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COMMITTEE OF EXPERTS ON THE TRANSPORT OF DANGEROUS GOODS AND ON THE GLOBALLY HARMONIZED SYSTEM OF CLASSIFICATION AND LABELLING OF CHEMICALS

REPORT OF THE COMMITTEE OF EXPERTS ON ITS FIRST SESSION

(Geneva, 11-12 December 2002)

Addendum 1

Annex 1

Amendments to the Recommendations on the Transport of Dangerous Goods (Model Regulations)

This annex contains the amendments to the Recommendations on the Transport of Dangerous Goods (Model Regulations) twelfth revised edition (ST/SG/AC.10/1/Rev.12), adopted by the Committee at its first session.

AMENDMENTS TO THE RECOMMENDATIONS ON THE TRANSPORT OF DANGEROUS GOODS, TWELFTH REVISED EDITION (ST/SG/AC.10/1/Rev.12)

Recommendations on the Transport of Dangerous Goods

Amend the last sentence of paragraph 1 (page 1) to read:

"They do not apply to the bulk transport of dangerous goods in sea-going or inland navigation bulk carriers or tank-vessels, which is subject to special international or national regulations.".

Amend paragraph 10 (page 2 of the English text) to read:

"10. Many of the substances listed in Classes 1 to 9 are deemed as being dangerous to the environment. Additional labelling is not always specified except for transport by sea. Criteria for substances and mixtures dangerous to the aquatic environment are given in Chapter 2.9 of the Model Regulations."

In the data sheet (figure 1 in page 5 of the English test), under Section 6, add the following new 6.2.1:

"6.2.1 Bulk containers (6.8*)? yes/no
If yes, give details in Sections …….. and/or 7."

Existing 6.2.1 and 6.2.2 become 6.2.2 and 6.2.3 respectively.

"**Section 7. BULK CONTAINERS (only complete if yes in 6.2.1)**

7.1 Proposed type(s) ……..".

Renumber existing sections 7 and 8 accordingly.

Model Regulations on the Transport of Dangerous Goods

PART 1

Chapter 1.1

1.1.1.2 Delete (a) and rename (b) and (c) accordingly.

1.1.2.6 Add a new sub-section to read as follows:

"**1.1.2.6** ***Non-compliance***

1.1.2.6.1 In the event of a non-compliance with any limit in these Regulations applicable to radiation level or contamination,

(a) the consignor shall be informed of the non-compliance

(i) by the carrier if the non-compliance is identified during transport;or

(ii) by the consignee if the non-compliance is identified at receipt;

(b) the carrier, consignor or consignee, as appropriate shall:

(i) take immediate steps to mitigate the consequences of the non-compliance;

(ii) investigate the non-compliance and its causes, circumstances and consequences;

(iii) take appropriate action to remedy the causes and circumstances that led to the non-compliance and to prevent a recurrence of similar circumstances that led to the non-compliance; and

(iv) communicate to the relevant competent authority(ies) on the causes of the non-compliance and on corrective or preventive actions taken or to be taken; and

(c) the communication of the non-compliance to the consignor and relevant competent authority(ies), respectively, shall be made as soon as practicable and it shall be immediate whenever an emergency exposure situation has developed or is developing.".

Chapter 1.2

1.2.1 In the definition of "*Manual of Tests and Criteria*", replace "third" with "fourth" and "Rev.3" with "Rev.4".

In the definition of "portable tank", subparagraph (a), insert "Class 1 and" before "Classes 3 to 9" and delete the words "having a capacity of more than 450 litres" in the first sentence.

In the definition of "tank", delete the words "with a capacity of not less than 450 litres" and add at the end "and has a capacity of not less than 450 litres when used for the transport of substances of Class 2.".

- Insert a new definition for "*Routine maintenance of flexible IBCs*" under "*Intermediate Bulk Containers (IBCs)"* as follows:

"*Routine maintenance of flexible IBCs* is the routine performance on plastics or textile flexible IBCs of operations, such as:

a) cleaning; or

b) replacement of non-integral components, such as non-integral liners and closure ties, with components conforming to the original manufacturer's specification;

provided that these operations do not adversely affect the containment function of the flexible IBC or alter the design type.

NOTE*: For rigid IBCs, see* "*Routine maintenance of rigid IBCs*".".

- Replace "*Routine maintenance of IBCs*" with "*Routine maintenance of rigid IBCs*" and add a note at the end of the existing text to read as follows:

*"**NOTE**: For flexible IBCs, see "Routine maintenance of flexible IBCs".".*

- Insert an entry for "*Routine maintenance of flexible IBCs*" in alphabetical order with the following reference: "(see "*Intermediate Bulk Containers (IBCs)*")".

- In the definition of "*Repaired IBCs*", insert the word "rigid" before "IBCs" in the last but one sentence and add the following sentence at the end of the existing text: "Flexible IBCs are not repairable unless approved by the competent authority.".

Insert the following new definitions:

"Bulk containers are containment systems (including any liner or coating) intended for the transport of solid substances which are in direct contact with the containment system. Packagings, intermediate bulk containers (IBCs), large packagings and portable tanks are not included.

Bulk containers are:

- of a permanent character and accordingly strong enough to be suitable for repeated use;

- specially designed to facilitate the transport of goods by one or more means of transport without intermediate reloading;

- fitted with devices permitting its ready handling;

- have a capacity of not less than 1.0 cubic metres.

Examples of bulk containers are freight containers, offshore bulk containers, skips, bulk bins, swap bodies, trough-shaped containers, roller containers, load compartments of vehicles.

Elevated temperature substance means a substance which is transported or offered for transport:

- in the liquid state at a temperature at or above 100 °C;
- in the liquid state with a flashpoint above 60.5 °C and which is intentionally heated to a temperature above its flashpoint; or
- in a solid state and at a temperature at or above 240 °C.

Freight container means an article of transport equipment that is of a permanent character and accordingly strong enough to be suitable for repeated use; specially designed to facilitate the transport of goods, by one or other modes of transport, without intermediate reloading: designed to be secured and /or readily handled, having fittings for these purposes, and approved in accordance with the International Convention for Safe Containers (CSC), 1972, as amended. The term "freight container" includes neither vehicle nor packaging. However a freight container that is carried on a chassis is included. For freight containers for the transport of Class 7 material, see 2.7.2.

Offshore bulk container means a bulk container specially designed for repeated use for transport of dangerous goods to, from and between offshore facilities. An offshore bulk container is designed and constructed in accordance with the guidelines for the approval

of offshore containers handled in open seas specified by the International Maritime Organization (IMO) in document MSC/Circ.860.

GHS means the Globally Harmonized System of Classification and labelling of Chemicals, published by the United Nations as document ST/SG/AC.10/30.".

Chapter 1.3

1.3.1 Add the following sentence at the end: "Training requirements specific to security of dangerous goods in Chapter 1.4. shall also be addressed.".

1.3.3 Insert a new 1.3.3 to read as follows:

"Records of all safety training undertaken shall be kept by the employer and made available to the employee if requested.".

Renumber existing 1.3.3 as 1.3.4.

Chapter 1.4

Add a new chapter as follows:

"CHAPTER 1.4

SECURITY PROVISIONS

Introductory notes

NOTE 1: *This Chapter provides requirements intended to address the security of dangerous goods in transport in all modes. Mode specific security provisions can be found in Chapter 7.2. National and modal authorities may apply additional security provisions which should be considered when offering or transporting dangerous goods.*

NOTE 2: *For the purposes of this Chapter security means measures or precautions to be taken to minimise theft or mis-use of dangerous goods that may endanger persons or property.*

1.4.1 General provisions

1.4.1.1 All persons engaged in the transport of dangerous goods shall consider security requirements for the transport of dangerous goods commensurate with their responsibilities.

1.4.1.2 Consignors shall only offer dangerous goods to carriers that have been appropriately identified.

1.4.1.3 Transit sites, such as airside warehouses, marshalling yards and other temporary storage areas shall be properly secured, well lit and, where possible, not be accessible to the general public.

1.4.2 Security training

1.4.2.1 The training specified for individuals in 1.3.2 (a), (b) or (c) shall also include elements of security awareness.

1.4.2.2 Security awareness training shall address the nature of security risks, recognising security risks, methods to address and reduce such risks and actions to be taken in the event of a security breach. It shall include awareness of security plans (if appropriate) commensurate with the responsibilities of individuals and their part in implementing security plans.

1.4.2.3 Such training shall be provided or verified upon employment in a position involving dangerous goods transport and shall be periodically supplemented with retraining.

1.4.2.4 Records of all security training undertaken shall be kept by the employer and made available to the employee if requested.

1.4.3 Provisions for high consequence dangerous goods

1.4.3.1 In implementing national security provisions competent authorities shall consider establishing a programme for identifying consignors or carriers engaged in the transport of high consequence dangerous goods for the purpose of communicating security related information. An indicative list of high consequence dangerous goods is provided in Table 1.4.1.

1.4.3.2 *Security plans*

1.4.3.2.1 Carriers, consignors and others (including infrastructure managers) engaged in the transport of high consequence dangerous goods (see Table 1.4.1) shall adopt, implement and comply with a security plan that addresses at least the elements specified in 1.4.3.2.2.

1.4.3.2.2 The security plan shall comprise at least the following elements:

(a) specific allocation of responsibilities for security to competent and qualified persons with appropriate authority to carry out their responsibilities;

(b) records of dangerous goods or types of dangerous goods transported;

(c) review of current operations and assessment of vulnerabilities, including inter-modal transfer, temporary transit storage, handling and distribution as appropriate;

(d) clear statements of measures, including training, policies (including response to higher threat conditions, new employee/employment verification etc.), operating practices (e.g. choice/use of routes where known, access to dangerous goods in temporary storage, proximity to vulnerable infrastructure etc.), equipment and resources that are to be used to reduce security risks;

(e) effective and up to date procedures for reporting and dealing with security threats, breaches of security or security incidents;

(f) procedures for the evaluation and testing of security plans and procedures for periodic review and update of the plans;

(g) measures to ensure the security of transport information contained in the plan; and

(h) measures to ensure that the security of the distribution of the transport information is limited as far as possible. (Such measures shall not preclude

provision of transport documentation required by Chapter 5.4 of these Regulations).

NOTE: *Carriers, consignors and consignees should co-operate with each other and with appropriate authorities to exchange threat information, apply appropriate security measures and respond to security incidents.*

Table 1.4.1: Indicative list of high consequence dangerous goods

High consequence dangerous goods are those which have the potential for mis-use in a terrorist incident and which may, as a result, produce serious consequences such as mass casualties or mass destruction. The following is an indicative list of high consequence dangerous goods:

Class 1, Division 1.1	explosives
Class 1, Division 1.2	explosives
Class 1, Division 1.3	compatibility group C explosives
Class 1, Division 1.5	explosives
Division 2.1	flammable gases in bulk
Division 2.3	toxic gases (excluding aerosols)
Class 3	flammable liquids in bulk of packing groups I and II
Class 3 and Division 4.1	desensitised explosives
Division 4.2	goods of packing group I in bulk
Division 4.3	goods of packing group I in bulk
Division 5.1	oxidizing liquids in bulk of packing group I
Division 5.1	perchlorates, ammonium nitrate and ammonium nitrate fertilisers, in bulk
Division 6.1	toxic substances of packing group I
Division 6.2	infectious substances of Category A
Class 7	radioactive material in quantities greater than 3000 A_1 (special form) or 3000 A_2, as applicable, in Type B or Type C packages
Class 8	corrosive substances of packing group I in bulk

NOTE 1*: For the purposes of this Table, "in bulk" means transported in quantities greater than 3000 kg or 3000 l in portable tanks or bulk containers.*

NOTE 2*: For purposes of non-proliferation of nuclear material, the Convention on Physical Protection of Nuclear Material applies to international transport supported by IAEA INFCIRC/225(Rev.4).".*

PART 2

Chapter 2.3

2.3.1.4 In the last sentence, replace "and UN 3357" with ", UN 3357 and UN 3379".

Chapter 2.4

Add a new introductory note to read as follows:

"NOTE 3: *Since organometallic substances can be classified in divisions 4.2 or 4.3 with additional subsidiary risks, depending on their properties, a specific classification flow chart for these substances is given in 2.4.5."*

2.4.2.3.2.2 Amend the two first sentences of this paragraph to read as follows:

"Self-reactive substances permitted for transport in packagings are listed in 2.4.2.3.2.3, those permitted for transport in IBCs are listed in packing instruction IBC520 and those permitted for transport in portable tanks are listed in portable tank instruction T23. For each permitted substance listed, the appropriate generic entry of the Dangerous Goods List (UN Nos. 3221 to 3240) is assigned, and appropriate subsidiary risks and remarks providing relevant transport information are given.".

2.4.2.3.2.3 In the title, add at the end: "in packages".

Add the following text before the existing Note 1:

"In the column "Packing Method" codes "OP1" to "OP8" refer to packing methods in packing instruction P520. Self-reactive substances to be transported shall fulfil the classification and the control and emergency temperatures (derived from the SADT) as listed.".

Delete note 1. As a consequence, "***NOTE 1***" becomes "***NOTE***".

2.4.2.3.2.4 Amend the beginning of the first sentence to read: "Classification of self-reactive substances not listed in 2.4.2.3.2.3, packing instruction IBC520 or portable tank instruction T23 and assignment to…".

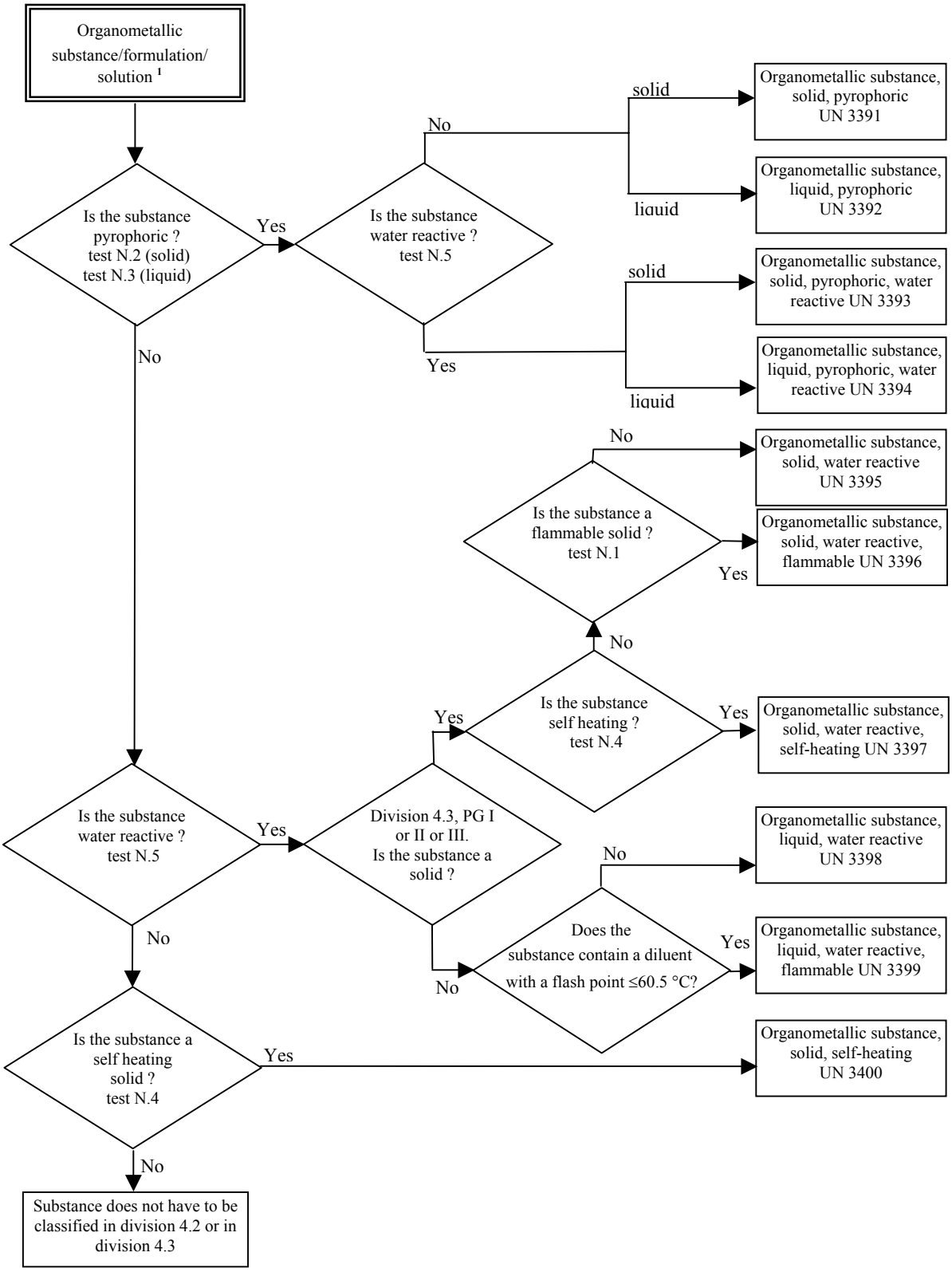
2.4.2.4.1 Add UN 3380 to the list of UN numbers.

2.4.5 Add a new paragraph 2.4.5 and a new figure 2.4.2 as follows:

"**2.4.5 Classification of organometallic substances**

Depending on their properties, organometallic substances may be classified in divisions 4.2 or 4.3, as appropriate, in accordance with the flowchart scheme given in figure 2.4.2.

Figure 2.4.2: Flowchart scheme for organometallic substances[2]



[1] *If applicable and testing is relevant, taking into account reactivity properties, class 6.1 and 8 properties should be considered according to the precedence of hazard table 2.0.3.3.*

[2] *Test methods N.1 to N.5 can be found in the Manual of Tests and Criteria, Part III, Section 33.*

Chapter 2.5

2.5.3.2.3 Amend the two first sentences of this paragraph to read as follows:

"Organic peroxides permitted for transport in packagings are listed in 2.5.3.2.4, those permitted for transport in IBCs are listed in packing instruction IBC520 and those permitted for transport in portable tanks are listed in portable tank instruction T23. For each permitted substance listed, the generic entry of the Dangerous Goods List (UN Nos. 3101 to 3120) is assigned, appropriate subsidiary risks and remarks providing relevant transport information are given.".

2.5.3.2.4 In the title add, at the end: "in packages".

Replace the existing note under the title with the following text:

"Packing Method" codes "OP1" to "OP8" refer to packing methods in packing instruction P520. Peroxides to be transported shall fulfill the classification and the control and emergency temperatures (derived form the SADT) as listed. For substances permitted in IBCs see packing instruction IBC520 and, for those permitted in tanks, see portable tank instruction T23."

In the table:
In the column "Subsidiary risks and remarks", delete "30)".
Amend the entries listed below as follows:

Organic peroxide		Column	Amendment
ACETYL BENZOYL PEROXIDE		Delete	
tert-AMYL PEROXYACETATE		Packing method	Replace "OP8" with "OP7"
		Number	Replace "3107" with "3105"
tert-BUTYL CUMYL PEROXIDE	(1st row)	Packing method	Replace "OP7" with "OP8"
		Number	Replace "3105" with "3107"
	(2nd row)	Concentration	Replace "≤ 42" with "≤ 52"
		Inert solid	Replace "≥ 58" with "≥ 48"
		Packing method	Replace "OP7" with "OP8"
		Number	Replace "3106" with "3108"
n-BUTYL-4,4-DI-(tert-BUTYLPEROXY)VALERATE	(2nd row)	Delete	
	(3rd row)	Concentration	Replace "≤ 42" with "≤ 52"
		Inert solid	Replace "≥ 58" with "≥ 48"
tert-BUTYL HYDROPEROXIDE	(4th row)	Packing method	Delete ",N,M"
tert-BUTYL MONOPEROXYPHTHALATE		Delete	
tert-BUTYL PEROXYACETATE	(3rd row)	Diluent type A	Delete "≥ 68"
		Diluent type B	Add "≥ 68"
		Packing method	Delete ",N"
	(4th and 5th rows)	Delete	
tert-BUTYL PEROXYBENZOATE	(1st row)	Diluent type A	Delete "< 22"

Organic peroxide		Column	Amendment
tert-BUTYL PEROXYDIETHYLACETATE + tert-BUTYL PEROXYBENZOATE		Delete	
tert-BUTYL PEROXY-2-ETHYLHEXANOATE	5th and 6th rows	Delete	
tert-BUTYL PEROXYISOBUTYRATE	(1st row)	Diluent type B	Replace ">23" with "≥23"
	(2nd row)	Diluent type B	Replace ">48" with "≥48"
tert-BUTYL PEROXYNEODECANOATE	(3rd row)	Delete	
	(4th row)	Number	Replace "3117" with "3119"
	(6th row)	Packing method	Delete ",N"
tert-BUTYL PEROXYPIVALATE	(4th and 5th rows)	Delete	
3-tert-BUTYLPEROXY-3-PHENYLPHTHALIDE		Delete	
tert-BUTYL PEROXY-3,5,5-TRIMETHYLHEXANOATE	(2nd row)	Diluent type A	Delete "≥ 68"
		Diluent type B	Add "≥ 68"
		Packing method	Delete ", N"
	(3rd row)	Delete	
CUMYL HYDROPEROXIDE	(2nd row)	Packing method	Delete ", M, N"
CUMYL PEROXYNEODECANOATE	(3rd row)	Delete	
DIBENZOYL PEROXIDE	(8th row)	Delete	
	(11th row)	Packing method	Delete ",N"
DIBENZYL PEROXYDICARBONATE		Delete	
DI-(4-tert-BUTYLCYCLOHEXYL) PEROXYDICARBONATE	(2nd row)	Packing method	Delete ",N"
DI-tert-BUTYL PEROXIDE	(1st row)	Concentration	Replace ">32" with ">52
	(2nd row)	Packing method	Delete ",N"
	(3rd row)	Delete	
1,1-DI-(tert-BUTYLPEROXY) CYCLOHEXANE	(5th row)	Diluent type A	Replace "≥ 36" with "≥ 25"
	(6th row)	Packing method	Delete ",N"
1,1-DI-(tert-BUTYLPEROXY)-3,3,5-TRIMETHYLCYCLOHEXANE	(3rd row)	Packing method	Replace "OP7" with "OP5"
		Number	Replace "3105" with "3103"
	(4th row)	Packing method	Replace "OP7" with "OP8"
		Number	Replace "3106" with "3110"
DICETYL PEROXYDICARBONATE	(2nd row)	Packing method	Delete ",N"
DICUMYL PEROXIDE	(1st row)	Concentration	Replace "42" with "52"
		Packing method	Delete ",M"
DICYCLOHEXYL PEROXYDICARBONATE	(1st and 2nd rows)	Control temperature	Replace "+5" with "+10"
		Emergency temperature	Replace "+10" with "+15"

Organic peroxide		Column	Amendment
DI-(2-ETHYLHEXYL) PEROXYDICARBONATE	(3rd row)	Organic peroxide	This amendment does not apply to the English version
	(5th row)	Delete	
	(6th row)	Concentration Number	Replace "42" with "52" Replace "3118" with "3120"
DIETHYL PEROXYDICARBONATE		Delete	
DIISOTRIDECYL PEROXYDICARBONATE		Delete	
DILAUROYL PEROXIDE	(2nd row)	Packing method	Delete ",N"
2,5-DIMETHYL-2,5-DI-(tert-BUTYLPEROXY)HEXANE	(2nd row)	Delete	
DIMYRISTYL PEROXYDICARBONATE	(3rd row)	Delete	
DIPEROXY AZELAIC ACID		Delete	
DIPEROXY DODECANE DIACID		Delete	
DISTEARYL PEROXYDICARBONATE		Delete	
DI-(3,5,5-TRIMETHYLHEXANOYL) PEROXIDE	(2nd row)	Packing method	Delete ", N"
	(4th and 5th rows)	Delete	
DI-(3,5,5-TRIMETHYL-1,2-DIOXOLANYL-3) PEROXIDE		Delete	
3,3,6,6,9,9-HEXAMETHYL-1,2,4,5-TETRAOXACYCLONONANE		Delete	
ISOPROPYLCUMYL HYDROPEROXIDE		Packing method	Delete ", M, N"
p-MENTHYL HYDROPEROXIDE	(2nd row)	Packing method	Delete ", M, N"
METHYL ETHYL KETONE PEROXIDE(S)	(1st row)	Concentration	Replace "≤ 52" with "see remark 8)"
	(2nd row)	Concentration	Replace "≤ 45" with "see remark 9)"
	(3rd now)	Concentration	Replace "≤ 40" with "see remark 10)"
	(4th row)	Delete	
PEROXYACETIC ACID, TYPE F, stabilized	(1st row)	Packing method	Delete ", N"
	(2nd row)	Delete	
PINANYL HYDROPEROXIDE	(1st row)	Concentration	Replace "56" with ">56"
	(2nd row)	Concentration Diluent type A Packing method	Replace "<56" with "≤ 56" Replace ">44" with "≥44" Delete ", M"
TETRAHYDRONAPHTHYL HYDROPEROXIDE		Delete	
1,1,3,3-TETRAMETHYLBUTYL PEROXY-2 ETHYLHEXANOATE		Control temperature Emergency temperature	Replace "+20" with "+15" Replace "+25" with "+20"
1,1,3,3-TETRAMETHYLBUTYL PEROXYPHENOACETATE		Delete	

Insert the following new entries:

Organic peroxide	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
tert-AMYLPEROXY ISOPROPYL CARBONATE	≤ 77	≥ 23				OP5			3103	
tert-BUTYL PEROXYNEO-HEPTANOATE *(new second row)*	≤ 42 as a stable dispersion in water					OP8	0	+10	3117	
1,6-Di-(tert-BUTYLPEROXY-CARBONYLOXY) HEXANE	≤ 72	≥ 28				OP5			3103	
DICYCLOHEXYL PEROXYDICARBONATE *(new third row)*	≤ 42 as a stable dispersion in water					OP8	+15	+20	3119	
1-(2-ETHYLHEXANOYL-PEROXY)-1,3-DIMETHYLBUTYL PEROXYPIVALATE	≤ 52	≥ 45	≥ 10			OP7	-20	-10	3115	
PEROXYLAURIC ACID	≤ 100					OP8	+35	+40	3118	
POLYETHER POLY-tert-BUTYLPEROXY-CARBONATE	≤ 52		≥ 23			OP8			3107	
1,1,3,3-TETRAMETHYL-BUTYL PEROXYPIVALATE	≤ 77	≥ 23				OP7	0	+10	3315	

2.5.3.2.4 Notes after the table:

Note 1): Add the following sentence at the end: "*Boiling point diluent type B should be at least 60°C higher than the SADT of the organic peroxide*.".

Note 3): Add at the end: *"(Model No. 1, see 5.2.2.2.2)."*.

Note 8): Amend to read as follows: "*Available oxygen > 10% and ≤ 10.7%, with or without water."*.

Note 9): Amend to read as follows: "*Available oxygen ≤ 10%, with or without water."*.

Note 10): Amend to read as follows: "*Available oxygen ≤ 8,2%, with or without water."*.

Note 13): Add at the end: *"(Model No. 8, see 5.2.2.2.2)."*.

Note 21): Amend to read as follows: "*With ≥ 25% diluent type A by mass, and in addition ethylbenzene."*.

Note 22): Amend to read as follows: "*With ≥ 19% diluent type A by mass, and in addition methyl isobutyl ketone."*.

Note 27): Add at the end: *"(Model No. 8, see 5.2.2.2.2)."*.

Note 29): Replace "*regulations*" with "*Model Regulations*".

Note 30): Delete

2.5.3.2.5 Amend the beginning of the first sentence to read: "Classification of organic peroxides not listed in 2.5.3.2.4, packing instruction IBC520 or portable tank instruction T23 and assignment to…".

Chapter 2.6

2.6.1(b) Replace "or recombinant micro-organisms (hybrid or mutant), that are known or reasonably expected to cause infectious disease in animals or humans." with "and other agents such as prions, which can cause disease in humans or animals.".

2.6.2.1.1 Replace the existing definition for " *LD_{50} for acute oral toxicity*" with the following text: "*LD_{50} (median lethal dose) for acute oral toxicity* is the statistically derived single dose of a substance that can be expected to cause death within 14 days in 50 per cent of young adult albino rats when administered by the oral route. The LD_{50} value is expressed in terms of mass of test substance per mass of test animal (mg/kg).".

2.6.2.2.4.3 In footnote "*", replace "Tear gases" with "Tear gas substances".

2.6.3 Replace the existing text with the following:

"2.6.3 Division 6.2 - Infectious substances

2.6.3.1 *Definitions*

For the purposes of these Regulations:

2.6.3.1.1 *Infectious substances* are substances which are known or are reasonably expected to contain pathogens. Pathogens are defined as micro-organisms (including bacteria, viruses, rickettsiae, parasites, fungi) and other agents such as prions, which can cause disease in humans or animals.

2.6.3.1.2 *Biological products* are those products derived from living organisms which are manufactured and distributed in accordance with the requirements of appropriate national authorities, which may have special licensing requirements, and are used either for prevention, treatment, or diagnosis of disease in humans or animals, or for development, experimental or investigational purposes related thereto. They include, but are not limited to, finished or unfinished products such as vaccines.

2.6.3.1.3 *Cultures* (laboratory stocks) are the result of a process by which pathogens are amplified or propagated in order to generate high concentrations, thereby increasing the risk of infection when exposure to them occurs. This definition refers to cultures prepared for the intentional generation of pathogens and does not include cultures intended for diagnostic and clinical purposes.

2.6.3.1.4 *Genetically modified micro-organisms and organisms* are micro-organisms and organisms in which genetic material has been purposely altered through genetic engineering in a way that does not occur naturally.

2.6.3.1.5 *Medical or clinical wastes* are wastes derived from the medical treatment of animals or humans or from bio-research.

2.6.3.2 ***Classification of infectious substances***

2.6.3.2.1 Infectious substances shall be classified in Division 6.2 and assigned to UN 2814, UN 2900 or UN 3373, as appropriate.

2.6.3.2.2 Infectious substances are divided into the following categories:

2.6.3.2.2.1 Category A: An infectious substance which is transported in a form that, when exposure to it occurs, is capable of causing permanent disability, life-threatening or fatal disease to humans or animals. Indicative examples of substances that meet these criteria are given in the table in this paragraph.

NOTE : *An exposure occurs when an infectious substance is released outside of the protective packaging, resulting in physical contact with humans or animals.*

(a) Infectious substances meeting these criteria which cause disease in humans or both in humans and animals shall be assigned to UN 2814. Infectious substances which cause disease only in animals shall be assigned to UN 2900.

(b) Assignment to UN 2814 or UN 2900 shall be based on the known medical history and symptoms of the source human or animal, endemic local conditions, or professional judgement concerning individual circumstances of the source human or animal.

NOTE 1*: The proper shipping name for UN 2814 is INFECTIOUS SUBSTANCE, AFFECTING HUMANS. The proper shipping name for UN 2900 is INFECTIOUS SUBSTANCE, AFFECTING ANIMALS only*.

NOTE 2**:** *The following table is not exhaustive. Infectious substances, including new or emerging pathogens, which do not appear in the table but which meet the same criteria shall be assigned to Category A. In addition, if there is doubt as to whether or not a substance meets the criteria it shall be included in Category A.*

NOTE 3: *In the following table, the micro-organisms written in italics are bacteria, mycoplasmas, rickettsia or fungi.*

INDICATIVE EXAMPLES OF INFECTIOUS SUBSTANCES INCLUDED IN CATEGORY A IN ANY FORM UNLESS OTHERWISE INDICATED (2.6.3.2.2.1 (a))	
UN Number and Proper Shipping Name	**Micro-organism**
UN 2814 Infectious substances affecting humans	*Bacillus anthracis (cultures only)* *Brucella abortus (cultures only)* *Brucella melitensis (cultures only)* *Brucella suis (cultures only)* *Burkholderia mallei - Pseudomonas mallei* – Glanders *(cultures only)* *Burkholderia pseudomallei – Pseudomonas pseudomallei (cultures only)* *Chlamydia psittaci* - avian strains (cultures only) *Clostridium botulinum (cultures only)* *Coccidioides immitis (cultures only)*

INDICATIVE EXAMPLES OF INFECTIOUS SUBSTANCES INCLUDED IN CATEGORY A IN ANY FORM UNLESS OTHERWISE INDICATED (2.6.3.2.2.1 (a))	
UN Number and Proper Shipping Name	**Micro-organism**
	Coxiella burnetii (cultures only) Crimean-Congo hemorrhagic fever virus Dengue virus (cultures only) Eastern equine encephalitis virus (cultures only) *Escherichia coli*, verotoxigenic (cultures only) Ebola virus Flexal virus *Francisella tularensis (cultures only)* Guanarito virus Hantaan virus Hantaviruses causing hantavirus pulmonary syndrome Hendra virus Hepatitis B virus (cultures only) Herpes B virus (cultures only) Human immunodeficiency virus (cultures only) Highly pathogenic avian influenza virus (cultures only) Japanese Encephalitis virus (cultures only) Junin virus Kyasanur Forest disease virus Lassa virus Machupo virus Marburg virus Monkeypox virus
UN 2900 Infectious substances affecting animals only	African horse sickness virus African swine fever virus Avian paramyxovirus Type 1 - Newcastle disease virus Bluetongue virus Classical swine fever virus Foot and mouth disease virus Lumpy skin disease virus *Mycoplasma mycoides* - Contagious bovine pleuropneumonia Peste des petits ruminants virus Rinderpest virus Sheep-pox virus Goatpox virus Swine vesicular disease virus Vesicular stomatitis virus

2.6.3.2.2.2 Category B: An infectious substance which does not meet the criteria for inclusion in Category A. Infectious substances in Category B shall be assigned to UN 3373 except that cultures, as defined in 2.6.3.1.3, shall be assigned to UN 2814 or UN 2900 as appropriate.

NOTE: *The proper shipping name of UN 3373 is "DIAGNOSTIC SPECIMENS" or "CLINICAL SPECIMENS."*

2.6.3.2.3 Substances which do not contain infectious substances or substances which are unlikely to cause disease in humans or animals are not subject to these Regulations unless they meet the criteria for inclusion in another class.

2.6.3.2.4 Blood or blood components which have been collected for the purposes of transfusion or for the preparation of blood products to be used for transfusion or transplantation and any tissues or organs intended for use in transplantation are not subject to these Regulations.

2.6.3.2.5 Substances for which there is a low probability that infectious substances are present, or where the concentration is at a level naturally encountered, are not subject to these Regulations. Examples are: foodstuffs, water samples, living persons and substances which have been treated so that the pathogens have been neutralized or deactivated.

2.6.3.2.6 An alive animal which has been intentionally infected and is known or suspected to contain an infectious substance shall only be transported under terms and conditions approved by the competent authority.

2.6.3.3 ***Biological products***

2.6.3.3.1 For the purposes of these Regulations, biological products are divided into the following groups:

(a) those which are manufactured and packaged in accordance with the requirements of appropriate national authorities and transported for the purposes of final packaging or distribution, and use for personal health care by medical professionals or individuals. Substances in this group are not subject to these Regulations.

(b) those which do not fall under paragraph (a) and are known or reasonably believed to contain infectious substances and which meet the criteria for inclusion in Category A or Category B. Substances in this group shall be assigned to UN 2814, UN 2900 or UN 3373, as appropriate.

NOTE*: Some licensed biological products may present a biohazard only in certain parts of the world. In that case, competent authorities may require these biological products to be in compliance with local requirements for infectious substances or may impose other restrictions.*

2.6.3.4 ***Genetically modified micro-organisms and organisms***

2.6.3.4.1 Genetically modified micro-organisms not meeting the definition of infectious substance shall be classified according to Chapter 2.9.

2.6.3.5 ***Medical or clinical wastes***

2.6.3.5.1 Medical or clinical wastes containing Category A infectious substances or containing Category B infectious substances in cultures shall be assigned to UN 2814 or UN 2900 as appropriate. Medical or clinical wastes containing infectious substances in Category B, other than cultures, shall be assigned to UN 3291.

2.6.3.5.2 Medical or clinical wastes which are reasonably believed to have a low probability of containing infectious substances shall be assigned to UN 3291.

NOTE*: The proper shipping name for UN 3291 is "CLINICAL WASTE, UNSPECIFIED, N.O.S." or "(BIO) MEDICAL WASTE, N.O.S". or "REGULATED MEDICAL WASTE, N.O.S.".*

2.6.3.5.3 Decontaminated medical or clinical wastes which previously contained infectious substances are not subject to these Regulations unless they meet the criteria for inclusion in another class.".

Chapter 2.7

Except for the definition in 2.7.2, replace, all throughout the chapter, "Industrial package Type 1 (Type IP-1)" with "Type IP-1 package" and "Industrial package Type 2 (Type IP-2)" with "Type IP-2 package".

2.7.1.2 In (e), insert the following text after "naturally occurring radionuclides":
"which are either in their natural state, or have only been processed for purposes other than for extraction of the radionuclides, and"

Add a new (f) as follows:
"(f) Non-radioactive solid objects with radioactive substances present on any surfaces in quantities not in excess of the limit defined in 2.7.2".

2.7.2 In the definition of "package", add "package" after "Type IP-1", "Type IP-2" and "Type IP-3" in b), c) and d).

2.7.6.1.1 Amend the title of the table to read: "Multiplication factor for tanks, freight containers and unpackaged LSA-I and SCO-I".

2.7.6.2.2 Amend to read: "The criticality safety index for each overpack or freight container shall be determined as the sum of the CSIs of all the packages contained. The same procedure shall be followed for determining the total sum of the CSIs in a consignment or aboard a conveyance."

2.7.7.2.1 In the table, for "Cf-252", replace "5×10^{-2}" with "1×10^{-1}" under the heading A_1.

2.7.8.3 Insert the words "or overpack" after "package".

2.7.9.3 (b) Amend to read as follows:
" (b) Each instrument or article bears the marking "RADIOACTIVE" except:

i) radioluminescent time-pieces or devices;

ii) consumer products that either have received regulatory approval according to 2.7.1.2(d) or do not individually exceed the activity limit for an exempt consignment in Table 2.7.7.2.1 (column 5), provided such products are transported in a package that bears the marking "RADIOACTIVE" on an internal surface in such a manner that warning of the presence of radioactive material is visible on opening the package, and ".

Chapter 2.8

2.8.2.5 (c) (ii) Replace the two last sentences of this subparagraph with the following text:

"For the purposes of testing steel, type S235JR+CR (1.0037 resp. St 37-2), S275J2G3+CR (1.0144 resp. St 44-3), ISO 3574, Unified Numbering System (UNS) G10200 or SAE 1020, and for testing aluminium, non-clad, types 7075-T6 or AZ5GU-T6 shall be used. An acceptable test is prescribed in the *Manual of Tests and Criteria*, Part III, Section 37".

Chapter 2.9

Replace the existing text with the following:

"CHAPTER 2.9

CLASS 9 – MISCELLANEOUS DANGEROUS SUBSTANCES AND ARTICLES

2.9.1 Definitions

2.9.1.1 *Class 9 substances and articles (miscellaneous dangerous substances and articles)* are substances and articles which, during transport present a danger not covered by other classes.

2.9.1.2 *Genetically modified micro-organisms (GMMOs) and genetically modified organisms (GMOs)* are micro-organisms and organisms in which genetic material has been purposely altered through genetic engineering in a way that does not occur naturally.

2.9.2 Assignment to Class 9

2.9.2.1 Class 9 includes, inter alia:

a) environmentally hazardous substances;

b) elevated temperature substances (i.e. substances that are transported or offered for transport at temperatures equal to or exceeding 100°C in a liquid state or at temperatures equal or exceeding 240°C in a solid state);

c) GMMOs or GMOs which do not meet the definition of infectious substances (see 2.6.3) but which are capable of altering animals, plants or microbiological substances in a way not normally the result of natural reproduction. They shall be assigned to UN 3245.

GMMOs or GMOs are not subject to these Regulations when authorized for use by the competent authorities of the Governments of the countries of origin, transit and destination.

2.9.3 Environmentally hazardous substances (aquatic environment)

2.9.3.1 *General definitions*

2.9.3.1.1 Environmentally hazardous substances include, inter alia, liquid or solid substances pollutant to the aquatic environment and solutions and mixtures of such substances (such as preparations and wastes).

2.9.3.1.2 The aquatic environment may be considered in terms of the aquatic organisms that live in the water, and the aquatic ecosystem of which they are part[1]. The basis, therefore, of the identification of hazard is the aquatic toxicity of the substance or mixture, although this may be modified by further information on the degradation and bioaccumulation behaviour.

2.9.3.1.3 While the following classification procedure is intended to apply to all substances and mixtures, it is recognised that in some cases, e.g. metals or poorly soluble inorganic compounds, special guidance will be necessary[2].

2.9.3.1.4 The following definitions apply for acronyms or terms used in this section:

- BCF: Bioconcentration Factor;
- BOD: Biochemical Oxygen Demand;
- COD: Chemical Oxygen Demand;
- GLP: Good Laboratory Practices;
- EC_{50} : the effective concentration of substance that causes 50% of the maximum response;
- ErC_{50} : EC_{50} in terms of reduction of growth;
- K_{ow}: octanol/water partition coefficient;
- LC_{50} (50% lethal concentration): the concentration of a substance in water which causes the death of 50% (one half) in a group of test animals;
- $L(E)C_{50}$: LC_{50} or EC_{50};
- NOEC: No Observed Effect Concentration;

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[1] *This does not address aquatic pollutants for which there may be a need to consider effects beyond the aquatic environment such as the impacts on human health etc.*

[2] *This can be found in Annex 9 of the GHS.*

- OECD Test Guidelines: Test guidelines published by the Organization for Economic Cooperation and Development (OECD);

2.9.3.2 ***Definitions and data requirements***

2.9.3.2.1 The basic elements for classification of environmentally hazardous substances (aquatic environment) are:

- acute aquatic toxicity;
- potential for or actual bioaccumulation;
- degradation (biotic or abiotic) for organic chemicals; and
- chronic aquatic toxicity.

2.9.3.2.2 While data from internationally harmonised test methods are preferred, in practice, data from national methods may also be used where they are considered as equivalent. In general, freshwater and marine species toxicity data can be considered as equivalent data and are preferably to be derived using OECD Test Guidelines or equivalent according to the principles of Good Laboratory Practices (GLP). Where such data are not available, classification shall be based on the best available data.

2.9.3.2.3 **Acute aquatic toxicity** shall normally be determined using a fish 96 hour LC_{50} (OECD Test Guideline 203 or equivalent), a crustacea species 48 hour EC_{50} (OECD Test Guideline 202 or equivalent) and/or an algal species 72 or 96 hour EC_{50} (OECD Test Guideline 201 or equivalent). These species are considered as surrogates for all aquatic organisms. Data on other species such as Lemna may also be considered if the test methodology is suitable.

2.9.3.2.4 **Bioaccumulation** means net result of uptake, transformation and elimination of a substance in an organism due to all routes of exposure (i.e. air, water, sediment/soil and food).

The potential for bioaccumulation shall normally be determined by using the octanol/water partition coefficient, usually reported as a log K_{ow} determined according to OECD Test Guideline 107 or 117. While this represents a potential to bioaccumulate, an experimentally determined Bioconcentration Factor (BCF) provides a better measure and shall be used in preference when available. A BCF shall be determined according to OECD Test Guideline 305.

2.9.3.2.5 **Environmental degradation** may be biotic or abiotic (eg. hydrolysis) and the criteria used reflect this fact. Ready biodegradation is most easily defined using the OECD biodegradability tests (OECD Test Guideline 301 (A - F)). A pass level in these tests may be considered as indicative of rapid degradation in most aquatic environments. As these are freshwater tests, use of results from OECD Test Guideline 306, which is more suitable for the marine environment, is also included. Where such data are not available, a BOD(5 days)/COD ratio >0.5 is considered as indicative of rapid degradation. Abiotic degradation such as hydrolysis, primary degradation, both abiotic and biotic, degradation in non-aquatic media and proven rapid degradation in the environment may all be considered in defining rapid degradability[3].

[3] *Special guidance on data interpretation is provided in Chapter 3.10 and Annex 8 of the GHS.*

Substances are considered rapidly degradable in the environment if the following criteria are met:

(a) In 28-day ready biodegradation studies, the following levels of degradation are achieved:

(i) Tests based on dissolved organic carbon: 70%;

(ii) Tests based on oxygen depletion or carbon dioxide generation: 60% of theoretical maxima;

These levels of biodegradation shall be achieved within 10 days of the start of degradation which point is taken as the time when 10% of the substance has been degraded; or

(b) In those cases where only BOD and COD data are available, when the ratio of BOD_5/COD is ≥ 0.5; or

(c) If other convincing scientific evidence is available to demonstrate that the substance or mixture can be degraded (biotically and/or abiotically) in the aquatic environment to a level above 70% within a 28 day period.

2.9.3.2.6 **Chronic toxicity** data are less available than acute data and the range of testing procedures less standardised. Data generated according to the OECD Test Guidelines 210 (Fish Early Life Stage) or 211 (Daphnia Reproduction) and 201 (Algal Growth Inhibition) may be accepted. Other validated and internationally accepted tests may also be used. The "No Observed Effect Concentrations" (NOECs) or other equivalent L(E)Cx shall be used.

2.9.3.3 ***Substance classification categories and criteria***

2.9.3.3.1 Substances shall be classified as "environmentally hazardous substances (aquatic environment)", if they satisfy the criteria for Acute I, Chronic I or Chronic II, according to the following tables:

Acute toxicity

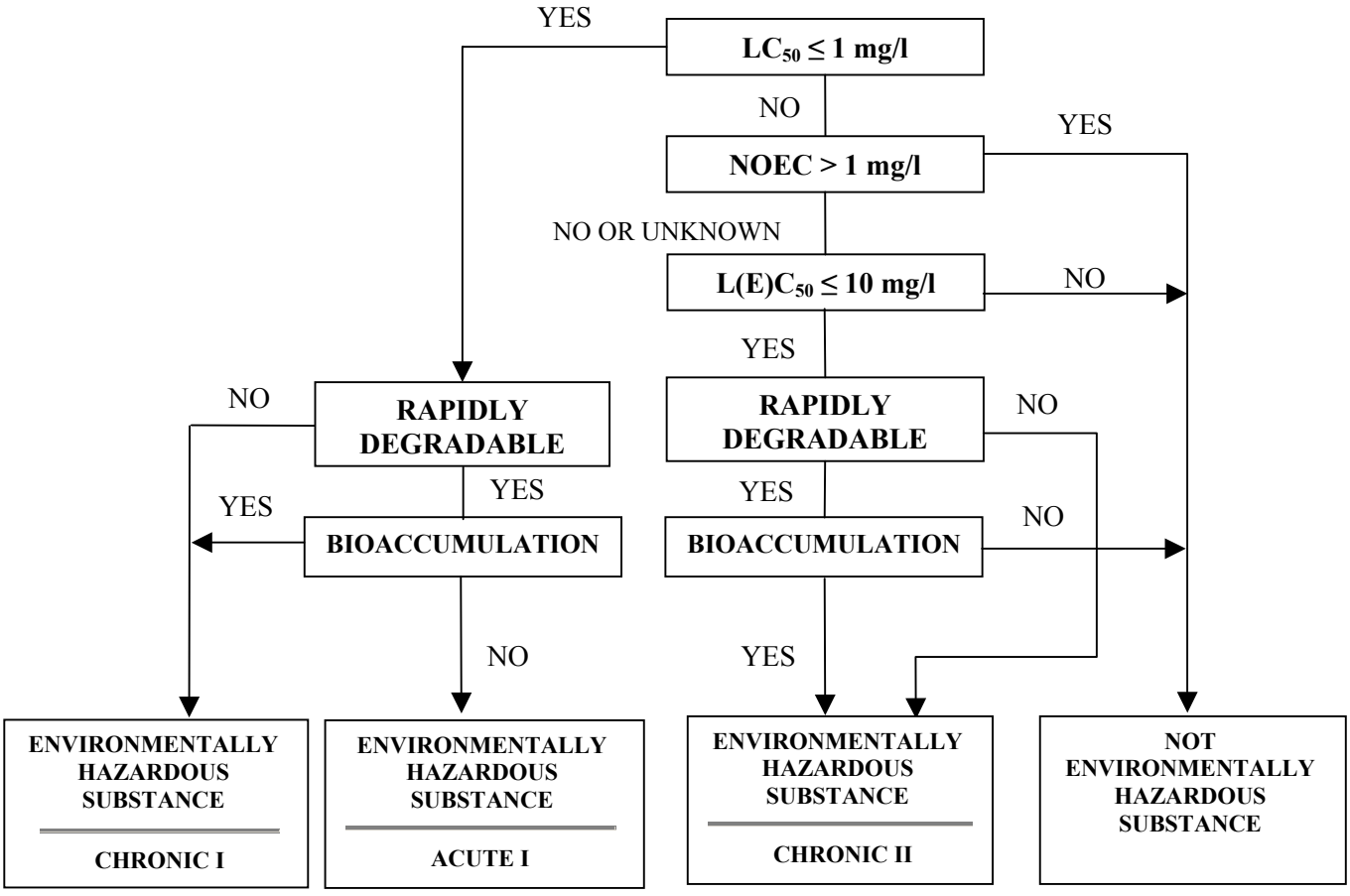
Category: Acute I	
Acute toxicity:	
96 hr LC_{50} (for fish)	≤ 1 mg/l and/or
48 hr EC_{50} (for crustacea)	≤ 1 mg/l and/or
72 or 96hr ErC_{50} (for algae or other aquatic plants)	≤ 1 mg/l

Chronic toxicity

Category: Chronic I	
Acute toxicity:	
96 hr LC_{50} (for fish)	≤ 1 mg/l and/or
48 hr EC_{50} (for crustacea)	≤ 1 mg/l and/or
72 or 96hr ErC_{50} (for algae or other aquatic plants)	≤ 1 mg/l
and the substance is not rapidly degradable and/or the log K_{ow} ≥ 4 (unless the experimentally determined BCF < 500)	

Category: Chronic II	
Acute toxicity:	
96 hr LC_{50} (for fish)	>1 to ≤ 10 mg/l and/or
48 hr EC_{50} (for crustacea)	>1 to ≤ 10 mg/l and/or
72 or 96hr ErC_{50} (for algae or other aquatic plants)	>1 to ≤ 10 mg/l
and the substance is not rapidly degradable and/or the log K_{ow} ≥ 4 (unless the experimentally determined BCF <500), unless the chronic toxicity NOECs are > 1 mg/l	

The classification flowchart below outlines the process to be followed.



2.9.3.4 Mixtures classification categories and criteria

2.9.3.4.1 The classification system for mixtures covers the classification categories which are used for substances meaning acute category I and chronic categories I and II. In order to make use of all available data for purposes of classifying the aquatic environmental hazards of the mixture, the following assumption is made and is applied where appropriate:

The "relevant components" of a mixture are those which are present in a concentration of 1% (w/w) or greater, unless there is a presumption (e.g. in the case of highly toxic components) that a component present at less than 1% can still be relevant for classifying the mixture for aquatic environmental hazards.

2.9.3.4.2 The approach for classification of aquatic environmental hazards is tiered, and is dependent upon the type of information available for the mixture itself and for its components. Elements of the tiered approach include:

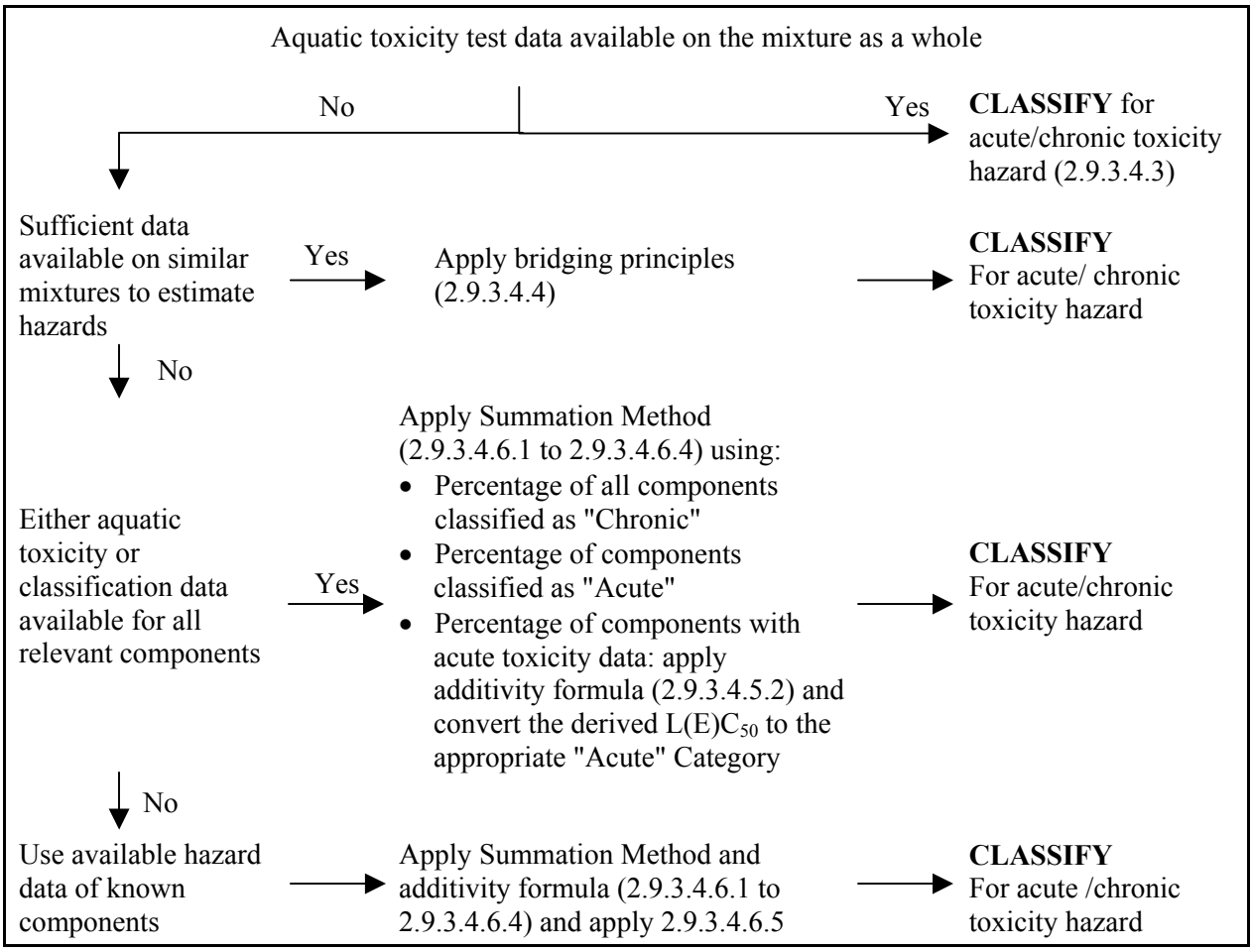
a) classification based on tested mixtures;

b) classification based on bridging principles;

c) the use of "summation of classified components" and /or an "additivity formula".

Figure 2.9.1 below outlines the process to be followed.

Figure 2.9.1: Tiered approach to classification of mixtures for acute and chronic aquatic environmental hazards



2.9.3.4.3 Classification of mixtures when data are available for the complete mixture

2.9.3.4.3.1 When the mixture as a whole has been tested to determine its aquatic toxicity, it shall be classified according to the criteria that have been agreed for substances, but only for acute toxicity. The classification is based on the data for fish, crustacea and algae/plants. Classification of mixtures by using LC_{50} or EC_{50} data for the mixture as a whole is not possible for chronic categories since both toxicity data and environmental fate data are needed, and there are no degradability and bioaccumulation data for mixtures as a whole. It is not possible to apply the criteria for chronic classification because the data from degradability and bio-accumulation tests of mixtures cannot be interpreted; they are meaningful only for single substances.

2.9.3.4.3.2 When there is acute toxicity test data (LC_{50} or EC_{50}) available for the mixture as a whole, this data as well as information with respect to the classification of components for chronic toxicity shall be used to complete the classification for tested mixtures as follows. When chronic (long term) toxicity data (NOEC) is also available, this shall be used in addition.

(a) $L(E)C_{50}$ (LC_{50} or EC_{50}) of the tested mixture ≤ 1mg/l and NOEC of the tested mixture ≤ 1.0 mg/l or unknown:

- classify mixture as category acute I;

- apply summation of classified components approach (see 2.9.3.4.6.3 and 2.9.3.4.6.4) for chronic classification (chronic I, II, or no need of chronic classification).

(b) $L(E)C_{50}$ of the tested mixture ≤ 1 mg/l and NOEC of the tested mixture > 1.0 mg/l:

- classify mixture as category acute I;

- apply summation of classified components approach (see 2.9.3.4.6.3 and 2.9.3.4.6.4) for classification as Category Chronic I. If the mixture is not classified as Category Chronic I, then there is no need for chronic classification.

(c) $L(E)C_{50}$ of the tested mixture >1mg/l, or above the water solubility, and NOEC of the tested mixture ≤ 1.0mg/l or unknown:

- no need to classify for acute toxicity;

- apply summation of classified components approach (see 2.9.3.4.6.3 and 2.9.3.4.6.4) for chronic classification or no need for chronic classification.

(d) $L(E)C_{50}$ of the tested mixture >1mg/l, or above the water solubility, and NOEC of the tested mixture > 1.0 mg/l:

- No need to classify for acute or chronic toxicity.

2.9.3.4.4 *Bridging principles*

2.9.3.4.4.1 Where the mixture itself has not been tested to determine its aquatic environmental hazard, but there are sufficient data on the individual components and similar tested mixtures to adequately characterise the hazards of the mixture, this data shall be used in accordance with the following agreed bridging rules. This ensures that the classification process uses the available data to the greatest extent possible in characterising the hazards of the mixture without the necessity for additional testing in animals.

2.9.3.4.4.2 Dilution

2.9.3.4.4.2.1 If a mixture is formed by diluting another classified mixture or a substance with a diluent which has an equivalent or lower aquatic hazard classification than the least toxic original component and which is not expected to affect the aquatic hazards of other components, then the mixture shall be classified as equivalent to the original mixture or substance.

2.9.3.4.4.2.2 If a mixture is formed by diluting another classified mixture or a substance with water or other totally non-toxic material, the toxicity of the mixture shall be calculated from the original mixture or substance.

2.9.3.4.4.3 Batching

2.9.3.4.4.3.1 The aquatic hazard classification of one production batch of a complex mixture shall be assumed to be substantially equivalent to that of another production batch of the same commercial product and produced by or under the control of the same manufacturer, unless there is reason to believe there is significant variation such that the aquatic hazard classification of the batch has changed. If the latter occurs, new classification is necessary.

2.9.3.4.4.4 Concentration of mixtures which are classified with the most severe classification categories (chronic I and acute I)

2.9.3.4.4.4.1 If a mixture is classified as chronic I and/or acute I, and components of the mixture which are classified as chronic I and/or acute I are further concentrated, the more concentrated mixture shall be classified with the same classification category as the original mixture without additional testing.

2.9.3.4.4.5 Interpolation within one toxicity category

2.9.3.4.4.5.1 If mixtures A and B are in the same classification category and mixture C is made in which the toxicologically active components have concentrations intermediate to those in mixtures A and B, then mixture C shall be in the same category as A and B. Note that the identity of the components is the same in all three mixtures.

2.9.3.4.4.6 Substantially similar mixtures

2.9.3.4.4.6.1 Given the following:

(a) Two mixtures:

i) A + B
ii) C + B

(b) The concentration of component B is the same in both mixtures;

(c) The concentration of component A in mixture (i) equals that of component C in mixture (ii);

(d) Classification for A and C are available and are the same, i.e. they are in the same hazard category and are not expected to affect the aquatic toxicity of B,

then there shall be no need to test mixture (ii) if mixture (i) is already characterised by testing and both mixtures are classified in the same category.

2.9.3.4.5 *Classification of mixtures when data are available for all components or only for some components of the mixture*

2.9.3.4.5.1 The classification of a mixture shall be based on summation of the classification of its components. The percentage of components classified as "Acute" or

"Chronic" will feed straight into the summation method. Details of the summation method are described in 2.9.3.4.6.1 to 2.9.3.4.6.4.1.

2.9.3.4.5.2 Mixtures are often made of a combination of both components that are classified (as Acute I and/or Chronic I, II) and those for which adequate test data is available. When adequate toxicity data is available for more than one component in the mixture, the combined toxicity of those components shall be calculated using the following additivity formula, and the calculated toxicity shall be used to assign that portion of the mixture an acute toxicity hazard which is then subsequently used in applying the summation method.

$$\frac{\sum C_i}{L(E)C_{50m}} = \sum_n \frac{C_i}{L(E)C_{50i}}$$

where:

C_i = concentration of component i (weight percentage);
$L(E)C_{50i}$ = (mg/L) LC_{50} or EC_{50} for component i;
n = number of components, and i is running from 1 to n;
$L(E)C_{50m}$ = $L(E)C_{50}$ of the part of the mixture with test data

2.9.3.4.5.3 When applying the additivity formula for part of the mixture, it is preferable to calculate the toxicity of this part of the mixture using for each substance toxicity values that relate to the same species (i.e. fish, daphnia or algae) and then to use the highest toxicity (lowest value) obtained (i.e. use the most sensitive of the three species). However, when toxicity data for each component are not available in the same species, the toxicity value of each component shall be selected in the same manner that toxicity values are selected for the classification of substances, i.e. the higher toxicity (from the most sensitive test organism) is used. The calculated acute toxicity shall then be used to classify this part of the mixture as Acute I using the same criteria described for substances.

2.9.3.4.5.4 If a mixture is classified in more than one way, the method yielding the more conservative result shall be used.

2.9.3.4.6 *Summation method*

2.9.3.4.6.1 Classification procedure

2.9.3.4.6.1.1 In general a more severe classification for mixtures overrides a less severe classification, e.g. a classification with chronic I overrides a classification with chronic II. As a consequence the classification procedure is already completed if the results of the classification is chronic I. A more severe classification than chronic I is not possible and it is not necessary therefore to undergo the further classification procedure.

2.9.3.4.6.2 Classification for the acute category I

2.9.3.4.6.2.1 All components classified as acute I shall be considered. If the sum of these components is greater than 25% the whole mixture shall be classified as category acute I. If the result of the calculation is a classification of the mixture as category acute I, the classification process is completed.

2.9.3.4.6.2.2 The classification of mixtures for acute hazards based on this summation of classified components, is summarised in Table 2.9.1 below.

Table 2.9.1: Classification of a mixture for acute hazards, based on summation of classified components

Sum of components classified as:	Mixture is classified as:
Acute I × M[1] >25%	Acute I

[1] *For explanation of the M factor, see 2.9.3.4.6.4.*

2.9.3.4.6.3 Classification for the chronic categories I, II

2.9.3.4.6.3.1 First, all components classified as chronic I are considered. If the sum of these components is greater than 25% the mixture shall be classified as category chronic I. If the result of the calculation is a classification of the mixture as category chronic I the classification procedure is completed.

2.9.3.4.6.3.2 In cases where the mixture is not classified as chronic I, classification of the mixture as chronic II is considered. A mixture shall be classified as chronic II if 10 times the sum of all components classified as chronic I plus the sum of all components classified as chronic II is greater than 25%. If the result of the calculation is classification of the mixture as chronic II, the classification process is completed.

2.9.3.4.6.3.3 The classification of mixtures for chronic hazards, based on this summation of classified components, is summarised in Table 2.9.2 below.

Table 2.9.2: Classification of a mixture for chronic hazards, based on summation of classified components

Sum of components classified as:		Mixture is classified as:
Chronic I × M[1]	>25%	Chronic I
(M × 10 × Chronic I)+Chronic II	>25%	Chronic II

[1] *For explanation of the M factor, see 2.9.3.4.6.4.*

2.9.3.4.6.4 Mixtures with highly toxic components

2.9.3.4.6.4.1 Acute category 1 components with toxicities well below 1 mg/l may influence the toxicity of the mixture and are given increased weight in applying the summation of classification approach. When a mixture contains components classified as acute or chronic category I, the tiered approach described in 2.9.3.4.6.2 and 2.9.3.4.6.3 shall be applied using a weighted sum by multiplying the concentrations of acute category 1 components by a factor, instead of merely adding up the percentages. This means that the concentration of "Acute I" in the left column of Table 2.9.1 and the concentration of "Chronic I" in the left column of Table 2.9.2 are multiplied by the appropriate multiplying

factor. The multiplying factors to be applied to these components are defined using the toxicity value, as summarised in Table 2.9.3 below. Therefore, in order to classify a mixture containing acute I and/or chronic I components, the classifier needs to be informed of the value of the M factor in order to apply the summation method. Alternatively, the additivity formula (2.9.3.4.5.2) may be used when toxicity data are available for all highly toxic components in the mixture and there is convincing evidence that all other components, including those for which specific acute toxicity data are not available, are of low or no toxicity and do not significantly contribute to the environmental hazard of the mixture.

Table 2.9.3: Multiplying factors for highly toxic components of mixtures

$L(E)C_{50}$ value	Multiplying factor (M)
$0.1 < L(E)C_{50} \leq 1$	1
$0.01 < L(E)C_{50} \leq 0.1$	10
$0.001 < L(E)C_{50} \leq 0.01$	100
$0.0001 < L(E)C_{50} \leq 0.001$	1000
$0.00001 < L(E)C_{50} \leq 0.0001$	10000
(continue in factor 10 intervals)	

2.9.3.4.6.5 Classification of mixtures with components without any useable information

2.9.3.4.6.5.1 In the event that no useable information on acute and/or chronic aquatic hazard is available for one or more relevant components, it is concluded that the mixture cannot be attributed (a) definitive hazard category(ies). In this situation the mixture shall be classified based on the known components only with the additional statement that: "× percent of the mixture consists of component(s) of unknown hazards to the aquatic environment.".

2.9.3.5 ***Substances or mixtures dangerous to the aquatic environment not otherwise classified under these Regulations***

2.9.3.5.1 Substances or mixtures dangerous to the aquatic environment not otherwise classified under these Regulations shall be designated:

UN 3077 ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. or

UN 3082 ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S.

They shall be assigned to Packing Group III.".

PART 3

Chapter 3.1

3.1.2.2 (b) Replace the existing text with the following:

"UN 2793 FERROUS METAL BORINGS, SHAVINGS, TURNINGS or CUTTINGS in a form liable to self-heating. The proper shipping name is the most appropriate of the following combinations:

FERROUS METAL BORINGS
FERROUS METAL SHAVINGS
FERROUS METAL TURNINGS
FERROUS METAL CUTTINGS"

3.1.2.4 Replace the existing paragraph with the following text:

"3.1.2.4 Many substances have an entry for both the liquid and solid state (see definitions for liquid and solid in 1.2.1), or for the solid and solution. These are allocated separate UN numbers which are not necessarily adjacent to each other. Details are provided in the alphabetical index, e.g.:

NITROXYLENES, LIQUID	6.1	1665
NITROXYLENES, SOLID	6.1	3447"

3.1.2.7 Replace "included" with "transported".

3.1.2.8.1 Replace "their technical" with "the technical" in the first sentence.

3.1.2.8.1.3 Replace "UN 2003 METAL ALKYL, WATER-REACTIVE, N.O.S (trimethylgallium)" with "UN 3394 ORGANOMETALLIC SUBSTANCE, LIQUID, PYROPHORIC, WATER-REACTIVE (trimethylgallium)".

Chapter 3.2

3.2.1 Column 2 Add the following sentence at the end of the existing text:
"Unless otherwise indicated for an entry in the dangerous goods list, the word "solution" in a proper shipping name means one or more named dangerous goods dissolved in a liquid that is not otherwise subject to these Regulations.".

Column 10 Add the following sentence at the end of the existing text:
"Bulk container code - a code including the letters "BK" refers to types of bulk containers used for the transport of bulk goods described in Chapter 6.8."

Dangerous Goods List

Amend the heading applicable to columns 10 and 11 to read: "Portable tanks and bulk containers". Amend the heading of column 10, to read "Instructions" and the heading of column 11 to read "Special provisions".

UN Nos. 2014, 2427, 2428, 2429, 2626, 2984, 3098, 3099, 3139, 3149, 3210, 3211, 3213, 3214, 3216, 3218 , and 3219, replace "kg" with "L" in column 7.

For UN Nos. 1611, 1704, 2936 replace "500 g" with "100 ml" in column 7, "P002 IBC08" with "P001 IBC02" in column 8, delete "B2, B4" in column 9 and add "T7" and "TP2" in columns 10 and 11 respectively.

For UN Nos. 1003, 1038, 1073, 1913, 1951, 1961, 1963, 1966, 1970, 1972, 1977, 2187, 2201, 2591, 3136, 3138, 3158, 3311 and 3312, replace "P200" with "P203" in column 8.

In the Dangerous Goods List, assign "TP5" in column 11 to each refrigerated liquid gas that is assigned "T75" in column 10. (Apply to UN Nos. 1003, 1038, 1073, 1913, 1951, 1961, 1963, 1966, 1970, 1972, 1977, 2187, 2201, 2591, 3136, 3138, 3158, 3311 and 3312).

For UN Nos. 0331, 0332 and 3375, insert "T1" in column 10 and "TP1", "TP17" and "TP32" in column 11.

For UN Nos. 1334, 1350, 1438, 1454, 1474, 1486, 1495, 1498, 1499, 1942, 2067, 2213, 2969, 3170 (PG II and III), 3175, 3243 and 3244, insert "BK1, BK2" in column 10 and for UN Nos. 1376, 1408 and 2950, insert "BK2" in the same column.

For the liquid, packing group I entries of UN Nos. 1583, 2810, 2927, 2929, 3122, 3123, 3275, 3276, 3278, 3279, 3280, 3281, 3287 and 3289, insert "315" in column 6.

For all the UN Nos. containing the words "fissile-excepted" in lower case in column 2, insert "317" in column 6. (Apply to UN Nos.: 2912, 2913, 2915, 2916, 2917, 2919, 2978, 3321, 3322, 3323 and 3332).

For UN Nos. 1366, 1370, 2005, 2445, 3051, 3052, 3053 and 3076, add "320" in column 6.

UN 1010 Add the following text at the end of the existing name in column 2:
"or BUTADIENES AND HYDROCARBON MIXTURE, STABILIZED, containing more than 40% butadienes".

UN 1057 Replace "P003" with "P002" in column 8 and add "PP84" in column 9.

UN 1203 The amendment does not apply to the English version.

UN 1389 Add ", LIQUID" in column 2 and delete "P403" in column 8.

UN 1392 Add ", LIQUID" in column 2 and delete "P403" in column 8.

UN 1408 Insert "B6" in column 9.

UN 1420 Add ", LIQUID" in column 2 and replace "P403" with "P402" in column 8.

UN 1422 Add ", LIQUID" in column 2 and replace "P403" with "P402" in column 8.

UN 1445 Add ", SOLID" in column 2.

UN 1447 Add ", SOLID" in column 2.

UN 1459 Add ", SOLID" in column 2.

UN 1470 Add ", SOLID" in column 2.

UN 1578	Add ", SOLID" in column 2.
UN 1579	Add ", SOLID" in column 2.
UN 1605	Replace "P601" with "P602" in column 8.
UN 1650	Add ", SOLID" in column 2.
UN 1680	Add ", SOLID" in column 2.
UN 1689	Add ", SOLID" in column 2 and delete "B1" in column 9.
UN 1690	Add ", SOLID" in column 2.
UN 1697	Add ", SOLID" in column 2.
UN 1701	Add ", LIQUID" in column 2.
UN 1709	Add ", SOLID" in column 2.
UN 1729	Replace "L" with "kg" in column 7 and "P001 IBC02" with "P002 IBC08" in column 8, insert "B2, B4" in column 9 and replace "T7" with "T3" and "TP2" with "TP33" in columns 10 and 11, respectively.
UN 1742	Add ", LIQUID" in column 2.
UN 1743	Add ", LIQUID" in column 2.
UN 1793	Replace "kg" with "L" and "P002 IBC08 LP02" with "P001 IBC02 LP01" in columns 7 and 8 respectively and delete "B3" in column 9.
UN 1805	In column 2, replace "LIQUID" with "SOLUTION" and add "223" in column 6.
UN 1811	Amend the name in column 2 to read "POTASSIUM HYDROGENDIFLUORIDE SOLID".
UN 1812	Add ", SOLID" in column 2.
UN 1843	Add ", SOLID" in column 2 and delete "T7" and "TP2" in columns 10 and 11 respectively.
UN 1931	Replace "NONE" with "5 kg" in column 7.
UN 1963	Add "TP34" in column 11.
UN 1966	Add "TP34" in column 11.
UN 2003	Delete.
UN 2014	Add "PP10" and delete "PP29" in column 9.
UN 2074	Add ", SOLID" in column 2.

UN 2077	Replace "T3" and "TP1" with "T1" and "TP33" in columns 10 and 11 respectively.
UN 2186	Insert "P099" in column 8.
UN 2208	Insert "313" and "314" in column 6 and "PP85" and "B13" in column 9.
UN 2211	Replace "NONE" with "5 kg" in column 7.
UN 2235	Add ", LIQUID" in column 2.
UN 2236	Add ", LIQUID" in column 2.
UN 2239	Add ", SOLID" in column 2.
UN 2261	Add ", SOLID" in column 2.
UN 2305	Replace "L" with "kg" in column 7, "P001 IBC02" with "P002 IBC08" in column 8 and add "B2, B4" in column 9 and "T3", "TP33" in columns 10 and 11 respectively.
UN 2306	Add ", LIQUID" in column 2.
UN 2315	Add ", LIQUID" in column 2.
UN 2439	Replace "L" with "kg" in column 7.
UN 2445	Add ", LIQUID" in column 2.
UN 2446	Add ", SOLID" in column 2.
UN 2511	Delete ", SOLUTION" in column 2 and insert "223" in column 6. Delete the entry for "2-CHLOROPROPIONIC ACID, SOLID".
UN 2552	Add ", LIQUID" in column 2.
UN 2662	Add ", SOLID" in column 2.
UN 2729	Replace "L" with "kg" in column 7, "P001 IBC03 LP01" with "P002 IBC08 LP02" in column 8, and add "B3", "T1" and "TP33" in columns 9, 10 and 11 respectively.
UN 2751	Replace "kg" with "L" in column 7, "P002 IBC08" with "P001 IBC02" in column 8 and delete "B2 B4" in column 9.
UN 2813	For packing groups I, II and III, add "PP83" in column 9.
UN 2814	Delete "274" and add "318" in column 6.
UN 2823	Replace "L" with "kg" in column 7 and "P001 IBC03 LP01" with "P002 IBC08 LP02" in column 8.
UN 2851	Replace "kg" with "L" in column 7 and "P002 IBC08" with "P001 IBC02" in column 8 and delete "B2 B4" in column 9.

UN 2857 Amend the name in column 2 to read as follows: "REFRIGERATING MACHINES containing non-flammable, non-toxic gases or ammonia solutions (UN 2672)".

UN 2900 Delete "274" and add "318" in column 6.

UN 2937 Add ", LIQUID" in column 2.

UN 2956 Delete "181" in column 6.

UN 3049 Delete.

UN 3050 Delete.

UN 3052 Add "TP9" in column 11.

UN 3082 Replace "kg" with "L" in column 7.

UN 3125 (Packing group II) Replace "P001" with "P002" in column 8.

UN 3149 Add "PP10" in column 9.

UN 3166 Add "312" in column 6.

UN 3176 Delete "TP9" in column 11.

UN 3203 Delete.

UN 3207 Delete.

UN 3276 Amend the name in column 2 to read as follows: "NITRILES, TOXIC, LIQUID, N.O.S".

UN 3278 For the liquid entry, amend the name in column 2 to read as follows: "ORGANOPHOSPHORUS COMPOUND, TOXIC, LIQUID, N.O.S".

UN 3280 Amend the name in column 2 to read as follows: "ORGANOARSENIC COMPOUND, LIQUID, N.O.S".

UN 3281 Amend the name in column 2 to read as follows: "METAL CARBONYLS, LIQUID, N.O.S".

UN 3282 Amend the name in column 2 to read as follows: "ORGANOMETALLIC COMPOUND, TOXIC, LIQUID, N.O.S".

UN 3283 Amend the name in column 2 to read as follows: "SELENIUM COMPOUND, SOLID, N.O.S".

UN 3314 Replace "NONE" with "5 kg" in column 7.

UN 3315 In column 2, delete ", liquid or solid".

UN 3372 Delete.

UN 3373 In the name in column 2, insert "or CLINICAL" before "SPECIMENS" and add "319" in column 6.

UN 3375 Delete "306" in column 6.

Assign TP9 to all N.O.S entries of Classes 4.2, 6.1 and 8, packing group I to which a T code has been assigned in column 10.

Amend the following entries to read as follows:

UN No.	Name and description	Class or division	Subsidiary Risks	UN packing group	Special provisions	Limited quantities	Packagings and IBCs		Portable tanks	
							Packing instruction	Special provisions	Portable tank instruction	Portable tank special provisions
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
1597	DINITROBENZENES LIQUID	6.1		II		100 ml	P001 IBC02		T7	TP2
		6.1		III	223	5 L	P001 IBC02		T7	TP2
1656	NICOTINE HYDROCHLORIDE, LIQUID or SOLUTION	6.1		II	43	100 ml	P001 IBC02			
		6.1		III	43 223	5 L	P001 IBC02			
1658	NICOTINE SULPHATE SOLUTION	6.1		II		100 ml	P001 IBC02		T7	TP2
		6.1		III	223	5 L	P001 IBC02		T7	TP2
1748	CALCIUM HYPOCHLORITE, DRY or CALCIUM HYPOCHLORITE MIXTURE, DRY with more than 39% available chlorine (8.8% available oxygen)	5.1		II	313 314	1 kg	P002 IBC08	PP85 B2, B4, B13		
		5.1		III	316	5 kg	P002 IBC08	B4		
1835	TETRAMETHYL-AMMONIUM HYDROXIDE SOLUTION	8		II		1 L	P001 IBC02		T7	TP2
		8		III	223	5 L	P001 IBC02		T7	TP2
1938	BROMOACETIC ACID SOLUTION	8		II		1 L	P001 IBC02		T7	TP2
		8		III	223	5 L	P001 IBC02		T7	TP2
2669	CHLOROCRESOLS SOLUTION	6.1		II		100 ml	P001 IBC02		T7	TP2
		6.1		III	223	5 L	P001 IBC02		T7	TP2
2880	CALCIUM HYPOCHLORITE, HYDRATED or CALCIUM HYPOCHLORITE HYDRATED MIXTURE, with not less than 5.5% but not more than 16% water	5.1		II	313 314	1 kg	P002 IBC08	PP85 B2, B4, B13		
		5.1		III	316	5 kg	P002 IBC08	B4		

Add the following new entries:

*(**Note**: When two UN numbers appear in column (1) of the table below, the number in italics corresponds to a current entry in the Dangerous Goods List for the same substance in solid, liquid or solution state and is given only for reference.).*

UN No.	Name and description	Class or division	Subsidiary Risks	UN packing group	Special provisions	Limited quantities	Packagings and IBCs		Portable tanks and bulk containers	
							Packing instruction	Special provisions	Instructions	Special provisions
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
3377	SODIUM PERBORATE MONOHYDRATE	5.1		III		5 kg	P002 IBC08 LP02	B3	T1 BK1 BK2	TP33
3378	SODIUM CARBONATE PEROXYHYDRATE	5.1		II		1 kg	P002 IBC08	B2, B4	T3 BK1 BK2	TP33
		5.1		III		5 kg	P002 IBC08 LP02	PP84 B3, B13	T1	TP33
3379	DESENSITIZED EXPLOSIVE, LIQUID, N.O.S.	3		I	274 311	NONE	P099			
3380	DESENSITIZED EXPLOSIVE, SOLID, N.O.S.	4.1		I	274 311	NONE	P099			
3381	TOXIC BY INHALATION LIQUID, N.O.S. with an inhalation toxicity lower than or equal to 200 ml/m^3 and saturated vapour concentration greater than or equal to 500 LC_{50}	6.1		I	274	NONE	P601		T22	TP2 TP9 TP13
3382	TOXIC BY INHALATION LIQUID, N.O.S. with an inhalation toxicity toxicity lower than or equal to 1000 ml/m^3 and saturated vapour concentration greater than or equal to 10 LC_{50}	6.1		I	274	NONE	P602		T20	TP2 TP9 TP13
3383	TOXIC BY INHALATION LIQUID, FLAMMABLE, N.O.S. with an inhalation toxicity lower than or equal to 200 ml/m^3 and saturated vapour concentration greater than or equal to 500 LC_{50}	6.1	3	I	274	NONE	P601		T22	TP2 TP9 TP13

UN No.	Name and description	Class or division	Subsidiary Risks	UN packing group	Special provisions	Limited quantities	Packagings and IBCs		Portable tanks and bulk containers	
							Packing instruction	Special provisions	Instructions	Special provisions
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
3384	TOXIC BY INHALATION LIQUID, FLAMMABLE, N.O.S. with an inhalation toxicity lower than or equal to 1000 ml/m^3 and saturated vapour concentration greater than or equal to 10 LC_{50}	6.1	3	I	274	NONE	P602		T20	TP2 TP9 TP13
3385	TOXIC BY INHALATION LIQUID, WATER-REACTIVE, N.O.S. with an inhalation toxicity lower than or equal to 200 ml/m^3 and saturated vapour concentration greater than or equal to 500 LC_{50}	6.1	4.3	I	274	NONE	P601		T22	TP2 TP9 TP13
3386	TOXIC BY INHALATION LIQUID, WATER-REACTIVE, N.O.S. with an inhalation toxicity lower than or equal to 1000 ml/m^3 and saturated vapour concentration greater than or equal to 10 LC_{50}	6.1	4.3	I	274	NONE	P602		T20	TP2 TP9 TP13
3387	TOXIC BY INHALATION LIQUID, OXIDIZING, N.O.S. with an inhalation toxicity lower than or equal to 200 ml/m^3 and saturated vapour concentration greater than or equal to 500 LC_{50}	6.1	5.1	I	274	NONE	P601		T22	TP2 TP9 TP13
3388	TOXIC BY INHALATION LIQUID, OXIDIZING, N.O.S. with an inhalation toxicity lower than or equal to 1000 ml/m^3 and saturated vapour concentration greater than or equal to 10 LC_{50}	6.1	5.1	I	274	NONE	P602		T20	TP2 TP9 TP13

UN No.	Name and description	Class or division	Subsidiary Risks	UN packing group	Special provisions	Limited quantities	Packagings and IBCs		Portable tanks and bulk containers	
							Packing instruction	Special provisions	Instructions	Special provisions
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
3389	TOXIC BY INHALATION LIQUID, CORROSIVE, N.O.S. with an inhalation toxicity lower than or equal to 200 ml/m^3 and saturated vapour concentration greater than or equal to 500 LC_{50}	6.1	8	I	274	NONE	P601		T22	TP2 TP9 TP13
3390	TOXIC BY INHALATION LIQUID, CORROSIVE, N.O.S. with an inhalation toxicity lower than or equal to 1000 ml/m^3 and saturated vapour concentration greater than or equal to 10 LC_{50}	6.1	8	I	274	NONE	P602		T20	TP2 TP9 TP13
3391	ORGANOMETALLIC SUBSTANCE, SOLID, PYROPHORIC	4.2		I	274	NONE	P404	PP86	T21	TP7 TP33
3392	ORGANOMETALLIC SUBSTANCE, LIQUID, PYROPHORIC	4.2		I	274	NONE	P400	PP86	T21	TP2 TP7
3393	ORGANOMETALLIC SUBSTANCE, SOLID, PYROPHORIC, WATER REACTIVE	4.2	4.3	I	274	NONE	P404	PP86	T21	TP7 TP33
3394	ORGANOMETALLIC SUBSTANCE, LIQUID, PYROPHORIC, WATER REACTIVE	4.2	4.3	I	274	NONE	P400	PP86	T21	TP2 TP7
3395	ORGANOMETALLIC SUBSTANCE, SOLID, WATER REACTIVE	4.3		I	274	NONE	P403		T9	TP7 TP33
		4.3		II	274	500 g	P410 IBC04		T3	TP33
		4.3		III	223 274	1 kg	P410 IBC06		T1	TP33
3396	ORGANOMETALLIC SUBSTANCE, SOLID, WATER REACTIVE, FLAMMABLE	4.3	4.1	I	274	NONE	P403		T9	TP7 TP33
		4.3	4.1	II	274	500 g	P410 IBC04		T3	TP33
		4.3	4.1	III	223 274	1 kg	P410 IBC06		T1	TP33
3397	ORGANOMETALLIC SUBSTANCE, SOLID, WATER REACTIVE, SELF-HEATING	4.3	4.2	I	274	NONE	P403		T9	TP7 TP33
		4.3	4.2	II	274	500 g	P410 IBC04		T3	TP33
		4.3	4.2	III	223 274	1 kg	P410 IBC06		T1	TP33

UN No.	Name and description	Class or division	Subsidiary Risks	UN packing group	Special provisions	Limited quantities	Packagings and IBCs		Portable tanks and bulk containers	
							Packing instruction	Special provisions	Instructions	Special provisions
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
3398	ORGANOMETALLIC SUBSTANCE, LIQUID, WATER REACTIVE	4.3		I	274	NONE	P402		T13	TP2 TP7
		4.3		II	274	500 ml	P001 IBC01		T7	TP2 TP7
		4.3		III	223 274	1 L	P001 IBC02		T7	TP2 TP7
3399	ORGANOMETALLIC SUBSTANCE, LIQUID, WATER REACTIVE, FLAMMABLE	4.3	3	I	274	NONE	P402		T13	TP2 TP7
		4.3	3	II	274	500 ml	P001 IBC01		T7	TP2 TP7
		4.3	3	III	223 274	1 L	P001 IBC02		T7	TP2 TP7
3400	ORGANOMETALLIC SUBSTANCE, SOLID, SELF-HEATING	4.2		II	274	500 g	P410 IBC06		T3	TP33
		4.2		III	223 274	1 kg	P002 IBC08		T1	TP33
3401 *1389*	ALKALI METAL AMALGAM, SOLID	4.3		I	182	NONE	P403		T9	TP7 TP33
3402 *1392*	ALKALINE EARTH METAL AMALGAM, SOLID	4.3		I	183	NONE	P403		T9	TP7 TP33
3403 *1420*	POTASSIUM METAL ALLOYS, SOLID	4.3		I		NONE	P403		T9	TP7 TP33
3404 *1422*	POTASSIUM SODIUM ALLOYS, SOLID	4.3		I		NONE	P403		T9	TP7 TP33
3405 *1445*	BARIUM CHLORATE SOLUTION	5.1	6.1	II		1 L	P504 IBC02		T4	TP1
		5.1	6.1	III	223	5 L	P001 IBC02		T4	TP1
3406 *1447*	BARIUM PERCHLORATE SOLUTION	5.1	6.1	II		1 L	P504 IBC02		T4	TP1
		5.1	6.1	III	223	5 L	P001 IBC02		T4	TP1
3407 *1459*	CHLORATE AND MAGNESIUM CHLORIDE MIXTURE SOLUTION	5.1		II		1 L	P504 IBC01		T4	TP1
		5.1		III	223	5 L	P504 IBC01		T4	TP1
3408 *1470*	LEAD PERCHLORATE SOLUTION	5.1	6.1	II		1 L	P504 IBC02		T4	TP1
		5.1	6.1	III	223	5 L	P001 IBC02		T4	TP1
3409 *1578*	CHLORONITRO-BENZENES, LIQUID	6.1		II	279	100 ml	P001 IBC02		T7	TP2
3410 *1579*	4-CHLORO-o-TOLUIDINE HYDROCHLORIDE SOLUTION	6.1		III	223	5 L	P001 IBC03		T4	TP1
3411 *1650*	beta-NAPHTHYLAMINE SOLUTION	6.1		II		100 ml	P001 IBC02		T7	TP2
		6.1		III	223	5 L	P001 IBC02		T7	TP2

UN No.	Name and description	Class or division	Subsidiary Risks	UN packing group	Special provisions	Limited quantities	Packagings and IBCs		Portable tanks and bulk containers	
							Packing instruction	Special provisions	Instructions	Special provisions
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
3413 *1680*	POTASSIUM CYANIDE SOLUTION	6.1		I		NONE	P001		T14	TP2 TP13
		6.1		II		100 ml	P001 IBC02		T11	TP2 TP13 TP27
		6.1		III	223	5 L	P001 IBC03 LP01		T7	TP2 TP13 TP28
3414 *1689*	SODIUM CYANIDE SOLUTION	6.1		I		NONE	P001		T14	TP2 TP13
		6.1		II		100 ml	P001 IBC02		T11	TP2 TP13 TP27
		6.1		III	223	5 L	P001 IBC03 LP01		T7	TP2 TP13 TP28
3415 *1690*	SODIUM FLUORIDE SOLUTION	6.1		III	223	5 L	P001 IBC03 LP01		T4	TP1
3416 *1697*	CHLOROACETO-PHENONE, LIQUID	6.1		II		NONE	P001 IBC02		T7	TP2 TP13
3417 *1701*	XYLYL BROMIDE, SOLID	6.1		II		NONE	P002 IBC08	B2, B4	T3	TP33
3418 *1709*	2,4-TOLUYLENE-DIAMINE SOLUTION	6.1		III	223	5 L	P001 IBC03 LP01		T4	TP1
3419 *1742*	BORON TRIFLUORIDE ACETIC ACID COMPLEX, SOLID	8		II		1 kg	P002 IBC08	B2, B4	T3	TP33
3420 *1743*	BORON TRIFLUORIDE PROPIONIC ACID COMPLEX, SOLID	8		II		1 kg	P002 IBC08	B2, B4	T3	TP33
3421 *1811*	POTASSIUM HYDROGENDI-FLUORIDE SOLUTION	8	6.1	II		1 L	P001 IBC02		T7	TP2
		8	6.1	III	223	5 L	P001 IBC03		T4	TP1
3422 *1812*	POTASSIUM FLUORIDE SOLUTION	6.1		III	223	5 L	P001 IBC03 LP01		T4	TP1
3423 *1835*	TETRAMETHYL-AMMONIUM HYDROXIDE, SOLID	8		II		1 kg	P002 IBC08	B2, B4	T3	TP33
3424 *1843*	AMMONIUM DINITRO-o-CRESOLATE SOLUTION	6.1		II		100 ml	P001 IBC02		T7	TP2
		6.1		III	223	5 L	P001 IBC02		T7	TP2
3425 *1938*	BROMOACETIC ACID, SOLID	8		II		1 kg	P002 IBC08	B2, B4	T3	TP33
3426 *2074*	ACRYLAMIDE SOLUTION	6.1		III	223	5 L	P001 IBC03 LP01		T4	TP1
3427 *2235*	CHLOROBENZYL CHLORIDES, SOLID	6.1		III		5 kg	P002 IBC08 LP02	B3	T1	TP33

UN No.	Name and description	Class or division	Subsidiary Risks	UN packing group	Special provisions	Limited quantities	Packagings and IBCs		Portable tanks and bulk containers	
							Packing instruction	Special provisions	Instructions	Special provisions
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
3428 *2236*	3-CHLORO-4-METHYLPHENYL ISOCYANATE, SOLID	6.1		II		500 g	P002 IBC08	B2, B4	T3	TP33
3429 *2239*	CHLORO-TOLUIDINES, LIQUID	6.1		III		5 L	P001 IBC03 LP01		T4	TP1
3430 *2261*	XYLENOLS, LIQUID	6.1		II		100 ml	P001 IBC02		T7	TP2
3431 *2306*	NITROBENZO-TRIFLUORIDES, SOLID	6.1		II		500 g	P002 IBC08	B2, B4	T3	TP33
3432 *2315*	POLYCHLORINATED BIPHENYLS, SOLID	9		II	305	1 kg	P906 IBC08		T3	TP33
3433 *2445*	LITHIUM ALKYLS, SOLID	4.2	4.3	I	320	NONE	P400		T21	TP7 TP33
3434 *2446*	NITROCRESOLS, LIQUID	6.1		III		5 L	P001 IBC03 LP01		T4	TP1
3435 *2662*	HYDROQUINONE SOLUTION	6.1		III	223	5 L	P001 IBC03 LP01		T4	TP1
3436 *2552*	HEXAFLUORO-ACETONE HYDRATE, SOLID	6.1		II		500 g	P002 IBC08	B2, B4	T3	TP33
3437 *2669*	CHLOROCRESOLS, SOLID	6.1		II		500 g	P002 IBC08	B2, B4	T3	TP33
3438 *2937*	alpha-METHYLBENZYL ALCOHOL, SOLID	6.1		III		5 kg	P002 IBC08 LP02	B3	T1	TP33
3439 *3276*	NITRILES, TOXIC, SOLID, N.O.S.	6.1		I	274	NONE	P002 IBC07	B1	T6	TP9 TP33
		6.1		II	274	500 g	P002 IBC08	B2, B4	T3	TP33
		6.1		III	223 274	5 kg	P002 IBC08 LP02	B3	T1	TP33
3440 *3283*	SELENIUM COMPOUND, LIQUID, N.O.S.	6.1		I		NONE	P001		T14	TP2 TP9 TP27
		6.1		II		100 ml	P001 IBC02		T11	TP2 TP27
		6.1		III	223	5 L	P001 IBC03		T7	TP1 TP28
3468	HYDROGEN IN A METAL HYDRIDE STORAGE SYSTEM	2.1			321	NONE	P099			

Add the following new entries for the solid form of substances previously covered by the UN number indicated in italics in column (1):

UN No.	Name and description	Class or division	Subsidiary Risks	UN packing group	Special provisions	Limited quantities	Packagings and IBCs		Portable tanks	
							Packing instruction	Special provisions	Portable tank instruction	Portable tank special provisions
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
3441 *1577*	CHLORODINITRO-BENZENES, SOLID	6.1		II	279	500 g	P002 IBC08	B2, B4	T3	TP33
3442 *1590*	DICHLOROANILINES, SOLID	6.1		II	279	500 g	P002 IBC08	B2, B4	T3	TP33
3443 *1597*	DINITROBENZENES, SOLID	6.1		II		500 g	P002 IBC08	B2, B4	T3	TP33
3444 *1656*	NICOTINE HYDROCHLORIDE, SOLID	6.1		II	43	500 g	P002 IBC08	B2, B4	T3	TP33
3445 *1658*	NICOTINE SULPHATE, SOLID	6.1		II		500 g	P002 IBC08	B2, B4	T3	TP33
3446 *1664*	NITROTOLUENES, SOLID	6.1		II		500g	P002 IBC08	B2, B4	T3	TP33
3447 *1665*	NITROXYLENES, SOLID	6.1		II		500 g	P002 IBC08	B2, B4	T3	TP33
3448 *1693*	TEAR GAS SUBSTANCE, SOLID, N.O.S.	6.1		I	274	NONE	P002		T6	TP9 TP33
		6.1		II	274	NONE	P002 IBC08	B2, B4	T3	TP33
3449 *1694*	BROMOBENZYL CYANIDES, SOLID	6.1		I	138	NONE	P002		T6	TP33
3450 *1699*	DIPHENYL-CHLOROARSINE, SOLID	6.1		I		NONE	P002 IBC07	B1	T6	TP33
3451 *1708*	TOLUIDINES, SOLID	6.1		II	279	500 g	P002 IBC08	B2, B4	T3	TP33
3452 *1711*	XYLIDINES, SOLID	6.1		II		500g	P002 IBC08	B2, B4	T3	TP33
3453 *1805*	PHOSPHORIC ACID SOLID	8		III		5 kg	P002 IBC08 LP02	B3	T1	TP33
3454 *2038*	DINITROTOLUENES, SOLID	6.1		II		500 g	P002 IBC08	B2, B4	T3	TP33
3455 *2076*	CRESOLS, SOLID	6.1	8	II		500 g	P002 IBC08	B2, B4	T3	TP33
3456 *2308*	NITROSYL-SULPHURIC ACID, SOLID	8		II		1 kg	P002 IBC08	B2, B4	T3	TP33
3457 *2433*	CHLORONITRO-TOLUENES, SOLID	6.1		III		5 kg	P002 IBC08 LP02	B3	T1	TP33
3458 *2730*	NITROANISOLES, SOLID	6.1		III	279	5 kg	P002 IBC08 LP02	B3	T1	TP33
3459 *2732*	NITROBROMO-BENZENES, SOLID	6.1		III		5 kg	P002 IBC08 LP02	B3	T1	TP33
3460 *2753*	N-ETHYLBENZYL-TOLUIDINES, SOLID	6.1		III		5 kg	P002 IBC08 LP02	B3	T1	TP33

UN No.	Name and description	Class or division	Subsidiary Risks	UN packing group	Special provisions	Limited quantities	Packagings and IBCs		Portable tanks	
							Packing instruction	Special provisions	Portable tank instruction	Portable tank special provisions
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
3461 *3052*	ALUMINIUM ALKYL HALIDES, SOLID	4.2	4.3	I	320	NONE	P404		T21	TP7 TP33
3462 *3172*	TOXINS, EXTRACTED FROM LIVING SOURCES, SOLID, N.O.S.	6.1		I	210 274	NONE	P002 IBC07	B1	T6	TP9 TP33
		6.1		II	210 274	500 g	P002 IBC08	B2, B4	T3	TP33
		6.1		III	210 223 274	5 kg	P002 IBC08	B3	T1	TP33
3464 *3278*	ORGANOPHOS-PHORUS COMPOUND, TOXIC, SOLID, N.O.S.	6.1		I	43 274	NONE	P002 IBC07	B1	T6	TP9 TP33
		6.1		II	43 274	500 g	P002 IBC08	B2, B4	T3	TP33
		6.1		III	43 223 274	5 kg	P002 IBC08 LP02	B3	T1	TP33
3465 *3280*	ORGANOARSENIC COMPOUND, SOLID, N.O.S.	6.1		I	274	NONE	P002 IBC07	B1	T6	TP9 TP33
		6.1		II	274	500 g	P002 IBC08	B2, B4	T3	TP33
		6.1		III	223 274	5 kg	P002 IBC08 LP02	B3	T1	TP33
3466 *3281*	METAL CARBONYLS, SOLID, N.O.S.	6.1		I	274	NONE	P002 IBC07	B1	T6	TP9 TP33
		6.1		II	274	500 g	P002 IBC08	B2, B4	T3	TP33
		6.1		III	223 274	5 kg	P002 IBC08 LP02	B3	T1	TP33
3467 *3282*	ORGANOMETALLIC COMPOUND, TOXIC, SOLID, N.O.S.	6.1		I	274	NONE	P002 IBC07	B1	T6	TP9 TP33
		6.1		II	274	500 g	P002 IBC08	B2, B4	T3	TP33
		6.1		III	223 274	5 kg	P002 IBC08 LP02	B3	T1	TP33

Rationalized approach for assignment of tank instructions for solids:

Class	Sub. Risk	PG	Tank Instruction	Tank prov.	Apply to
4.1		I	*Not Authorized*		All UN Nos. in this group
		II	T3	TP33	1309, 1323, 1325 (replace "TP1" with "TP33"), 1326, 1339, 1341, 1343, 1345, 1352, 1358, 1437, 1868, 1871, 2925, 2926, 2989, 3089, 3175, 3178, 3179, 3180, 3181, 3182, 3242
		III	T1	TP33	1309,1312, 1313, 1314, 1318, 1325 (replace "TP1" with "TP33"), 1328, 1330, 1332, 1334, 1338, 1346, 1350 (replace "TP1" with "TP33"), 1869, 2001, 2213, 2538, 2687, 2714, 2715, 2717, 2878, 2925, 2926, 2989, 3089, 3097, 3178, 3179, 3180, 3181, 3182
4.2		I	T21	TP7 TP33	1383, 1854, 2005, 2008, 2870, 2881, 3200, 3254
		II	T3	TP33	1361, 1369, 1374, 1378, 1382, 1384, 1385, 1431, 1923, 1929, 2004, 2008, 2318, 2545, 2546, 2881, 2940, 3088, 3126, 3127, 3128, 3189, 3190, 3191, 3192, 3205, 3206, 3313, 3341, 3342
		III	T1	TP33	1361, 1362, 1373, 1376, 1932, 2008, 2210, 2545, 2546, 2881, 3088, 3126, 3127, 3128, 3174, 3189, 3190, 3191, 3192, 3205, 3206, 3313, 3341, 3342
4.3	6.1	I	*Not Authorized*		All UN Nos. in this group
		I	T9	TP7 TP33	1402, 1428 (replace "TP3 TP31" with "TP33") and 2257 (replace "TP3 TP31" with "TP33")
		II	T3	TP33	1340, 1390, 1393, 1394, 1395, 1396, 1400, 1401, 1402, 1405, 1409, 1417, 1418, 1436, 2624, 2805, 2813, 2830, 2835, 3078, 3131, 3132, 3134, 3135, 3170, 3208, 3209, 3372
		III	T1	TP33	1396, 1398, 1403, 1405, 1408, 1418, 1435, 1436, 2813, 2844, 2950, 2968, 3131, 3132, 3134, 3135, 3170, 3208, 3209, 3372
5.1		I	*Not Authorized*		All UN Nos. in this group
		II	T3	TP33	1439, 1442, 1445 (replace "T4" with "T3" and "TP1" with "TP33"), 1446, 1447 (replace "T4" with "T3" and "TP1" with "TP33"), 1448, 1449, 1450, 1452, 1453, 1455, 1456, 1457, 1458, 1459 (replace "T4" with "T3" and "TP1" with "TP33", 1461, 1462, 1463, 1469, 1470 (replace "T4" with "T3" and "TP1" with "TP33"), 1472, 1473, 1475, 1476, 1477, 1479, 1481, 1482, 1483, 1484, 1485, 1487, 1488, 1489, 1490, 1493, 1494, 1495, 1496, 1502, 1503, 1506, 1508, 1509, 1512, 1513, 1514, 1515, 1516, 2464, 2465, 2468, 2573, 2626, 2627, 2719, 2721, 2723, 2741, 3085, 3087, 3212, 3247
		III	T1	TP33	1438, 1444, 1451, 1454, 1458, 1459 (replace "T4" with "T1" and "TP1" with "TP33"), 1465, 1466, 1467, 1474, 1477, 1479, 1481, 1482, 1483, 1486, 1492, 1498, 1499, 1500, 1505, 1507, 1511, 1872, 1942, 2067, 2469, 2720, 2722, 2724, 2725, 2726, 2728, 3085, 3087, 3215
5.2			T23	TP33	3110, 3120

Class	Sub. Risk	PG	Tank Instruction	Tank prov.	Apply to
6.1		I	T6	TP33	1544, 1557, 1565, 1570, 1575, 1588, 1601, 1626, 1655, 1680 (replace "T14" with "T6" and "TP2 TP13" with "TP33"), 1689 (replace "T14" with "T6" and "TP2 TP13" with "TP33"), 1692, 1698, 1713, 1889, 2025, 2026, 2316, 2471, 2570, 2588, 2628, 2629, 2630, 2642, 2757, 2759, 2761, 2763, 2771, 2775, 2777, 2779, 2781, 2783, 2786, 2811, 2928, 2930, 3027, 3048, 3086, 3124, 3125, 3143, 3146, 3283 (replace "T14" with "T6" and "TP2 TP27" with "TP33"), 3284 (replace "T14" with "T6" and "TP2 TP27" with "TP33"), 3285 (replace "T14" with "T6" and "TP2 TP27" with "TP33"), 3288, 3290, 3345, 3349
		II	T3	TP33	1544, 1546, 1554, 1555, 1557, 1558, 1559, 1561, 1562, 1564, 1566, 1567, 1569 (replace "T10" with "T3" and "TP2 TP13" with "TP33"), 1572, 1573, 1574, 1578 (replace "T7" with "T3" and "TP2" with "TP33"), 1585, 1586, 1587, 1588, 1596 (replace "T7" with "T3" and "TP2" with "TP33"), 1598 (replace "T7" with "T3" and "TP2" with "TP33"), 1601, 1606, 1607, 1608, 1617, 1618, 1620, 1621, 1622, 1623, 1624, 1625, 1627, 1629, 1630, 1631, 1634, 1636, 1637, 1638, 1639, 1640, 1641, 1642, 1643, 1644, 1645, 1646, 1650 (replace "T7" with "T3" and "TP2" with "TP33"), 1651, 1652, 1653, 1655, 1657, 1659, 1661 (replace "T7" with "T3" and "TP2" with "TP33"), 1671 (replace "T6" with "T3" and "TP2" with "TP33"), 1674, 1677, 1678, 1679, 1683, 1684, 1685, 1688, 1691, 1697 (replace "T7" with "T3" and "TP2 TP13" with "TP33"), 1707, 1712, 1751, 1843, 1885, 1894, 1895, 2018 (replace "T7" with "T3" and "TP2" with "TP33"), 2025, 2026, 2027, 2250 (replace "T7" with "T3" and "TP2" with "TP33"), 2261 (replace "T7" with "T3" and "TP2" with "TP33"), 2567, 2570, 2587, 2588, 2645, 2647, 2649, 2657, 2671, 2673, 2727, 2757, 2759, 2761, 2763, 2771, 2775, 2777, 2779, 2781, 2783, 2786, 2811, 2859, 2861, 2863, 2864, 2928, 2930, 2931, 3027, 3086, 3124, 3125, 3143, 3146, 3155, 3243, 3249, 3283 (replace "T11" with "T3" and "TP2 TP27" with "TP33"), 3284(replace "T11" with "T3" and "TP2 TP27" with "TP33"), 3285 (replace "T11" with "T3" and "TP2 TP27" with "TP33"), 3288, 3290, 3345, 3349
6.1		III	T1	TP33	1544, 1548, 1549, 1550, 1551, 1557, 1564, 1566, 1579 (replace "T4" with "T1" and "TP1" with "TP33"), 1588, 1601, 1616, 1655, 1663 (replace "T4" with "T1" and "TP3" with "TP33"), 1673 (replace "T7" with "T1" and "TP1" with "TP33"), 1690 (replace "T4" with "T1" and "TP1" with "TP33"), 1709 (replace "T4" with "T1" and "TP1" with "TP33"), 1812 (replace "T4" with "T1" and "TP1" with "TP33"), 1884, 2020, 2025, 2026, 2074 (replace "T4" with "T1" and "TP1" with "TP33"), 2233, 2237, 2239 (replace "T4" with "T1" and "TP1" with "TP33"), 2291, 2446, 2473, 2505, 2512, 2516, 2570, 2588, 2651 (replace "T4" with "T1"

Class	Sub. Risk	PG	Tank Instruction	Tank prov.	Apply to
					and "TP1" with "TP33"), 2655, 2659, 2660, 2662 (replace "T4" with "T1" and "TP1" with "TP33"), 2674, 2713, 2716, 2729, 2757, 2759, 2761, 2763, 2771, 2775, 2777, 2779, 2781, 2783, 2786, 2811, 2853, 2854, 2855, 2856, 2862, 2871, 2875, 2876, 3027, 3143, 3146, 3249, 3283 (replace "T7" with "T1"and "TP1 TP28" with "TP33"), 3284 (replace "T7" with "T1" and "TP1 TP28" with "TP33"), 3285 (replace "T7" with "T1" and "TP1 TP28" with "TP33"), 3288, 3345, 3349
8		I	T6	TP33	1759, 1905, 2430 (replace "T10" with "T1" and "TP2 TP28" with "TP33"), 2921, 2923, 3084, 3095, 3096, 3147, 3259, 3260, 3261, 3262, 3263
		II	T3	TP33	1725, 1726, 1727, 1740, 1756, 1759, 1770, 1794, 1806, 1807, 1811 (replace "T7" with "T3" and "TP2" with "TP33"), 1813, 1823, 1825, 1839, 1847, 1849 (replace "T7" with "T3" and "TP2" with "TP33"), 1939 (replace "T7" with "T3" and "TP2" with "TP33"), 2033, 2430 (replace "TP2" with "TP33"), 2439, 2506, 2509, 2583, 2670, 2678, 2680, 2682, 2691, 2869, 2921, 2923, 3084, 3095, 3096, 3147, 3244, 3259, 3260, 3261, 3262, 3263
		III	T1	TP33	1740, 1759, 1773, 1907, 1910, 2214 (replace "T4" with "T1" and "TP3" with "TP33"), 2215 (replace "T4" with "T1" and "TP1" with "TP33"), 2280 (replace "T4" with "T1" and "TP3" with "TP33"), 2331, 2430 (replace "T3" with "T1" and "TP1" with "TP33"), 2440, 2475, 2503, 2507, 2508, 2578, 2579 (replace "T4" with "T1" and "TP1 TP30" with "TP33"), 2585, 2698, 2802, 2803, 2812, 2823 (replace "T4" with "T1" and "TP1" with "TP33"), 2834 (replace "T3" with "T1" and "TP1" with "TP33"), 2865, 2869, 2905, 2923, 2967, 3147, 3253, 3259, 3260, 3261, 3262, 3263
9		II	T3	TP33	2212, 2969, 3152
		III	T1	TP33	1841, 1931, 2211, 2216, 2590, 3077

Chapter 3.3

SP63 Amend as follows:
Replace (a) and (b) with the following:

"(a) Division 2.1 applies if the contents include 85% by mass or more flammable components and the chemical heat of combustion is 30 kJ/g or more;

(b) Division 2.2 applies if the contents contain 1% by mass or less flammable components and the heat of combustion is less than 20 kJ/g."

Insert a new (c) as follows:
"(c) Otherwise the product shall be classified as tested by the tests described in the *Manual of Tests and Criteria*, Part III, section 31. Extremely flammable and flammable aerosols shall be classified in Division 2.1; non-flammable in Division 2.2;".

The existing subparagraphs (c), (d), (e) and (f) become (d), (e), (f) and (g) respectively.

Add at the end a new paragraph to read as follows:
"Flammable components are flammable liquids, flammable solids or flammable gases and gas mixtures as defined in Notes 1 to 3 of sub-section 31.1.3 of Part III of the *Manual of Tests and Criteria.* This designation does not cover pyrophoric, self-heating or water-reactive substances. The chemical heat of combustion shall be determined by one of the following methods ASTM D 240, ISO/FDIS 13943: 1999 (E/F) 86.1 to 86.3 or NFPA 30B."

SP 133 Amend to read:

"If over-confined in packagings, this substance may exhibit explosive behaviour. Packagings authorized under packing instruction P409 are intended to prevent over-confinement. When a packaging other than those prescribed under packing instruction P409 is authorized by the competent authority of the country of origin in accordance with 4.1.3.7, the package shall bear an "EXPLOSIVE" subsidiary risk label unless the competent authority of the country of origin has permitted this label to be dispensed with for the specific packaging employed because test data have proved that the substance in this packaging does not exhibit explosive behaviour (see 5.4.1.5.5.1). The provisions of 7.1.3.1 shall also be then considered.".

SP 179 Amend to read:

"This designation shall be used for substances and mixtures which are dangerous to the aquatic environment or which are marine pollutants that do not meet the classification criteria of any other class or another substance within Class 9. This designation may also be used for wastes not otherwise subject to these Regulations but which are covered under the *Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal* and for substances designated to be environmentally hazardous substances by the competent authority of the country of origin, transit or destination which do not meet the criteria for an environmentally hazardous substance according to these Regulations or for any other hazard Class.".

SP 215 Add the following text at the end:

"Homogeneous mixtures containing not more than 35 % by mass of azocarbonamide and at least 65 % of inert substance are not subject to these Regulations unless criteria of other classes or divisions are met.".

SP219 Amend to read as follows:
"Genetically modified micro-organisms and genetically modified organisms which meet the definition of an infectious substance and the criteria for inclusion in Division 6.2 in accordance with Chapter 2.6 shall be transported as UN 2814, UN 2900 or UN 3373, as appropriate.".

SP240 Add the following at the end of the existing special provision 240:

"Hybrid electric vehicles powered by both an internal combustion engine and wet batteries, sodium batteries or lithium batteries, transported with the battery(ies) installed shall be consigned under the entries UN 3166 VEHICLE, FLAMMABLE GAS POWERED or UN 3166 VEHICLE, FLAMMABLE LIQUID POWERED, as appropriate."

SP243 Amend to read as follows:

"Gasoline, motor spirit and petrol for use in spark-ignition engines (e.g. in automobiles, stationary engines and other engines) shall be assigned to this entry regardless of variations in volatility.".

SP 247 Delete: "deviating for the requirements of Chapter 6.1," in the first paragraph.

SP296 Replace the existing text with the following:

"These entries apply for life-saving appliances such as life rafts, personal flotation devices and self-inflating slides. UN 2990 applies for self-inflating appliances and UN 3072 applies for life-saving appliances that are not self-inflating. Life-saving appliances may contain:

(a) Signal devices (Class 1) which may include smoke and illumination signal flares packed in packagings that prevent them from being inadvertently activated;

(b) For UN 2990 only, cartridges, power device of Division 1.4, compatibility group S, may be contained for purposes of the self-inflating mechanism and provided that the quantity of explosives per appliance does not exceed 3.2 g;

(c) Division 2.2 compressed gases;

(d) Electric storage batteries (Class 8) and lithium batteries (Class 9);

(e) First aid kits or repair kits containing small quantities of dangerous goods (e.g.: Class 3, Division 4.1, Division 5.2, Class 8 or Class 9 substances); or

(f) "Strike anywhere" matches packed in packagings that prevent them from being inadvertently activated.".

SP 309 Amend the last sentence to read as follows:
"Substances shall satisfactorily pass Test Series 8 of the *Manual of Tests and Criteria*, Part I, Section 18."

Add the following new special provisions:

"**311** Substances shall not be transported under this entry unless approved by the competent authority on the basis of the results of appropriate tests according to Part I of the *Manual of Tests and Criteria*. Packaging shall ensure that the percentage of diluent does not fall below that stated in the competent authority approval, at any time during transport.

312 Vehicles which contain an internal combustion engine shall be consigned under the entries UN 3166 VEHICLE, FLAMMABLE GAS POWERED or UN 3166 VEHICLE, FLAMMABLE LIQUID POWERED, as appropriate. These entries include hybrid electric vehicles powered by both an internal combustion engine and wet batteries, sodium batteries or lithium batteries, transported with the battery(ies) installed.

313 Substances and mixtures meeting the criteria for Class 8 shall be labelled with a "CORROSIVE" subsidiary risk label.

314 a) These substances are liable to exothermic decomposition at elevated temperatures. Decomposition can be initiated by heat or by impurities (e.g. powdered metals (iron, manganese, cobalt, magnesium) and their compounds);

b) During the course of transport, these substances shall be shaded from direct sunlight and all sources of heat and be placed in adequately ventilated areas.

315 This entry shall not be used for Division 6.1 substances which meet the inhalation toxicity criteria for packing group I described in 2.6.2.2.4.3.

316 This entry applies only to calcium hypochlorite, dry or hydrated, when transported in non friable tablet form.

317 "Fissile-excepted" applies only to those packages complying with 6.4.11.2.

318 For the purposes of documentation, the proper shipping name shall be supplemented with the technical name (see 3.1.2.8). Technical names need not be shown on the package. When the infectious substances to be transported are unknown, but suspected of meeting the criteria for inclusion in category A and assignment to UN 2814 or UN 2900, the words "suspected category A infectious substance" shall be shown, in parentheses, following the proper shipping name on the transport document, but not on the outer packagings.

319 This entry applies to human or animal material including, but not limited to, excreta, secreta, blood and its components, tissue and tissue fluids, and body parts being transported for purposes such as research, diagnosis, investigational activities, disease treatment or prevention. Substances packed and marked in accordance with packing instruction P650 are not subject to any other requirements in these Regulations.".

320 It is intended that this entry will be deleted from modal requirements effective on 1 January 2007. Irrespective of 2.0.2.2, in the interim period, this entry or the appropriate generic entry may be used.

321 These storage systems shall always be considered as containing hydrogen.".

PART 4

Chapter 4.1

4.1.1.8 Amend to read as follows:

"4.1.1.8 Liquids may only be filled into inner packagings which have an appropriate resistance to internal pressure that may be developed under normal conditions of transport. Where pressure may develop in a package by the emission of gas from the contents (as a result of temperature increase or other causes), the packaging, including IBC, may be fitted with a vent. A venting device shall be fitted if dangerous overpressure may develop due to normal decomposition of substances. However, the gas emitted shall not cause danger on account of its toxicity, its flammability, the quantity released, etc**.** The vent shall be so designed that, when the packaging, including 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 transport. Venting of the package is not permitted for air transport."

4.1.1.9 Insert the words "or routinely maintained" after "repaired", in the first and last sentences.

4.1.1.15 Add a new paragraph to read as follows:

"4.1.1.15 For plastics drums and jerricans, rigid plastics IBCs and composite IBCs with plastics inner receptacles, unless otherwise approved by the competent authority, the period of use permitted for the transport of dangerous substances shall be five years from the date of manufacture of the receptacles, except where a shorter period of use is prescribed because of the nature of the substance to be transported".

Renumber subsequent paragraphs and sub-paragraphs accordingly.

4.1.2.3 Delete this paragraph and renumber the remaining paragraphs accordingly.

4.1.2.4 Replace "rigid plastics and composite IBCs" with " rigid plastics, composite and flexible IBCs" in the first sentence.

4.1.3.4 Add a new line for large packagings, immediately before the line for IBCs, as follows:
"Large packagings
Flexible plastics: 51H (outer packaging)"

4.1.3.5 In the first sentence, delete "outer" (twice) and "in a combination packaging" and add ";1A2" after "4G" and ";1A2V, 1A2U or 1A2W" after "4GW" in the examples between brackets.

4.1.3.6 Replace "Cylinders, bundles of cylinders, pressure drums and tubes" with "All cylinders, tubes, pressure drums and bundles of cylinders".

4.1.4.1 **P002** Extend the application of note "5" to steel, aluminium and solid plastics boxes.

Under "Special packing provisions":
In special packing provision **PP9,** add a new sentence at the end to read as follows:
"For UN 3175, the leakproofness test is not required when the liquids are fully absorbed in solid material contained in sealed bags.".

Add the following two new special provisions:

"**PP84** For UN 1057, rigid outer packagings meeting the packing group II performance level shall be used. The packagings shall be designed and constructed and arranged to prevent movement, inadvertent ignition of the devices or inadvertent release of flammable gas or liquid.

PP85 For UN Nos. 1748, 2208 and 2880, if bags are used as single packagings they shall be adequately separated to allow for the dissipation of heat.".

P200 In paragraph 2(d), insert a note to read as follows:

"***NOTE:*** *For pressure receptacles which make use of composite materials, the periodic inspection frequencies shall be as determined by the competent authority which approved the receptacles."*

In paragraph (4), under "Gas specific provisions", add a new provision "t" to read as follows:

"t: (i) The wall thickness of pressure receptacles shall be not less than 3 mm.

(ii) Prior to transport it shall be ensured that the pressure has not risen due to potential hydrogen generation.".

Amendments to the tables:
In Tables 2 and 3, rearrange the order of the columns listed hereafter according to the sequence in Table 1, i.e. Cylinders, Tubes, Pressure drums, Bundles of cylinders, MEGCs.

Delete all asterisks on LC_{50} values and delete the associated footnote.

Amend Table 1 as follows:

UN No.	Column	Amendment
1953, 1955, 3303, 3304, 3305 and 3306	LC_{50}	Add "≤ 5000"
2600	LC_{50}	Add "between 3760 and 5000"

Amend Table 2 as follows:

UN No.	Column	Amendment
1010	Name and description	replace "BUTADIENE, STABILIZED (mixtures of 1,3-butadiene and hydrocarbons)" with "BUTADIENES AND HYDROCARBON MIXTURE, STABILIZED, containing more than 40% butadienes".
	Test pressure, bar	Delete "10"
	Filling ratio	Delete "0.50"
	Special packing provisions	Add "v,"
3160, 3162, 3307, 3308, 3309 and 3310	LC_{50}	Add "≤ 5000"
3083	Special packing provisions	Delete "k"

Amend Table 3 as follows:

UN No.	Column	Amendment
1051	LC_{50}	Replace "140" with "40"
1052	Special packing provisions	Add "t"
1746	LC_{50}	Replace "180" with "50"

P203 Replace the existing packing instruction P203 with the following:

P203	**PACKING INSTRUCTION**	**P203**

This instruction applies to Class 2 refrigerated liquefied gases in closed cryogenic receptacles. Refrigerated liquefied gases in open cryogenic receptacles shall conform to the construction, testing and filling requirements approved by the competent authority.

For closed cryogenic receptacles, the general requirements of 4.1.6.1 shall be met.

Closed cryogenic receptacles constructed as specified in Chapter 6.2 are authorized for the transport of refrigerated liquefied gases.

The closed cryogenic receptacles shall be so insulated that they do not become coated with frost.

(1) Test pressure

Refrigerated liquids shall be filled in closed cryogenic receptacles with the following minimum test pressures:

(a) For closed cryogenic receptacles with vacuum insulation, the test pressure shall not be less than 1.3 times the sum of the maximum internal pressure of the filled receptacle, including during filling and discharge, plus 100 kPa (1 bar);

(b) For other closed cryogenic receptacles, the test pressure shall be not less than 1.3 times the maximum internal pressure of the filled receptacle, taking into account the pressure developed during filling and discharge.

P203	PACKING INSTRUCTION	P203
(2)	Degree of filling For non-flammable, non-toxic refrigerated liquefied gases the volume of liquid phase at the filling temperature and at a pressure of 100 kPa (1 bar) shall not exceed 98% of the water capacity of the pressure receptacle. For flammable refrigerated liquefied gases the degree of filling shall remain below the level at which, if the contents were raised to the temperature at which the vapour pressure equalled the opening pressure of the relief valve, the volume of the liquid phase would reach 98% of the water capacity at that temperature.	
(3)	Pressure-relief devices Closed cryogenic receptacles shall be fitted with at least one pressure-relief device.	
(4)	Compatibility Materials used to ensure the leakproofness of the joints or for the maintenance of the closures shall be compatible with the contents. In the case of receptacles intended for the transport of oxidizing gases, (i.e. with a subsidiary risk of 5.1) these materials shall not react with these gases in a dangerous manner.	

P400 In paragraph (1), at the end of the second sentence, replace "in strong wood, fibreboard or plastics boxes" with "in strong rigid outer packagings", and in the third sentence, replace "box" with "outer packaging".

At the end of the table, add a new row with the heading "Special packing provisions" and a new special packing provision PP86, as follows:

"**Special packing provisions**

PP86: For UN Nos. 3392 and 3394, air shall be eliminated from the vapour space by nitrogen or other means.".

P403 Under "Inner packagings", replace "and have threaded closures" with " (e.g. by taping or by threaded closures).".

At the end of the table, add a new row with the heading "Special packing provisions" and a new special packing provision PP83, as follows:

"Special packing provisions

PP83 For UN No. 2813, waterproof bags containing not more than 20 g of substance for the purposes of heat formation may be packaged for transport. Each waterproof bag shall be sealed in a plastics bag and placed within an intermediate packaging. No outer packaging shall contain more than 400 g of substance. Water or liquid which may react with the water reactive substance shall not be included in the packaging.".

P404 In the list of pyrophoric solids, add UN Nos. 3391 to 3400.

At the end of the table, add a new row with the heading "Special packing provisions" and a new special packing provision PP86, as follows:

"Special packing provisions

PP86 For UN Nos. 3391 and 3393, air shall be eliminated from the vapour space by nitrogen or other means."

P407 In the text before "Additional requirement", amend the beginning of the second sentence to read "The maximum gross mass of the package shall not exceed…".

P410 Under "Single packagings", apply note "3" to steel, aluminium and solid plastics boxes.

Under "Special packing provisions", add PP83 (same wording as in P403).

P504 Delete special provision PP29 and add a new PP10 as to read follows:

"**PP10** For UN Nos. 2014 and 3149, the packaging shall be vented".

P520 In column OP8, replace "200[2]" with "400[2]" and amend note 2 to read:
"[2] 60 kg for jerricans/200 kg for boxes and, for solids, 400 kg in combination packagings with outer packagings comprising boxes (4C1, 4C2, 4D, 4F, 4G, 4H1 and 4H2) and with inner packagings of plastics or fibre with a maximum net mass of 25 kg.".

P601 In (3), replace "Combination packagings" with "Packagings consisting of:" and amend the first paragraph to read as follows:

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

At the end of the table, add a new row with the heading "Special packing provisions" and a new special packing provision PP82, as follows:

"**Special packing provision**

PP82 For UN No.1744, glass inner packagings with a capacity of not more than 1.3 litres may be used in a permitted outer packaging with a maximum gross mass of 25 kg.".

P602 In paragraph (3), amend the text between brackets in the first line, to read: (…1H1, 6HA1 or 6HH1)".

P620 In (a)(iii), insert "either" before "individually" and "or separated" after "wrapped" at the end.

In (b), replace "An outer packaging" with "A rigid packaging" in the first sentence and replace "at least" with "not less than" in the second sentence.

Under 2, replace existing "(a), (b), (i), (ii), (iii)" with the following:

"(a) Substances consigned at ambient temperatures or at a higher temperature. Primary receptacles shall be of glass, metal or plastics. Positive means of ensuring a leakproof seal shall be provided, e.g. a heat seal, a skirted stopper or a metal crimp

seal. If screw caps are used, they shall be secured by positive means, e.g., tape, paraffin sealing tape or manufactured locking closure;

(b) Substances consigned refrigerated or frozen. Ice, dry ice or other refrigerant shall be placed around the secondary packaging(s) or alternatively in an overpack with one or more complete packages marked in accordance with 6.3.1.1. Interior supports shall be provided to secure secondary packaging(s) or packages in position after the ice or dry ice has dissipated. If ice is used, the outer packaging or overpack shall be leakproof. If dry ice is used, the outer packaging or overpack shall permit the release of carbon dioxide gas. The primary receptacle and the secondary packaging shall maintain their integrity at the temperature of the refrigerant used;

(c) Substances consigned in liquid nitrogen. Plastics primary receptacles capable of withstanding very low temperature shall be used. The secondary packaging shall also be capable of withstanding very low temperatures, and in most cases will need to be fitted over the primary receptacle individually. Provisions for the consignment of liquid nitrogen shall also be fulfilled. The primary receptacle and the secondary packaging shall maintain their integrity at the temperature of the liquid nitrogen.

(d) Lyophilized substances may also be transported in primary receptacles that are flame-sealed glass ampoules or rubber-stoppered glass vials fitted with metal seals;".

P650 Replace the existing P650 with the following:

P650	**PACKING INSTRUCTION**	**P650**

This packing instruction applies to UN 3373

(1) The packaging shall be of good quality, strong enough to withstand the shocks and loadings normally encountered during transport, including transhipment between transport units and between transport units and warehouses as well as any removal from a pallet or overpack for subsequent manual or mechanical handling. Packagings shall be constructed and closed to prevent any loss of contents that might be caused under normal conditions of transport by vibration or by changes in temperature, humidity or pressure.

(2) The packaging shall consist of three components:

(a) a primary receptacle;

(b) a secondary packaging; and

(c) an outer packaging.

(3) Primary receptacles shall be packed in secondary packagings in such a way that, under normal conditions of transport, they cannot break, be punctured or leak their contents into the secondary packaging. Secondary packagings shall be secured in outer packagings with suitable cushioning material. Any leakage of the contents shall not compromise the integrity of the cushioning material or of the outer packaging.

(4) For transport, the mark illustrated below shall be displayed on the external surface of the outer packaging on a background of a contrasting colour and shall be clearly visible and legible. The width of the line shall be at least 2 mm; the letters and numbers shall be at least 6 mm high.

P650	PACKING INSTRUCTION (*cont'd*)	P650

(5) The completed package shall be capable of successfully passing the drop test in 6.3.2.5 as specified in 6.3.2.3 and 6.3.2.4 of the Model Regulations except that the height of the drop shall not be less than 1.2 m.

(6) For liquid substances

(a) The primary receptacle(s) shall be leakproof;

(b) The secondary packaging shall be leakproof;

(c) If multiple fragile primary receptacles are placed in a single secondary packaging, they shall be either individually wrapped or separated to prevent contact between them;

(d) Absorbent material shall be placed between the primary receptacle(s) and the secondary packaging. The absorbent material shall be in quantity sufficient to absorb the entire contents of the primary receptacle(s) so that any release of the liquid substance will not compromise the integrity of the cushioning material or of the outer packaging;

(e) The primary receptacle or the secondary packaging shall be capable of withstanding, without leakage, an internal pressure of 95 kPa (0.95 bar).

(7) For solid substances

(a) The primary receptacle(s) shall be siftproof;

(b) The secondary packaging shall be siftproof;

(c) If multiple fragile primary receptacles are placed in a single secondary packaging, they shall be either individually wrapped or separated to prevent contact between them.

(8) Refrigerated or frozen specimens: Ice, dry ice and liquid nitrogen

(a) When dry ice or liquid nitrogen is used to keep specimens cold, all applicable requirements of these Regulations shall be met. When used, ice or dry ice shall be placed outside the secondary packagings or in the outer packaging or an overpack. Interior supports shall be provided to secure the secondary packagings in the original position after the ice or dry ice has dissipated. If ice is used, the outside packaging or overpack shall be leakproof. If carbon dioxide, solid (dry ice) is used, the packaging shall be designed and constructed to permit the release of carbon dioxide gas to prevent a build-up of pressure that could rupture the packagings and shall be marked "Carbon dioxide, solid" or "Dry ice".

(b) The primary receptacle and the secondary packaging shall maintain their integrity at the temperature of the refrigerant used as well as the temperatures and the pressures which could result if refrigeration were lost.

(9) Infectious substances assigned to UN 3373 which are packed and marked in accordance with this packing instruction are not subject to any other requirement in these Regulations.

(10) Clear instructions on filling and closing such packages shall be provided by packaging manufacturers and subsequent distributors to the consignor or to the person who prepares the package (e.g. patient) to enable the package to be correctly prepared for transport.

P903 Add the following paragraph after the sentence "Packaging conforming to the packing group II performance level.":

"In addition, batteries employing a strong, impact resistant outer casing of a gross mass of 12 kg or more, and assemblies of such batteries, may be packed in strong outer packagings, in protective enclosures (e.g., in fully enclosed or wooden slatted crates) unpackaged or on pallets. Batteries shall be secured to prevent inadvertent movement, and the terminals shall not support the weight of other superimposed elements.".

P904 Amend to read as follows:

P904	**PACKING INSTRUCTION**	**P904**

This packing instruction applies to UN3245.

The following packagings are authorized provided the general provisions of 4.1.1 and 4.1.3 are met:

(1) Packagings according to P001 or P002 conforming to the packing group III performance level.

(2) Outer packagings, which need not conform to the packaging test requirements of Part 6, but conforming to the following:

(a) An inner packaging comprising:

(i) a watertight primary receptacle(s);

(ii) a watertight secondary packaging which is leakproof;

(iii) absorbent material placed between the primary receptacle(s) and the secondary packaging. The absorbent material shall be in a quantity sufficient to absorb the entire contents of the primary receptacle(s) so that any release of the liquid substance will not compromise the integrity of the cushioning material or of the outer packaging;

(iv) if multiple fragile primary receptacles are placed in a single secondary packaging they shall be individually wrapped or separated to prevent contact between them.

(b) An outer packaging shall be strong enough for its capacity, mass and intended use and with a smallest external dimension of at least 100 mm.

Additional requirement

Dry ice and liquid nitrogen

When carbon dioxide, solid, (dry ice) is used as a refrigerant, the packaging shall be designed and constructed to permit the release of the gaseous carbon dioxide to prevent the build up of pressure that could rupture the packaging.

Substances consigned in liquid nitrogen or dry ice shall be packed in primary receptacles that are capable of withstanding very low temperatures. The secondary packaging shall also be capable of withstanding very low temperatures and, in most cases, will need to be fitted over the primary receptacle individually.

P906(1) and (2) After "PCBs", insert "or polyhalogenated biphenyls or terphenyls" in (1) and ", polyhalogenated biphenyls or terphenyls" in (2).

4.1.4.2 **IBC04** Insert a new special packing provision B14 to read as follows.
"**B14** For UN Nos. 3391 and 3393, air shall be eliminated from the vapour space by nitrogen or other means."

IBC08 In special provision B6, insert "1408," after "1386,".

Add a new special packing provision B13, to read as follows:
"**B13** For UN Nos. 1748, 2208 and 2880, transport by sea in IBCs is prohibited.".

IBC520 Insert the following new entries:

UN No.	Organic peroxide	Type of IBC	Maximum quantity (litres)	Control temperature	Emergency temperature
3119	Dicyclohexylperoxydicarbonate, not more than 42% as a stable dispersion, in water	31A	1250	+ 10 °C	+ 15 °C
3110	**ORGANIC PEROXIDE, TYPE F, SOLID** Dicumyl peroxide	31A 31H 31HA1	2000		
3120	**ORGANIC PEROXIDE, TYPE F, SOLID, TEMPERATURE CONTROLLED**				

4.1.4.3 **LP02** Insert "Flexible plastics (51H)[3]" in the column for "Large outer packagings", and a note 3 under the table, as follows: "[3] To be used with flexible inner packagings only.".

4.1.6.1.2 Replace "material" with "mass" in the third sentence.
In (b), insert "porous" before "mass". The last sentence of subparagraph b) becomes applicable to the whole paragraph.

4.1.6.1.4 Amend as follows: "…have been performed. The change of service for compressed and liquefied gases shall be in accordance with ISO 11621:1997, as applicable. In addition, a pressure receptacle…".

The existing second paragraph of 4.1.6.1.4 becomes new paragraph 4.1.6.1.5. Insert "Shutt-off" before "valves" at the beginning of the second sentence.

Renumber subsequent paragraphs accordingly.

4.1.6.1.8 Amend the beginning of the first sentence to read as follows: " Valves shall be designed and constructed in such a way that they are inherently able to withstand damage without release of the contents or shall be protected from damage which could cause…".

Delete subparagraph d) and rename subsequent subparagraphs accordingly.

Amend the end of the last paragraph to read: "…for valves with inherent protection, the requirements of annex B…".

4.1.6.1.10 Amend the first sentence to read as follows: "Refillable pressure receptacles, other than cryogenic receptacles, shall be periodically inspected according to the provisions of 6.2.1.5 and packing instruction P200".

Delete "charged or" before "filled" in the second sentence.

4.1.6.1.11 Amend the first paragraph to read as follows:
"Repairs shall be consistent with the fabrication and testing requirements of the applicable design and construction standards and are only permitted as indicated in the relevant periodic inspection standards specified in 6.2.2.4. Pressure receptacles, other than the jacket of closed cryogenic receptacles, shall not be subjected to repairs of any of the following:".

4.1.6.1.12(b) Replace "and" with "or" at the end.

4.1.6.1.13 Replace "Charged" with "Filled" at the beginning of the first sentence and replace "and" with "or" at the end of subparagraph (c).

4.1.7.2.1 Amend to read: "The currently assigned organic peroxides specifically listed in packing instruction IBC520 may be transported in IBCs in accordance with this packing instruction.".

4.1.8.3 Add the following sentence at the end:
"When the infectious substances to be transported are unknown, but suspected of meeting the criteria for inclusion in category A and assignment to UN 2814 or UN 2900, the words "suspected category A infectious substance" shall be shown, in parentheses, following the proper shipping name on the document inside the outer packaging.".

4.1.9.1.4 Replace "and intermediate bulk containers" with "intermediate bulk containers and conveyances".

4.1.9.2.1 Replace "Industrial package Type 1 (Type IP-1), Industrial package Type 2 (Type IP-2), Industrial package Type 3 (Type IP-3)" with " Type IP-1 package, Type IP-2 package, Type IP-3 package,".

Chapter 4.2

4.2.1 Insert "Class 1 and" before "Classes 3 to 9".

4.2.1.1 Amend the end of the first sentence to read: "… transport of substances of Classes 1, 3, 4, 5, 6, 7, 8 and 9.".

4.2.1.4 Amend the second sentence to read as follows:
"When necessary, the shell shall be thermally insulated.".

4.2.1.9.5.1 Amend the sentence before the formula to read as follows:
"The maximum degree of filling (in %) for solids transported above their melting points and for elevated temperature liquids shall be determined by the following formula:".

4.2.1.18 Add the following new paragraphs:

"**4.2.1.18** ***Additional provisions applicable to the transport of solid substances transported above their melting point***

4.2.1.18.1 Solid substances transported or offered for transport above their melting point which are not assigned a portable tank instruction in column (10) of the Dangerous Goods List or when the assigned portable tank instruction does not apply to transport at temperatures above their melting point may be transported in portable tanks provided that the solid substances are classified in divisions 4.1, 4.2, 4.3, 5.1 or 6.1 or classes 8 or 9 and have no subsidiary risk other than that of Division 6.1 or Class 8 and are in packing group II or III.

4.2.1.18.2 Unless otherwise indicated in the Dangerous Goods List of Chapter 3.2, portable tanks used for the transport of these solid substances above their melting point shall conform to the provisions of portable tank instruction T4 for solid substances of packing group III or T7 for solid substances of packing group II. A portable tank that affords an equivalent or greater level of safety may be selected according to 4.2.5.2.5. The maximum degree of filling (in %) shall be determined according to 4.2.1.9.5 (TP3) ".

4.2.5.2.1 Replace "2" with "1" at the end of the first sentence.

4.2.5.2.2 Insert "Class 1 and" before "Classes 3 to 9" at the beginning of the first sentence.

4.2.5.2.5 For portable tank instructions T2 and T4, delete "T6" under "Portable tank instructions also permitted".

4.2.5.2.6 Insert the following paragraph after the title:

"Portable tank instructions specify the requirements applicable to a portable tank when used for the transport of specific substances. Portable tank instructions T1 to T22 specify the applicable minimum test pressure, the minimum shell thickness (in mm reference steel), and the pressure-relief and bottom-opening requirements.".

In the table for portable tank instruction "T1-T22" add a reference "[a]" to a footnote at the end of the heading "Pressure-relief requirements". The footnote will read as follows:

"[a] *When the word "Normal" is indicated, all the requirements of 6.7.2.8 apply except for 6.7.2.8.3.".*

T23 For UN 3109, in the entry for Pinanyl hydroperoxyde, replace "50%" with "56%".

T50 In the table for portable tank instruction "T50":

- In the heading "Max. allowable working pressure (bar) Small, Bare; Sunshield; Insulated", add at the end "respectively[a]" and a footnote to read as follows:

  "[a] *"Small" means tanks having a shell with a diameter of 1.5 metres or less; "Bare" means tanks having a shell with a diameter of more than 1.5 metres without insulation or sun shield (see 6.7.3.2.12); "Sunshield" means tanks having a shell with a diameter of more than 1.5 metres with sun shield (see 6.7.3.2.12); "Insulated" means tanks having a shell with a diameter of more than 1.5 metres with insulation (see 6.7.3.2.12); (See definition of "Design reference temperature" in 6.7.3.1)."*

- Add a reference "[b]" to a footnote at the end of the heading "Pressure-relief requirements", and a footnote to read as follows:

  "[b] *The word "Normal" in the pressure relief requirements column indicates that a frangible disc as specified in 6.7.3.7.3 is not required.".*

- Add a new row as follows:

UN No.	**Non-refrigerated liquefied gases**	**Max. allowable working pressure (bar) Small; Bare; Sunshield; Insulated**	**Openings below liquid level**	**Pressure-relief requirements (see 6.7.3.7)**	**Maximum filling ratio**
1010	Butadienes and hydrocarbon mixture, stabilized	See MAWP definition in 6.7.3.1	Allowed	Normal	See 4.2.2.7

4.2.5.3 **TP3** Amend to read as follows: "The maximum degree of filling (in %) for solids transported above their melting points and for elevated temperature liquids shall be determined in accordance with 4.2.1.9.5.".

TP5 Amend to read as follows: "The degree of filling prescribed in 4.2.3.6 shall be met.".

Add the following new portable tank instructions:

"**TP32** For UN Nos. 0331, 0332 and 3375, portable tanks may be used subject to the following conditions:

(a) To avoid unnecessary confinement, each portable tank constructed of metal shall be fitted with a pressure-relief device that may be of the reclosing spring loaded type, a frangible disc or a fusible element. The set to discharge or burst pressure, as applicable, shall not be greater than 2.65 bar for portable tanks with minimum test pressures greater than 4 bar;

(b) The suitability for transport in tanks shall be demonstrated. One method to evaluate this suitability is test 8 (d) in Test Series 8 (see *Manual of Tests and Criteria*, Part 1, Sub-section 18.7).

(c) Substances shall not be allowed to remain in the portable tank for any period that could result in caking. Appropriate measures shall be taken to avoid accumulation and packing of substances in the tank (e.g. cleaning, etc).

TP33 The portable tank instruction assigned for this substance applies for granular and powdered solids and for solids which are filled and discharged at temperatures above their melting point which are cooled and transported as a solid mass. For solids which are transported above their melting point see 4.2.1.18.

TP34 Portable tanks need not be subjected to the impact test in 6.7.4.14.1 if the portable tank is marked "NOT FOR RAIL TRANSPORT" on the plate specified in 6.7.4.15.1 and also in letters of at least 10 cm high on both sides of the outer jacket.".

Chapter 4.3

Insert a new chapter as follows:

"**CHAPTER 4.3**

USE OF BULK CONTAINERS

4.3.1 General provisions

4.3.1.1 This section provides general requirements applicable to the use of containers for the transport of solid substances in bulk. Substances shall be transported in bulk containers conforming to the applicable bulk container instruction identified by the letters BK in column 10 of the Dangerous Goods List, with the following meaning:

BK1: the transport in sheeted bulk containers is permitted
BK2: the transport in closed bulk containers is permitted

The bulk container used shall conform to the requirements of Chapter 6.8.

4.3.1.2 Except as provided in 4.3.1.3, bulk containers shall only be used when a substance is assigned to a bulk container code in Column 10 of the Dangerous Goods List in Chapter 3.2.

4.3.1.3 When a substance is not assigned a bulk container code in Column 10 of the Dangerous Goods List in Chapter 3.2, interim approval for transport may be issued by the competent authority of the country of origin. The approval shall be included in the documentation of the consignment and contain, as a minimum, the information normally provided in the bulk container instruction and the conditions under which the substance shall be transported. Appropriate measures should be initiated by the competent authority to include the assignment in the Dangerous Goods List.

4.3.1.4 Substances which may become liquid at temperatures likely to be encountered during transport, are not permitted in bulk containers.

4.3.1.5 Bulk containers shall be siftproof and shall be so closed that none of the contents can escape under normal conditions of transport including the effect of vibration, or by changes of temperature, humidity or pressure.

4.3.1.6 Bulk solids shall be loaded into bulk containers and evenly distributed in a manner that minimises movement that could result in damage to the container or leakage of the dangerous goods.

4.3.1.7 Where venting devices are fitted they shall be kept clear and operable.

4.3.1.8 Bulk solids shall not react dangerously with the material of the bulk container, gaskets, equipment including lids and tarpaulins and with protective coatings which are in contact with the contents or significantly weaken them. Bulk containers shall be so constructed or adapted that the goods can not penetrate between wooden floor coverings or come into contact with those parts of the bulk containers that may be affected by the materials or residues thereof.

4.3.1.9 Before being filled and offered for transport each bulk container shall be inspected and cleaned to ensure that it does not contain any residue on the interior or exterior of the bulk container that could

- cause a dangerous reaction with the substance intended for transport;
- detrimentally affect the structural integrity of the bulk container; or
- affect the dangerous goods retention capabilities of the bulk container.

4.3.1.10 During transport, no dangerous residues shall adhere to the outer surfaces of bulk containers.

4.3.1.11 If several closure systems are fitted in series, the system which is located nearest to the substance to be transported shall be closed first before filling.

4.3.1.12 Empty bulk containers that have contained a dangerous substance shall be treated in the same manner as is required by these Regulations for a filled bulk container, unless adequate measures have been taken to nullify any hazard.

4.3.1.13 If bulk containers are used for the carriage of bulk goods liable to cause a dust explosion, or evolve flammable vapours (e. g. for certain wastes) measures shall be taken to exclude sources of ignition and prevent dangerous electrostatic discharge during transport filling or discharge of the substance.

4.3.1.14 Substances, for example wastes, which may react dangerously with one another and substances of different classes and goods not subject to these Regulations, which are liable to react dangerously with one another shall not be mixed together in the same bulk container. Dangerous reactions are:

(a) combustion and/or evolution of considerable heat;

(b) emission of flammable and/or toxic gases;

(c) (c) formation of corrosive liquids; or

(d) formation of unstable substances.

4.3.1.15 Before a bulk container is filled it shall be visually examined to ensure it is structurally serviceable, its interior walls, ceiling and floors are free from protrusions or damage and that any inner liners or substance retaining equipment are free from rips, tears or any damage that would compromise its cargo retention capabilities. Structurally serviceable means the bulk container does not have major defects in its structural components, such as top and bottom side rails, top and bottom end rails, door sill and header, floor cross members, corner posts, and corner fittings in a freight container. Major defects include:

(a) Bends, cracks or breaks in the structural or supporting members that affect the integrity of the container.

(b) More than one splice or an improper splice (such as a lapped splice) in top or bottom end rails or door headers;

(c) More than two splices in any one top or bottom side rail;

(d) Any splice in a door sill or corner post;

(e) Door hinges and hardware that are seized, twisted, broken, missing, or otherwise inoperative;

(f) Gaskets and seals that do not seal;

(g) Any distortion of the overall configuration great enough to prevent proper alignment of handling equipment, mounting and securing chassis or vehicle, or insertion into ships' cells;

(h) Any damage to lifting attachments or handling equipment interface features; or.

(i) Any damage to service or operational equipment.

4.3.2 Additional provisions applicable to bulk goods of Divisions 4.2, 4.3, 5.1, 6.2 and Classes 7 and 8

4.3.2.1 ***Bulk goods of Division 4.2***

Only closed bulk containers (code BK2) may be used . The total mass carried in a bulk container shall be such that its spontaneous ignition temperature is greater than 55 °C.

4.3.2.2 ***Bulk goods of Division 4.3***

Only closed bulk containers (code BK2) may be used. These goods shall be transported in bulk containers which are watertight.

4.3.2.3 ***Bulk goods of Division 5.1***

Bulk containers shall be so constructed or adapted that the goods cannot come into contact with wood or any other incompatible material.

4.3.2.4 ***Bulk waste goods of Division 6.2 (UN 2900)***

(a) For waste goods of UN 2900, sheeted bulk containers BK1 are permitted provided that they are not filled to maximum capacity to avoid substances coming into contact with the sheeting. Closed bulk containers BK2 are also permitted.

(b) Closed and sheeted bulk containers, and their openings, shall be leak-proof by design or by the fitting of a suitable liner.

(c) Waste goods of UN 2900 shall be thoroughly treated with an appropriate disinfectant before loading prior to transport.

(d) Waste goods of UN 2900 in a sheeted bulk container shall be covered by an additional top liner weighted down by absorbent material treated with an appropriate disinfectant.

(e) Closed or sheeted bulk containers used for the transport of waste goods of UN 2900 shall not be re-used until after they have been thoroughly cleaned and disinfected.

4.3.2.5 ***Bulk material of Class 7***

For the transport of unpackaged radioactive material, see 4.1.9.2.3.

4.3.2.6 ***Bulk goods of Class 8***

Only closed bulk containers (code BK2) may be used . These goods shall be transported in bulk containers which are watertight.".

PART 5

Chapter 5.1

5.1.2.1 Insert "with the word "OVERPACK", " after "shall be marked".

5.1.2.2 Insert the following sentence after "these Regulations.": "The "overpack" marking is an indication of compliance with this requirement.".

5.1.5.1.2 (f) Delete "special form" before "approval".

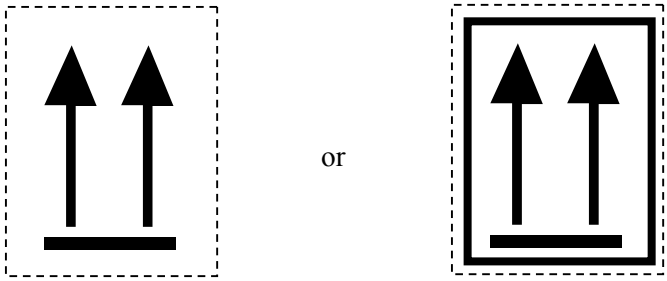
Chapter 5.2

5.2.1.5.4 (a) Replace "an Industrial package Type 1 ", " an Industrial package Type 2" and " an Industrial package Type 3" with " a Type IP-1 package", " a Type IP-2 package" and "a Type IP-3 package" respectively.

(c) Replace "an Industrial package Type 2, an Industrial package Type 3" with " a Type IP-2 package, a Type IP-3 package".

5.2.2.1.6 Amend the beginning of this paragraph to read:
"Except as provided in 5.2.2.2.1.2, each label shall:"

5.2.2.1.13 Add a new paragraph to read as follows:
"5.2.2.1.13 The following orientation label shall be displayed on two opposite sides of cryogenic receptacles intended for the transport of refrigerated liquefied gases. They shall be rectangular, of standard format A7 (74 × 105 mm). If the size of the package so requires, the dimensions of the labels may be changed, provided that they remain clearly visible.



Two black or red arrows on white
or suitable contrasting background

5.2.2.2.1.2 Add the following text at the end of the existing paragraph:
"Labels may overlap to the extent provided for by ISO 7225:1994 "Gas cylinders - Precautionary labels", however, in all cases, the labels representing the primary hazard and the numbers appearing on any label shall remain fully visible and the symbols recognisable.".

Chapter 5.3

5.3.1.1.4 Add "or empty uncleaned bulk containers" after "unpurged tanks" in the first sentence.

5.3.2.1.1 Insert a new (b) as follows: "(b) Solids in bulk containers;" and rename existing (b) to (d) accordingly.

Chapter 5.4

5.4.1.4.3 (b) Add ", bulk containers" in the title after "packagings", and in the text between brackets after "IBCs".

5.4.1.5.7.1 (h) Amend to read as follows:

" (h) For consignments of more than one package, the information contained in 5.4.1.4.1 (a) to (c) and 5.4.1.5.7.1 (a) to (g) shall be given for each package. For packages in an overpack, freight container, or conveyance, a detailed statement of

the contents of each package within the overpack, freight container, or conveyance and, where appropriate, of each overpack, freight container, or conveyance shall be included. If packages are to be removed from the overpack, freight container, or conveyance at a point of intermediate unloading, appropriate transport documents shall be made available;".

5.4.1.5.8 Add a new paragraph to read as follows:

"5.4.1.5.8 *Transport of solids in bulk containers*

For bulk containers other than freight containers, the following statement shall be shown on the transport document (see 6.8.4.6):

"Bulk container BK(x) approved by the competent authority of…"

Chapter 5.5

5.5.1.2 Delete the whole paragraph.

PART 6

Chapter 6.1

6.1.2.7 In the table, under the heading "Paragraph", replace:

6.1.4.7	with	6.1.4.6
6.1.4.8	with	6.1.4.7 (twice)
6.1.4.9	with	6.1.4.8
6.1.4.10	with	6.1.4.9
6.1.4.11	with	6.1.4.10
6.1.4.12	with	6.1.4.11
6.1.4.13	with	6.1.4.12
6.1.4.14	with	6.1.4.13 (twice)
6.1.4.16	with	6.1.4.15
6.1.4.17	with	6.1.4.16
6.1.4.15	with	6.1.4.14
6.1.4.18	with	6.1.4.17
6.1.4.19	with	6.1.4.18 (11^{th} times)
6.1.4.20	with	6.1.4.19 (11^{th} times)

6.1.3.6 Insert a new paragraph 6.1.3.6 to read as follows:

"6.1.3.6 Packagings manufactured with recycled plastics material as defined in 1.2.1 shall be marked "REC". This mark shall be placed near the mark prescribed in 6.1.3.1."

Renumber subsequent paragraphs accordingly.

6.1.3.10 In the examples, replace:

"4G/Y145/S/83"	with	"4G/Y145/S/02"
"lAl/Y1.4/150/83"	with	"lAl/Y1.4/150/98"
"1A2/Y150/S/83"	with	"1A2/Y150/S/01"
"4HW/Y136/S/83"	with	"4HW/Y136/S/98"
"1A2/Y/100/91"	with	"1A2/Y/100/01"

6.1.3.11 In the examples, replace:

"1A1/Y1.4/150/83 NL/RB/85 RL"	with	"1A1/Y1.4/150/97 NL/RB/01 RL"
"1A2/Y150/S/83 USA/RB/85 R"	with	"1A2/Y150/S/99 USA/RB/00 R"

6.1.3.12 In the example, replace:

"1A2T/Y300/S/94"	with	"1A2T/Y300/S/01"

6.1.4.1.1 Add a Note to read as follows:

*"**NOTE**: In the case of carbon steel drums, "suitable" steels are identified in ISO 3573:1999 "Hot rolled carbon steel sheet of commercial and drawing qualities" and ISO 3574:1999 "Cold-reduced carbon steel sheet of commercial and drawing qualities". For carbon steel drums below 100 litres "suitable" steels in addition to the above standards are also identified in ISO 11949:1995 "Cold-reduced electrolytic tinplate", ISO 11950:1995 "Cold-reduced electrolytic chromium/chromium oxide-coated steel" and ISO 11951:1995 "Cold-reduced blackplate in coil form for the production of tinplate or electrolytic chromium/chromium-oxide coated steel.".*

6.1.4.6 Delete this paragraph.

Current paragraphs 6.1.4.7 to 6.1.4.7.6 become 6.1.4.6 to 6.1.4.6.6 and 6.1.4.8 and 6.1.4.8.1 become 6.1.4.7 and 6.1.4.7.1, respectively.

6.1.4.8.2 (former) Delete this paragraph and renumber subsequent paragraphs and subparagraphs accordingly.

6.1.4.18.1.1 Replace "6.1.4.8.1", "6.1.4.8.4" and "6.1.4.8.7" with "6.1.4.7.1", "6.1.4.7.3" and "6.1.4.7.6".

6.1.4.18.2.2, 6.1.4.19.2.2 and
6.1.4.19.2.4 Replace "6.1.4.14" with "6.1.4.13".

6.1.4.18.2.3 and
6.1.4.19.2.5 Replace "6.1.4.9" with "6.1.4.8".

6.1.4.18.2.5 Replace "6.1.4.10" with "6.1.4.9".

6.1.4.18.2.6 and
6.1.4.19.2.8 Replace "6.1.4.7.1 to 6.1.4.7.4" with "6.1.4.6.1 to 6.1.4.6.4".

6.1.4.18.2.7 and
6.1.4.19.2.9 Replace "6.1.4.12" with "6.1.4.11".

6.1.4.18.2.8 Replace "6.1.4.8.1", "6.1.4.8.3" and "6.1.4.8.7" with "6.1.4.7.1", "6.1.4.7.2" and "6.1.4.7.6", respectively.

6.1.4.18.2.9 Replace "6.1.4.13.1 and 6.1.4.13.4 to 6.1.4.13.6" with "6.1.4.12.1 and 6.1.4.12.4 to 6.1.4.12.6".

6.1.4.19.2.10 Replace "6.1.4.13" with "6.1.4.12".

6.1.5.1.11 (b) Replace "6.1.5.8" with "6.1.5.7".

6.1.5.2.1 In the second sentence, insert "other than bags" after "packagings".

Insert the following new third sentence: "Bags shall be filled to the maximum mass at which they may be used.".

6.1.5.2.2 Replace "6.1.5.3.4" with "6.1.5.3.5".

6.1.5.2.5 Replace "6.1.4.8.1 and 6.1.4.8.4" with "6.1.4.7.1 and 6.1.4.7.3".

6.1.5.3.2 In (a) and (b), replace "6.1.4.8" with "6.1.4.7" and in (c) and (d), replace "6.1.4.13" and "6.1.4.19" with "6.1.4.12" and "6.1.4.18", respectively.

6.1.5.3.3 Add a new 6.1.5.3.3 to read as follows:

"6.1.5.3.3 Removable head packagings for liquids shall not be dropped until at least 24 hours after filling and closing to allow for any possible gasket relaxation."

Renumber subsequent paragraphs and subparagraphs accordingly.

6.1.5.3.5 Replace the sentence: "For liquids if the test is performed with water:" with "For liquids in single packagings and for inner packagings of combination packagings, if the test is performed with water:"

Add the following note before the table:

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

6.1.5.3.6.2 Insert the words "while retaining its containment function," after "closure".

6.1.5.7 Delete this paragraph and renumber subsequent paragraphs and subparagraphs accordingly.

Chapter 6.2

Delete "certified" in relation to "UN certified" in paragraphs: 6.2.2, 6.2.2.1.1, 6.2.2.1.2, 6.2.2.1.3, 6.2.2.4, 6.2.2.6, 6.2.2.6.1, 6.2.2.7 and 6.2.3.

6.2.1.1.1 Insert ",including fatigue," after "to withstand all conditions".

6.2.1.1.3 Delete the first sentence.

6.2.1.1.5 Renumber the first sentence of this paragraph as 6.2.1.1.8 and amend as follows:
Insert "additional" before "requirements" and delete "pressure" before "receptacles".

6.2.1.1.5 (a) Renumber as 6.2.1.1.8.1 and delete "at the initial inspection".

6.2.1.1.5 (b) Renumber as 6.2.1.1.8.2 and amend as follows:
2nd sentence: replace "continuous sheathing" with "a jacket".
3rd sentence: replace "sheathing" and "protective sheathing" with "jacket" and amend the end of the sentence to read as follows: "…(1 bar) calculated in accordance with a recognised technical code or a calculated critical collapsing pressure of not less than 200 kPa (2 bar) gauge pressure.".
4th sentence: replace "sheathing" with "jacket".

6.2.1.1.6 Renumber as 6.2.1.1.5.

6.2.1.1.7 Renumber as 6.2.1.1.6. In the last sentence, delete "Division 2.3", insert "toxic" before "liquefied" and replace "can be separately charged" with "can be filled separately".

6.2.1.1.7 Insert a new paragraph 6.2.1.1.7 to read as follows:

"6.2.1.1.7 Contact between dissimilar metals which could result in damage by galvanic action shall be avoided.".

6.2.1.1.8.3 and 6.2.1.1.8.4 Add the following two new paragraphs:

"6.2.1.1.8.3 Closed cryogenic receptacles intended for the transport of refrigerated liquefied gases having a boiling point below -182 °C at atmospheric pressure shall not include materials which may react with oxygen or oxygen enriched atmospheres in a dangerous manner, when located in parts of the thermal insulation where there is a risk of contact with oxygen or with oxygen enriched liquid.

6.2.1.1.8.4 Closed cryogenic receptacles shall be designed and constructed with suitable lifting and securing arrangements.".

6.2.1.3.2 Replace "4.1.6.1.7" with "4.1.6.1.8" in the last sentence.

6.2.1.3.4 In the first sentence, delete "approved", replace "required" with ""specified" and "as specified by the country of use" with "6.2.1.3.6.4 and 6.2.1.3.6.5.".

Insert the following new second sentence: "Pressure-relief devices shall be designed to prevent the entry of foreign matter, the leakage of gas and the development of any dangerous excess pressure.".

In the last sentence, replace "receptacles" with "receptacle itself", before "under normal conditions of transport.".

6.2.1.3.5 Delete this paragraph. As a consequence, current 6.2.1.3.6 becomes 6.2.1.3.5.

6.2.1.3.6 Add a new sub-section to read as follows:

"6.2.1.3.6 *Additional requirements for closed cryogenic receptacles*

6.2.1.3.6.1 Each filling and discharge opening in a closed cryogenic receptacle used for the transport of flammable refrigerated liquefied gases shall be fitted with at least two mutually independent shut-off devices in series, the first being a stop-valve, the second being a cap or equivalent device.

6.2.1.3.6.2 For sections of piping which can be closed at both ends and where liquid product can be trapped, a method of automatic pressure-relief shall be provided to prevent excess pressure build-up within the piping.

6.2.1.3.6.3 Each connection on a closed cryogenic receptacle shall be clearly marked to indicate its function (e.g. vapour or liquid phase).

6.2.1.3.6.4 Pressure-relief devices

6.2.1.3.6.4.1 Every closed cryogenic receptacle shall be provided with at least one pressure-relief device. The pressure-relief device shall be of the type that will resist dynamic forces including surge.

6.2.1.3.6.4.2 Closed cryogenic receptacles may, in addition, have a frangible disc in parallel with the spring loaded device(s) in order to meet the requirements of 6.2.1.3.6.5.

6.2.1.3.6.4.3 Connections to pressure-relief devices shall be of sufficient size to enable the required discharge to pass unrestricted to the pressure-relief device.

6.2.1.3.6.4.4 All pressure-relief device inlets shall under maximum filling conditions be situated in the vapour space of the closed cryogenic receptacle and the devices shall be so arranged as to ensure that the escaping vapour is discharged unrestrictedly.

6.2.1.3.6.5 Capacity and setting of pressure-relief devices

NOTE: *In relation to pressure-relief devices of closed cryogenic receptacles, MAWP means the maximum effective gauge pressure permissible at the top of a loaded closed cryogenic receptacle in its operating position including the highest effective pressure during filling and discharge.*

6.2.1.3.6.5.1 The pressure-relief device shall open automatically at a pressure not less than the MAWP and be fully open a pressure equal to 110% of the MAWP. It shall, after discharge, close at a pressure not lower than 10% below the pressure at which discharge starts and shall remain closed at all lower pressures.

6.2.1.3.6.5.2 Frangible discs shall be set to rupture at a nominal pressure which is the lower of either the test pressure or 150% of the MAWP.

6.2.1.3.6.5.3 In the case of the loss of vacuum in a vacuum-insulated closed cryogenic receptacle the combined capacity of all pressure-relief devices installed shall be sufficient so that the pressure (including accumulation) inside the closed cryogenic receptacle does not exceed 120% of the MAWP.

6.2.1.3.6.5.4 The required capacity of the pressure-relief devices shall be calculated in accordance with an established technical code recognized by the competent authority [1].".

6.2.1.4.1 Insert ", other than closed cryogenic receptacles," after "New pressure receptacles".

In subparagraph (c), delete "and". The sentence "Inspection of the external and internal conditions of the pressure receptacles" becomes new subparagraph (d).

Rename subsequent subparagraphs accordingly.

In the note under new (g), replace "inspection body" with "competent authority".

In (h), add the following sentence at the end: "In the case of welded pressure receptacles, particular attention shall be paid to the quality of the welds."

In (j), replace "material" with "mass" and add ",if applicable," before "the quantity of solvent".

6.2.1.4.2 Add the following new paragraph:

"6.2.1.4.2 On an adequate sample of closed cryogenic receptacles, the inspections and tests specified in 6.2.1.4.1 (a), (b), (d), and (f) shall be performed. In addition, welds shall be inspected by radiographic, ultrasonic or another suitable non-destructive test method on a sample of closed cryogenic receptacles according to the applicable design and construction standard. This weld inspection does not apply to the jacket.

Additionally, all closed cryogenic receptacles shall undergo the initial inspections and tests specified in 6.2.1.4.1 (g), (h), and (i), as well as a leakproofness test and a test of the satisfactory operation of the service equipment after assembly.".

6.2.1.5.1 Delete "under the supervision of an inspection body" and insert "by a body authorized by the competent authority, "before "in accordance with the following:".
In (b), delete "by weighing," and replace "checks of" with "verification of minimum".
In (c), delete "neck" and add "if the fittings are removed;", at the end.
In Note 1 under (d), replace "inspection body" with "competent authority", and in Note 2, replace "and" with "or" before "tubes".

6.2.1.5.3 Delete.

6.2.2.1.1 Amend the end of the sentence before the table as follows: "…and test of UN cylinders, except that except that inspection requirements related to the conformity assessment system and approval shall be in accordance with 6.2.2.5:"

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[1] *See for example CGA Publications S-1.2-1995 and S-1.1-2001.*

Add the following standards to the current table:

ISO 11119-1:2002	Gas cylinders of composite construction – Specification and test methods – Part 1: Hoop wrapped composite gas cylinders
ISO 11119-2:2002	Gas cylinders of composite construction – Specification and test methods – Part 2: Fully wrapped fibre reinforced composite gas cylinders with load-sharing metal liners

Add the following notes at the end of the table:

NOTE 1: *In the above referenced standards composite cylinders shall be designed for unlimited service life.*

NOTE 2: *After the first 15 years of service, composite cylinders manufactured according to these standards, may be approved for extended service by the competent authority which was responsible for the original approval of the cylinders and which will base its decision on the test information supplied by the manufacturer or owner or user.".*

6.2.2.1.2 Amend the end of the sentence before the table as follows: "…and test of UN tubes, except that inspection requirements related to the conformity assessment system and approval shall be in accordance with 6.2.2.5:".

6.2.2.1.3 Amend the end of the sentence before the table as follows: "… and test of UN acetylene cylinders, except that inspection requirements related to the conformity assessment system and approval shall be in accordance with 6.2.2.5:".

6.2.2.4 Add the following standard to the table:

ISO 11623:2002	Transportable gas cylinders – Periodic inspection and testing of composite gas cylinders

6.2.2.5 In the title, insert "for manufacture" after "approval".

6.2.2.5.2.4 In the first sentence, replace "as an inspector" with "for the inspection".
In (d), Insert "commercial" after "ensure".

6.2.2.5.3.1 (i) Insert "and qualification procedures" after " training programmes".

6.2.2.5.4.1 Replace "encompass" with "meet".

6.2.2.5.4.2 Replace "written approval" with "certificate" in the last sentence.

6.2.2.5.4.6 Replace "6.2.2.5.4.2" with "6.2.2.5.4.3".

6.2.2.5.4.9 Replace "certification" with "approval" in the last paragraph.

6.2.2.6 Insert the following text as new sub-section 6.2.2.6.

"6.2.2.6 *Approval system for periodic inspection and test of pressure receptacles*

6.2.2.6.1 *Definition*

For the purposes of this section:

Approval system means a system for competent authority approval of a body performing periodic inspection and test of pressure receptacles (hereinafter referred to as "periodic inspection and test body"), including approval of that body's quality system.

6.2.2.6.2 *General requirements*

Competent authority

6.2.2.6.2.1 The competent authority shall establish an approval system for the purpose of ensuring that the periodic inspection and test of pressure receptacles conform to the requirements of these Regulations. In instances where the competent authority that approves a body performing periodic inspection and test of a pressure receptacle is not the competent authority of the country approving the manufacture of the pressure receptacle, the marks of the approval country of periodic inspection and test shall be indicated in the pressure receptacle marking (see 6.2.2.7).

The competent authority of the country of approval for the periodic inspection and test shall supply, upon request, evidence demonstrating compliance to this approval system including the records of the periodic inspection and test to its counterpart in a country of use.

The competent authority of the country of approval may terminate the approval certificate referred to in 6.2.2.6.4.1, upon evidence demonstrating non-compliance with the approval system.

6.2.2.6.2.2 The competent authority may delegate its functions in this approval system, in whole or in part.

6.2.2.6.2.3 The competent authority shall ensure that a current list of approved periodic inspection and test bodies and their identity marks is available.

Periodic inspection and test body

6.2.2.6.2.4 The periodic inspection and test body shall be approved by the competent authority and shall:

(a) have a staff with an organisational structure, capable, trained, competent, and skilled, to satisfactorily perform its technical functions;

(b) have access to suitable and adequate facilities and equipment;

(c) operate in an impartial manner and be free from any influence which could prevent it from doing so;

(d) ensure commercial confidentiality;

(e) maintain clear demarcation between actual periodic inspection and test body functions and unrelated functions;

(f) operate a documented quality system accordance with 6.2.2.6.3;

(g) apply for approval in accordance with 6.2.2.6.4;

(h) ensure that the periodic inspections and tests are performed in accordance with 6.2.2.6.5; and

(i) maintain an effective and appropriate report and record system in accordance with 6.2.2.6.6.

6.2.2.6.3 *Quality system and audit of the periodic inspection and test body*

6.2.2.6.3.1 Quality system

The quality system shall contain all the elements, requirements, and provisions adopted by the periodic inspection and test body. It shall be documented in a systematic and orderly manner in the form of written policies, procedures, and instructions.

The quality system shall include:

(a) a description of the organisational structure and responsibilities;

(b) the relevant inspection and test, quality control, quality assurance, and process operation instructions that will be used;

(c) quality records, such as inspection reports, test data, calibration data and certificates;

(d) management reviews to ensure the effective operation of the quality system arising from the audits performed in accordance with 6.2.2.6.3.2;

(e) a process for control of documents and their revision;

(f) a means for control of non-conforming pressure receptacles; and

(g) training programmes and qualification procedures for relevant personnel.

6.2.2.6.3.2 Audit

The periodic inspection and test body and its quality system shall be audited in order to determine whether it meets the requirements of these Regulations to the satisfaction of the competent authority.

An audit shall be conducted as part of the initial approval process (see 6.2.2.6.4.3). An audit may be required as part of the process to modify an approval (see 6.2.2.6.4.6).

Periodic audits shall be conducted, to the satisfaction of the competent authority, to ensure that the periodic inspection and test body continues to meet the requirements of these Regulations.

The periodic inspection and test body shall be notified of the results of any audit. The notification shall contain the conclusions of the audit and any corrective actions required.

6.2.2.6.3.3 Maintenance of the quality system

The periodic inspection and test body shall maintain the quality system as approved in order that it remains adequate and efficient.

The periodic inspection and test body shall notify the competent authority that approved the quality system, of any intended changes, in accordance with the process for modification of an approval in 6.2.2.6.4.6.

6.2.2.6.4 *Approval process for periodic inspection and test bodies*

Initial approval

6.2.2.6.4.1 A body desiring to perform periodic inspection and test of pressure receptacles in accordance with a pressure receptacle standard and these Regulations shall apply for, obtain, and retain an Approval Certificate issued by the competent authority.

This written approval shall, on request, be submitted to the competent authority of a country of use.

6.2.2.6.4.2 An application shall be made for each periodic inspection and test body and shall include:

(a) the name and address of the periodic inspection and test body and, if the application is submitted by an authorised representative, its name and address;

(b) the address of each facility performing periodic inspection and test;

(c) the name and title of the person(s) responsible for the quality system;

(d) the designation of the pressure receptacles, the periodic inspection and test methods, and the relevant pressure receptacle standards met by the quality system;

(e) documentation on each facility, the equipment, and the quality system as specified under 6.2.2.6.3.1;

(f) the qualifications and training records of the periodic inspection and test personnel; and

(g) details of any refusal of approval of a similar application by any other competent authority.

6.2.2.6.4.3 The competent authority shall:

(a) examine the documentation to verify that the procedures are in accordance with the requirements of the relevant pressure receptacle standards and these Regulations; and

(b) conduct an audit in accordance with 6.2.2.6.3.2 to verify that the inspections and tests are carried out as required by the relevant pressure receptacle standards and these Regulations, to the satisfaction of the competent authority.

6.2.2.6.4.4 After the audit has been carried out with satisfactory results and all applicable requirements of 6.2.2.6.4 have been satisfied, an approval certificate shall be issued. It shall include the name of the periodic inspection and test body, the registered mark, the address of each facility, and the necessary data for identification of its approved activities (e.g. designation of pressure receptacles, periodic inspection and test method and pressure receptacle standards).

6.2.2.6.4.5 If the periodic inspection and test body is denied approval, the competent authority shall provide written detailed reasons for such denial.

Modifications to periodic inspection and test body approvals

6.2.2.6.4.6 Following approval, the periodic inspection and test body shall notify the issuing competent authority of any modifications to the information submitted under 6.2.2.6.4.2 relating to the initial approval. The modifications shall be evaluated in order to determine whether the requirements of the relevant pressure receptacle standards and these Regulations will be satisfied. An audit in accordance with 6.2.2.6.3.2 may be required. The competent authority shall accept or reject these modifications in writing, and an amended approval certificate shall be issued as necessary.

6.2.2.6.4.7 Upon request, the competent authority shall communicate to any other competent authority, information concerning initial approvals, modifications of approvals, and withdrawn approvals.

6.2.2.6.5 *Periodic inspection and test and certification*

The application of the periodic inspection and test marking to a pressure receptacle shall be considered a declaration that the pressure receptacle complies with the applicable pressure receptacle standards and the requirements of these Regulations. The periodic inspection and test body shall affix the periodic inspection and test marking, including its registered mark, to each approved pressure receptacle (see 6.2.2.7.7).

A record certifying that a pressure receptacle has passed the periodic inspection and test shall be issued by the periodic inspection and test body, before the pressure receptacle is filled.

6.2.2.6.6 *Records*

The periodic inspection and test body shall retain records of pressure receptacle periodic inspection and tests (both passed and failed) including the location of the test facility, for not less than 15 years.

The owner of the pressure receptacle shall retain an identical record until the next periodic inspection and test unless the pressure receptacle is permanently removed from service.".

Renumber existing 6.2.2.6 and 6.2.2.7 as 6.2.2.7 and 6.2.2.8 respectively.

6.2.2.7 Amend the title to read: "Marking of refillable UN pressure receptacles".
Amend the first sentence to read as follows: "Refillable UN pressure receptacles shall be marked clearly and legibly with certification, operational and manufacturing marks.".
In the third sentence, insert "or corrosion resistant plate welded on the outer jacket of a closed cryogenic receptacle" after "welded collar".
Replace ""UN" mark" with "UN packaging symbol" (twice).

6.2.2.7.1(a) Delete "certified".

6.2.2.7.2 In (g), amend the beginning of the first sentence to read: "the mass of the empty pressure receptacle…". In the third sentence, delete "empty" before "mass".
In (h), add at the end: "or for closed cryogenic receptacles;"
In (i), In the first sentence, delete "intended" and "the transport of". Add the following sentence at the end: "In the case of closed cryogenic receptacles, the maximum allowable working pressure preceded by the letters "MAWP";"
In (j), amend the beginning of the sentence to read: "In the case of pressure receptacles for liquefied gases and refrigerated liquefied gases, the water…" and replace "digits" with "figures", in the first sentence.
In (k) insert "pressure receptacles for" before "UN 1001" and replace "material" with "mass" after "porous".
In (l) insert "pressure receptacles for" before "UN 3374" and replace "material" with "mass" after "porous".

6.2.2.7.3 In (m), add the following sentence at the end: "This mark is not required for closed cryogenic receptacles;".

6.2.2.7.4 In the first sentence, delete "as shown in the example below:".
In the first indent, replace "6.2.2.6.3" with "6.2.2.7.3".
In the second indent, amend the beginning to read: "The operational marks in 6.2.2.7.2 shall be the middle grouping and the test pressure (f) shall be immediately …".
In the third indent, replace "6.2.2.6.1" with "6.2.2.7.1".
Add the following sentence immediately before the diagram: "The following is an example of the markings applied to a cylinder.".

6.2.2.7.5 Insert the following new second sentence: "In the case of closed cryogenic receptacles, such marks may be on a separate plate attached to the outer jacket.".

6.2.2.7.6 Replace current text with the following:

"In addition to the preceding marks, each refillable pressure receptacle that meets the periodic and test requirements of 6.2.2.4 shall be marked indicating:

(a) The character(s) identifying the country authorizing the body performing the periodic inspection and test. This marking is not required if this body is approved by the competent authority of the country approving manufacture;

(b) The registered mark of the body authorised by the competent authority for performing periodic inspection and test;

(c) The date of the periodic inspection and test, the year (two digits) followed by the month (two digits) separated by a slash (i.e. "/"). Four digits may be used to indicate the year.

The above marks shall appear consecutively in the sequence given.".

6.2.2.8 Wherever it appears throughout this subsection, replace "UN-non refillable" with "non-refillable UN".

6.2.2.8.2 In the NOTE, delete "(see 5.2.2.2.1.2)".

6.2.3 In the title, delete "certified".

Chapter 6.3

6.3.1.2 In the example, replace:

"4G/CLASS 6.2/92" with "4G/CLASS 6.2/01"

Chapter 6.4

Replace "Industrial package Type 1 (Type IP-1)", "Industrial package Type 2 (Type IP-2)" and "Industrial package Type 3 (Type IP-3)" with " Type IP-1 package", "Type IP-2 package" and "Type IP-3 package" respectively, all throughout this chapter.

6.4.3.3 Amend to read as follows:
"6.4.3.3 Packages containing radioactive material, to be transported by air, shall be capable of withstanding, without leakage, an internal pressure which produces a pressure differential of not less than maximum normal operating pressure plus 95 kPa.".

6.4.6.1 Add the following new first sentence: "Packages designed to contain uranium hexafluoride shall meet the requirements prescribed elsewhere in these Regulations which pertain to the radioactive and fissile properties of the material.".

Amend the beginning of the second sentence to read as follows: "Except as allowed in 6.4.6.4, uranium hexafluoride in quantities of 0.1 kg or more shall also be packaged…".

6.4.6.2 In (b), insert "free drop" before "test" and in (c), insert "thermal" before "test".

6.4.6.4 Amend (a) to read as follows:

"(a) The packages are designed to international or national standards other than ISO 7195:1993 provided an equivalent level of safety is maintained;"

In (b), insert "of" after "test pressure".

Add the following sentence after the subparagraphs (a) to (c): "In all other respects the requirements specified in 6.4.6.1 to 6.4.6.3 shall be satisfied.".

6.4.7.16 Replace "6.4.7.14" with "6.4.7.14 (a)".

6.4.8.5 Replace the existing table with the following one:

Case	Form and location of surface	Insolation for 12 hours per day (W/m^2)
1	Flat surfaces transported horizontally-downward facing	0
2	Flat surfaces transported horizontally-upward facing	800
3	Surfaces transported vertically	200[a]
4	Other downward facing (not horizontal) surfaces	200[a]
5	All other surfaces	400[a]

Note "a" under the table remains unchanged.

6.4.11.1 (b)(i) Amend to read as follows: "of 6.4.7.2 for packages containing fissile material;".

6.4.11.2 (a) Amend the sentence after subparagraphs (i) to (iii) to read as follows:
"Neither beryllium nor deuterium in hydrogenous material enriched in deuterium shall be present in quantities exceeding 1% of the applicable consignment mass limits provided in Table 6.4.11.2".

6.4.11.5 Replace "packaging" with "package".

6.4.11.10 Amend (a) as follows: "…conditions consistent with the Type C package tests specified in 6.4.20.1…".

In (b), amend the beginning to read: "In the assessment of 6.4.11.9 allowance…"; insert "Type C package" before "tests specified" and "the water in-leakage test of" before "6.4.19.3".

6.4.14 Replace "6.4.17.2, 6.4.20.2, and 6.4.20.4" with "6.4.17.2 and 6.4.20.2".

6.4.17.2 (b) In the last but one sentence, replace "edges" with "edge".

6.4.20.2 (a) Amend the end of the last but one sentence to read: "…at the top with its edge rounded off to a radius of not more than 6 mm".

6.4.20.4 Amend the end of the last sentence to read: "… as defined in 6.4.14, except that the target surface may be at any orientation as long as the surface is normal to the specimen path.".

Chapter 6.5

6.5.2.1.1 Assign paragraph number "6.5.2.1.2" to the list of examples under the heading "Examples of markings for various types of IBC in accordance with (a) to (h) above:" and in the examples, replace:

"11A/Y/02 89"	with	"11A/Y/02 99"
"13H3/Z/03 89"	with	"13H3/Z/03 01"
"31H1/Y/04 89"	with	"31H1/Y/04 99"
"31HA1/Y/05 19"	with	"31HA1/Y/05 01"
"11C/X/01 93"	with	"11C/X/01 02"

Chapter 6.6

6.6.3.2 In the examples, replace:

"96/N/PQRS"	with	"01/N/PQRS"
"95/D/ABCD 987"	with	"02/D/ABCD 987"
"06 97/S/1999"	with	"06/01/S/1999"

Chapter 6.7

6.7.2 Insert "Class 1 and" before "Classes 3 to 9".

6.7.2.1 In the definition of "*Design pressure*", delete "elevated temperature" in sub-paragraph b)i) and replace "dynamic" with "static" in b)iii).

In the definition of "*Design temperature range*", insert "the other" before "substances" at the beginning of the second sentence.

In the definition of "portable tank" insert "Class 1 and" before "Classes 3 to 9" and delete the words "having a capacity of more than 450 litres" in the first sentence.

Insert the following definitions in alphabetical order:

"*Fine grain steel* means steel which has a ferritic grain size of 6 or finer when determined in accordance with ASTM E 112-96 or as defined in EN 10028-3, Part 3.

Fusible element means a non-reclosable pressure relief device that is thermally actuated.

Offshore portable tank means a portable tank specially designed for repeated use for transport of dangerous goods to, from and between offshore facilities. An offshore portable tank is designed and constructed in accordance with the guidelines for the approval of containers handled in open seas specified by the International Maritime Organization in document MSC/Circ.860.".

6.7.2.12.2 Amend the beginning of the first sentence to read as follows:
"The combined delivery capacity of the pressure relief system (taking into account the reduction of the flow when the portable tank is fitted with frangible-discs preceding spring-loaded pressure-relief devices or when the spring-loaded pressure-relief devices are provided with a device to prevent the passage of the flame), in condition of complete fire engulfment…".

6.7.2.13.1 (e) Replace "of the device" with "of the spring-loaded pressure relief devices, frangible discs or fusible elements".

6.7.2.13.2 Insert the words "spring-loaded" before "pressure-relief devices".

6.7.2.19.1, 6.7.3.15.1, 6.7.4.14.1 and
6.7.5.12.1 Replace the reference for the Canadian and German standards, respectively, with the following:

"National Standard of Canada, CAN/CGSB-43.147-2002, "Construction, Modification, Qualification, Maintenance, and Selection and Use of Means of Containment for the Handling, Offering for Transport or Transporting of Dangerous Goods by Rail", March 2002, published by the Canadian General Standards Board (CGSB).

Deutsche Bahn AG
DB Systemtechnik, Minden
Verifikation und Versuche, TZF 96.2
Portable tanks, longitudinal impact test"

6.7.3.1 In the definition of "*Design pressure*" replace "dynamic" with "static" in b) ii).

6.7.5.1 In the definition of "*Elements"* delete "restricted to".

6.7.5.2.1 Replace "loaded" with "filled" in the first sentence.

6.7.5.4.1 In the second sentence, delete "Other" and insert "for other gases" after "MEGCs" and "of" before "use".

6.7.5.5.1 Insert, "of the MEGC" after "fire engulfment" in the first sentence.

Chapter 6.8

Add a new chapter 6.8 as follows:

"**CHAPTER 6.8**
REQUIREMENTS FOR THE DESIGN, CONSTRUCTION, INSPECTION AND TESTING OF BULK CONTAINERS

6.8.1 Definitions

For the purposes of this section:

Closed bulk container means a totally closed bulk container having a rigid roof, sidewalls, end walls and floor (including hopper-type bottoms). The term includes bulk containers with an opening roof, side or end wall that can be closed during transport. Closed bulk containers may be equipped with openings to allow for the exchange of vapours and gases with air and which prevent under normal conditions of transport the release of solid contents as well as the penetration of rain and splash water.

Sheeted bulk container means an open top bulk container with rigid bottom (including hopper-type bottom), side and end walls and a non-rigid covering;

6.8.2 Application and general requirements

6.8.2.1 Bulk containers and their service and structural equipment shall be designed and constructed to withstand, without loss of contents, the internal pressure of the contents and the stresses of normal handling and transport.

6.8.2.2 Where a 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 unintended opening and the open or closed position shall be readily apparent.

6.8.2.3 *Code for designating types of bulk container*

The following table indicates the codes to be used for designating types of bulk containers:

Types of bulk containers	Code
Sheeted bulk container	BK1
Closed bulk container	BK2

6.8.2.4 In order to take account of progress in science and technology, the use of alternative arrangements which offer at least equivalent safety as provided by the requirements of this chapter may be considered by the competent authority.

6.8.3 Requirements for the design, construction, inspection and testing of freight containers used as bulk containers

6.8.3.1 ***Design and construction requirements***

6.8.3.1.1 The general design and construction requirements of this section are deemed to be met if the bulk container complies with the requirements of ISO 1496-4:1991 "Series 1 Freight containers- Specification and testing - Part 4: Non pressurized containers for dry bulk" and the container is siftproof.

6.8.3.1.2 Freight containers designed and tested in accordance with ISO 1496-1:1990 "Series 1 Freight containers- Specification and testing - Part 1: General cargo containers for general purposes" shall be equipped with operational equipment which is, including its connection to the freight container, designed to strengthen the end walls and to improve the longitudinal restraint as necessary to comply with the test requirements of ISO 1496-4:1991 as relevant.

6.8.3.1.3 Bulk containers shall be siftproof. Where a liner is used to make the container siftproof it shall be made of a suitable material. The strength of material used for, and the construction of, the liner shall be appropriate to the capacity of the container and its intended use. Joins and closures of the liner shall withstand pressures and impacts liable to occur under normal conditions of handling and transport. For ventilated bulk containers any liner shall not impair the operation of ventilating devices.

6.8.3.1.4 The operational equipment of bulk containers designed to be emptied by tilting shall be capable of withstanding the total filling mass in the tilted orientation.

6.8.3.1.5 Any movable roof or side or end wall or roof section shall be fitted with locking devices with securing devices designed to show the locked state to an observer at ground level.

6.8.3.2 ***Service equipment***

6.8.3.2.1 Filling and discharge devices shall be so constructed and arranged as to be protected against the risk of being wrenched off or damaged during transport and handling. The filling and discharge devices shall be capable of being secured against unintended opening. The open and closed position and direction of closure shall be clearly indicated.

6.8.3.2.2 Seals of openings shall be so arranged as to avoid any damage by the operation, filling and emptying of the bulk container.

6.8.3.2.3 Where ventilation is required bulk containers shall be equipped with means of air exchange, either by natural convection, e.g. by openings, or active elements, e.g. fans. The ventilation shall be designed to prevent negative pressures in the container at all times. Ventilating elements of bulk containers for the transport of flammable substances or substances emitting flammable gases or vapours shall be designed so as not to be a source of ignition.

6.8.3.3 ***Inspection and testing***

6.8.3.3.1 Freight containers used maintained and qualified as bulk containers in accordance with the requirements of this section shall be tested and approved in accordance with the Convention for Safe Containers (CSC), 1972, as amended.

6.8.3.3.2 Freight containers used and qualified as bulk containers shall be inspected periodically according to the CSC.

6.8.3.4 ***Marking***

6.8.3.4.1 Freight containers used as bulk containers shall be marked with a Safety Approval Plate in accordance with the CSC.

6.8.4 Requirements for the design, construction and approval of bulk containers other than freight containers

6.8.4.1 Bulk containers covered in this section include skips, offshore bulk containers, bulk bins, swap bodies, trough shaped containers, roller containers, and load compartments of vehicles.

6.8.4.2 These bulk containers shall be designed and constructed so as to be strong enough to withstand the shocks and loadings normally encountered during transport including, as applicable, transhipment between modes of transport.

6.8.4.3 Vehicles shall comply with the requirements of, and be acceptable to, the competent authority responsible for land transport of the materials to be transported in bulk.

6.8.4.4 These bulk containers shall be approved by the competent authority and the approval shall include the code for designating types of bulk containers in accordance with 6.8.2.3 and the requirements for inspection and testing as appropriate.

6.8.4.5 Where it is necessary to use a liner in order to retain the dangerous goods it shall meet the provisions of 6.8.3.1.3.

6.8.4.6 The following statement shall be shown on the transport document.

"Bulk container BK(x) approved by the competent authority of ……"."

Chapter 7.1

7.1.6.2.3 Add a new paragraph to read as follows:

"7.1.6.2.3 *Decontamination of transport units*

A railway wagon, road vehicle, cargo space of a ship, compartment of an aircraft or other transport unit which has been used to transport infectious substances shall be inspected for release of the substance before re-use. If the infectious substances were released during transport, the transport unit shall be decontaminated before it is re-used. Decontamination may be achieved by any means which effectively inactivates the released infectious substance.".

7.1.7.1.1 (b) Amend the end of this sub-paragraph to read: "…to the critical group, taking account of the exposures expected to be delivered by all other relevant sources and practices under control.".

7.1.7.3.3 (c) Amend the end to read: "…of the conveyance, except for consignments transported under exclusive use by road or rail, for which the radiation limits around the vehicle are set forth in 7.2.3.1.2 (b) and (c)".

7.1.7.4.1 Amend to read as follows:
"7.1.7.4.1 Any group of packages, overpacks, and freight containers containing fissile material stored in transit in any one storage area shall be so limited that the total sum of the criticality safety indexes in the group does not exceed 50. Each group shall be stored so as to maintain a spacing of at least 6 m from other such groups.".

7.1.7.5.5 Amend the beginning to read as follows: "A freight container, tank, intermediate bulk container or conveyance dedicated to the transport of unpackaged radioactive material under exclusive use…".

Chapter 7.2

7.2.4 Add a new section 7.2.4 as to read as follows:

"7.2.4 Security provisions for transport by road, rail and inland waterway

NOTE: *These provisions are in addition to those applicable to all modes of transport as provided in Chapter 1.4.*

7.2.4.1 Each crew member of road vehicles, trains and inland waterway craft transporting dangerous goods shall carry with them means of identification, which includes their photograph, during transport.

7.2.4.2 When appropriate and already fitted, the use of transport telemetry or other tracking methods or devices shall be used to monitor the movement of high consequence dangerous goods (see Table 1.4.1 in Chapter 1.4.).

7.2.4.3 The carrier shall ensure the application to vehicles and inland waterway craft transporting high consequence dangerous goods (see Table 1.4.1 in Chapter 1.4) of devices, equipment or arrangements to prevent the theft of the vehicle or inland waterway craft or its cargo and shall ensure that these are operational and effective at all times.

7.2.4.4 Safety inspections on transport units shall cover appropriate security measures.".

APPENDIX A and APLHABETICAL INDEX

Amend Appendix A and the alphabetical index in accordance with the amendments adopted for Chapter 3.2.

The corrections concerning "Ligroïne" and "Morpholine" do not apply to the English version.
