results and a design type identification assigned by the competent authority, and be valid for IBCs which correspond to the design type.

A test report giving at least the following particulars shall be drawn up:

1. Testing body;

2. Applicant;

3. Manufacturer of the IBC;

4. Description of the IBC (e.g. distinctive features such as material, inner lining, dimensions, wall thickness, mass, closures, colouring of plastics materials);

5. Design drawing of IBC and closures (if necessary, photographs);

6. Method of manufacture;

7. Actual capacity;

8. Permissible filling substances (in particular, details of relative densities and vapour pressures at 50°C or 55°C);

9. Drop height;

10. Test pressure in leakproofness test;

11. Test pressure in internal pressure (hydraulic) test;

12. Test load in stacking test;

13. Bottom lift test, if prescribed;

14. Top lift test, if prescribed;

15. Topple test, if prescribed;

16. Tear test, if prescribed;

17. Righting test, if prescribed;

18. Test results;

19. Marking of the IBC and details to identify closures.

A copy of the test report shall be retained by the competant authority.

3605 Marking

(1) Primary marking. Each IBC manufactured and intended for use according to these provisions shall bear durable and legible markings showing:

(a) the United Nations packaging symbol 

(for metallic IBCs on which the marking is stamped or embossed, the letters UN may be applied instead of the symbol);

(b) the code designating the type of IBC according to marginal 3600(2);

(c) a letter (Y or Z) designating the packing group(s) for which the design type has been approved;

(d) the month and year (last two digits) of manufacture;

(e) the mark */ of the State in which the approval was issued;

(f) the name or symbol of the manufacturer or other identification of the IBC as specified by the competent authority;

(g) the stacking test load in kg.

The primary marking required above shall be applied in the sequence of the subparagraphs unless the requirements of a specific section demand the insertion of additional information. The marking required by paragraph (2) and any further marking authorized by a competent authority shall be arranged so as to enable the various parts of the marking to be correctly identified.

(2) Additional marking. See special requirements shown in the individual sections.

(3) After reconditioning an IBC, the reconditioner shall affix to it the following sequence of additional marks:

(h) the mark */ of the State in whose territory the reconditioning was carried out;

(i) the name or authorized symbol of the reconditioner;

(j) the year of reconditioning and the letter "R".

* Distinguishing sign for motor vehicles in international traffic prescribed in the Vienna Convention on Road Traffic (1968).[1]

[1] United Nations, *Treaty Series*, vol. 1042, p. 17.

(4) IBCs marked in accordance with this appendix but which were approved in a State which is not a Contracting Party to ADR may also be used for carriage under ADR.

3606 Certification

The manufacturer shall certify, by affixing marking in accordance with this appendix, that mass-produced IBCs correspond to the approved design type and that the conditions referred to in the approval certificate have been met.

3607 Operational requirements

(1) Before being filled and handed over for carriage, every IBC shall be inspected to ensure that it is free from corrosion, contamination or other damage and with regard to proper functioning of any service equipment. Any IBC which shows signs of reduced strength as compared with the tested design type shall no longer be used or shall be so reconditioned that it is able to withstand the design type tests.

(2) Where two or more closure systems are fitted in series, that nearest to the substance being carried shall be closed first.

(3) During carriage, no dangerous residue shall adhere to the outside of the IBC.

(4) During carriage, IBCs shall be securely fastened to or contained within the transport unit so as to prevent lateral or longitudinal movement or impact, and so as to provide adequate external support.

(5) Where overpressure may develop in an IBC through the emission of gas from the contents (as a result of temperature increase or other causes), the IBC may be fitted with a vent provided that the gas emitted will not cause any danger on account of its toxicity, its inflammability, the quantity released, etc. The vent shall be so designed that, when the IBC is in the attitude in which it is intended to be transported, leakages of liquid and the penetration of foreign matter are prevented under normal conditions of carriage. However, a substance may be carried in such an IBC only where a vent is expressly prescribed for that substance in the conditions of carriage of the relevant class.

(6) Where IBCs are filled with liquids, sufficient ullage shall be left to ensure that no leakage of liquid and no permanent distortion of the IBC occurs as a result of expansion of the liquid, due to temperatures which may be attained during carriage. For a filling temperature of 15°C, the maximum degree of filling shall be determined as follows, unless otherwise provided under a particular class:

either (a)

Boiling point (initial boiling point) of the substance in °C	⩾35 <60	⩾60 <100	⩾100 <200	⩾200 <300	⩾300
Degree of filling as a percentage of the capacity of the IBC	90	92	94	96	98

or (b)

$$\text{Degree of filling} = \frac{98}{1 + \alpha (50 - t_F)} \text{ \% of the capacity of the IBC.}$$

In this formula α represents the mean coefficient of cubic expansion of the liquid between 15°C and 50°C; that is to say, for a maximum rise in temperature of 35°C, α is calculated according to the formula:

$$\alpha = \frac{d_{15} - d_{50}}{35 \times d_{50}}$$

d_{15} and d_{50} being the relative densities of the liquid at 15°C and 50°C and t_F the mean temperature of the liquid at the time of filling.

(7) When IBCs are used for the carriage of liquids with a flash-point of 55°C (closed cup) or lower, or powders liable to dust explosion, measures shall be taken to prevent a dangerous electrostatic discharge during filling and discharging.

(8) The closure of IBCs containing wetted or diluted substances shall be such that the percentage of liquid (water, solvent or phlegmatizer) does not fall below the prescribed limits during carriage.

3608–
3609

Section 2 – Specific requirements for metallic IBCs

3610 Scope

These provisions apply to metallic IBCs intended for the carriage of solids or liquids. There are three categories of metallic IBCs:

(i) for solids which are loaded or discharged by gravity or under a gauge pressure of 10 kPa (0.1 bar) or less (11A, 11B, 11N);

(ii) for solids which are loaded or discharged under a gauge pressure greater than 10 kPa (0.1 bar) (21A, 21B, 21N);

(iii) for liquids (31A, 31B, 31N). IBCs intended for the carriage of liquids and being in accordance with this section shall not be used to carry liquids having a vapour pressure of more than 110 kPa (1.1 bar) at 50°C, or more than 130 kPa (1.3 bar) at 55°C.

3611 Definitions

(1) A metallic IBC consists of a metal body together with appropriate service and structural equipment.

(2) Body means the receptacle proper, including openings and their closures.

(3) Protected means being provided with additional protection against impact, the protection taking the form of, for example, a multi-layer (sandwich) or double wall construction or a frame with a metal lattice-work casing.

(4) Service equipment means filling and discharge, pressure relief, safety, heating and heat-insulating devices and measuring instruments.

(5) Structural equipment means the reinforcing, fastening, handling, protective or stabilizing members of the body.

(6) Maximum permissible gross mass means the mass of the body and its service equipment and structural equipment and the heaviest load authorized to be carried.

3612 Construction

(1) Bodies shall be made of suitable ductile metallic materials in which the weldability has been fully demonstrated. Welds shall be skilfully made and afford complete safety.

(2) If contact between the substance carried and the material used for the construction of the body entails a progressive decrease in the thickness of the walls, this thickness shall be increased at manufacture by an appropriate amount. This thickness to allow for corrosion shall be added to the wall thickness as determined according to paragraph (6) (see also marginal 3601(3)).

(3) Care shall be taken to avoid damage by galvanic action due to the juxtaposition of dissimilar metals.

(4) Aluminium IBCs intended for the carriage of inflammable liquids with a flash-point of not more than 55°C shall have no movable parts, such as covers, closures etc., made of unprotected steel liable to rust, which might cause a dangerous reaction by coming into frictional or percussive contact with the aluminium.

(5) Metallic IBCs shall be made of metals which meet the following requirements:

(a) for steel the elongation at fracture, in per cent, shall not be less than $\frac{10,000}{Rm}$ with an absolute minimum of 20%;

where Rm = guaranteed minimum tensile strength of the metal to be used in N/mm^2.

(b) for aluminium and its alloys the elongation at fracture, in per cent, shall not be less than $\frac{10,000}{6\ Rm}$ with an absolute minimum of 8%.

Specimens used to determine the elongation at fracture shall be taken transversely to the direction of rolling and be so secured that:

$Lo = 5d$

or

$Lo = 5.65 \sqrt{A}$

Where: Lo = gauge length of the specimen before the test

d = diameter

A = cross-sectional area of test specimen.

(6) Minimum wall thickness:

(a) for a reference steel having a product of Rm x A_o = 10,000 the wall thickness shall not be less than:

Capacity in m^3	Wall thickness in mm			
	Types: 11A, 11B, 11N		Types: 21A, 21B, 21N, 31A, 31B, 31N,	
	Unprotected	Protected	Unprotected	Protected
≤1.0	2.0	1.5	2.5	2.0
>1.0 – ≤2.0	2.5	2.0	3.0	2.5
>2.0 – ≤3.0	3.0	2.5	4.0	3.0

where: A_o = minimum elongation (as a percentage) of the reference steel to be used on fracture under tensile stress (see paragraph (5)).

(b) for metals other than the reference steel described in (a), the minimum wall thickness is given by the following equivalence formula:

$$e_1 = \frac{21.4 \times e_o}{\sqrt[3]{Rm_1 \times A_1}}$$

where:

e_1 = required equivalent wall thickness of the metal to be used (in mm);

e_o = required minimum wall thickness for the reference steel (in mm);

Rm_1 = guaranteed minimum tensile strength of the metal to be used (in N/mm^2);

A_1 = minimum elongation (as a percentage) of the metal to be used on fracture under tensile stress (see paragraph (5)).

However, in no case shall the wall thickness be less than 1.5 mm.

(7) Pressure relief requirements

IBCs for liquids shall be capable of releasing a sufficient amount of vapour to ensure that in the case of fire engulfment no rupture of the body will occur. This can be achieved by conventional relief devices or by other constructional means.

The start to discharge pressure shall not be higher than 65 kPa (0.65 bar) and no lower than the total gauge pressure experienced in the IBC (i.e. the vapour pressure of the filling substance plus the partial pressure of the air or other inert gases, minus 100 kPa (1 bar)) at 55°C, determined on the basis of a maximum degree of filling as defined in marginal 3607(6). The required relief devices shall be fitted in the vapour space.

3613 Testing and inspection

Metallic IBCs shall be subject to:

(a) type approval including design type tests in accordance with marginal 3614.

(b) initial and periodic tests in accordance with marginal 3615.

(c) inspections in accordance with marginal 3616.

3614 Design type tests

(1) One IBC of each design type, size, wall thickness and manner of construction shall be submitted to the tests listed in the order below and as set out in marginal 3617(1) to (5). Another IBC of the same design may be used for the drop test as set out in marginal 3617(6).

Tests	See marginal	Type of IBC	
		11A, 11B, 11N	21A, 21B, 21N 31A, 31B, 31N
Bottom lift	3617(1)	required a/	required a/
Top lift	3617(2)	required a/	required a/
Stacking	3617(3)	required b/	required b/
Leakproofness	3617(4)	required	required
Internal pressure (hydraulic)	3617(5)	not required	required
Drop	3617(6)	required	required

a/ When IBCs are designed for this method of handling.

b/ When IBCs are designed to be stacked.

(2) The competent authority may permit the selective testing of IBCs which differ only in minor respects from a tested type, e.g. with small reductions in external dimensions.

3615 Initial and periodic testing of individual IBCs

(1) Each IBC shall correspond in all respects to its design type, and be subjected to the leakproofness test.

(2) The leakproofness test in paragraph (1) shall be repeated at intervals of not more than two and a half years.

(3) The results of tests shall be recorded in test reports to be kept by the owner of the IBC.

3616 Inspection

(1) Every IBC shall be inspected to the satisfaction of the competent authority before it is put into service, and thereafter at intervals not exceeding five years, with regard to:

conformity to design type including marking;

internal and external condition;

proper functioning of service equipment.

Thermal insulation need be removed only to the extent necessary for a proper examination of the body of the IBC.

(2) Every IBC shall be visually inspected to the satisfaction of the competent authority at intervals of not more than two and a half years with regard to its external condition and the proper functioning of its service equipment.

Thermal insulation need be removed only to the extent necessary for a proper examination of the body of the IBC.

(3) A report of each inspection shall be kept by the owner at least until the date of the next inspection.

(4) When the structure of an IBC is impaired as a result of impact (e.g. accident) or any other cause, it shall be repaired and then subjected to the full testing and inspection as set out in marginal 3614(1) and paragraph (1) above.

3617 Test specifications

(1) Bottom lift test

(a) Applicability

For all types of IBC which are fitted with means of lifting from the base, as a design type test.

(b) Preparation of IBCs for test

The IBC shall be loaded to 1.25 times its maximum permissible gross mass, the load being evenly distributed.

(c) Method of testing

The IBC shall be raised and lowered twice by a lift truck with the forks centrally positioned and spaced at three quarters of the dimension of the side of entry (unless the points of entry are fixed). The forks shall penetrate to three quarters of the direction of entry. The test shall be repeated from each possible direction of entry.

(d) Criteria for passing the test

No permanent deformation which renders the IBC unsafe for transport and no loss of contents.

(2) Top lift test

(a) Applicability

For all types of IBC which are fitted with means of lifting from the top, as a design type test.

(b) Preparation of IBCs for test

The IBC shall be loaded to twice its maximum permissible gross mass.

(c) Method of testing

The IBC shall be lifted in the manner for which it is designed until it is clear of the floor and maintained in that position for a period of five minutes.

(d) Criteria for passing the test

No permanent deformation which renders the IBC unsafe for transport and no loss of contents.

(3) Stacking test

(a) Applicability

For all types of IBC which are designed to be stacked on each other, as a design type test.

(b) Preparation of IBCs for test

The IBC shall be loaded to its maximum permissible gross mass.

(c) Method of testing

The IBC shall be placed on its base on level hard ground and subjected to a uniformly distributed superimposed test load (see (d) below) for a period of at least five minutes.

(d) Calculation of superimposed test load

The load to be placed on the IBC shall be at least 1.8 times the combined maximum permissible gross mass of the number of similar IBCs that may be stacked on top of the IBC during carriage.

(e) Criteria for passing the test

No permanent deformation which renders the IBC unsafe for transport and no loss of contents.

(4) Leakproofness test

(a) Applicability

For all types of IBC, as a design type test and as an initial and periodic test.

(b) Preparation of IBCs for test

The initial test shall be carried out before the fitting of any thermal insulation equipment. The bottom discharge apertures of IBC types 11A, 11B and 11N, which are not required to be hermetically closed may be blanked off prior to the test.

(c) Method of testing and pressure to be applied

The test shall be carried out for a period of at least 10 minutes using air at a constant gauge pressure of not less than 20 kPa (0.2 bar). The airtightness of the IBC shall be determined by a suitable method such as the air-pressure differential test or by immersing the IBC in water. In the latter case a correction factor shall be applied for the hydrostatic pressure.

(d) Criterion for passing the test

No leakage of air.

(5) Internal pressure (hydraulic) test

(a) Applicability

For IBC types 21A, 21B, 21N, 31A, 31B and 31N, as a design type test.

(b) Preparation of IBCs for test

The test shall be carried out before the fitting of any thermal insulation equipment. Pressure relief devices shall be removed and their apertures plugged, or shall be rendered inoperative.

(c) Method of testing

The test shall be carried out for a period of at least 10 minutes applying a hydraulic pressure not less than that indicated in (d). The IBCs shall not be mechanically restrained during the test.

(d) Pressures to be applied

(i) for all IBCs type 21A, 21B, 21N, 31A, 31B, 31N, a 200 kPa (2 bar) gauge pressure;

(ii) as a supplementary test, for IBCs type 31A, 31B, 31N, for liquids, a 65 kPa (0.65 bar) gauge pressure. This test shall be performed before the test in accordance with (i).

(e) Criteria for passing the test(s)

For all IBCs type 21A, 21B, 21N, 31A, 31B, 31N when subjected to the test pressure specified in (d)(i), no leakage.

For IBCs type 31A, 31B, 31N, for liquids, when subjected to the test pressure specified in (d)(ii), neither permanent deformation which would render the IBC unsafe for transport, nor leakage.

(6) Drop test

(a) Applicability

For all types of IBC as a design type test.

(b) Preparation of IBCs for test

The IBC shall be filled to not less than 95% of its capacity for solids or 98% for liquids and to its maximum permissible load in accordance with the design type. Pressure relief devices shall be removed and their apertures plugged, or shall be rendered inoperative.

(c) Method of testing

The IBC shall be dropped on to a rigid, non-resilient, smooth, flat and horizontal surface, in such a manner as to ensure that the point of impact is on that part of the base of the IBC considered to be the most vulnerable.

(d) Drop height

Packing Group II	Packing Group III
1.2 m	0.8 m

(e) Criterion for passing the test

No loss of contents.

3618 Additional marking

Each IBC shall be fitted with a corrosion-resistant metal plate permanently attached to the body or structural equipment and in a place readily accessible for inspection. This metal plate shall bear the markings prescribed in marginal 3605 and, in addition:

capacity in litres at 20°C;

tare mass in kg;

maximum permissible gross mass in kg;

date of last leakproofness test (month and year);

maximum filling/discharge pressure in kPa (or bar) */ (if applicable);

*/ The unit used should be indicated.

body material and its minimum thickness in mm;

serial number of the manufacturer.

Examples of complete marking:

(u n) 11A/Y/7-83/B/FM/0
1000/250/1000/3-90/-/Steel/3,5/S4-82

(u n) 31N/Y/9-85/F/FM/5940
1000/450/1650/3-90/60kPa/CrNi/2,5/S20-85.

3619

Section 3 - Specific requirements for flexible IBCs

3620 Scope

These provisions apply to flexible IBCs intended for the carriage of solids. These IBCs are of the following types:

13H1 woven plastics without coating or liner
13H2 woven plastics, coated
13H3 woven plastics with liner
13H4 woven plastics, coated and with liner
13H5 plastics film
13L1 textile without coating or liner
13L2 textile, coated
13L3 textile with liner
13L4 textile, coated and with liner
13M1 paper, multiwall
13M2 paper, multiwall, water resistant

3621 Definitions

(1) Flexible IBCs consist of a body constituted of film, woven fabric or any other flexible material or combinations thereof, together with any appropriate service equipment and handling devices.

(2) Body means the receptacle proper, including openings and their closures.

(3) Woven plastics means a material made from stretched tapes or monofilaments of suitable plastics material.

(4) Service equipment means filling, discharge, venting and safety devices.

(5) Handling device means any sling, loop, eye or frame attached to the body of the IBC or formed from a continuation of the IBC body material.

(6) Maximum permissible load means the maximum net mass for which the IBC is intended to be used and which it is authorized to carry.

3622 Construction

(1) Bodies shall be manufactured from suitable materials. The strength of the material and the construction of the flexible IBC shall be appropriate to its capacity and its intended use.

(2) All materials used in the construction of flexible IBCs of types 13M1 and 13M2 shall, after complete immersion in water for not less than 24 hours, retain at least 85% of the tensile strength as measured originally on the material conditioned to equilibrium at 67% relative humidity or less.

(3) Seams shall be formed by stitching, heat sealing, glueing or any equivalent method. All stitched seam-ends shall be secured.

(4) Flexible IBCs shall provide adequate resistance to ageing and to degradation caused either by ultraviolet radiation, the climatic conditions or by the substance contained, thereby rendering them appropriate to their intended use.

(5) For plastics flexible IBCs, where protection against ultraviolet radiation is required, it shall be provided by the addition of carbon black or other suitable pigments or inhibitors. These additives shall be compatible with the contents and remain effective throughout the life of the body. Where use is made of carbon black, pigments or inhibitors other than those used in the manufacture of the tested design type, retesting may be waived if changes in the carbon black content, the pigment content or the inhibitor content do not adversely affect the physical properties of the material of construction.

(6) Additives may be incorporated into the material of the body to improve the resistance to ageing or to serve other purposes, provided that these do not adversely affect the physical or chemical properties of the material.

(7) No material recovered from used receptacles shall be used in the manufacture of IBC bodies. Production residues or scrap from the same manufacturing process may, however, be used. This shall not preclude the reuse of component parts such as fittings and pallet bases provided such components have not in any way been damaged in previous use.

(8) When filled, the ratio of height to width shall be not more than 2:1.

3623 Testing

IBCs shall be subjected to type approval, including design type tests, in accordance with marginal 3624.

3624 Design type tests

(1) Design types of each IBC shall be submitted to the tests listed below as set out in the marginals indicated in accordance with procedures established by the competent authority.

An IBC which has passed one test may be used for other tests.

Test	See marginal
Top lift */	3625(1)
Tear	3625(2)
Stacking	3625(3)
Drop	3625(4)
Topple	3625(5)
Righting */	3625(6)

*/ When IBCs are designed to be lifted from the top or the side.

(2) The competent authority may permit the selective testing of IBCs which differ only in minor respects from a tested type, e.g. with small reductions in external dimensions.

(3) Paper IBCs shall be conditioned for at least 24 hours in an atmosphere having a controlled temperature and relative humidity (r.h.). There are three options, one of which shall be chosen. The preferred atmosphere is 23° ± 2°C and 50% ± 2% r.h. The two other options are 20° ± 2°C and 65% ± 2% r.h. or 27° ± 2°C and 65% ± 2% r.h.

3625 Design type test specifications

(1) Top lift test

(a) Applicability

For all types of IBCs designed to be lifted from the top or the side, as a design type test.

(b) Preparation of IBCs for test

The IBC shall be filled to six times its maximum permissible load, the load being evenly distributed.

(c) Method of testing

The IBC shall be lifted in the manner for which it is designed until it is clear of the floor and maintained in that position for a period of five minutes.

(d) Other methods of top lift testing and preparation at least equally effective may be used.

(e) Criteria for passing the test

No damage to the IBC or its lifting devices which renders the IBC unsafe for transport or handling.

(2) Tear test

(a) Applicability

For all types of IBCs, as a design type test.

(b) Preparation of IBCs for test

The IBC shall be filled to not less than 95% of its capacity and to its maximum permissible load, the load being evenly distributed.

(c) Method of testing

Once the IBC is placed on the ground, a 100 mm knife score, completely penetrating the wall of a wide face, is made at a 45° angle to the principal axis of the IBC, halfway between the bottom surface and the top level of contents. The IBC shall then be subjected to a uniformly distributed superimposed load equivalent to twice the maximum permissible load. The load shall be applied for at least five minutes.

IBCs which are designed to be lifted from the top or the side shall then, after removal of the superimposed load, be lifted clear of the floor and maintained in that position for a period of five minutes. Other equivalent methods may be used.

(d) Criterion for passing the test

The cut shall not propagate more than 25% of its original length.

(3) Stacking test

(a) Applicability

For all types of IBCs, as a design type test.

(b) Preparation of IBCs for test

The IBC shall be filled to not less than 95% of its capacity and to its maximum permissible load, the load being evenly distributed.

(c) Method of testing

The IBC shall be placed on its base on level hard ground and subjected to a uniformly distributed superimposed test load for a period of 24 hours. This load shall be applied by one of the following methods:

one or more IBCs of the same type filled to the maximum permissible load and stacked on the test IBC;

appropriate weights loaded on to a flat plate which is placed on the test IBC.

(d) Calculation of superimposed test load

The load to be placed on the IBC shall be at least 1.8 times the combined maximum permissible gross mass of the number of similar IBCs that may be stacked on top of the IBC during carriage.

(e) Criteria for passing the test

No deterioration of the body which renders the IBC unsafe for transport and no loss of contents.

(4) Drop test

(a) Applicability

For all types of IBCs, as a design type test.

(b) Preparation of IBCs for test

The IBC shall be filled to not less than 95% of its capacity and to its maximum permissible load, the load being evenly distributed.

(c) Method of testing

The IBC shall be dropped on its base on to a rigid, non-resilient, smooth, flat and horizontal surface.

(d) Drop height

Packing Group II	Packing Group III
1.2 m	0.8 m

(e) Criteria for passing the test

No loss of contents. A slight discharge, e.g. from closures or stitch holes, upon impact shall not be considered to be a failure of the IBC, provided that no further leakage occurs after the IBC has been raised clear of the ground.

(5) Topple test

(a) Applicability

For all types of IBCs, as a design type test.

(b) Preparation of IBCs for test

The IBC shall be filled to not less than 95% of its capacity and to its maximum permissible load, the load being evenly distributed.

(c) Method of testing

The IBC shall be caused to topple on to any part of its top on to a rigid, non-resilient, smooth, flat and horizontal surface.

(d) Topple height

Packing Group II	Packing Group III
1.2 m	0.8 m

(e) Criteria for passing the test

No loss of contents. A slight discharge, e.g. from closures or stitch holes, upon impact shall not be considered to be a failure of the IBC, provided that no further leakage occurs.

(6) Righting test

(a) Applicability

For all IBCs designed to be lifted from the top or side, as a design type test.

(b) Preparation of IBCs for test

The IBC shall be filled to not less than 95% of its capacity and to its maximum permissible load, the load being evenly distributed.

(c) Method of testing

The IBC, lying on its side, shall be lifted at a speed of at least 0.1 m/s to upright position, clear of the floor, by one lifting device or by two lifting devices when four are provided.

(d) Criterion for passing the test

No damage to the IBC or its lifting devices which renders the IBC unsafe for transport or handling.

3626 Additional marking

Each IBC shall bear the markings required by marginal 3605(1) and in addition the maximum permissible load in kg:

Each IBC may also bear a pictogram indicating recommended lifting methods.

Examples of complete markings:

13H2/Y/9 83/B/FM/8127/1500

13L1/Z/7 84/USA/FM/12996/1800

13M1/Z/5 85/GB/FM/O/1300

3627–
3699

APPENDIX A.7

This Appendix comprises:

SECTIONS

SECTION I ACTIVITY AND FISSILE MATERIAL LIMITS

3700 BASIC A_1 AND A_2 VALUES

A_1 / A_2 values for radionuclides are given in Table I.

TABLE I. A_1 AND A_2 VALUES FOR RADIONUCLIDES

Symbol of radionuclide	Element and atomic number	A_1		A_2	
		TBq	(Ci) (approx [1])	TBq	(Ci) (approx [1])
^{225}Ac [2]	Actinium (89)	0.6	10	1×10^{-2}	2×10^{-1}
^{227}Ac		40	1000	2×10^{-5}	5×10^{-4}
^{228}Ac		0.6	10	0.4	10
^{105}Ag	Silver (47)	2	50	2	50
$^{108}Ag^m$		0.6	10	0.6	10
$^{110}Ag^m$		0.4	10	0.4	10
^{111}Ag		0.6	10	0.5	10
^{26}Al	Aluminium (13)	0.4	10	0.4	10
^{241}Am	Americium (95)	2	50	2×10^{-4}	5×10^{-3}
$^{242}Am^m$		2	50	2×10^{-4}	5×10^{-3}
^{243}Am		2	50	2×10^{-4}	5×10^{-3}
^{37}Ar	Argon (18)	40	1000	40	1000
^{39}Ar		20	500	20	500
^{41}Ar		0.6	10	0.6	10
^{42}Ar [2]		0.2	5	0.2	5
^{72}As	Arsenic (33)	0.2	5	0.2	5
^{73}As		40	1000	40	1000
^{74}As		1	20	0.5	10
^{76}As		0.2	5	0.2	5
^{77}As		20	500	0.5	10
^{211}At	Astatine (85)	30	800	2	50
^{193}Au	Gold (79)	6	100	6	100
^{194}Au		1	20	1	20
^{195}Au		10	200	10	200
^{196}Au		2	50	2	50
^{198}Au		3	80	0.5	10
^{199}Au		10	200	0.9	20
^{131}Ba	Barium (56)	2	50	2	50
$^{133}Ba^m$		10	200	0.9	20
^{133}Ba		3	80	3	80
^{140}Ba [2]		0.4	10	0.4	10
^{7}Be	Beryllium (4)	20	500	20	500
^{10}Be		20	500	0.5	10
^{205}Bi	Bismuth (83)	0.6	10	0.6	10
^{206}Bi		0.3	8	0.3	8
^{207}Bi		0.7	10	0.7	10
$^{210}Bi^m$ [2]		0.3	8	3×10^{-2}	8×10^{-1}
^{210}Bi		0.6	10	0.5	10
^{212}Bi [2]		0.3	8	0.3	8
^{247}Bk	Berkelium (97)	2	50	2×10^{-4}	5×10^{-3}
^{249}Bk		40	1000	8×10^{-2}	2
^{76}Br	Bromine (35)	0.3	8	0.3	8
^{77}Br		3	80	3	80
^{82}Br		0.4	10	0.4	10
^{11}C	Carbon (6)	1	20	0.5	10
^{14}C		40	1000	2	50

Symbol of radio-nuclide	Element and atomic number	A_1		A_2	
		TBq	(Ci) (approx [1])	TBq	(Ci) (approx [1])
^{41}Ca	Calcium (20)	40	1000	40	1000
^{45}Ca		40	1000	0.9	20
^{47}Ca		0.9	20	0.5	10
^{109}Cd	Cadmium (48)	40	1000	1	20
$^{113}Cd^{m}$		20	500	9×10^{-2}	2
$^{115}Cd^{m}$		0.3	8	0.3	8
^{115}Cd		4	100	0.5	10
^{139}Ce	Cerium (58)	6	100	6	100
^{141}Ce		10	200	0.5	10
^{143}Ce		0.6	10	0.5	10
^{144}Ce [2]		0.2	5	0.2	5
^{248}Cf	Californium (98)	30	800	3×10^{-3}	8×10^{-2}
^{249}Cf		2	50	2×10^{-4}	5×10^{-3}
^{250}Cf		5	100	5×10^{-4}	1×10^{-2}
^{251}Cf		2	50	2×10^{-4}	5×10^{-3}
^{252}Cf		0.1	2	1×10^{-3}	2×10^{-2}
^{253}Cf		40	1000	6×10^{-2}	1
^{254}Cf		3×10^{-3}	8×10^{-2}	6×10^{-4}	1×10^{-2}
^{36}Cl	Chlorine (17)	20	500	0.5	10
^{38}Cl		0.2	5	0.2	5
^{240}Cm	Curium (96)	40	1000	2×10^{-2}	5×10^{-1}
^{241}Cm		2	50	0.9	20
^{242}Cm		40	1000	1×10^{-2}	2×10^{-1}
^{243}Cm		3	80	3×10^{-4}	8×10^{-3}
^{244}Cm		4	100	4×10^{-4}	1×10^{-2}
^{245}Cm		2	50	2×10^{-4}	5×10^{-3}
^{246}Cm		2	50	2×10^{-4}	5×10^{-3}
^{247}Cm		2	50	2×10^{-4}	5×10^{-3}
^{248}Cm		4×10^{-2}	1	5×10^{-5}	1×10^{-3}
^{55}Co	Cobalt (27)	0.5	10	0.5	10
^{56}Co		0.3	8	0.3	8
^{57}Co		8	200	8	200
$^{58}Co^{m}$		40	1000	40	1000
^{58}Co		1	20	1	20
^{60}Co		0.4	10	0.4	10
^{51}Cr	Chromium (24)	30	800	30	800
^{129}Cs	Caesium (55)	4	100	4	100
^{131}Cs		40	1000	40	1000
^{132}Cs		1	20	1	20
$^{134}Cs^{m}$		40	1000	9	200
^{134}Cs		0.6	10	0.5	10
^{135}Cs		40	1000	0.9	20
^{136}Cs		0.5	10	0.5	10
^{137}Cs [2]		2	50	0.5	10
^{64}Cu	Copper (29)	5	100	0.9	20
^{67}Cu		9	200	0.9	20
^{159}Dy	Dysprosium (66)	20	500	20	500
^{165}Dy		0.6	10	0.5	10
^{166}Dy [2]		0.3	8	0.3	8
^{169}Er	Erbium (68)	40	1000	0.9	20
^{171}Er		0.6	10	0.5	10
^{147}Eu	Europium (63)	2	50	2	50
^{148}Eu		0.5	10	0.5	10

Symbol of radio-nuclide	Element and atomic number	A_1		A_2	
		TBq	(Ci) (approx [1])	TBq	(Ci) (approx [1])
^{149}Eu	Europium (cont'd)	20	500	20	500
^{150}Eu		0.7	10	0.7	10
^{152}Eu^{m}		0.6	10	0.5	10
^{152}Eu		0.9	20	0.9	20
^{154}Eu		0.8	20	0.5	10
^{155}Eu		20	500	2	50
^{156}Eu		0.6	10	0.5	10
^{18}F	Fluorine (9)	1	20	0.5	10
^{52}Fe [2]	Iron (26)	0.2	5	0.2	5
^{55}Fe		40	1000	40	1000
^{59}Fe		0.8	20	0.8	20
^{60}Fe		40	1000	0.2	5
^{67}Ga	Gallium (31)	6	100	6	100
^{68}Ga		0.3	8	0.3	8
^{72}Ga		0.4	10	0.4	10
^{146}Gd [2]	Gadolinium (64)	0.4	10	0.4	10
^{153}Gd		10	200	5	100
^{159}Gd		4	100	0.5	10
^{68}Ge [2]	Germanium (32)	0.3	8	0.3	8
^{71}Ge		40	1000	40	1000
^{77}Ge		0.3	8	0.3	8
^{172}Hf [2]	Hafnium (72)	0.5	10	0.3	8
^{175}Hf		3	80	3	80
^{181}Hf		2	50	0.9	20
^{182}Hf		4	100	3×10^{-2}	8×10^{-1}
^{194}Hg [2]	Mercury (80)	1	20	1	20
^{195}Hg^{m}		5	100	5	100
^{197}Hg^{m}		10	200	0.9	20
^{197}Hg		10	200	10	200
^{203}Hg		4	100	0.9	20
^{163}Ho	Holmium (67)	40	1000	40	1000
^{166}Ho^{m}		0.6	10	0.3	8
^{166}Ho		0.3	8	0.3	8
^{123}I	Iodine (53)	6	100	6	100
^{124}I		0.9	20	0.9	20
^{125}I		20	500	2	50
^{126}I		2	50	0.9	20
^{129}I		Unlimited		Unlimited	
^{131}I		3	80	0.5	10
^{132}I		0.4	10	0.4	10
^{133}I		0.6	10	0.5	10
^{134}I		0.3	8	0.3	8
^{135}I		0.6	10	0.5	10
^{111}In	Indium (49)	2	50	2	50
^{113}In^{m}		4	100	4	100
^{114}In^{m} [2]		0.3	8	0.3	8
^{115}In^{m}		6	100	0.9	20
^{189}Ir	Iridium (77)	10	200	10	200
^{190}Ir		0.7	10	0.7	10
^{192}Ir		1	20	0.5	10
^{193}Ir^{m}		10	200	10	200
^{194}Ir		0.2	5	0.2	5

Symbol of radio-nuclide	Element and atomic number	A_1		A_2	
		TBq	(Ci) (approx [1])	TBq	(Ci) (approx [1])
^{42}K	Potassium (19)	0.2	5	0.2	5
^{43}K		1	20	0.5	10
^{81}Kr	Krypton (36)	40	1000	40	1000
$^{85}Kr^{m}$		6	100	6	100
^{85}Kr		20	500	10	200
^{87}Kr		0.2	5	0.2	5
^{137}La	Lanthanum (57)	40	1000	2	50
^{140}La		0.4	10	0.4	10
LSA	Low specific activity material (see marginal 2700 (2))				
^{172}Lu	Lutetium (71)	0.5	10	0.5	10
^{173}Lu		8	200	8	200
$^{174}Lu^{m}$		20	500	8	200
^{174}Lu		8	200	4	100
^{177}Lu		30	800	0.9	20
MFP	For Mixed Fission Products, use formula for mixtures or Table II (marginal 3701)				
^{28}Mg (2)	Magnesium (12)	0.2	5	0.2	5
^{52}Mn	Manganese (25)	0.3	8	0.3	8
^{53}Mn		Unlimited		Unlimited	
^{54}Mn		1	20	1	20
^{56}Mn		0.2	5	0.2	5
^{93}Mo	Molybdenum (42)	40	1000	7	100
^{99}Mo		0.6	10	0.5	10
^{13}N	Nitrogen (7)	0.6	10	0.5	10
^{22}Na	Sodium (11)	0.5	10	0.5	10
^{24}Na		0.2	5	0.2	5
$^{93}Nb^{m}$	Niobium (41)	0.7	10	0.7	10
$^{93}Nb^{m}$		40	1000	6	100
^{94}Nb		0.6	10	0.6	10
^{95}Nb		1	20	1	20
^{97}Nb		0.6	10	0.5	10
^{147}Nd	Neodymium (60)	4	100	0.5	10
^{149}Nd		0.6	10	0.5	10
^{59}Ni	Nickel (28)	40	1000	40	1000
^{63}Ni		40	1000	30	800
^{65}Ni		0.3	8	0.3	8
^{235}Np	Neptunium (93)	40	1000	40	1000
^{236}Np		7	100	1×10^{-3}	2×10^{-2}
^{237}Np		2	50	2×10^{-4}	5×10^{-3}
^{239}Np		6	100	0.5	10
^{185}Os	Osmium (76)	1	20	1	20
$^{191}Os^{m}$		40	1000	40	1000
^{191}Os		10	200	0.9	20
^{193}Os		0.6	10	0.5	10
^{194}Os (2)		0.2	5	0.2	5
^{32}P	Phosphorus (15)	0.3	8	0.3	8
^{33}P		40	1000	0.9	20
^{230}Pa	Protactinium (91)	2	50	0.1	2
^{231}Pa		0.6	10	6×10^{-5}	1×10^{-3}
^{233}Pa		5	100	0.9	20

Symbol of radionuclide	Element and atomic number	A_1		A_2	
		TBq	(Ci) (approx [1])	TBq	(Ci) (approx [1])
^{201}Pb	Lead (82)	1	20	1	20
^{202}Pb		40	1000	2	50
^{203}Pb		3	80	3	80
^{205}Pb		Unlimited		Unlimited	
^{210}Pb [2]		0.6	10	9×10^{-3}	2×10^{-1}
^{212}Pb [2]		0.3	8	0.3	8
^{103}Pd	Palladium (46)	40	1000	40	1000
^{107}Pd		Unlimited		Unlimited	
^{109}Pd		0.6	10	0.5	10
^{143}Pm	Promethium (61)	3	80	3	80
^{144}Pm		0.6	10	0.6	10
^{145}Pm		30	800	7	100
^{147}Pm		40	1000	0.9	20
^{148}Pm^{m}		0.5	10	0.5	10
^{149}Pm		0.6	10	0.5	10
^{151}Pm		3	80	0.5	10
^{208}Po	Polonium (84)	40	1000	2×10^{-2}	5×10^{-1}
^{209}Po		40	1000	2×10^{-2}	5×10^{-1}
^{210}Po		40	1000	2×10^{-2}	5×10^{-1}
^{142}Pr	Praseodymium (59)	0.2	5	0.2	5
^{143}Pr		4	100	0.5	10
^{188}Pt [2]	Platinum (78)	0.6	10	0.6	10
^{191}Pt		3	80	3	80
^{193}Pt^{m}		40	1000	9	200
^{193}Pt		40	1000	40	1000
^{195}Pt^{m}		10	200	2	50
^{197}Pt^{m}		10	200	0.9	20
^{197}Pt		20	500	0.5	10
^{236}Pu	Plutonium (94)	7	100	7×10^{-4}	1×10^{-2}
^{237}Pu		20	500	20	500
^{238}Pu		2	50	2×10^{-4}	5×10^{-3}
^{239}Pu		2	50	2×10^{-4}	5×10^{-3}
^{240}Pu		2	50	2×10^{-4}	5×10^{-3}
^{241}Pu		40	1000	1×10^{-2}	2×10^{-1}
^{242}Pu		2	50	2×10^{-4}	5×10^{-3}
^{244}Pu [2]		0.3	8	2×10^{-4}	5×10^{-3}
^{223}Ra [2]	Radium (88)	0.6	10	3×10^{-2}	8×10^{-1}
^{224}Ra [2]		0.3	8	6×10^{-2}	1
^{225}Ra [2]		0.6	10	2×10^{-2}	5×10^{-1}
^{226}Ra [2]		0.3	8	2×10^{-2}	5×10^{-1}
^{228}Ra [2]		0.6	10	4×10^{-2}	1
^{81}Rb	Rubidium (37)	2	50	0.9	20
^{83}Rb		2	50	2	50
^{84}Rb		1	20	0.9	20
^{86}Rb		0.3	8	0.3	8
^{87}Rb		Unlimited		Unlimited	
Rb (natural)		Unlimited		Unlimited	

Symbol of radio-nuclide	Element and atomic number	A_1		A_2	
		TBq	(Ci) (approx [1])	TBq	(Ci) (approx [1])
^{183}Re	Rhenium (75)	5	100	5	100
^{184}Re^{m}		3	80	3	80
^{184}Re		1	20	1	20
^{186}Re		4	100	0.5	10
^{187}Re		Unlimited		Unlimited	
^{188}Re		0.2	5	0.2	5
^{189}Re		4	100	0.5	10
Re (natural)		Unlimited		Unlimited	
^{99}Rh	Rhodium (45)	2	50	2	50
^{101}Rh		4	100	4	100
^{102}Rh^{m}		2	50	0.9	20
^{102}Rh		0.5	10	0.5	10
^{103}Rh^{m}		40	1000	40	1000
^{105}Rh		10	200	0.9	20
^{222}Rn [2]	Radon (86)	0.2	5	4×10^{-3}	1×10^{-1}
^{97}Ru	Ruthenium (44)	4	100	4	100
^{103}Ru		2	50	0.9	20
^{105}Ru		0.6	10	0.5	10
^{106}Ru [2]		0.2	5	0.2	5
^{35}S	Sulphur (16)	40	1000	2	50
^{122}Sb	Antimony (51)	0.3	8	0.3	8
^{124}Sb		0.6	10	0.5	10
^{125}Sb		2	50	0.9	20
^{126}Sb		0.4	10	0.4	10
^{44}Sc	Scandium (21)	0.5	10	0.5	10
^{46}Sc		0.5	10	0.5	10
^{47}Sc		9	200	0.9	20
^{48}Sc		0.3	8	0.3	8
SCO	Surface Contaminated Objects (see marginal 2700 (2))				
^{75}Se	Selenium (34)	3	80	3	80
^{79}Se		40	1000	2	50
^{31}Si	Silicon (14)	0.6	10	0.5	10
^{32}Si		40	1000	0.2	5
^{145}Sm	Samarium (62)	20	500	20	500
^{147}Sm		Unlimited		Unlimited	
^{151}Sm		40	1000	4	100
^{153}Sm		4	100	0.5	10
^{113}Sn [2]	Tin (50)	4	100	4	100
^{117}Sn^{m}		6	100	2	50
^{119}Sn^{m}		40	1000	40	1000
^{121}Sn^{m}		40	1000	0.9	20
^{123}Sn		0.6	10	0.5	10
^{125}Sn		0.2	5	0.2	5
^{126}Sn [2]		0.3	8	0.3	8
^{82}Sr [2]	Strontium (38)	0.2	5	0.2	5
^{85}Sr^{m}		5	100	5	100
^{85}Sr		2	50	2	50
^{87}Sr^{m}		3	80	3	80
^{89}Sr		0.6	10	0.5	10
^{90}Sr [2]		0.2	5	0.1	2
^{91}Sr		0.3	8	0.3	8
^{92}Sr [2]		0.2	5	0.2	5

Symbol of radionuclide	Element and atomic number	A_1		A_2	
		TBq	(Ci) (approx [1])	TBq	(Ci) (approx [1])
T(all forms)	Tritium (1)	40	1000	40	1000
^{178}Ta	Tantalum (73)	1	20	1	20
^{179}Ta		30	800	30	800
^{182}Ta		0.8	20	0.5	10
^{157}Tb	Terbium (65)	40	1000	10	200
^{158}Tb		1	20	0.7	10
^{160}Tb		0.9	20	0.5	10
^{95}Tc^{m}	Technetium (43)	2	50	2	50
^{96}Tc^{m} [2]		0.4	10	0.4	10
^{96}Tc		0.4	10	0.4	10
^{97}Tc^{m}		40	1000	40	1000
^{97}Tc		Unlimited		Unlimited	
^{98}Tc		0.7	10	0.7	10
^{99}Tc^{m}		8	200	8	200
^{99}Tc		40	1000	0.9	20
^{118}Te [2]	Tellurium (52)	0.2	5	0.2	5
^{121}Te^{m}		5	100	5	100
^{121}Te		2	50	2	50
^{123}Te^{m}		7	100	7	100
^{125}Te^{m}		30	800	9	200
^{127}Te^{m} [2]		20	500	0.5	10
^{127}Te		20	500	0.5	10
^{129}Te^{m} [2]		0.6	10	0.5	10
^{129}Te		0.6	10	0.5	10
^{131}Te^{m}		0.7	10	0.5	10
^{132}Te [2]		0.4	10	0.4	10
^{227}Th	Thorium (90)	9	200	1×10^{-2}	2×10^{-1}
^{228}Th [2]		0.3	8	4×10^{-4}	1×10^{-2}
^{229}Th		0.3	8	3×10^{-5}	8×10^{-4}
^{230}Th		2	50	2×10^{-4}	5×10^{-3}
^{231}Th		40	1000	0.9	20
^{232}Th		Unlimited		Unlimited	
^{234}Th [2]		0.2	5	0.2	5
Th (natural)		Unlimited		Unlimited	
^{44}Ti [2]	Titanium (22)	0.5	10	0.2	5
^{200}Tl	Thallium (81)	0.8	20	0.8	20
^{201}Tl		10	200	10	200
^{202}Tl		2	50	2	50
^{204}Tl		4	100	0.5	10
^{167}Tm	Thulium (69)	7	100	7	100
^{168}Tm		0.8	20	0.8	20
^{170}Tm		4	100	0.5	10
^{171}Tm		40	1000	10	200
^{230}U	Uranium (92)	40	1000	1×10^{-2}	2×10^{-1}
^{232}U		3	80	3×10^{-4}	8×10^{-3}
^{233}U		10	200	1×10^{-3}	2×10^{-2}
^{234}U		10	200	1×10^{-3}	2×10^{-2}
^{235}U		Unlimited [3]		Unlimited [3]	
^{236}U		10	200	1×10^{-3}	2×10^{-2}
^{238}U		Unlimited		Unlimited	

Symbol of radionuclide	Element and atomic number	A_1 TBq	A_1 (Ci) (approx [1])	A_2 TBq	A_2 (Ci) (approx [1])
	Uranium (cont'd)				
U (natural)		Unlimited		Unlimited	
U (enriched 5 % or less)		Unlimited [3]		Unlimited [3]	
U (enriched more than 5 %)		10	200	1×10^{-3}	2×10^{-2}
U (depleted)		Unlimited		Unlimited	
^{48}V	Vanadium (23)	0.3	8	0.3	8
^{49}V		40	1000	40	1000
^{178}W [2]	Tungsten (74)	1	20	1	20
^{181}W		30	800	30	800
^{185}W		40	1000	0.9	20
^{187}W		2	50	0.5	10
^{188}W [2]		0.2	5	0.2	5
^{122}Xe [2]	Xenon (54)	0.2	5	0.2	5
^{123}Xe		0.2	5	0.2	5
^{127}Xe		4	100	4	100
$^{131}Xe^{m}$		40	1000	40	1000
^{133}Xe		20	500	20	500
^{135}Xe		4	100	4	100
^{87}Y	Yttrium (39)	2	50	2	50
^{88}Y		0.4	10	0.4	10
^{90}Y		0.2	5	0.2	5
$^{91}Y^{m}$		2	50	2	50
^{91}Y		0.3	8	0.3	8
^{92}Y		0.2	5	0.2	5
^{93}Y		0.2	5	0.2	5
^{169}Yb	Ytterbium (70)	3	80	3	80
^{175}Yb		30	800	0.9	20
^{65}Zn	Zinc (30)	2	50	2	50
$^{69}Zn^{m}$ [2]		2	50	0.5	10
^{69}Zn		4	100	0.5	10
^{88}Zr	Zirconium (40)	3	80	3	80
^{93}Zr		40	1000	0.2	5
^{95}Zr		1	20	0.9	20
^{97}Zr		0.3	8	0.3	8

Notes:

1. The curie values quoted are obtained by rounding down from the TBq figure after conversion to Ci.

2. A_1 and / or A_2 value limited by daughter product decay.

3. A_1 and A_2 are unlimited for radiation control purposes only. For nuclear criticality safety this material is subject to the control placed on fissile material.

DETERMINATION OF A_1 AND A_2

3701 (1) For individual radionuclides whose identities are known, but which are not listed in Table I, the determination of the values of A_1 and A_2 shall require multilateral approval. Alternatively, the values of A_1 and A_2 in Table II may be used without obtaining competent authority approval.

TABLE II. GENERAL VALUES FOR A_1 AND A_2

Contents	A_1		A_2	
	TBq	(Ci)*/	TBq	(Ci)*/
Only beta or gamma emitting nuclides are known to be present	0.2	5	0.02	0.5
Alpha emitting nuclides are known to be present or no relevant data are available	0.1	2	2×10^{-5}	5×10^{-4}

*/ The curie values quoted are obtained by rounding down from the TBq figure after conversion to Ci.

(2) In the calculations of A_1 and A_2 for a radionuclide not in Table I, a single radioactive decay chain in which the radionuclides are present in their naturally occurring proportions and in which no daughter nuclide has a half-life either longer than 10 days or longer than that of the parent nuclide shall be considered as a single radionuclide, and the activity to be taken into account and the A_1 or A_2 value to be applied shall be those corresponding to the parent nuclide of that chain. In the case of radioactive decay chains in which any daughter nuclide has a half-life longer than 10 days or greater than that of the parent nuclide, the parent and such daughter nuclides shall be considered as mixtures of different nuclides.

(3) For mixtures of radionuclides whose identities and respective activities are known, the following conditions shall apply:

a) For special form radioactive material:

$$\sum_i \frac{B(i)}{A_1(i)} \text{ less than or equal to } 1$$

b) For other forms of radioactive material:

$$\sum_{i} \frac{B(i)}{A_2(i)} \text{ less than or equal to } 1$$

where B(i) is the activity of radionuclide i and $A_1(i)$ and $A_2(i)$ are the A_1 and A_2 values for radionuclide i, respectively.

Alternatively, an A_2 value for mixtures may be determined as follows:

$$A_2 \text{ for mixture} = \frac{1}{\sum_{i} \frac{f(i)}{A_2(i)}}$$

where f(i) is the fraction of activity of nuclide i in the mixture and $A_2(i)$ is the appropriate A_2 value for nuclide i.

(4) When the identity of each radionuclide is known but the individual activities of some of the radionuclides are not known, the radionuclides may be grouped and the lowest A_1 or A_2 value, as appropriate, for the radionuclides in each group may be used in applying the formulas in paragraph (3) above. Groups may be based on the total alpha activity and the total beta / gamma activity when these are known, using the lowest A_1 or A_2 values for the alpha emitters or beta / gamma emitters, respectively.

(5) For individual radionuclides or for mixtures of radionuclides for which relevant data are not available, the values shown in Table II shall be used.

CONTENTS LIMITS FOR PACKAGES

3702 The quantity of radioactive material in a package shall not exceed the relevant limits specified in this marginal.

(1) Excepted packages

a) For radioactive material other than articles manufactured of natural uranium, depleted uranium or natural thorium, an excepted package shall not contain activities greater than the following:

(i) Where the radioactive material is enclosed in or forms a component part of an instrument or other manufactured article, such as a clock or electronic apparatus, the limits specified in marginal 3713 (4) for each individual item and each package, respectively; or

(ii) Where the radioactive material is not so enclosed or manufactured, the limits specified in marginal 3713 (5).

b) For articles manufactured of natural uranium, depleted uranium or natural thorium, an excepted package may contain any quantity of such material provided that the outer surface of the uranium or thorium is enclosed in an inactive sheath made of metal or some other substantial material.

(2) Industrial packages

The total activity in a single package of LSA material or in a single package of SCO shall be so restricted that the radiation level specified in marginal 3714 (1) shall not be exceeded, and the activity in a single package shall also be so restricted that the activity limits for a vehicle specified in marginal 3714 (6) shall not be exceeded.

(3) Type A packages

Type A packages shall not contain activities greater than the following:

a) For special form radioactive material - A_1; or

b) For all other radioactive material - A_2.

Values for A_1 and A_2 are listed in Tables I and II of marginals 3700 and 3701 respectively.

(4) Type B packages

Type B packages shall not contain:

a) Activities greater than those authorised for the package design.

b) Radionuclides different from those authorised for the package design, or

c) Contents in a form, or a physical or chemical state different from those authorised for the package design,

as specified in their certificates of approval.

(5) Packagings containing fissile material

All packagings containing fissile material shall comply with the applicable activity limits for packages specified in paragraphs (1) - (4) above.

Packagings containing fissile material, other than those containing materials which comply with the provisions of marginal 3703 (1), shall not contain:

a) a mass of fissile material greater than that authorised for the package design,

b) any radionuclide or fissile material different from those authorised for the package design, or

c) contents in a form or physical or chemical state, or in a spatial arrangement, different from those authorised for the package design,

as specified in their certificates of approval.

3703 Packages meeting one of the conditions of this marginal shall be excepted from the provisions specified in marginal 3741 and from the other provisions of this Appendix that apply specifically to fissile material; such packages, however, shall be regulated as non-fissile radioactive material packages, as applicable, and shall still be subject to those provisions of this Appendix which pertain to their radioactive nature and properties.

a) Packages containing individually not more than 15 g of fissile material, provided that the smallest external dimension of each package is not less than 10 cm. For unpackaged material, the quantity limitation shall apply to the consignment being carried in or on the vehicle.

b) Packages containing homogeneous hydrogenous solutions or mixtures satisfying the conditions listed in Table III. For unpackaged material, the quantity limitations in Table III shall apply to the consignment being carried in or on the vehicle.

c) Packages containing uranium enriched in uranium-235 to a maximum of 1% by mass, and with a total plutonium and uranium-233 content not exceeding 1% of the mass of uranium-235, provided that the fissile material is distributed essentially homogeneously throughout the material. In addition, if uranium-235 is present in metallic, oxide, or carbide forms, it shall not form a lattice arrangement within the package.

d) Packages containing not more than 5 g of fissile material in any 10 litre volume, provided that the radioactive material is contained in packages which will maintain the limitations on fissile material distribution under conditions likely be encountered during routine transport.

e) Packages containing individually not more than 1 kg of total plutonium, of which not more than 20% by mass may consist of plutonium-239, plutonium-241, or any combination of those radionuclides.

f) Packages containing liquid solutions of uranyl nitrate enriched in uranium-235 to a maximum of 2% by mass, with a total plutonium and uranium-233 content not exceeding 0.1 % of the mass of uranium-235, and with a minimum nitrogen to uranium atomic ratio ($^{N}/_{U}$) of 2.

TABLE III. LIMITATIONS ON HOMOGENEOUS HYDROGENOUS SOLUTIONS OR MIXTURES OF FISSILE MATERIAL

Parameters	Uranium-235 only	Any other fissile material (including mixtures)
Minimum $^{H}/_{X}$ 1/	5200	5200
Maximum concentration of fissile material (g/l)	5	5
Maximum mass of fissile material in a package or vehicle (g)	800 2/	500

Notes: 1/ Where H/X is the ratio of the number of hydrogen atoms to the number of atoms of fissile nuclide.

2/ With a total plutonium and uranium-233 content of not more than 1% of the mass of uranium-235.

3704-3709

SECTION II PREPARATION PROVISIONS AND CONTROLS FOR SHIPMENT AND FOR STORAGE IN TRANSIT.

PACKAGE INSPECTION PROVISIONS

3710 (1) Before the first shipment of any package, the following provisions shall be fulfilled:

a) If the design pressure of the containment system exceeds 35 kPa (0.35 bar) (gauge), it shall be ensured that the containment system of each package conforms to the approved design provisions relating to the capability of that system to maintain its integrity under pressure.

b) For each Type B package and for each packaging containing fissile material, it shall be ensured that the effectiveness of its shielding, containment system, and, where necessary, the heat transfer characteristics, are within the limits applicable to or specified for the approved design.

c) For each packaging containing fissile material, where neutron poisons are specifically included as components of the package, in order to comply with the provisions of marginal 3741, tests shall be performed to confirm the presence and distribution of those neutron poisons.

(2) Before each shipment of any package, the following provisions shall be fulfilled:

a) It shall be ensured that lifting attachments which do not meet the provisions of marginal 3732 have been removed or otherwise rendered incapable of being used for lifting the package.

b) For each Type B package and for each packaging containing fissile material, it shall be ensured that all the requirements specified in the approval certificates and the relevant provisions of this Appendix have been satisfied.

c) Each Type B package shall be held until equilibrium conditions have been approached closely enough to demonstrate compliance with the shipment provisions for temperature and pressure unless an exemption from these provisions has received unilateral approval.

d) For each Type B package, it shall be ensured by examination and / or appropriate tests that all closures, valves and other openings of the containment system through which the radioactive contents might escape are properly closed and, where appropriate, sealed in the manner for which the demonstrations of compliance with the provisions of marginal 3738 were made.

TRANSPORT OF OTHER GOODS

3711 (1) A package shall not contain any other items except such articles and documents as are necessary for the use of the radioactive material. This provision shall not preclude the transport of low specific activity material or surface contaminated objects with other items. The transport of such articles and documents in a package, or of low specific activity material or surface contaminated objects with other items may be permitted provided that there is no interaction between them and the packaging or its contents that would reduce the safety of the package.

(2) Tanks used for the transport of radioactive material shall not be used for the storage or transport of other goods.

(3) The carriage of other goods with consignments being transported under exclusive use shall be permitted provided the arrangements are controlled only by the consignor and it is not prohibited by other regulations.

(4) Consignments shall be segregated from other dangerous goods during transport and storage in accordance with the provisions of marginal 2703 under heading 7. and 71 403.

(5) Radioactive material shall be sufficiently segregated from undeveloped photographic film. The basis for determining segregation distances for this purpose shall be that the radiation exposure of undeveloped photographic film due to the transport of radioactive material be limited to 0.1 mSv (10 mrem) per consignment of such film in accordance with marginal 2711.

REQUIREMENTS AND CONTROLS FOR CONTAMINATION AND FOR LEAKING PACKAGES

3712 (1) The non-fixed contamination on the external surfaces of a package shall be kept as low as practicable and, under conditions likely to be encountered in routine transport, shall not exceed the levels specified in Table IV.

(2) In the case of overpacks and containers, the level of non-fixed contamination on the external and the internal surfaces shall not exceed the limits specified in Table IV.

TABLE IV LIMITS OF NON-FIXED CONTAMINATION ON SURFACES

Type of package, overpack, container, tank or vehicle and its equipment	Contaminant			
	Limit */ of beta and gamma emitters and low toxicity alpha emitters		Limit */ of all other alpha emitters	
	Bq/cm²	(μCi/cm²)	Bq/cm²	(μCi/cm²)
External surfaces of:				
excepted packages	0.4	(10^{-5})	0.04	(10^{-6})
other than excepted packages	4	(10^{-4})	0.4	(10^{-5})
External and internal surfaces of overpacks, containers, vehicles and their equipment when carrying or being prepared to carry:				
loads including excepted packages and / or non-radioactive goods	0.4	(10^{-5})	0.04	(10^{-6})
loads consisting only of radioactive material in packages other than excepted packages	4	(10^{-4})	0.4	(10^{-5})
External surfaces of containers, tanks and vehicles and their equipment used in the carriage of unpackaged radioactive material	4	(10^{-4})	0.4	(10^{-5})

*/ The limits are applicable when averaged over any area of 300 cm^2 of any part of the surface.

(3) If it is evident that a package is damaged or leaking, or if it is suspected that the package may have leaked or been damaged, access to the package shall be restricted and a qualified person shall, as soon as possible, assess the extent of contamination and the resultant radiation level of the package. The scope of the survey shall include the package, the vehicle, the adjacent loading and unloading

areas, and, if necessary, all other material which has been carried in the vehicle. When necessary, additional steps for the protection of human health, in accordance with provisions established by the relevant competent authority, shall be taken to overcome and minimize the consequences of such leakage or damage.

(4) Packages leaking radioactive contents in excess of allowable limits for normal conditions of transport may be removed under supervision but shall not be forwarded until repaired or reconditioned and decontaminated.

(5) A vehicle and equipment used routinely for the carriage of radioactive material shall be periodically checked to determine the level of contamination. The frequency of such checks shall be related to the likelihood of contamination and the extent to which radioactive material is carried.

(6) Except as provided in paragraph (7) below, any vehicle, equipment, or part thereof which has become contaminated above the limits specified in Table IV in the course of the carriage of radioactive material shall be decontaminated as soon as possible by a qualified person and shall not be re-used unless the non-fixed radioactive contamination does not exceed the levels specified in Table IV, and the radiation level resulting from the fixed contamination on surfaces after decontamination is less than 5 µSv/h (0.5 mrem/h).

(7) A vehicle used for the transport of low specific activity material or surface contaminated objects under exclusive use shall be excepted from the provisions of paragraph (6) above, only for as long as it remains under that specific exclusive use.

REQUIREMENTS AND CONTROLS FOR TRANSPORT OF EXCEPTED PACKAGES

3713 (1) Excepted packages shall be subject only to the following provisions:

a) In sections II, III and V, only the provisions specified in:

(i) paragraphs (2) to (6) of this marginal, as applicable, and marginal 3770 and

(ii) the general provisions for all packagings and packages specified in marginal 3732.

b) If the excepted package contains fissile material, the provisions of marginal 3703.

c) The provision of marginal 2705 (1).

(2) The radiation level at any point on the external surface of an excepted package shall not exceed 5 μSv/h (0.5 mrem/h).

(3) The non-fixed radioactive contamination on any external surface of an excepted package shall not exceed the levels specified in Table IV.

(4) Radioactive material which is enclosed in or forms a component part of an instrument or other manufactured article, with activity not exceeding the item and package limits specified in columns 2 and 3 respectively in Table V, may be transported in an excepted package provided that:

a) the radiation level at 10 cm from any point on the external surface of any unpackaged instrument or article is not greater than 0.1 mSv/h (10 mrem/h);

and

b) each instrument or article (except radioluminescent time-pieces or devices) bears the marking "Radioactive".

TABLE V. ACTIVITY LIMITS FOR EXCEPTED PACKAGES.

Physical state of contents	Instruments and articles		Material
	Item limits	Package limits	Package limits
Solids:			
special form	10^{-2} A_1	A_1	10^{-3} A_1
other forms	10^{-2} A_2	A_2	10^{-3} A_2
Liquids:	10^{-3} A_2	10^{-1} A_2	10^{-4} A_2
Gases:			
tritium	2×10^{-2} A_2	2×10^{-1} A_2	2×10^{-2} A_2
special forms	10^{-3} A_1	10^{-2} A_1	10^{-3} A_1
other forms	10^{-3} A_2	10^{-2} A_2	10^{-3} A_2

Note: For mixtures of radionuclides, see marginal 3701 (3) to (5).

(5) Radioactive material in forms other than as specified in paragraph (4) above, with an activity not exceeding the limit specified in column 4 of Table V, may be transported in an excepted package provided that:

a) the package retains its contents under conditions likely to be encountered in routine transport;

and

b) the package bears the marking "Radioactive" on an internal surface in such a manner that a warning of the presence of radioactive material is visible on opening the package.

(6) A manufactured article in which the sole radioactive material is unirradiated natural uranium, unirradiated depleted uranium or unirradiated natural thorium may be transported as an excepted package provided that the outer surface of the uranium or thorium is enclosed in an inactive sheath made of metal or some other substantial material.

REQUIREMENTS AND CONTROLS FOR TRANSPORT OF LSA MATERIAL AND SCO IN INDUSTRIAL PACKAGES OR UNPACKAGED

3714 (1) The quantity of LSA material or SCO in a single industrial package (IP-1, IP-2 or IP-3) or object or collection of objects, whichever is appropriate, shall be so restricted that the external radiation level at 3 m from the unshielded material or object or collection of objects does not exceed 10 mSv/h (1000 mrem/h).

(2) LSA material and SCO which is or contains fissile material shall meet the applicable provisions of marginals 2714 (2) and (3) and 3741.

(3) Packages, including tanks or containers, containing LSA material or SCO shall be subject to the provisions of marginal 3712 (1) and (2).

(4) LSA material and SCO in groups LSA-I and SCO-I may be transported unpackaged under the following conditions:

a) All unpackaged material other than ores containing only naturally occurring radionuclides shall be transported in such a manner that under conditions likely to be encountered in routine transport there will be no escape of the contents from the vehicle nor will there be any loss of shielding.

b) Each vehicle shall be under exclusive use, except when only transporting SCO-1 on which the contamination on the accessible and the inaccessible surfaces is not greater than ten times the applicable level specified in marginal 2700 (2).

c) For SCO-I where it is suspected that non-fixed contamination exists on inaccessible surfaces in excess of the values specified in marginal 2700 (2), measures shall be taken to ensure that the radioactive material is not released into the vehicle.

(5) LSA material and SCO, except as otherwise specified in paragraph (4) above, shall be packaged in accordance with

the package integrity levels specified in Table VI in such a manner that, under conditions likely to be encountered in routine transport, there will be no escape of contents from packages, nor will there be any loss of shielding afforded by the packaging. LSA-II material, LSA-III material and SCO-II shall not be transported unpackaged.

TABLE VI INDUSTRIAL PACKAGE INTEGRITY PROVISIONS FOR LSA MATERIAL AND SCO

Contents	Industrial package type 1/	
	Exclusive use	Not under exclusive use
LSA-I 2/		
Solid	IP-1	IP-1
Liquid	IP-1	IP-2
LSA-II		
Solid	IP-2	IP-2
Liquid and gas	IP-2	IP-3
LSA-III	IP-2	IP-3
SCO-I 2/	IP-1	IP-1
SCO-II	IP-2	IP-2

Note: 1/ See marginal 2700 (2).

2/ Under the conditions specified in paragraph (4) above, LSA-I material and SCO-I may be transported unpackaged.

(6) The total activity of LSA material and SCO in any single vehicle shall not exceed the limits shown in Table VII.

TABLE VII VEHICLE ACTIVITY LIMITS FOR LSA MATERIAL AND SCO IN INDUSTRIAL PACKAGES OR UNPACKAGED

Nature of material	Activity limit for vehicle
LSA-I	No limit
LSA-II and LSA-III non-combustible solids	No limit
LSA-II and LSA-III combustible solids, and all liquids and gases	100 A_2
SCO	100 A_2

DETERMINATION OF TRANSPORT INDEX (TI)

3715 (1) The transport index (TI) based on radiation exposure control for a package, overpack, tank, container, or for unpackaged LSA-I or SCO-I, shall be the number derived in accordance with the following procedure:

a) Determine the maximum radiation level at a distance of 1 m from the external surfaces of the package, overpack, tank, container, or unpackaged LSA-I and SCO-I. Where the radiation level is determined in units of millisievert per hour (mSv/h), the value determined shall be multiplied by 100. Where the radiation level is determined in units of millirem per hour (mrem/h), the value determined is not changed.

For uranium and thorium ores and concentrates, the maximum radiation dose rate at any point 1 m from the external surface of the load may be taken as:

0.4 mSv/h (40 mrem/h)	for the ores and physical concentrates of uranium and thorium,
0.3 mSv/h (30 mrem/h)	for chemical concentrates of thorium,
0.02 mSv/h (2 mrem/h)	for chemical concentrates of uranium, other than uranium hexafluoride.

b) For tanks, containers and unpackaged LSA-I and SCO-I, the value determined in step a) above shall be multiplied by the appropriate factor from Table VIII.

c) The figure obtained in steps a) and b) above shall be rounded up to the first decimal place (e.g. 1.13 becomes 1.2), except that a value of 0.05 or less may be considered as zero.

TABLE VIII MULTIPLICATION FACTORS FOR LARGE DIMENSION LOADS

Size of load (Largest cross-sectional area of the load being measured)	Multiplication factor
size of load ≤ 1 m²	1
1 m² < size of load ≤ 5 m²	2
5 m² < size of load ≤ 20 m²	3
20 m² < size of load	10

(2) The transport index (TI) based on nuclear criticality control shall be obtained by dividing the number 50 by the value of N derived using the procedures specified in marginal 3741 (ie Transport Index = 50/N). The value of the transport index for nuclear criticality control may be zero, provided that an unlimited number of packages is subcritical (ie N is effectively equal to infinity).

(3) The transport index for each consignment shall be determined in accordance with Table IX.

TABLE IX DETERMINATION OF TRANSPORT INDEX

Item	Contents	Method of determining Transport Index (T.I)
Packages	Non-fissile material	TI for radiation exposure control
	Fissile material	The larger of the TI for radiation exposure control and the TI for nuclear criticality control
Non-rigid Overpacks	Packages	Sum of TI's of all packages contained
Rigid Overpacks	Packages	The sum of the TI's of all packages contained, or, for the original consignor either the TI for radiation exposure control or the sum of the TI's of all the packages
Containers	Packages or Overpacks	Sum of the TI's of all packages and overpacks contained
	LSA material or SCO	Either the sum of the TI's or the larger of the TI for radiation exposure control and the TI for nuclear criticality control
Containers under exclusive use	Packages or Overpacks	Either the sum of the TI's or the larger of the TI for radiation exposure control and the TI for nuclear criticality control
Tanks	Non-fissile material	TI for radiation exposure control
	Fissile material	The larger of the TI for radiation exposure control and the TI for nuclear criticality control
Unpackaged	LSA-I and SCO-I	The TI for radiation exposure control

ADDITIONAL PROVISIONS FOR OVERPACKS

3716 The following additional provisions shall apply to overpacks:

a) Packages of fissile material for which the transport index for nuclear criticality control is 0 and packages of non-fissile radioactive material may be combined together in an overpack for transport, provided that

each package contained therein meets the applicable provision of this Appendix.

b) Packages of fissile material for which the transport index for nuclear criticality control exceeds 0 shall not be carried in an overpack.

c) Only the original consignor of the packages contained within the overpacks shall be permitted to use the method of direct measurement of radiation level to determine the transport index of a rigid overpack.

LIMITS ON TRANSPORT INDEX AND RADIATION LEVEL FOR PACKAGES AND OVERPACKS

3717 (1) Except for consignments under exclusive use, the transport index of any individual package or overpack shall not exceed 10.

(2) Except for packages or overpacks transported under exclusive use under the conditions specified in marginal 2713 (1) a), the maximum radiation level at any point on any external surface of a package or overpack shall not exceed 2 mSv/h (200 mrem/h).

(3) The maximum radiation level at any point on any external surface of a package transported under exclusive use shall not exceed 10 mSv/h (1000 mrem/h).

CATEGORIES

3718 Packages and overpacks shall be assigned to either category I-WHITE, II-YELLOW or III-YELLOW in accordance with the conditions specified in Tables X and XI, as applicable, and with the following provisions:

a) For a package, both the transport index and the surface radiation level conditions shall be taken into account in determining which is the appropriate category. Where the transport index satisfies the condition for one category but the surface radiation level satisfies the condition for a different category, the package shall be assigned to the higher category of the two. For this purpose, category I-WHITE shall be regarded as the lowest category.

b) The transport index shall be determined following the procedures specified in marginal 3715 and subject to the limitation of marginal 3716 c).

c) If the transport index is greater than 10, the package or overpack shall be transported under exclusive use.

d) If the surface radiation level is greater than 2 mSv/h (200 mrem/h), the package or overpack shall be transported under exclusive use and under the provisions of marginal 2713 (1) a).

e) A package transported under a special arrangement shall be assigned to category III-YELLOW.

f) An overpack which contains packages transported under special arrangement shall be assigned to category III-YELLOW.

TABLE X. CATEGORIES OF PACKAGES

Conditions		
Transport Index	Maximum radiation level at any point on external surface	Category
0*/	Not more than 0.005 mSv/h (0.5 mrem/h)	I-WHITE
More than 0 but not more than 1*/	More than 0.005 mSv/h (0.5 mrem/h) but not more than 0.5 mSv/h (50 mrem/h)	II-YELLOW
More than 1 but not more than 10	More than 0.5 mSv/h (50 mrem/h) but not more than 2 mSv/h (200 mrem/h)	III-YELLOW
More than 10	More than 2 mSv/h (200 mrem/h) but not more than 10 mSv/h (1000 mrem/h)	III-YELLOW and also under exclusive use

*/ If the measured TI is not greater than 0.05, the value quoted may be zero in accordance with marginal 3715 (1) c).

TABLE XI. CATEGORIES OF OVERPACKS INCLUDING CONTAINERS WHEN USED AS OVERPACKS.

Transport Index	Category
0	I-WHITE
Greater than 0 but less than or equal to 1	II-YELLOW
Greater than 1	III-YELLOW

NOTIFICATION OF COMPETENT AUTHORITIES

371.9 (1) Before the first shipment of any package requiring competent authority approval, the consignor shall ensure that copies of each applicable competent authority certificate applying to that package design have been submitted to the competent authority of each country through or into which the consignment is to be transported. The consignor is not required to await an acknowledgement from the competent authority, nor is the competent authority required to make such acknowledgement of receipt of the certificate.

(2) For each shipment listed in a), b) or c) below, the consignor shall notify the competent authority of each country through or into which the consignment is to be transported. This notification shall be in the hands of each competent authority prior to the commencement of the shipment, and preferably at least 7 days in advance.

a) Type B(U) packages containing radioactive material with an activity greater than 3 X 10^3 A_1 or 3 X 10^3 A_2, as appropriate, or 1000 TBq (20 kCi), whichever is the lower.

b) Type B(M) packages.

c) Transport under special arrangement.

(3) The consignment notification shall include:

a) Sufficient information to enable the identification of the package including all applicable certificate numbers and identification marks;

b) Information on the date of shipment, the expected date of arrival and proposed routeing;

c) The name of the radioactive material or nuclide;

d) A description of the physical and chemical form of the radioactive material, or whether it is special form radioactive material; and

e) The maximum activity of the radioactive contents during transport expressed in units of becquerel (Bq) (and, if desired, curie (Ci)) with an appropriate SI prefix (see marginal 2001 (1)). For fissile material, the total mass of fissile material in units of gram (g), or multiples thereof, may be used in place of activity.

(4) The consignor is not required to send a separate notification if the required information has been included in the application for shipment approval. See marginal 3757 (3).

Possession of certificates and operating instructions

(5) The consignor shall have in his possession a copy of each certificate required under Section III of this Appendix, and a copy of the instructions with regard to the proper closing of the package and other preparations for shipment before making any shipment under the terms of the certificates.

3720–
3729

SECTION III PROVISIONS FOR RADIOACTIVE MATERIAL, FOR PACKAGING AND PACKAGES AND TEST PROCEDURES

Note: The provisions in Section III are the same as those prescribed in the 1985 Edition of IAEA Regulations for the safe transport of radioactive material and the 1988 Supplement. The paragraph numbers mentioned under marginals 3730 to 3742 are the numbers of the applicable paragraphs of the 1985 Edition.

3730 PROVISIONS FOR LSA-III MATERIAL

paragraph 501

3731 PROVISIONS FOR SPECIAL FORM RADIOACTIVE MATERIAL

paragraphs 502 - 504

3732 GENERAL PROVISIONS FOR ALL PACKAGINGS AND PACKAGES

paragraphs 505 - 514

3733 PROVISIONS FOR INDUSTRIAL PACKAGES TYPE 1 (IP-1)

paragraph 518

3734 ADDITIONAL PROVISIONS FOR INDUSTRIAL PACKAGES TYPE 2 (IP-2)

paragraph 519

3735 ADDITIONAL PROVISIONS FOR INDUSTRIAL PACKAGES TYPE 3 (IP-3)

paragraph 520

3736 ALTERNATIVE PROVISIONS FOR TANKS AND CONTAINERS TO QUALIFY AS IP-2 AND IP-3

paragraphs 521 - 523

3737 PROVISIONS FOR TYPE A PACKAGES

paragraphs 524 - 540

3738 PROVISIONS FOR TYPE B PACKAGES

paragraphs 541 - 548

3739 PROVISIONS FOR TYPE B (U) PACKAGES

paragraphs 549 - 556

3740 PROVISIONS FOR TYPE B (M) PACKAGES

paragraphs 557 - 558

3741 PROVISIONS FOR PACKAGES CONTAINING FISSILE MATERIAL

paragraphs 559 - 568

3742 TEST PROCEDURES

paragraphs 601 - 633

3743-3749

SECTION IV APPROVAL AND ADMINISTRATIVE PROVISIONS

Note: Where the provisions in Section IV are the same as those prescribed in the 1985 Edition of the IAEA Regulations for the Safe Transport of Radioactive Material and the 1988 Supplement the numbers mentioned under marginals 3761 to 3764 are the numbers of the applicable paragraphs of the 1985 Edition.'

GENERAL

3750 Competent authority approval shall be required for the following:

a) Special form radioactive material (see marginal 3751).

b) All packages containing fissile material (see marginals 3754 and 3755).

c) Type B packages - Type B(U) and Type B(M) (see marginals 3752, 3753 and 3755).

d) Special arrangements (see marginal 3758).

e) Certain shipments (see marginal 3757).

f) Calculation of unlisted A_1 and A_2 values (see marginal 3701 (1)).

APPROVAL OF SPECIAL FORM RADIOACTIVE MATERIAL

3751 (1) The design for special form radioactive material shall require unilateral approval. An application for approval shall include;

a) A detailed description of the radioactive material or,if a capsule, the contents; particular reference shall be made to both physical and chemical states;

b) A detailed statement of the design of any capsule to be used; and

c) A statement of the tests which have been done and their results, or evidence based on calculative methods to show that the radioactive material is capable of meeting the performance standards, or other evidence that the special form radioactive material meets the applicable provisions of this Appendix.

d) Evidence of a quality assurance programme.

(2) The competent authority shall issue an approval certificate stating that the approved design meets the provisions for special form radioactive material and shall allocate to that design an identification mark. The certificate shall specify the details of the special form radioactive material.

APPROVAL OF PACKAGE DESIGNS

Approval of Type B(U) package designs.

3752 (1) Any design of Type B(U) package originating in a country party to ADR shall be approved by the competent authority of this country; if the country where the package has been designed is not a party to ADR carriage is possible on condition that;

a) a certificate has been supplied by this country, proving that the package satisfies the technical provisions of ADR, and that this certificate is countersigned by the competent authority of the first ADR country reached by the consignment;

b) if no certificate has been supplied, the package design is approved by the competent authority of the first ADR country reached by the consignment.

Any design of Type B(U) package for fissile material, which is also subject to marginal 3741 shall require multilateral approval.

(2) An application for approval shall include:

a) A detailed description of the proposed radioactive contents with particular reference to their physical and chemical states and the nature of the radiation emitted;

b) A detailed statement of the design, including complete engineering drawings and schedules of materials and methods of construction to be used;

c) A statement of the tests which have been done and their results, or evidence based on calculative methods or other evidence that the design is adequate to meet the applicable provisions;

d) The proposed operating and maintenance instructions for the use of the packaging;

e) If the package is designed to have a maximum normal operating pressure in excess of 100 kPa (1.0 bar) gauge, the application for approval shall, in particular, state, in respect of the materials of construction of the containment system, the specifications, the samples to be taken, and the tests to be made;

f) Where the proposed radioactive contents are irradiated fuel, the applicant shall state and justify any assumption in the safety analysis relating to the characteristics of the fuel;

g) Any special stowage provisions necessary to ensure the safe dissipation of heat from the package; consideration

shall be given to the various modes of transport to be used and type of vehicle or container;

h) A reproducible illustration not larger than 21 by 30 cm showing the make-up of the package; and

i) Evidence of a quality assurance programme.

(3) The competent authority shall issue an approval certificate stating that the design meets the provisions for Type B(U) packages.

APPROVAL OF TYPE B(M) PACKAGE DESIGNS

3753 (1) Each Type B(M) package design, including those for fissile material which are also subject to marginal 3754 shall require multilateral approval.

(2) An application for approval of a Type B(M) package design shall include, in addition to the information required in marginal 3752 (2) for Type B(U) packages:

a) A list of the specific provisions for Type B(U) packages specified in marginals 3738-3739 with which the package does not conform;

b) Any proposed supplementary operational controls to be applied during transport not routinely provided for in this Appendix, but which are necessary to ensure the safety of the package or to compensate for the deficiencies listed in a) above, such as human intervention for temperature or pressure measurements or for periodic venting, taking into account the possibility of unexpected delay;

c) Particulars of any restrictions on the mode of transport and any special loading, carriage, unloading or handling procedures; and

d) The maximum and minimum ambient conditions (temperature, solar radiation) expected to be encountered during transport and which have been taken into account in the design.

(3) The competent authority shall issue an approval certificate stating that the design meets the applicable provisions for Type B(M) packages.

APPROVAL OF PACKAGE DESIGNS FOR FISSILE MATERIAL

3754 (1) Each package design for fissile material shall require multilateral approval.

(2) An application for approval shall include all information necessary to satisfy the competent authority

that the design meets the provisions of marginal 3741 and evidence of a quality assurance programme.

(3) The competent authority shall issue an approval certificate stating that the design meets the applicable provisions of marginal 3741.

TRANSITIONAL ARRANGEMENTS

3755 Packagings not fully conforming to the provisions of this Appendix, but which nevertheless could be used in accordance with the provisions of ADR applicable on 31 December 1989 for the corresponding material of Class 7 may still be used for a transitional period of 6 years until 31 December 1995 for the carriage of such material.

After this date,

a) multilateral approval shall be required; and

b) a serial number according to the provisions of marginal 2705 (3) shall be assigned to and marked on the outside of each packaging.

Changes in the design of the packaging or in the nature or quantity of the authorised radioactive contents which, as determined by the competent authority, would significantly affect safety shall meet the provisions of this Appendix.

NOTIFICATION AND REGISTRATION OF SERIAL NUMBERS

3756 The competent authority of the country of origin of design approval shall be informed of the serial number of each packaging manufactured to a design approved under marginals 3752, 3753 (1), 3754 (1) and 3755. The competent authority shall maintain a register of such serial numbers.

APPROVAL OF SHIPMENTS

3757 (1) Except as allowed in paragraph (2) below, multilateral approval shall be required for:

a) The shipment of Type B(M) packages especially designed to allow controlled intermittent venting;

b) The shipment of Type B(M) packages containing radioactive material with an activity greater than 3×10^3 A_1 or 3×10^3 A_2, as appropriate, or 1000 TBq (20 kCi), whichever is the lower;

c) The shipment of packages containing fissile material if the sum of the transport indexes of the individual packages exceeds 50 as provided in marginal 2712 (4).

(2) A competent authority may authorize transport into or through its country without shipment approval, by a specific provision in its design approval (see marginal 3759).

(3) An application for shipment approval shall include:

a) The period of time for which the approval is sought;

b) The actual radioactive contents, the expected modes of transport, the type of vehicle and the probable or proposed route; and

c) The details of how the special precautions and special administrative or operational controls, referred to in the package design approval certificates issued under marginal 3752 (3), 3753 (3) and 3754 (3) are to be put into effect.

(4) Upon approval of the shipment, the competent authority shall issue an approval certificate.

APPROVAL OF SHIPMENT UNDER SPECIAL ARRANGEMENT

3758 (1) Each consignment shipped under special arrangement shall require multilateral approval.

(2) An application for approval of a shipment under special arrangement shall include all the information necessary to satisfy the competent authority that the overall level of safety in transport is at least equivalent to that which would be provided if all the applicable provisions of this Appendix had been met. The application shall include:

a) A statement of the respects in which, and of the reasons why, the consignment cannot be made in full accordance with the applicable provisions of this Appendix; and

b) A statement of any special precautions or special administrative or operational controls which are to be employed during transport to compensate for the failure to meet the applicable provisions of this Appendix.

(3) Upon approval of a shipment under special arrangement, the competent authority shall issue an approval certificate.

COMPETENT AUTHORITY APPROVAL CERTIFICATES

3759 Four types of approval certificates may be issued: special form radioactive material, special arrangement, shipment and package design. The package design and shipment approval certificates may be combined into a single certificate.

COMPETENT AUTHORITY IDENTIFICATION MARKS

3760 (1) Each approval certificate issued by a competent authority shall be assigned an identification mark. The mark shall be of the following generalized type:

Symbol of nationality of country / number / type code:

a) The symbol of nationality represents the distinguishing sign for motor vehicles in international traffic in the Vienna Convention on Road Traffic (1968).

b) The number shall be assigned by the competent authority, and shall be unique and specific with regard to the particular design or shipment.

The shipment approval identification mark shall be clearly related to the design approval identification mark.

c) The following type codes shall be used in the order listed to indicate the types of approval certificates issued:

AF Type A package design for fissile material

B(U) Type B(U) package design; B(U)F if for fissile material

B(M) Type B(M) package design; B(M)F if for fissile material

IF Industrial package design for fissile material

S Special form radioactive material

T Shipment

X Special arrangement.

d) For package design approval certificates, other than those issued under the provisions of marginal 3755, the symbol '-85'1/ shall be added to the type code of the package design.

(2) These type codes shall be applied as follows:

a) Each certificate and each package shall bear the appropriate identification mark, comprising the symbols prescribed in paragraph (1) above, except that, for packages, only the applicable design type codes

1/ This symbol denotes that the package design satisfies the provisions of the Regulations for the Safe Transport of Radioactive Material, Safety Series No. 6, 1985 Edition.

including, if applicable, the symbol '-85'[1]/, shall appear following the second stroke, that is, the 'T' or 'X' shall not appear in the identification marking on the package. Where the design approval and shipment approval are combined, the applicable type codes do not need to be repeated. For example:

A/132/B(M)F-85: A Type B(M) package design approved for fissile material, requiring multilateral approval, for which the competent authority of Austria has assigned the design number 132 (to be marked on both the package and on the package design approval certificate);

A/132/B(M)F-85T: The shipment approval issued for a package bearing the identification mark elaborated above (to be marked on the certificate only);

A/137/X-85: A special arrangement approval issued by the competent authority of Austria, to which the number 137 has been assigned (to be marked on the certificate only);

A/139/IF-85: An industrial package design for fissile material approved by the competent authority of Austria, to which package design number 139 has been assigned (to be marked on both the package and on the package design approval certificate).

b) Where multilateral approval is effected by validation, only the identification mark issued by the country of origin of the design or shipment shall be used. Where multilateral approval is effected by issue of certificates by successive countries, each certificate shall bear the appropriate mark and the package whose design was so approved shall bear all appropriate identification marks. For example

A/132/B(M)F-85
CH/28/B(M)F-85

would be the identification mark of a package which was originally approved by Austria and was subsequently approved, by separate certificate, by Switzerland. Additional identification marks would be displayed in a similar manner on the package.

c) The revision of a certificate shall be indicated by a parenthetical expression following the identification mark on the certificate. For example, A/132/B(M)F-85(Rev.2) would indicate revision 2 of the Austrian package design approval certificate; or

A/132/B(M)F-85(Rev.0) would indicate the original issue of the Austrian package design approval certificate. For original issues, the parenthetical entry is optional and other words such as 'original issue' may also be used in place of 'Rev.0'. Certificate revision numbers may only be issued by the country issuing the original approval certificate.

d) Additional symbols (as may be necessitated by national requirements) may be added in brackets to the end of the identification mark; for example, A/132/B(M)F-85(SP503).

e) It is not necessary to alter the identification mark on the packaging each time that a revision to the design certificate is made. Such re-marking shall be made only in those cases where the revision to the package design certificate involves a change in the letter type codes for the package design following the second stroke.

CONTENTS OF APPROVAL CERTIFICATES (See introductory note to this section)

3761 SPECIAL FORM RADIOACTIVE MATERIAL APPROVAL CERTIFICATES

paragraph 726

3762 SPECIAL ARRANGEMENT APPROVAL CERTIFICATES

paragraph 727

3763 SHIPMENT APPROVAL CERTIFICATES

paragraph 728

3764 PACKAGE DESIGN APPROVAL CERTIFICATES

paragraph 729

VALIDATION OF CERTIFICATES

3765 Multilateral approval may be by validation of the original certificate issued by the competent authority of the country of origin of the design or shipment.

Such validation may take the form of an endorsement on the original certificate or the issue of a separate endorsement, annex, supplement, etc., by the competent authority of the country through or into which the shipment is made.

GENERAL PROVISION FOR QUALITY ASSURANCE PROGRAMME

3766 Quality assurance programmes shall be established for the design, manufacture, testing, documentation, use, maintenance and inspection of all packages and for transport

and in-transit storage operations to ensure compliance with the relevant provisions of this Appendix. Where competent authority approval for design or shipment is required, such approval shall take into account and be contingent upon the adequacy of the quality assurance programme. Certification that the design specification has been fully implemented shall be available to the competent authority. The manufacturer, consignor, or user of any package design shall be prepared to provide facilities for competent authority inspection of the packaging during construction and use and to demonstrate to any relevant competent authority that:

a) The construction methods and materials used for the construction of the packaging are in accordance with the approved design specifications; and

b) All packagings manufactured to an approved design are periodically inspected and, as necessary, repaired and maintained in good condition so that they continue to comply with all relevant provisions and specifications, even after repeated use.

3767-3769

SECTION V RADIOACTIVE MATERIAL HAVING OTHER HAZARDOUS PROPERTIES

3770 (1) Radioactive material having other hazardous properties shall be packaged:

a) in accordance with the provisions for Class 7; and

b) unless carried as a Type A or Type B package, also in accordance with the provisions of the appropriate class.

(2) Pyrophoric radioactive material shall be packaged in Type A or Type B packages and shall also be suitably inerted.

(3) For radioactive material in excepted packages having other hazardous properties, see marginal 2002 (12) and (13).

(4) Packagings for uranium hexafluoride shall be designed, constructed and used in accordance with the provisions of marginal 3771.

PROVISIONS FOR THE PACKAGING AND TRANSPORT OF URANIUM HEXAFLUORIDE

3771 (1) Packagings for uranium hexafluoride shall be designed as pressure vessels and manufactured from an appropriate carbon steel or other appropriate alloy steel.

(2) a) The packagings and their service equipment shall be designed for working temperatures of at least

-40 °C up to 121 °C and for a working pressure of 1.4 MPa (14 bar).

b) The packagings and their service and structural equipment shall be so designed as to prevent any leakage or permanent deformation when they are subjected for five minutes to a hydraulic test pressure of 2.8 MPa (28 bar).

c) The packagings and their structural equipment (if this is permanently attached to the packaging) shall be so designed as to withstand an external gauge pressure of 150 kPa (1.5 bar) without permanent deformation.

d) The packagings and their service equipment shall be so designed as to remain leakproof so that the limit specified in paragraph (4) f) is observed.

e) Pressure relief valves are not permitted and the number of openings shall be as few as possible.

f) Packagings with a capacity of more than 450 l and their service and structural equipment (if this is permanently attached to the packaging) shall be so designed that they remain leakproof when they are subjected to the drop test specified in marginal 3742.

(3) After manufacture, the inside of the pressure bearing parts shall be thoroughly cleaned of grease, oil, scale, slag and other foreign matter by an appropriate procedure.

(4) a) Every manufactured packaging and its service and structural equipment shall, either jointly or separately, undergo an inspection initially before being put into service and periodically thereafter. These inspections shall be performed and certified by agreement with the competent authority.

b) The initial inspection shall consist of a check of the design characteristics, the strength test, the leakproofness test, the water capacity test and a check of satisfactory operation of the service equipment.

(c) The periodic inspections shall consist of a visual inspection, the strength test, the leakproofness test and a check of satisfactory operation of the service equipment. The interval for periodic inspections shall be not more than five years. Packagings which have not been inspected within this five-year period shall be examined before transport in accordance with a programme approved by the competent authority. They shall not be

refilled before completion of the full programme for periodic inspections.

(d) The check of design characteristics shall demonstrate compliance with the design type specifications and the manufacturing programme.

(e) The strength test before first being put into service shall be conducted by means of a hydraulic test with an internal pressure of 2.8 MPa (28 bar). For the periodic inspections, any other equivalent non-destructive examination procedure recognized by the competent authority may be applied.

(f) The leakproofness test shall be performed in accordance with a procedure which is capable of indicating leakages in the containment system with a sensitivity of 0.1 Pa.l/s (10^{-6} bar.l/s).

(g) The water capacity of the packagings shall be established with an accuracy of ± 0.25 % at a reference temperature of 15 °C. The volume shall be stated on the plate described in paragraph (6).

(5) With the exception of packagings for less than 10 kg of uranium hexafluoride, the competent authority of the country of origin shall, for every design type of uranium hexafluoride package, confirm that it complies with the provisions of this marginal and issue an approval. This approval may be part of the approval for a Type B package and / or for a package with fissile contents in accordance with Section IV of this Appendix.

(6) A plate made of non-corroding metal shall be durably attached to every packaging in a readily accessible place. The method of attaching the plate must not impair the strength of the packaging. The following particulars, at least, shall be marked on the plate by stamping or by any other equivalent method:

- approval number;
- manufacturer's serial number;
- maximum working pressure (gauge pressure) 1.4 MPa (14 bar);
- test pressure (gauge pressure) 2.8 MPa (28 bar);
- contents: uranium hexafluoride;
- capacity in litres;
- maximum permissible filling mass of uranium hexafluoride;

- tare mass;

- date (month, year) of the initial test and the most recent periodic test;

- stamp of the expert who performed the test.

(7) a) The uranium hexafluoride must be in solid form when transported.

b) The degree of filling shall only be such that the capacity is not more than 95 % filled at 121 °C.

c) The cleaning of packagings shall be performed only by a suitable procedure.

d) The execution of repairs is permissible only in accordance with design and manufacturing programmes laid down in writing. Otherwise, repair programmes require the prior approval of the competent authority.

e) Uncleaned empty packagings shall be as tightly closed, during transport and intermediate storage, as when full.

f) For maintenance, a programme approved by the competent authority shall be operated.

(8) Packagings constructed in accordance with the United States Standard ANSI N 14.1 - 1982 , or equivalent, may be used, with the consent of the competent authority concerned, if the tests specified in these standards have been performed by the expert named therein and continue to be performed and certified in agreement with the competent authority in accordance with paragraph (4) c).

3772-3799

APPENDIX A.9

Section 1 is amended to read as follows:

1. Provisions relating to danger labels.

Note: For packages, see also marginal 2007.

3900 (1) Labels Nos 1, 1.4, 1.5, 3, 4.1, 4.2, 4.3, 5, 6.1, 6.1A, 7A, 7B, 7C, 8 and 9 shall be diamond-shaped and measure 100 x 100 mm. They have a black line 5 mm inside the edge and running parallel to it. If the size of the package so requires, the dimensions of the labels may be reduced, provided that they remain clearly visible. Label No. 7D and other labels to be affixed to vehicles, to tanks of more than 3 m^3 or to large containers shall measure not less than 250 x 250 mm.

(2) Labels Nos 10, 11 and 12 shall be rectangular, of standard format A5 (148 x 210 mm). If the size of the package so requires, the dimensions of the labels may be reduced, provided that they remain clearly visible.

(3) existing text

(4) Wording on danger labels shall be clearly legible and indelible.

3901 (1) Danger labels must be affixed on packages and fixed tanks in a suitable manner and be clearly visible. Only where the state of the outside of a package does not permit this should labels be stuck on cards or tablets securely attached to the package. Indelible danger markings corresponding exactly to the prescribed models may be used instead of labels.

(2) existing text

(3) It is the consignor's duty to affix the labels.

(4) existing text

Section 2 is amended as follows:

2. Explanation of symbols

3902 In the first line, replace "Classes 1 to 8" by "Classes 1 to 9" and replace explanation No. 1 as follows:

No. 1	(black on orange background: bomb blast in upper half; appropriate division number and compatibility group letter in lower half; small figure 1 in bottom corner);	liable to explosion, divisions 1.1, 1.2, and 1.3;
No. 1.4	(black on orange background: division number '1.4' filling most of the upper half; appropriate compatibility group letter in the lower half; small figure . in bottom corner);	liable to explosion, division 1.4;

No. 1.5	(black on orange background: division number '1.5' filling most of the upper half; compatibility group letter 'D' in the lower half; small figure 1 in bottom corner);	liable to explosion, division 1.5;

Replace text for labels Nos 7A, 7B, 7C and add new text for 7D as follows:

No. 7A	(stylized trefoil, inscription RADIOACTIVE followed by a vertical stripe in the lower half, with the following text: Contents ..... Activity ..... small figure 7 in bottom corner; symbol and inscriptions black on white background; red vertical stripe);	radioactive material in packages of Category I - WHITE; in the event of damage to the packages, danger to health by ingestion or inhalation of, or contact with, spilled contents;
No. 7B	(like the foregoing, but with two vertical stripes in the lower half and the following text: Contents ..... Activity ..... Transport index ..... in the rectangular black bordered box; small figure 7 in bottom corner; black symbols and inscriptions; upper half of background: yellow; lower half of background: white; red vertical stripes);	radioactive material in packages of Category II - YELLOW; packages to be kept away from packages bearing the inscription "FOTO" (see marginal 2711); in the event of damage to packages, danger to health by ingestion or inhalation of, or contact with spilled contents, and risk of external radiation at a distance.
No. 7C	(like the foregoing, but with three vertical stripes in the lower half);	radioactive material in packages of Category III - YELLOW; packages to be kept away from packages bearing the inscription "FOTO" (see marginal 2711); in the event of damage to packages, danger to health by ingestion or inhalation of, or contact with, spilled contents, and risk of external radiation at a distance;
No. 7D	(stylized trefoil, inscription RADIOACTIVE , and figure 7; black symbols and inscriptions; upper half of background: yellow; lower half of background: white;	radioactive material presenting the dangers described under 7A, 7B or 7C.

the use of the word 'RADIOACTIVE' in the lower half is optional to allow the alternative use of this label to display the appropriate substance identification number for the consignment);

Add after explanation No. 8 as follows:

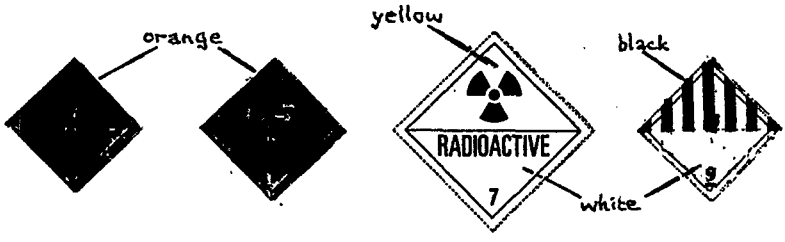
No. 9	(white background with 7 black vertical stripes in the upper half and small figure 9, underlined, in the bottom corner);	miscellaneous substances and articles which, during transport, present dangers other than those covered by the other classes;

Amend or insert corresponding illustrations in the Plate annexed to marginal 3902 as follows:

Label No. 1 receives a small figure "1" in the bottom corner.

Labels No. 7A, No. 7B and No. 7C - as amended and illustrated in ECE/TRANS/60/Amend.1 receive a small figure "7" in the bottom corner.

The following new labels No. 1.4, No. 1.5, No. 7D (replacing the former model shown in marginal 240 010) and No. 9 are adopted:



Delete all cross-references to other marginals in the second column in respect of the other label numbers.

ANNEX B

Table of Contents: Part II

Amend end of heading to read: "... of Classes 1 to 9"

Amend first entry to read:

"Class 1 Explosive substances and articles 11 000 et seq"

Against Class 7, replace "Radioactive substances" by "Radioactive material"

Add new final entry as follows:

"Class 9 Miscellaneous dangerous substances and articles 91 000 et seq"

Table of Contents: Appendices

Against Appendix B.4, delete existing text and substitute "(Reserved)".

marginal

10 000(1) Amend end of (b) to read: "Classes 1 to 9 (Part II)"
Under (c), delete the entry for Appendix B.4.

10 010 Amend end of sentence to read: "... 2601a, 2801a and 2901a".

10 011 Amend the first four entries to read:

		5 kg	20 kg	50 kg	100 kg	333 kg	500 kg	1 000	unlimited
1,2 (only the gases classified under (a) and (b)), 3, 4.2, 4.3, 5.1, 5.2, 6.1, 8 and 9	Empty packagings (including receptacles, excluding tanks)								X
1	1°, 3°, 5°-7°, 9°-11°, 13°, 15°-17°, 19°-21°, 23°, 26°-28°			X					
	2°, 4°, 8°	X							
	22°, 25°		X						
	29°-31°, 33°-35°, 37°						X		
	39°								X
	40°	X							

Amend entry for Class 3 as follows:

First line, read: "8°, 12°, 13° and substances ..."
Third line, read: "... 5°(a), 6°(a), 6°(b) and 7°(b)"

In the table, insert two new rows as follows:

"4.1 20°, 21° X [in column for 20 kg]
5.2 23° to 25° x ditto"

For Class 8, delete "Sodium sulphide of 45°(b) X"

Add new final entry as follows:

9	Substances classified under 1°(b)	X	(in column C)
	Substances classified under 1°(c)	X	(in column D)

10 014(1) Amend the eighth definition to read:

"The term 'container' does not cover conventional packagings or IBCs, or vehicles, or tank-containers; for Class 7 only, the term 'container' is defined in marginal 2700(2)".

10 220 In Notes (a) and (b) which precede this marginal, insert after "gases of Class 2" as follows:

".... or requiring a test pressure of not less than 1 MPa (10 bar)...."

10 220(1) Amend end of Note 2 to read:

"... see marginal 211 127(4) and (5)".

Insert new marginal:

"10 240 (3) Fire extinguishers conforming to the provisions of paragraph (1) (b) shall be fitted with a seal verifying that they have not been used. In addition, they shall bear a mark of compliance with a standard recognized by a competent authority and an inscription indicating the date when they should next be inspected" and re-number existing 10 240 (3) as 10 240 (4).

10 251 In the first sentence, delete the words "of vehicles"

10 251 Paragraphs (a) and (b) should read:

"(a) Transport units carrying tanks (fixed or demountable) or batteries of receptacles transporting either liquids having a flash-point of 55°C or below, or inflammable substances of Class 2 as defined in marginal 2200 (3);

(b) Transport units intended for the carriage of explosives and having to comply with the requirements set out in marginal 11 204 (3) for transport units of type III."

10 282 (2) Add an additional sentence to read:

"However the model prescribed in accordance with the requirements of ADR in force as at 31 December 1989 may be used until 31 December 1993."

10 315 (1) Amend to read:

"Drivers of tank vehicles or transport units carrying tanks or tank-containers with a total capacity of more than 3,000 litres and, where so required under the provisions of Part II of this annex, drivers of other vehicles shall hold a certificate ..."

10 315 Add new paragraph (2):

"(2) As from 1 January 1996 drivers of vehicles other than those mentioned under paragraph (1) whose permissible maximum weight exceeds 3,500kg, of the categories C and E referred to in annex 6 to the Convention on Road Traffic (1968), shall hold a certificate as described under paragraph (1)."

The existing paragraphs (2), (3) and (4) are renumbered (3), (4) and (5).

10 315 (5) Amend to read:

"All certificates of training conforming with the requirements of this marginal and issued in accordance with the model ..."

10 381 (1) Amend to read:

"(1) In addition to the documents required under other regulations, the following documents shall be carried on the transport unit:

(a) the transport documents prescribed in Annex A, marginal 2002 (3) and (4), covering all the dangerous substances carried;

(b) a copy of the main text of the special agreement(s) concluded in accordance with marginals 2010 and 10 602 if transport is carried out on the basis of such agreement(s)."

Part II Amend main heading to read "... CLASSES 1 TO 9 ..."

Amend next heading to read: "CLASS 1 EXPLOSIVE SUBSTANCES AND ARTICLES".

Marginals 11 xxx are amended to read as follows:

Class 1. Explosive substances and articles

General

(Only the general provisions of Part I apply)

11 000-
11 099

Section 1

Mode of carriage

11 100-
11 107

Full loads

11 108 When substances and articles of divisions 1.1, 1.2 or 1.5 are carried in large containers, such consignments may be carried only as a full load.

11 109-
11 117

Carriage in containers

11 118 Provided that small containers satisfy the requirements prescribed in respect of the body of the vehicle for the transport operation concerned, the body of the vehicle need not satisfy those requirements.

11 119-
11 199

Section 2

Special requirements to be fulfilled by vehicles and their equipment

11 200-
11 203

Types of vehicles

11 204 For the purpose of this annex, transport units authorized to carry substances and articles of Class 1 are classified as follows:

(1) "Type I" transport units:

These vehicles shall be either closed or sheeted. The sheet of a sheeted vehicle shall be of impermeable material not readily inflammable. It shall be tautened so as to cover the vehicle on all sides, with an overlap of not less than 20 cm down the sides of the vehicle, and be kept in position by a lockable device.

(2) "Type II" transport units: whose engines shall use a liquid fuel with a flash point of 55° C or above.

(a) General

These vehicles shall be either closed or sheeted. The body shall be solidly constructed in such a manner that it adequately protects the goods carried. The loading surface, including the front wall, shall be continuous. If the vehicle is sheeted, the provisions relating to the sheeting on "Type I" transport units shall be met.

If the transport unit includes a trailer, this trailer shall have a coupling device which is quidkly detachable and robust; and it shall be fitted with an effective braking device which acts on all the wheels, is actuated by the drawing vehicle's service-brake control and automatically stops the trailer in the event of breakage of the coupling.

(b) Engine and exhaust system

The engine and the exhaust system shall be placed forward of the front wall of the body. The exhaust pipe outlet shall be directed outwards from the vehicle.

(c) Fuel tank

The fuel tank shall be placed well away from the engine and the exhaust system and shall be such that, in the event of leakage from the tank, the fuel drains directly onto the ground and cannot reach the load of explosives. It shall be so placed as to be adequately protected.

(d) Driver's cab

Only material not readily inflammable shall be used in the construction of the driver's cab, except in the seating equipment. Auxiliary heating for the cab shall be sufficiently secure from the standpoint of fire prevention and shall be placed forward of the protective wall (rear wall of the cab). The heating appliance shall be placed as far forward and as high as possible (at least 80 cm above floor level) and shall be fitted with devices preventing any object from being brought into contact with the hot surfaces of the appliance or its exhaust-pipe. Only appliances with a means of rapdily restarting the combustion air ventilator (maximum 20s) may be used.

(3) "Type III" transport units: which possess all the characteristics of closed vehicles of "Type II" with bodies which also meet the following provisions:

(a) The body shall be closed and have a continuous surface. It shall be solidly constructed of materials which are not readily inflammable, in such a manner that it adequately protects the goods carried. The materials used for the lining shall be incapable of producing sparks. The insulating and heat-resisting properties of the body shall be at least equivalent to those of a partition consisting of a metal outer wall lined with a layer of fire-proofed wood of 10 mm thickness.

(b) All the doors shall be capable of being locked. They shall be so placed and constructed as to overlap the joints.

Special requirements for the use of vehicles of certain types

11 205 Trailers, except semi-trailers, loaded with substances and articles of Class 1, and meeting the specifications required for transport units of Types II and III, may be drawn by motor vehicles which do not meet these specifications.

Note: For carriage in containers, see 10 118(3) and 11 118.

11 206-
11 209

Materials to be used in the construction of vehicle bodies

11 210 No materials likely to form dangerous compounds with the substances carried shall be used in the construction of the body (see also 11 204(3)).

11 211-
11 250

Electrical equipment

11 251 (1) The rated voltage of the electric lighting system shall not exceed 24V.

(2) Transport units of Types II and III shall meet the following requirements:

(a) Batteries shall be adequately secured and protected from damage due to collision and shall have their terminals protected by an electrically insulating cover.

(b) The installation of interior lighting in the load-carrying compartment shall be dust-tight (at least IP54 or equivalent) or, in the case of Compatibility Group J, flame-proof Ex d (at least IP65 or equivalent). The switch shall be located on the outside.

11 252-
11 281

Approval of vehicles

11 282 The requirements of 10 282 shall be applicable to Type III transport units.

11 283-
11 299

Section 3

General service provisions

11 300-
11 310

Crews of vehicles

11 311 (1) A driver's assistant shall be carried on every transport unit. If the national regulations so provide, the competent authority of a country party to ADR may require an approved official to be carried in the vehicle at the carrier's expense.

(2) The first sentence of paragraph (1) does not apply to convoys of more than two vehicles if the drivers of the first and last vehicles of the convoy are accompanied by an assistant.

11 312-
11 314

11 315 As from 1 January 1992, with the exception of paragraphs (2) and (4) (h), the provisions of 10 315 shall apply to drivers of vehicles carrying substances or articles of Class 1 exceeding the limited quantities specified in 10 011."

11 316-
11 320

Supervision of vehicles

11 321 The requirements of 10 321 shall be applicable only when substances and articles of Class 1 having a total mass of explosive substance of more than 50 kg are carried in a vehicle. In addition, these substances and articles shall be supervised at all times in order to prevent any malicious act and to alert the driver and the competent authorities in the event of loss or fire. Empty packagings of 51° are exempted.

11 322-
11 353

Prohibition of fire and naked flame

11 354 The use of fire or naked flame shall be prohibited on vehicles carrying substances and articles of Class 1, in their vicinity and during the loading and unloading of these substances and articles.

11 355-
11 399

Section 4

Special provisions concerning loading, unloading and handling

11 400

Limitation of the quantities carried

11 401 The total net mass in kg of explosive substance , or, in the case of explosive articles, the total net mass of explosive substance contained in all the articles combined, which may be carried on one transport unit shall be limited as indicated in the table below (see also 11 403 as regards the prohibition of mixed loading):

Maximum permissible net mass in kg of explosive in Class 1 goods per transport unit

Transport Unit	Division 1.1	1.2	1.3	1.4		1.5
	Item 1°-10°	11°-21°	22°-28°	29°-37°	38°,39°,51°	40°,41°
Type I	50	50	50	300	unlimited	50
Type II	1,000	3,000	5,000	15,000	unlimited	5,000
Type III	15,000	15,000	15,000	15,000	unlimited	15,000

11 402 Where substances and articles of different divisions of Class 1 are loaded on one transport unit in conformity with the prohibitions of mixed loading contained in 11 403, the load as a whole shall be treated as if it belonged to the most dangerous division (in the order 1.1, 1.5, 1.2, 1.3, 1.4). Where substances of 40° are carried in one transport unit together with substances or articles of division 1.2, the entire load shall be treated for carriage as if it belonged to division 1.1.

Prohibitions on mixed loading

11 403 (1) Packages bearing a label conforming to models Nos. 1, 1.4 or 1.5 but which are assigned to different compatibility groups shall not be loaded together on one vehicle, unless mixed loading of the corresponding compatibility groups is authorized in the following table:

Compatibility group	B	C	D	E	F	G	H	J	S
B	X								X
C		X	X	X		X			X
D		X	X	X		X			X
E		X	X	X		X			X
F					X				X
G		X	X	X		X			X
H							X		X
J								X	X
S	X	X	X	X	X	X	X	X	X

X = mixed loading authorized

(2) Packages bearing a label conforming to models Nos. 1, 1.4 or 1.5 shall not be loaded together in one vehicle with packages bearing one or two labels conforming to models Nos. 3, 4.1, 4.2, 4.3, 5, 6.1, 6.1A, 7A, 7B, 7C, 8 or 9.

11 404

Prohibition of mixed loading with goods contained in a container

11 405 (1) The prohibitions of mixed loading of goods laid down in 11 403 shall apply within each container.

(2) The provisions of 11 403 shall apply as between the dangerous goods contained in a container and the other dangerous goods loaded on the same vehicle, whether or not the latter goods are enclosed in one or more other containers.

11 406

Places of loading and unloading

11 407 (1) The following operations are prohibited:

(a) Loading or unloading substances and articles of Class 1 in a public place in a built-up area without special permission from the competent authorities;

(b) Loading or unloading substances and articles of Class 1 in a public place elsewhere than in a built-up area without prior notice thereof having been given to the competent authorities, unless these operations are urgently necessary for reasons of safety.

(2) If, for any reason, handling operations have to be carried out in a public place, then substances and articles of different kinds shall be separated according to the labels.

11 408-
11 409

Precautions with respect to articles of consumption

11 410 (1) Packages bearing labels conforming to model No. 6.1 shall be kept apart from foodstuffs, other articles of consumption and animal feedstuffs in vehicles and at places of loading, unloading and transloading.

(2) Empty packagings, uncleaned, bearing labels conforming to model No. 6.1 shall be kept apart from foodstuffs, other articles of consumption and animal feedstuffs in vehicles and at places of loading, unloading and transloading.

11 411-
11 412

Cleaning before loading

11 413 Before substances and articles of Class 1 are loaded, the loading surface of the vehicle shall be throughly cleaned.

Handling and stowage

11 414 (1) The use of readily inflammable materials for stowing packages in vehicles is prohibited.

(2) Packages containing substances and articles of Class 1 shall so far as is reasonably practical be loaded in such a manner that they can be unloaded one by one at the point of destination without it being necessary to rearrange the load.

(3) Packages shall be so stowed in the vehicle that they cannot be displaced therein. They shall be protected against any friction or impact.

11 415-
11 499

Section 5

Special provisions concerning the operation of vehicles

11 500-
11 508

Halts for operational requirements

11 509 When vehicles carrying substances and articles of Class 1 are obliged to stop for loading or unloading operations in a public place, a distance of at least 50m shall be maintained between the stationary vehicles.

11 510-
11 519

Convoys

11 520 (1) When vehicles carrying substances and articles of Class 1 travel in convoy, a distance of not less than 50 m shall be maintained between each transport unit and the next.

(2) The competent authority may lay down rules for the order or composition of convoys.

11 521-
11 599

Section 6

Transitional provisions, derogations and provisions peculiar to certain countries

(Only the general provisions of Part I apply)

11 600-
20 999

21 378 Delete this marginal and heading

21 403 Amend second half of sentence to read:

"... with substances or articles of Classes 1 or 5.2 enclosed in packages bearing a label conforming to models Nos. 1, 1.4 or 1.5."

The same amendment is also to be made in each of the following marginals: 31 403 (1), 41 403 (1), 42 403 (1), 43 403, 51 403 (1), 61 403 (1) and 81 403 (1).

21 414(2) Amend last sentence of (a) to read:

"Cylinders which are laid flat shall be securely and appropriately wedged, attached or secured so that they cannot shift;"

21 500 For Chlorine amend "6.1 + 8" to read "6.1".

31 130)
)
31 500) In the first sentence, replace "1° to 6°" by "1° to 8°".

31 321 Amend indent to read:

"Substances of 1° to 5°(a) and (b), 6°(a) and (b) 7°(b) and 21° to 26° 10,000 kg

Substances of 8° and 11° to 20° 5,000 kg"

41 204 After "4° to 8°" insert "20° and 21°" Before "4°" insert "1°(b),"

41 321 After "7°(c)" add "20°, 21°"

52 204(1) Replace "1° to 22°" by "1° to 25°"

52 321 In Group A add "23° to 25°"

52 401 Insert "23° to 25°" before "45°"

52 403(a) Amend to read "substances and articles of Class 1 contained in packages bearing a label conforming to models Nos. 1, 1.4 or 1.5"

52 509 Insert "23° to 25°" before "46[(a)"

Marginals 71 xxx are amended to read as follows:

Class 7 Radioactive Material
General

Carriage

71 000 For details see the relevant schedule in marginal 2704.

71 001-
71 099

Section 1 Mode of carriage

Provisions

71 100 For details see the relevant schedule in marginal 2704.

71 101-
71 117

Carriage in Containers

71 118 The labels prescribed in 10 118(5) shall be affixed to all four sides of the container.

71 119-
71 129

Marking and labelling of tank-containers

71 130 The labels and the orange-coloured plates as prescribed in Class 7 shall be affixed to all four sides of the tank container. If these labels or plates are not visible from outside the vehicle, the same labels and plates shall be affixed to the sides and the rear of the vehicle.

71 131-

Section 2 Special requirements to be fulfilled by the means of transport and its equipment

Provisions

71 200 For details see the relevant schedule in marginal 2704.

71 201-
71 299

Section 3 General service provisions

Provisions

71 300 For details see the relevant schedule in marginal 2704.

71 301-
71 320

Supervision of vehicles

71 321 The provisions of 10 321 shall apply to all material, in whatever quantity. However, the provisions of 10 321 need not be applied where:

(a) the loaded compartment is locked and the packages carried are otherwise protected against any illicit unloading; and

(b) the dose rate does not exceed 5μSv/hour (0.5 mrem/hour) at any accessible point on the surface of the vehicle.

In addition, these goods shall be subject at all times to supervision to prevent any malicious act and to alert the driver and the competent authorities in the event of loss or fire.

71 322-
71 324

Carriage of passengers

71 325 The provisions of 10 325 shall not apply to transport units carrying only radioactive material of Schedules 1 to 4.

71 326-
71 352

Portable lighting apparatus

71 353 The provisions of 10 353 shall not apply provided there is no subsidiary risk.

71 354-
71 373

Prohibition of smoking

71 374 The provisions of 10 374 shall not apply provided there is no subsidiary risk.

71 375-
71 384

Instructions in writing

71 385 The provisions of 10 385 shall not apply to transport units carrying only radioactive material of Schedules 1 to 4.

71 386-
71 399

Section 4 Special provisions concerning loading, unloading and handling

Provisions

71 400 For details see the relevant schedule in marginal 2704

71 401-
71 402

Prohibition of mixed loading on one vehicle

71 403 Material of Class 7 contained in packages bearing a label conforming to models Nos. 7A, 7B or 7C shall not be loaded together on the same vehicle with substances or articles of Classes 1 or 5.2 contained in packages bearing a label conforming to models Nos. 1, 1.4 or 1.5.

71 404-
71 414

Cleaning after unloading

71 415 For decontamination requirements see marginal 3712

71 416-
71 499

Section 5 Special provisions concerning the operation of vehicles

71 500 In addition to the requirements of 10 500, every vehicle carrying radioactive material shall bear on the outside of each side wall and of the rear wall a label conforming to model No. 7D.

However, these requirements shall not apply to vehicles carrying only the radioactive material referred to in Schedules 1 to 4 of marginal 2704.

71 501-
71 506

Parking of a vehicle constituting a special danger

71 507 In addition to 10 507, see Appendix A.7, marginal 3712.

71 508-
71 599

Section 6 Transitional provisions, derogations and provisions peculiar to certain countries

(Only the general provisions of Part I apply)

71 600-
80 999

81 600-199 999 Amend to: 81 600-90 999

Add new marginals 91 xxx as follows:

Class 9 Miscellaneous dangerous substances and articles

General

91 000-91 099 (Only the general provisions of Part I apply)

Section 1 Mode of carriage

91 100-91 129

Labelling of tank-containers

91 130 Tank-containers containing or having contained substances of Class 9 shall bear on both sides a label conforming to model No. 9.

91 131-91 199

Section 2 Special requirements to be fulfilled by the means of transport and its equipment

91 200-91 239

Fire fighting appliances

91 240 The provisions of 10 240 (1) (b) and (3) shall not apply.

91 241-91 299

Section 3 General Service Provisions

91 300-91 320

Supervision of vehicles.

91 321 The provisions of 10 321 shall apply to the dangerous goods listed below in quantities exceeding those specified.
Substances classified under (b) of all items: 5,000 kg.

91 322-91 384

91 385 For the carriage of substances of 2° (b) or apparatus of 3°, the text of the written instructions must give the indication that highly toxic dioxins may form in the event of fire.

91 386-91 399

Section 4 Special provisions concerning loading, unloading and handling

91 400-
91 402

Prohibition of mixed loading on one vehicle

91 403 Substances and articles of Class 9 contained in packages bearing a label conforming to model No. 9 shall not be loaded together on one vehicle with substances or articles of Classes 1 or 5.2 contained in packages bearing a label conforming to models Nos. 1, 1.4 or 1.5.

91 404-
91 406

Places of loading and unloading

91 407 (1) The following operations are prohibited:

(a) loading or unloading substances classified under (b) of the various items in a public place in a built-up area without special permission from the competent authorities;

(b) loading or unloading substances classified under (b) of the various items in a public place elsewhere than in a built-up area wihtout prior notice having been given to the competent authorities, unless these operations are urgently necessary for reasons of safety.

(2) If for any reason handling operations have to be carried out in a public place, then substances and articles of different kinds shall be separated according to the labels.

91 408
91 409

Precautions with respect to articles of consumption

91 410 Substances and articles of Class 9 and empty packagings, uncleaned, of 11° shall be kept apart from foodstuffs, other articles of consumption and animal feeds in vehicles and at places of loading, unloading or transloading.

91 411-
91 414

Cleaning after unloading

91 415 If substances and articles of Class 9 have been spilled or leaked in a vehicle, it may not be re-used until after it has been throughly cleaned and, if necessary, decontaminated. All other goods carried in the same vehicle shall be examined for possible contamination.

91 416-
91 499

Section 5 Special provisions concerning the operation of vehicles

Marking and labelling of vehicles

91 500 Vehicles with fixed or demountable tanks containing or having contained substances of Class 9 shall bear on both sides and at the rear a label conforming to model No. 9.

91 501-
91 599

Section 6 Transitional provisions, derogations, and provisions peculiar to certain countries

91 600-
199 999 (Only the general provisions of Part I apply).

Appendix B.1a

211 120 (2) For "welds" read "weld seams".

(3) For "See also 211 127 (7)" read "See also 211 127 (8)" For "in accordance with 211 127 (2) to (5)" read "in accordance with 211 127 (2) to (6)".

211 123 (3) For "0.15 MPa" read "150 kPa".

211 127 In the opening sentence, for "(2) to (5)" read "(2) to (6)"

(1) In the last sentence, between "value" and "defined" insert a sigma.

The Note after paragraph (4) is deleted and replaced by a new paragraph (5) as follows, the existing paragraphs (5) to (9) becoming (6) to (10).

"(5) There is protection against damage as referred to in paragraph (4) when the following measures or equivalent measures are adopted:

(a) For shells intended for the carriage of powdery or granular substances, the protection against damage shall satisfy the competent authority.

(b) For shells intended for the carriage of other substances, there is protection against damage when:

1. for shells with a circular or elliptical cross-section having a maximum radius of curvature of 2 m, the shell is equipped with strengthening members comprising partitions, surge plates or external or internal rings, so placed that at least one of the following conditions is met:

- Distance between two adjacent strengthening elements $\leq$1.75 m

- Volume contained between two partitions or surge plates $\leq$7500 l.

The vertical cross-section of a ring, with the associated coupling, shall have a section modulus of at least 10 cm^3.

External rings shall not have projecting edges with a radius of less than 2.5 mm.

Partitions and surge plates shall conform to the requirements of paragraph (7).

The thickness of the partitions and surge

plates shall in no case be less than that of the shell.

2. for shells made with double walls, the space between being evacuated of air, the aggregate thickness of the outer metal wall and the shell wall corresponds to the wall thickness prescribed in paragraph (3), and the thickness of the wall of the shell itself is not less than the minimum thickness prescribed in paragraph (4).

3. for shells made with double walls having an intermediate layer of solid materials at least 50 mm thick, the outer wall has a thickness of at least 0.5 mm of mild steel 3/ or at least 2 mm of a plastics material reinforced with glass fibre. Solid foam (with an impact absorption capacity like that, for example, of polyurethane foam) may be used as the intermediate layer of solid material.

4. shells of forms other than in 1., especially box-shaped tanks, are provided, all round the mid-point of their vertical height and over at least 30 % of their height, with an additional protection designed in such a way as to offer specific resilience at least equal to that of a shell constructed in mild steel of a thickness of 5 mm (for a shell diameter not exceeding 1.80 m) or 6 mm (for a shell diameter exceeding 1.80 m). The additional protection shall be applied in a durable manner to the outside of the shell. This requirement shall be considered to have been met without further proof of the specific resilience when the additional protection involves the welding of a plate of the same material as the shell to the area to be strengthened, so that the minimum wall thickness is in accordance with paragraph (3).

   This protection is dependent upon the possible stresses exerted on mild steel shells in the event of an accident, where the ends and walls have a thickness of at least 5 mm for a diameter not exceeding 1.80 m or at least 6 mm for a diameter exceeding 1.80 m. If another metal is used,the equivalent thickness shall be obtained in accordance with the formula in paragraph (3).

For demountable tanks this protection is not required when they are protected on all sides by the drop sides of the carrier vehicle."

(7) In the second paragraph, for "coefficient lambda (λ)" read "coefficient λ (lambda)".

Against marginal 211 129 insert the following:

"Protection of upper fittings

211 129 The fittings and accessories mounted on the upper part of the shell shall be protected against damage caused by overturning. This protection may take the form of strengthening rings, protective canopies or transverse or longitudinal members so shaped that effective protection is given."

211 131 Amend Note 5 to read:
"However, in the case of shells intended for the carriage of certain crystallizable or highly viscous substances, deeply refrigerated liquefied gases and powdery or granular substances and shells fitted with an ebonite or thermoplastic coating, the internal stop-valve may be replaced by an external stop-valve provided with additional protection."

211 134 For "0.15 MPa" read "150 kPa".

211 135 For "0.3 MPa" read "300 kPa".

211 150 Amend to read as follows:
"Shells and their equipment shall either together or separately undergo an initial inspection before being put into service. This inspection shall include a check of conformity to the approved prototype, a check of the design characteristics 7/, an external and internal examination, a hydraulic pressure test 8/ and a check of satisfactory operation of the equipment.

The hydraulic pressure test shall be carried out on the shell as a whole at the pressure indicated in Part II of this Appendix, and separately on each compartment of compartmented shells at a pressure of not less than 1.3 times the maximum working pressure. The leakproofness test shall be carried out separately on each compartment of compartmented shells.

The hydraulic pressure test shall be carried out before the installation of such thermal equipment as may be necessary. If the shells and their equipment are tested separately, they shall be jointly subjected to a leakproofness test after assembly."

211 151 Between the existing first and second paragraphs insert the following new paragraph:
"The hydraulic pressure test shall be carried out on the shell as a whole at the pressure indicated in Part II of this Appendix, and separately on each compartment of compartmented shells at a pressure of not less than 1.3 times the maximum working pressure."

211 152 Add a second sentence as follows:
"The leakproofness test shall be carried out separately on each compartment of compartmented shells."

211 172 (1) (a) For "(e.g. not toxic or corrosive)" read "(e.g. toxicity or corrosivity)".

(c) For "whether inflammable or not" read "(whether inflammable or not)"; after "hermetically closed" insert footnote reference "6/".

(d) For "(whether or not inflammable)" read "(whether inflammable or not)"; after "hermetically closed" insert footnote reference "6/".

211 210 For "boron chloride" read "boron trichloride".

211 234 (2) For "0.1 MPa" read "100 kPa".

211 251 (5) For "0.3 MPa" read "300 kPa"; for "0.1 MPa" read "100 kPa".

211 254 For "211 127 (7)" read "211 127 (8)".

211 261 For "at 15°C */" read "*/ at 15°C".

211 262 (d) Delete "international".

211 277 For "the valve-opening pressure" read "the opening pressure of the safety valve".

211 371 Amend to read:
"Tank-vehicles and demountable tanks approved for the ... (remainder unchanged)

211 475 For "211 433" read "211 432".

211 534 For "0.18 to 0.22 MPa" read "180 to 220 kPa".

211 535 Amend the last sentence to read:
"The thermal insulation shall be free from combustible matter."

211 550 For "0.25 MPa" read "250 kPa".

Marginals 211 700 - 211 799 are amended as follows:

211 700-
211 709

Section 1 General; scope (use of tanks); definitions

211 710 Use
Materials of marginal 2704, Schedules 1, 5, 6, 9, 10 and 11, except uranium hexafluoride, may be carried in fixed or demountable tanks. The provisions of the appropriate schedule in marginal 2704 are applicable.

Note: There may be additional requirements for

tanks which are designed as a Type A or Type B packaging.

211 711-
211 719

Section 2 Construction

211 720 See marginal 3736.

211 721-
211 729

Section 3 Items of Equipment

211 730 The openings of shells for the carriage of liquid radioactive material 9/ shall be above the level of the liquid. The shell walls shall not have any piping or pipe connections below the level of the liquid.

211 731-
211 739

Section 4 Type approval

211 740 Tanks which are approved for the carriage of radioactive material shall not be approved for the carriage of other substances.

211 741-
211 749

Section 5 Tests

211 750 The shells shall initially and periodically undergo a hydraulic pressure test at a pressure of at least 265 kPa (2.65 bar). Notwithstanding 211 151, the periodic internal inspection may be replaced by a programme approved by the competent authority.

211 751-
211 759

Section 6 Marking

211 760 In addition, the trefoil symbol, as shown on labels Nos. 7A to 7D, shall be marked by stamping or by any other equivalent method on the plate described in 211 160 or directly on the walls of the shell itself, if the walls are so reinforced that the strength of the shell is not impaired.

211 761-
211 769

Section 7 Operation

211 770 The degree of filling, according to 211 172,

at the reference temperature of 15°C shall not exceed 93 % of the capacity of the shell.

211 771 Tanks in which radioactive material has been carried shall not be used for the carriage of other substances.

211 772-
211 799

211 820 In first paragraph, for "gauge pressure" read "(gauge pressure)"; in second paragraph, after "(10 bar)" and after "(4 bar)" insert "(gauge pressure)".

211 821 For "gauge pressure" read "(gauge pressure)".

211 822 For "gauge pressure" read "(gauge pressure)".

211 872-
211 999 Amend to read : 211 872-
211 899

Add new marginals as follows:

Class 9 Miscellaneous dangerous substances and articles

211 900-
211 909

Section 1 General; scope (use of tanks); definitions

Use

211 910 Substances of 1° and 2° of Class 9 may be carried in fixed or demountable tanks.

211 911-
211 919

Section 2 Construction

211 920 Shells intended for the carriage of substances of 1° shall be designed in accordance with the requirements of Part I of this Appendix.

211 921 Shells intended for the carriage of substances of 2° shall be designed for a calculation pressure (see 211 127 (2)) of not less than 0.4 MPa (4 bar)(gauge pressure

211 922-
211 929

Section 3 Items of equipment

211 930 Shells shall be capable of being hermetically closed 6/.

211 931 If shells are fitted with safety valves, a bursting

disc shall be placed before the valve. The arrangement of the bursting disc and safety valve shall be such as to satisfy the competent authority.

211 932-
211 939

Section 4 Type approval

211 940-
211 949 (No special requirements)

Section 5 Tests

211 950 Shells intended for the carriage of substances of 2° shall be subjected to the initial and periodic hydraulic pressure tests at a pressure of at least kPa (4 bar)(gauge pressure).

211 951 Shells intended for the carriage of substances of 1° shall be subjected to the initial and periodic hydraulic pressure tests at their calculation pressure as defined in 211 123.

211 952-
211 959

Section 6 Marking

211 960-
211 969 (No special requirements)

Section 7 Operation

211 970 Shells shall be hermetically closed 6/ during carriage.

211 971 Tank-vehicles and demountable tanks approved for the carriage of substances of 1° and 2° shall not be used for the carriage of foodstuffs, articles of consumption or animal feedstuffs.

211 972-
211 999

211 571 Amend last sentence to read:

"... the carriage of other substances without being first carefully cleansed of any residues."

Appendices B.1b, B.1c, B.1d, B.2 & B.3

Appendix B.1b

212 120 (2) For "welds" read "weld seams".

212 123 (3) For "0.15 MPa" read "150 kPa".

212 127 (6) Second paragraph, for "lambda (λ)" read "λ (lambda)".

212 131 Note 5 : Same amendment as in Note 5 of Appendix B.1a, marginal 211 131.

212 134 For "0.15 MPa" read "150 kPa".

212 135 For "0.3 MPa" read "300 kPa".

212 140 First sentence, for "substance carried." read "substances carried."

212 161 After "laden mass" insert "*/".

212 172 (1) (a) For "(e.g. not toxic or corrosive)" read "(e.g. toxicity or corrosivity)".

(c) Read: "for inflammable substances, and for harmful or slightly corrosive substances (whether inflammable or not), in hermetically closed shells 7/ without safety device: ... (remainder unchanged)

(d) Read: "for highly toxic, toxic, highly corrosive or corrosive substances (whether inflammable or not) in hermetically closed shells 7/ without safety device: ... (remainder unchanged)

(2) For "density" read "relative densities".

212 210 Amend "boron chloride" to read "boron trichloride"

212 234 (2) For "0.1 MPa" read "100 kPa".

212 251 (5) For "0.3 MPa" read "300 kPa"; for "0.1 MPa" read "100 kPa".

212 261 For "pressure at 15 C */" read "pressure */ at 15 C".

212 262 (d) Delete "international".

212 277 For "valve-opening pressure" read "opening pressure of the safety valve".

212 534 For "0.18 to 0.22 MPa" read "180 to 220 kPa".

212 550 For "0.25 MPa" read "250 kPa".

212 820 First paragraph, for "gauge pressure" read "(gauge pressure)"; second paragraph, after "(10 bar)" and after "(4 bar)" insert "(gauge pressure)".

212 821 For "gauge pressure" read "(gauge pressure)".

212 822 For "gauge pressure" read "(gauge pressure)".

Amend marginals 212 7xx to read as follows:

Class 7 Radioactive material

212 700-
212 709

Section 1 General; Scope (use of tank-containers); definitions

Use

212 710 Materials of marginal 2704, Schedules 1, 5, 6, 9, 10 and 11, except uranium hexafluoride, may be carried in tank-containers. The provisions of the appropriate schedule in marginal 2704 are applicable.

Note: There may be additional requirements for tank-containers which are designed as a Type A or Type B packaging.

212 711-
212 719

Section 2 Construction

212 720 See marginal 3736.

212 721-
212 729

Section 3 Equipment

212 730 The openings of tank-containers for the carriage of liquid radioactive material [13] shall be above the level of the liquid. The shell walls shall not have any piping or pipe connections below the level of the liquid.

212 731-
212 739

Section 4 Type Approval

212 740 Tank-containers which are approved for the transport of radioactive material shall not be approved for the transport of any other substance.

212 741-
212 749

Section 5 Tests

212 750 The shells shall initially and periodically undergo a hydraulic pressure test at a pressure of at least 265 kPa (2.65 bar).

Notwithstanding 212 151 the periodicinternal inspection may be replaced by a programme approved by the competent authority.

212 751-
212 759

Section 6 Marking

212 760 In addition, the trefoil symbol, as shown on labels Nos 7A to 7D, shall be marked by stamping or by any other equivalent method on the plate described in 212 160 or directly on the walls of the shell itself, if the walls are so reinforced that the strength of the shell is not impaired.

212 761-
212 769

Section 7 Operation

212 770 The degree of filling, according to 212 172, at the reference temperature of 15°C shall not exceed 93% of the capacity of the shell.

212 771 Tank-containers in which radioactive material has been carried shall not be used for the carriage of other substances.

212 772-
212 799

212 872- becomes 212 872-
212 999 212 899

Add new marginals 212 9xx as follows:

Class 9 Miscellaneous dangerous substances and articles

212 900-
212 909

Section 1 General; scope (use of tank-containers); definitions

Use

212 910 Substances of 1° and 2° of Class 9 may be carried in tank-containers.

212 911-
212 919

Section 2 Construction

212 920 Shells intended for the carriage of substances of 1° shall be designed in accordance with the requirements of Part I of this Appendix.

212 921 Shells intended for the carriage of substances of 2° shall be designed for a calculation pressure (see 212 127 (2)) of not less than 0.4 MPa (4 bar)(gauge pressure).

212 922-
212 929

Section 3 Items of equipment

212 930 Shells shall be capable of being hermetically closed[7].

212 931 If shells are fitted with safety valves, a bursting disc shall be placed before the valve. The arrangement of the bursting disc and safety valve shall be such as to satisfy the competent authority.

212 932-
212 939

Section 4 Type approval

212 940- (No special requirements).
212 949

Section 5 Tests

212 950 Shells intended for the carriage of substances of 2° shall be subjected to the initial and periodic hydraulic pressure tests at a pressure of at least 0.4 MPa (4 bar) (gauge pressure).

212 951 Shells intended for the carriage of substances of 1° shall be subjected to the initial and periodic hydraulic pressure tests at their calculation pressure as defined in 212 123.

212 952-
212 959

Section 6 Marking

212 960- (No special requirements).
212 969

Section 7 Operation

212 970 Shells shall be hermetically closed[7] during carriage.

212 971 Tank-containers approved for the carriage of substances of 1° and 2° shall not be used for the carriage of foodstuffs, articles of consumption or animal feedstuffs.

212 972-
212 999

APPENDIX B.1c

213 010 (e) should read:

"(e) Substances of 1°(b) and (c), 2°(b) and (c), solutions of hydrochloric acid of 5°(b), substances of 5°(c), phosphoric acid of 11°(c), substances of 42°, 61° and 62° of Class 8."

213 100 For "211 127(6)" read "211.127(7)".

Appendix B.1d

214 250 (2) For "hydrofluoric acid" read "hydrofluoric acids".

214 265 Fourth paragraph, for "austenitic steel" read "austenitic steels".

APPENDIX B.2

220 000 should read:

"The electrical equipment of the transport units referred to in marginal 10 251 shall meet the following requirements:

Requirements applicable to the electrical equipment as a whole

(a) Wiring: Conductors shall be generously dimensioned to prevent overheating. They shall be appropriately insulated. Circuits except those connecting the battery to the engine starter motor or the alternator shall be protected against excess current by fuses or automatic cut-outs. The wiring shall be firmly attached and so placed that the conductors are protected against impacts, projected stones and heat emitted by the exhaust system.

(b) 1. Battery master switch: Except in the case of the transport units referred to in marginal 10 251 (b), a switch for breaking all the electrical circuits shall be placed as close to the battery as possible. A direct or remote control system shall be installed in the driving cab and outside the vehicle. It shall be easily accessible and distinctively marked. The switch shall be openable while the engine is running without causing a dangerous surge. The electrical supply to the tachograph may, however, be provided by a circuit connected direct to the battery. The battery master switch and the electric circuits for the tachograph, and other equipment which after actuating the battery master switch are to remain under current, shall be explosion-proof according to European Standards EN 50 014 to EN 50 020. In the case of vehicles used for the carriage of hydrogen and carbon disulphide the requirements for Group II C according to European Standards EN 50 014, EN 50 018 and EN 50 020 shall be complied with.

2. Storage batteries: If the batteries are situated elsewhere than under the engine bonnet, they shall be secured in a vented case of metal or another material of equivalent strength, with insulating inner walls.

Requirements applicable to the part of the electrical equipment situated behind the driver's cab

(c) The whole of this equipment shall be so designed, installed and protected as not to be able to cause ignition or short circuiting in normal conditions of use of the vehicles and as to reduce to a minimum the risk of either occurrence in the event of impact or distortion.

In particular:

1. Wiring: The conductors of all wiring (see (a)) shall consist of cables protected by seamless and rust-proof casings. The protection may consist of a resistant plastics pipe, plastics-coated steel wire gauge, or other equivalent casing.

2. Lighting: Screw-cap bulbs shall not be used. If the lamps in the body of the vehicle are not fixed in parts of the walls or ceiling so strengthened as to protect them against any mechanical damage, they should be protected by a strong cage or grid.

APPENDIX B.3 should read:

" 230 000 Note: The dimensions of the certificate shall be 210 x 297 mm (format A4). Both front and back shall be used. The colour shall be white, with a pink diagonal stripe.

CERTIFICATE OF APPROVAL FOR VEHICLES CARRYING CERTAIN DANGEROUS GOODS

1. CERTIFICATE NO. _____

testifying that the vehicle specified below fulfils the conditions prescribed by the European Agreement concerning the International Carriage of Dangerous Goods by Road (ADR)[1/] for its acceptance for the international carriage of dangerous goods by road.

2. Manufacturer and type of vehicle .....

3. Registration number (if any) and chassis number .....

4. Name and business address of carrier, operator or owner .....

.....

.....

5. The vehicle described above has undergone the inspection prescribed by ADR, Annex B, marginal 10 282 and fulfils the conditions required for its acceptance for the international carriage by road of dangerous goods of the following classes, item numbers and letters (where necessary the name of the substance or the substance identification number shall be given):

[1] United Nations, *Treaty Series*, vol. 619, p. 77.

7. Valid until	Stamp of issuing service at: Date: Signature:
8. Validity extended until	Stamp of issuing service at: Date: Signature:
9. Validity extended until	Stamp of issuing service at: Date: Signature:
10. Validity extended until	Stamp of issuing service at: Date: Signature:
11. Validity extended until	Stamp of issuing service at: Date: Signature:

Notes 1. Every vehicle shall be the subject of a separate certificate unless otherwise required e.g. for class 1.

2. This certificate must be returned to the issuing service when the vehicle is taken out of service; if the vehicle is transferred to another carrier, operator or owner, as specified in item 4; on expiry of the validity of the certificate; and if there is a material change in one or more essential characteristics of the vehicle."

230 001-
239 999

Appendices B.4, B.5 & B.6

APPENDIX B.4

The heading and text are deleted and replaced by:

Appendix B.4

240 000– 249 999 Reserved.

APPENDIX B.5

Marginal 250 000 is amended as follows:

In (1), between "6 Toxicity" and "8 Corrosivity" insert:
"7 Radioactivity";

Replace "44 and 539" by "44, 539 and 90".

In (2), between 69 and 80, insert:

"70 radioactive material
72 radioactive gas
723 radioactive gas, inflammable
73 radioactive liquid, inflammable, (flash point not above 55 °C)
74 radioactive solid, inflammable
75 radioactive material, oxidizing
76 radioactive material, toxic
78 radioactive material, corrosive";

After 89 insert:

"90 miscellaneous dangerous substances".

In (3), add the following entries to Table I in alphabetical order:

(a)	(b)	(c)	(d)	(e)
Actinolite: see White asbestos				
Amosite: see Brown asbestos				
Anthophyllite: see White asbestos				
Blue asbestos (Crocidolite)	9,1°(b)	90	2212	9
Brown asbestos (Amosite or mysorite)	9,1°(b)	90	2212	9
Chrysotile: see White asbestos				
Crocidolite: see Blue asbestos				
Mysorite: see Brown asbestos				
Polychlorinated biphenyls	9,2°(b)	90	2315	9

(a)	(b)	(c)	(d)	(e)
Radioactive material, low specific activity (LSA), not otherwise specified in this Appendix	7, Sch 5 or 6	70	2912	7A, 7B or 7C
gas		72	2912	7A, 7B or 7C
gas, inflammable		723	2912	7A, 7B or 7C + 3
liquid, inflammable, having a flash point not above 55°C		73	2912	7A, 7B or 7C + 3
solid, inflammable		74	2912	7A, 7B or 7C + 4.1
oxidizing		75	2912	7A, 7B or 7C + 5
toxic		76	2912	7A, 7B or 7C + 6.1
harmful		70	2912	7A, 7B or 7C + 6.1A
corrosive		78	2912	7A, 7B or 7C + 8
Radioactive material, not otherwise specified in this Appendix	7, Sch 1, 5, 6, 9, 10 and 11	70	2982	7A, 7B or 7C
gas		72	2982	7A, 7B or 7C
gas, inflammable		723	2982	7A, 7B or 7C + 3
liquid, inflammable, having a flash point not above 55°C		73	2982	7A, 7B or 7C + 3
solid, inflammable		74	2982	7A, 7B or 7C + 4.1
oxidizing		75	2982	7A, 7B or 7C + 5
toxic		76	2982	7A, 7B or 7C + 6.1
harmful		70	2982	7A, 7B or 7C + 6.1A
corrosive		78	2982	7A, 7B or 7C + 8

(a)	(b)	(c)	(d)	(e)
Tremolite: see White asbestos				
Uranyl nitrate hexahydrate solution	7, Sch 5 or 6	78	2980	7A, 7B or 7C + 8
White asbestos (Actinolite, Anthophyllite, Chrysotile or Tremolite)	9, 1°(c)	90	2590	9
Collodions, semi-collodions, solutions of, and other nitrocellulose solutions, containing 20 % or less nitrocellulose:				
having a flash-point below 21°C	3, 5°	33	1263	3
having a flash-point between 21°C and 55°C (Limit values included)	3, 33° (c)*	30	1263	3
having a flash-point above 55°C	3, 34° (c)*	30	1263	-

Add the footnote:

* See, however, NOTE under section D of marginal 2301.

Acetaldehyde oxime	3, 31°(c)	30	2332	3
Acetyl iodide	8, 36°(b)	80	1898	8
Acrolein dimer	3, 31°(c)	39	2607	3
Ethyl-2-chloro propionate	3, 31°(c)	30	2935	3
N-Ethylbenzyltoluidines	6.1, 12°(c)	60	2753	6.1A
2-Ethylbutyraldehyde	3, 3°(b)	33	1178	3
Ethylchlorothioformate	8, 64°(b)	80	2826	8
Ethyldichloroarsine	6.1, 34°(a)	66	1892	6.1
Ethylene oxide and propylene oxide mixtures, containing not more than 30 % ethylene oxide	3, 17°(a)	336	2983	3 + 6.1

Alkylamines and polyamines, not otherwise specified in this appendix					
- with a flash-point below 21°C, highly corrosive	3,	22°(a)	338	2733	3+8
- with a flash-point below 21°C, corrosive	3,	22°(b)	338	2733	3+8
- with a flash-point below 21°C, slightly corrosive	3,	3°(b)	33	2733	3
- with a flash-point between 21°C and 55°C, corrosive	8,	53°(b)	83	2734	8+3
- with a flash-point between 21°C and 55°C, slightly corrosive	8,	53°(c)	83	2734	8+3
- with a flash-point above 55°C, corrosive	8,	53°(b)	80	2735	8
- with a flash-point above 55°C, slightly corrosive	8,	53°(c)	80	2735	8
- solid	8,	52°(c)	80	2735	8
Allyl iodide	3,	25°(a)	338	1723	3+8
2-Amino-5-diethylaminopentane	6.1,	12°(c)	60	2946	6.1A
Amyl nitrite	3,	3°(b)	33	1113	3
Benzyl iodide	6.1,	17°(b)	60	2653	6.1
Bisulphites, inorganic, aqueous solutions of	8,	27°(c)	80	2693	8
3-Bromopropyne	3,	3°(b)	33	2345	3
Butyl nitrites	3,	3°(b)	33	2351	3
Cycloheptatriene	3,	20°(b)	336	2603	3+6.1
Diacetone alcohol, chemically pure	3,	31°(c)	30	1148	3
2,3-Dimethylbutane	3,	3°(b)	33	2457	3
Divinyl ether	3,	2°(b)	339	1167	3
Extracts, flavourings					
- with a flash-point below 21°C	3,	3°(b)	33	1197	3
- with a flash-point between 21°C and 55°C	3,	31°(c)	30	1197	3
- with a flash-point above 55°C	3,	32°(c)	30	1197	-
Extracts, aromatic					
- with a flash-point below 21°C	3,	3°(b)	33	1169	3
- with a flash-point between 21°C and 55°C	3,	31°(c)	30	1169	3
- with a flash-point above 55°C	3,	32°(c)	30	1169	-
Dyes and intermediates					
- inorganic, corrosive	8,	46°(b)	80	2801	8
- inorganic, slightly corrosive	8,	46°(c)	80	2801	8
- organic, corrosive	8,	55°(b)	80	2801	8
- organic, slightly corrosive	8,	55°(c)	80	2801	8
Fusel oil					
- with a flash-point below 21°C	3,	3°(b)	33	1201	3
- with a flash-point between 21°C and 55°C	3,	31°(c)	30	1201	3
- with a flash-point above 55°C	3,	32°(c)	30	1201	-
Rubber solution					
- with a flash-point below 21°C	3,	3°(b)	33	1287	3
- with a flash-point between 21°C and 55°C	3,	31°(c)	30	1287	3
- with a flash-point above 55°C	3,	32°(c)	30	1287	-

Rosin oil	3,	31°(c)	30	1286	3
n-Heptaldehyde	3,	31°(c)	30	3056	3
Hexanols					
- with a flash-point between 21°C and 55°C	3,	31°(c)	30	2282	3
- with a flash-point above 55°C	3,	32°(c)	30	2282	-
Wood preservatives					
- with a flash-point below 21°C	3,	3°(b)	33	1306	3
- with a flash-point between 21°C and 55°C	3,	31°(c)	30	1306	3
- with a flash-point above 55°C	3,	32°(c)	30	1306	-
Isocyanates, not otherwise specified in this appendix					
- with a flash-point between 21°C and 55°C and a boiling point below 200°C	6.1	18°(b)	63	2206	6.1+3
- with a flash-point between 21°C and 55°C and a boiling point between 200 and 300°C	6.1	19°(b)	63	2206	6.1+3
- with a flash-point above 55°C and a boiling point below 200°C	6.1	18°(b)	60	2206	6.1
- with a flash-point above 55°C and a boiling point between 200 and 300°C	6.1	19°(b)	60	2206	6.1
Isooctene	3,	3°(b)	33	1216	3
Isopropyl-2-chloropropionate	3,	31°(c)	30	2934	3
Isopropyl chloroacetate	3,	32°(c)	30	2947	-
2-Iodobutane	3,	3°(b)	33	2390	3
Iodomethylpropanes	3,	3°(b)	33	2391	3
Iodine monochloride	8,	21°(b)	80	1792	8
Iodopropanes	3,	31°(c)	30	2392	3
Camphor oil	3,	31°(c)	30	1130	3
Ketones, liquid, not otherwise specified in this appendix					
- with a flash-point below 21°C	3,	3°(b)	33	1224	3
- with a flash-point between 21°C and 55°C	3,	31°(c)	30	1224	3
- with a flash-point above 55°C	3,	32°(c)	30	1224	-
Pine oil	3,	32°(c)	30	1272	-
Adhesives					
- with a flash-point below 21°C	3,	5°	33	1133	3
- with a flash-point between 21°C and 55°C	3,	31°(c)*	30	1133	3
- with a flash-point above 55°C	3,	32°(c)*	30	1133	-
Lithium hydroxide, solutions of	8,	42°(b)	80	2679	8
Mercaptans, not otherwise specified in this appendix					
- with a flash-point below 21°C, highly toxic	3,	19°(a)	336	1228	3+6.1
- with a flash-point below 21°C, toxic	3,	18°(b)	336	1228	3+6.1
- with a flash-point below 21°C, harmful or non-toxic	3,	3°(b)	33	1228	3
- with a flash-point between 21°C and 55°C, highly toxic	6.1	20°(a)	663	3071	6.1+3
- with a flash-point between 21°C and 55°C, toxic	6.1	20°(b)	63	3071	6.1+3
- with a flash-point between 21°C and 55°C, harmful	6.1	20°(c)	63	3071	6.1+3
Methyl-2-chloropropionate	3,	31°(c)	30	2933	3

Methyl benzoate	6.1	13°(c)	60	2938	6.1A
alpha-Methylbenzyl alcohol	6.1	14°(c)	60	2937	6.1A
N-Methylbutylamine	3,	22°(b)	338	2945	3+8
Methyl cyclohexanols					
- with a flash-point between 21°C and 55°C	3,	31°(c)	30	2617	3
- with a flash-point above 55°C	3,	32°(c)	30	2617	-
Methyl isopropenyl ketone	3,	3°(b)	339	1246	3
2-Methylpentan-2-ol	3,	31°(c)	30	2560	3
Sodium cuprocyanide, solutions of	6.1	41°(a)	66	2317	6.1
Ortho-phosphoric acid	8,	11°(c)	80	2834	8
Perfumery products					
- with a flash-point below 21°C	3,	3°(b)	33	1266	3
- with a flash-point between 21°C and 55°C	3,	31°(c)	30	1266	3
- with a flash-point above 55°C	3,	32°(c)	30	1266	-
Pesticides, triazine derivatives					
- solid	6.1,	75°(b)	60	2763	6.1
		75°(c)	60	2763	6.1A
- liquid, with a flash-point below 21°C	3,	19°	336	2764	3+6.1
		6°	33	2764	3+6.1A
- liquid, with a flash-point between 21°C and 55°C	6.1,	75°(a)	663	2997	6.1+3
		75°(b)	63	2997	6.1+3
		75°(c)	63	2997	6.1A+3
- liquid, non-inflammable or with a flash-point above 55°C	6.1	75°(a)	66	2998	6.1
		75°(b)	60	2998	6.1
		75°(c)	60	2998	6.1A
Pesticides, phenyl urea derivatives					
- solid	6.1,	75°(b)	60	2767	6.1
		75°(c)	60	2767	6.1A
- liquid, with a flash-point below 21°C	3,	19°	336	2768	3+6.1
		6°	33	2768	3+6.1A
- liquid, with a flash-point between 21°C and 55°C	6.1,	75°(a)	663	3001	6.1+3
		75°(b)	63	3001	6.1+3
		75°(c)	63	3001	6.1A+3
- liquid, non-inflammable or with a flash-point above 55°C	6.1,	75°(a)	66	3002	6.1
		75°(b)	60	3002	6.1
		75°(c)	60	3002	6.1A
Pesticides, phthalimide derivatives					
- solid	6.1,	75°(b)	60	2773	6.1
		75°(c)	60	2773	6.1A
- liquid, with a flash-point below 21°C	3,	19°	336	2774	3+6.1
		6°	33	2774	3+6.1A
- liquid, with a flash-point between 21°C and 55°C	6.1,	75°(a)	663	3007	6.1+3
		75°(b)	63	3007	6.1+3
		75°(c)	63	3007	6.1A+3
- liquid, non-inflammable or with a flash-point above 55°C	6.1,	75°(a)	66	3008	6.1
		75°(b)	60	3008	6.1
		75°(c)	60	3008	6.1A

Pesticides, with substituted nitrophenol					
- solid	6.1,	75°(b)	60	2779	6.1
		75°(c)	60	2779	6.1A
- liquid, with a flash-point below 21°C	3,	19°	336	2780	3+6.1
		6°	33	2780	3+6.1A
- liquid, with a flash-point between 21°C and 55°C	6.1,	75°(a)	663	3013	6.1+3
		75°(b)	63	3013	6.1+3
		75°(c)	63	3013	6.1A+3
- liquid, non-inflammable or with a flash-point above 55°C	6.1,	75°(a)	66	3014	6.1
		75°(b)	60	3014	6.1
		75°(c)	60	3014	6.1A
Pesticides, benzoic derivatives					
- solid	6.1,	83°(b)	60	2769	6.1
		83°(c)	60	2769	6.1A
- liquid, with a flash-point below 21°C	3,	19°	336	2770	3+6.1
		6°	33	2770	3+6.1A
- liquid, with a flash-point between 21°C and 55°C	6.1,	83°(a)	663	3003	6.1+3
		83°(b)	63	3003	6.1+3
		83°(c)	63	3003	6.1A+3
- liquid, non-inflammable or with a flash-point above 55°C	6.1,	83°(a)	66	3004	6.1
		83°(b)	60	3004	6.1
		83°(c)	60	3004	6.1A
Amyl acid phosphate	8,	38°(c)	80	2819	8
Rubidium hydroxide, solutions of	8,	42°(b)	80	2677	8
Coating solution					
- with a flash-point below 21°C	3,	3°(b)	33	1139	3
- with a flash-point between 21°C and 55°C	3,	31°(c)	30	1139	3
- with a flash-point above 55°C	3,	32°(c)	30	1139	-
Sulphurous acid	8,	1°(b)	80	1833	8
Selenium oxychloride	8,	21°(a)	886	2879	8
Tetrahydrofurfurylamine	3,	31°(c)	30	2943	3
Thiolactic acid	6.1,	21°(b)	60	2936	6.1
Tinctures, medicinal					
- with a flash-point below 21°C	3,	3°(b)	33	1293	3
- with a flash-point between 21°C and 55°C	3,	31°(c)	30	1293	3
- with a flash-point above 55°C	3,	32°(c)	30	1293	-
2-Trifluoromethylaniline	6.1,	16°(c)	60	2942	6.1A
3-Trifluoromethylaniline	6.1,	16°(b)	60	2948	6.1
Triisocyanatoisocyanurates of isophoronediisocyanate, solutions of	3,	31°(c)	30	2906	3
Triisopropyl borate, pure	3,	31°(c)	30	2616	3
Triisopropyl borate, technical	3,	3°(b)	33	2616	3

The following amendments should be made to Appendix B.5, table I:

Bicycloheptadiene	3, 3°(b)	33	2251	3
to read:				
2,5-Norbornadiene (Dicycloheptadiene)	3, 3°(b)	33	2251	3
and the following entry added:				
"Dicycloheptadiene:				
see 2,5-Norbornadiene".				
1-Bromo-3-methylbutane	3, 3°(b)	33	2341	3
Amend columns (b) and (c) to read:	3, 31°(c)	30		
N,N-Diisopropylethanolamine	8, 53°(c)	80	2825	8
Delete.				
Dinitrotoluenes solid	6.1, 12°(b)	60	2038	6.1
Delete "solid"				
Fluorotoluenes	3, 3°(b)	33	2388	3
to read:				
Fluorotoluenes				
- with a flash-point below 21°C	3, 3°(b)	33	2388	3
- with a flash-point between 21°C and 55°C (limit values included)	3, 31°(c)	30	2388	3
Furfurylamine	8, 53°(c)	83	2526	8 + 3
Amend columns (b), (c) and (e) to read:	3, 31°(c)	30		3
Isopropyl butyrate	3, 3°(b)	33	2405	3
Amend columns (b) and (c) to read:	3, 31°(c)	30		
Methylphenyldichlorosilane	8, 37°(b)	83	2437	8 + 3
Amend columns (c) and (e) to read:		X80		8
Ethylphenyldichlorosilane	8, 37°(b)	83	2435	8+3
Amend columns (c) and (e) to read:		X80		8

Collodions...

Amend column (a) to read:

"Collodions, semi-collodions, solutions of, and other nitrocellulose solutions, containing more than 20 % but not more than 55 % nitrocellulose", (rest of entry unchanged).

Table II is amended to read as follows:

APPENDIX B.5
Table II

Group of substances (a)	Class and item number (b)	Hazard identification number (c)	Substance identification number (d)	Label (e)
Inflammable liquids having a flash-point below 21°C, not toxic and not corrosive	3, 1° - 5°	33	1993	3
Inflammable liquid substances and preparations used as pesticides, having a flash-point below 21°C, harmful	3, 6°	33	3021	3+6.1A
Inflammable liquids having a flash-point below 21°C, toxic	3, 11°, 14°-18°, 20°	336	1992	3+6.1
Inflammable liquid substances and preparations used as pesticides, having a flash-point below 21°C, highly toxic or toxic	3, 19°	336	3021	3+6.1
Inflammable liquids having a flash-point below 21°C, corrosive	3, 22°-26°	338	2924	3 + 8
Inflammable liquids having a flash-point between 21°C and 100°C, not toxic and not corrosive	3, 31° 3, 32°	30 30	1993 1993	3 -
Highly toxic liquids, inflammable, having a flash-point between 21°C and 55°C	6.1, letter (a) of items 11°,13°,15°,16°,18°, 20°,22°,24°,68°	663	2929	6.1+3
Toxic liquids, inflammable, having a flash-point between 21°C and 55°C	6.1, letter (b) of items 11°,13°,15°,16°,18° 20°,22°,24°,68°	63	2929	6.1+3
Harmful liquids, inflammable, having a flash-point between 21°C and 55°C	6.1, letter (c) of items 11°,13°,15°,16°,18° 20°,22°,24°,68°	63	2929	6.1A+3

Highly toxic liquids, non-inflammable or having a flash-point above 55°C	6.1, letter (a) of items 11°-24°,55°,68°	66	2810	6.1	
Toxic liquids, non-inflammable or having a flash-point above 55°C	6.1, letter (b) of items 11°-24°,51°-55°, 57°-61°,63°-66°,68°	60	2810	6.1	
Harmful liquids, non-inflammable or having a flash-point above 55°C	6.1, letter (c) of items 11°-24°,51°-55°, 57°-61°,63°-66°,68°	60	2810	6.1	
Toxic solids, combustible	6.1, letter (b) of items 11°-24°,68°	60	2930	6.1	
Harmful solids, combustible	6.1, letter (c) of items 11°-24°,68°	60	2930	6.1A	
Toxic solids, not combustible	6.1, letter (b) of items 24°,51°-55°,57°-61°, 63°-66°,68°	60	2811	6.1	
Harmful solids, not combustible	6.1, letter (c) of items 24°,51°-55°,57°-61°, 63°-66°,68°	60	2811	6.1A	
Highly toxic liquid substances and preparations used as pesticides, inflammable, having a flash-point between 21°C and 55°C	6.1, letter (a) of items 74°,75°,77°,78°,80°, 81°,83°,85°,88°	663	2903	6.1+3	
Toxic liquid substances and preparations used as pesticides; inflammable, having a flash-point between 21°C and 55°C	6.1, letter (b) ofitems 74°,75°,77°,78°,80°, 81°,83°,85°,88°	63	2903	6.1+3	
Harmful liquid substances and preparations used as pesticides, inflammable, having a flash-point between 21°C and 55°C	6.1, letter (c) of items 74°,75°,77°,78°,80°, 81°,83°,05°,08°	63	2903	6.1A+3	
Highly toxic liquid substances and preparations used as pesticides, non-inflammable or having a flash-point above 55°C	6.1, letter (a) of items 74°,75°,77°,78°,80° 81°,83°,05°,88°	66	2902	6.1	

Toxic liquid substances and preparations used as pesticides, non-inflammable or having a flash-point above 55°C	6.1, letter (b) of items 74°,75°,77°,78°,80° 81°,83°,85°,88°	60	2902		6.1
Harmful liquid substances and preparations used as pesticides, non-inflammable or having a flash-point above 55°C	6.1, letter (c) of items 74°,75°,77°,78°,80° 81°,83°,85°,88°	60	2902		6.1A
Toxic solid substances and preparations used as pesticides	6.1, letter (b) of items 74°,75°,77°,78°,80°, 81°,83°,85°,88°	60	2588		6.1
Harmful solid substances and preparations used as pesticides	6.1, letter (c) of items 74°,75°,77°,78°,80°, 81°,83°,85°,88°	60	2588		6.1A
Highly toxic halogenated liquids, irritant, inflammable, with a flash-point between 21°C and 55°C	6.1, letter (a) ofitems 15° and 16°	663	1610		6.1+3
Toxic halogenated liquids, irritant, inflammable, with a flash-point between 21°C and 55°C	6.1, letter (b) of items 15° and 16°	63	1610		6.1+3
Highly toxic halogenated liquids, irritant, non-inflammable or with a flash-point above 55°C	6.1, letter (a) of items 15°-17°	66	1610		6.1
Toxic halogenated liquids, irritant, non-inflammable or with a flash-point above 55°C	6.1, letter (b) of items 15°-17°	60	1610		6.1
Highly corrosive liquids, inflammable, having a flash-point between 21°C and 55°C	8, letter (a) of items 27°,32°,33°,36°,37°, 39°,46°,55°,64°,66°	883	2920		8+3

Corrosive or slightly corrosive liquids, inflammable, having a flash-point between 21°C and 55°C	8, letters (b) and (c) of items 27°,32°,33°,36°,38°, 39°,46°,51°,53°-55°, 64°,66°	83	2920	8+3
Highly corrosive liquids, non-inflammable or having a flash-point above 55°C	8, letter (a) of items 1°,3°,10°,11°,21°, 27°,32°,33°,36°,37°, 39°,46°,55°,64°,66°	88	1760	8
	8, 26° (a)	88	1760	8+6.1
Corrosive or slightly corrosive liquids, non-inflammable or having a flash-point above 55°C	8, letters (b) and (c) of items 1°,3°,5°,10°,11°, 21°,23°,27°,32°,33°, 36°,38°,39°,46°,51°, 53°-55°,64°,66°.	80	1760	8
	8, 26° (b) or (c)	80	1760	8+6.1
Corrosive or slightly corrosive solids, combustible	8, letters (b) and (c) of items 27°,31°,33°,35°,38°, 39°,46°,51°,52°,54°, 55°,64°,65°	80	2921	8
Corrosive or slightly corrosive solids, not combustible	8, letters (b) and (c) of items 11°,22°,27°,31°,33°, 35°,38°,39°,41°,45°, 46°,55°,65°	80	1759	8
	8, 26° (b) or (c)	80	1759	8+6.1

APPENDIX B.6

In the lists of classes on pages 1 and 3 of the certificate, replace "1a, 1b, 1c" by "1" and after "8" add "9".

Authentic texts of the amendments: English and French.

Registered ex officio *on 1 January 1990.*