



## **Economic and Social Council**

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### **Economic Commission for Europe**

**Administrative Committee of the European Agreement  
Concerning the International Carriage of Dangerous  
Goods by Inland Waterways (ADN)**

### **European Agreement concerning the International Carriage of Dangerous Goods by Inland Waterways (ADN)**

#### **Draft amendments to the Regulations annexed to ADN**

At its fourth session (Geneva, 28-29 January 2010), the ADN Administrative Committee requested the secretariat to issue a consolidated list of amendments to the Regulations annexed to ADN adopted by the Safety Committee and endorsed by the Administrative Committee at its second, third and fourth sessions for entry into force on 1 January 2011 (ECE/ADN/8, para. 19).

The present consolidated list will be circulated to Contracting Parties for acceptance in accordance with Article 20 (4) of ADN.

## Part 1

### Chapter 1.1

1.1.3.2 Amend (f) to read:

"(f) gases contained in foodstuffs (except UN 1950), including carbonated beverages;"

Add the following new sub-paragraphs:

"(g) gases contained in balls intended for use in sports; and

(h) gases contained in light bulbs provided they are packaged so that the projectile effects of any rupture of the bulb will be contained within the package."

### Chapter 1.2

1.2.1 Under "*Approval*", in the definition of "*Multilateral approval*", delete the last sentence ("The term "through or into" specifically excludes...").

In the definitions of "*Battery-vehicle*" and "*Multiple-element gas container*" replace "gases of Class 2" by "gases as defined in 2.2.2.1.1".

Amend the definition of "*Cargo residues*" to read as follows:

"*Cargo residues* means liquid cargo which cannot be pumped out of the cargo tanks or piping by means of the stripping system."

In the definition of "EN (standard)", replace "(CEN, 36 rue de Stassart, B-1050 Brussels)" with "(CEN, Avenue Marnix 17, B-1000 Brussels)".

Amend the definition for "*Gas cartridge*" to read as follows:

"*Gas cartridge*, see *Small receptacle containing gas*;"

In the definition of "GHS", replace "second" with "third" and "ST/SG/AC.10/30/Rev.2" with "ST/SG/AC.10/30/Rev.3".

In the definition of "*High velocity vent valve*", after "propagation of a flame", insert "of a flammable mixture".

Amend the definition of "loader" to read as follows:

"*Loader* means any enterprise which:

(a) Loads packaged dangerous goods, small containers or portable tanks into or onto a conveyance or a container; or

(b) Loads a container, bulk-container, MEGC, tank-container or portable tank onto a conveyance; or

(c) Loads a vehicle or a wagon into or onto a vessel."

Delete the definition of "*Loading journal*".

In the definition of "*Manual of Tests and Criteria*", replace "fourth" with "fifth" and amend the text in the parenthesis to read "(ST/SG/AC.10/11/Rev.5)".

In the definition of "*Maximum working pressure*", add "or pressure relief valves" at the end.

In the definition of "*Pressure receptacle*", insert ", metal hydride storage systems" before "and bundles".

Amend the definition of "*Slops*" to read as follows:

"*Slops* means a mixture of cargo residues and washing water, rust or sludge which is either suitable or not suitable for pumping."

Amend the definition for "*Small receptacle containing gas*" to read as follows:

"*Small receptacle containing gas (gas cartridge)* means a non-refillable receptacle meeting the relevant requirements of 6.2.6 of ADR containing, under pressure, a gas or a mixture of gases. It may be fitted with a valve;"

Amend the definition for "*Stripping system (efficient)*" to read as follows:

"*Stripping system (efficient)* means a system according to Annex II of CDNI for complete draining, if possible, of the cargo tanks and stripping the cargo piping except for the cargo residues;"

In the definitions of "*Tank-container*" and "*Portable tank*", replace "Class 2 substances" by "gases as defined in 2.2.2.1.1".

In the definition of "*UN Model Regulations*", replace "fifteenth" with "sixteenth" and "(ST/SG/AC.10/1/Rev.15)" with "(ST/SG/AC.10/1/Rev.16)".

In the definition of "*wagon*", add at the end "(see also *battery-wagon, closed wagon, open wagon, sheeted wagon and tank wagon*)".

Add the following new definitions in alphabetical order:

"*CDNI* means Convention on the Collection, Storage and Reception of Waste Generated during Navigation on the Rhine and Other Inland Waterways;"

"*CIM* means the Uniform Rules Concerning the Contract of International Carriage of Goods by Rail (Appendix B to the Convention concerning International Carriage by Rail (COTIF)), as amended;"

"*CMR* means the Convention on the Contract for the International Carriage of Goods by Road (Geneva, 19 May 1956), as amended;"

"*Fuel cell* means an electrochemical device that converts the chemical energy of a fuel to electrical energy, heat and reaction products;"

"*Fuel cell engine* means a device used to power equipment and which consists of a fuel cell and its fuel supply, whether integrated with or separate from the fuel cell, and includes all appurtenances necessary to fulfil its function;"

"*Metal hydride storage system* means a single complete hydrogen storage system, including a receptacle, metal hydride, pressure relief device, shut-off valve, service equipment and internal components used for the carriage of hydrogen only;"

"*Open cryogenic receptacle* means a transportable thermally insulated receptacle for refrigerated liquefied gases maintained at atmospheric pressure by continuous venting of the refrigerated liquefied gas;"

*Consequential amendment:* At the end of the definition of "*Cryogenic receptacle*", add "(see also *Open cryogenic receptacle*)"

"*Receptacle for residual products* means a tank, intermediate bulk container or tank-container or portable tank intended to collect residual cargo, washing water, cargo residues or slops which are suitable for pumping;"

"*Receptacle for slops* means a steel drum intended to collect slops which are unsuitable for pumping;"

"*Relative density* (or specific density) describes the ratio of the density of a substance to the density of pure water at 3.98 °C (1000 kg/m<sup>3</sup>) and is dimensionless;"

"*Remanufactured large packaging* see *Large packaging*."

"*Reused large packaging* see *Large packaging*."

[Insert the following two definitions after the definition of *Large packaging*]

"*Remanufactured large packaging* means a metal or rigid plastics large packaging that:

- (a) Is produced as a UN type from a non-UN type; or
- (b) Is converted from one UN design type to another UN design type.

Remanufactured large packagings are subject to the same requirements of ADR that apply to new large packagings of the same type (see also design type definition in 6.6.5.1.2 of ADR);"

"*Reused large packaging* means a large packaging to be refilled which has been examined and found free of defects affecting the ability to withstand the performance tests; the term includes those which are refilled with the same or similar compatible contents and are carried within distribution chains controlled by the consignor of the product;"

"*Tank for residual products* means a permanently built-in tank intended to collect residual cargo, washing water, cargo residues or slops which are suitable for pumping;"

"*Through or into*, for the carriage of Class 7 material, means through or into the countries in which a consignment is carried but specifically excludes countries "over" which a consignment is carried by air provided that there are no scheduled stops in those countries;"

"*Unloader* means any enterprise which:

- (a) Removes a container, bulk-container, MEGC, tank-container or portable tank from a vehicle; or
- (b) Unloads packaged dangerous goods, small containers or portable tanks out of or from a conveyance or a container; or
- (c) Discharges dangerous goods from a tank (tank-vehicle, demountable tank, portable tank or tank-container) or from a battery-vehicle, MEMU or MEGC or from a vehicle, large container or small container for carriage in bulk or a bulk-container."
- (d) Removes a vehicle or a wagon from a vessel."

## Chapter 1.3

1.3.1 In the first sentence, replace "shall receive training" with "shall be trained".

Add a new second sentence to read as follows: "Employees shall be trained in accordance with 1.3.2 before assuming responsibilities and shall only perform functions, for which required training has not yet been provided, under the direct supervision of a trained person."

1.3.2.2.1 In the first sentence, replace "Personnel shall receive detailed training" with "Personnel shall be trained". In the second sentence, replace "the personnel shall be made aware" with "the personnel shall be aware".

1.3.2.3 Replace "personnel shall receive training covering" with "personnel shall be trained in".

Insert a new 1.3.2.4 to read as follows:

"1.3.2.4 The training shall be periodically supplemented with refresher training to take account of changes in regulations."

1.3.3 Amend the text after the heading to read as follows:

"Records of training received according to this Chapter shall be kept by the employer and made available to the employee or competent authority, upon request. Records shall be kept by the employer for a period of time established by the competent authority. Records of training shall be verified upon commencing a new employment."

## Chapter 1.4

1.4.2 After the heading, insert the following new Note:

*"NOTE 1: Several participants to which safety obligations are assigned in this section may be one and the same enterprise. Also, the activities and the corresponding safety obligations of a participant can be assumed by several enterprises."*

Renumber existing Note as Note 2.

Amend 1.4.2.2.1 (b) to read as follows:

"(b) Ascertain that all information prescribed in ADN related to the dangerous goods to be carried has been provided by the consignor before carriage, that the prescribed documentation is on board the vessel or if electronic data processing (EDP) or electronic data interchange (EDI) techniques are used instead of paper documentation, that data is available during transport in a manner at least equivalent to that of paper documentation;"

1.4.2.2.2 Replace "(a), (b) and (i)" by "(a) and (b)".

1.4.2.3.1 (a), (c), (e), (f), (g) and (h) Replace the text by "(Deleted)".

1.4.2.3.2 Replace the text by "(Deleted)".

1.4.2.3.3 Replace the text by "(Deleted)".

Add a new 1.4.3.6 to read as follows:

"1.4.3.6 (Reserved)".

Add a new sub-section 1.4.3.7 to read as follows:

### **"1.4.3.7 Unloader**

*NOTE: In this sub-section, unloading covers removal, unloading and discharging as indicated in the definition of unloader in 1.2.1.*

1.4.3.7.1 In the context of 1.4.1, the unloader shall in particular:

(a) Ascertain that the correct goods are unloaded by comparing the relevant information on the transport document with the information on the package, container, tank, MEMU, MEGC or conveyance;

(b) Before and during unloading, check whether the packagings, the tank, the conveyance or container have been damaged to an extent which would endanger the unloading operation. If this is the case, ascertain that unloading is not carried out until appropriate measures have been taken;

(c) Comply with all relevant requirements concerning unloading;

(d) Immediately following the unloading of the tank, conveyance or container:

(i) Ensure the removal of any dangerous residues which have adhered to the outside of the tank, conveyance or container during the process of unloading; and

(ii) By unloading of packages, ensure the closure of valves and inspection openings;

(e) Ensure that the prescribed cleaning and decontamination of the conveyances or containers is carried out;

(f) Ensure that the containers, vehicles and wagons, once completely unloaded, cleaned and decontaminated, no longer bear danger markings conforming to Chapter 5.3;

*Additional obligations concerning the unloading of cargo tanks*

(g) Complete his section of the check list referred to in 7.2.4.10 prior to the unloading of the cargo tanks of a tank vessel;

(h) Ascertain that provision has been made in the fore and aft sections of the vessel for appropriate means for its evacuation in the event of an emergency;

(i) Ascertain that, when prescribed in 7.2.4.25.5, there is a flame-arrester in the gas discharge pipe or the gas return pipe to protect the vessel against detonations and flame-fronts from the landward side;

(j) Ascertain that the unloading flows conform to the loading instructions referred to in 9.3.2.25.9 or 9.3.3.25.9 and that the pressure at the connecting-point of the gas discharge pipe or the gas return pipe does not exceed the opening pressure of the high velocity vent valve;

(k) Ascertain that the gaskets provided by him for the connecting flange of the ship/shore connections of the loading and unloading piping consist of a material which will not be damaged by the cargo nor causes a decomposition of the cargo nor forms harmful or dangerous components with it;

(l) Ascertain that during the entire duration of loading and unloading a permanent and appropriate supervision is assured.

(m) Ascertain that, during unloading by means of the on-board pump, it is possible for the shore facility to switch it off;

*Additional obligations concerning the bulk unloading of dangerous solids in vessels*

(n) Ascertain that provision has been made in the fore and aft sections of the vessel for appropriate means for its evacuation in the event of an emergency."

1.4.3.7.2 If the unloader makes use of the services of other participants (cleaner, decontamination facility, etc.) he shall take appropriate measures to ensure that the requirements of ADN have been complied with."

## Chapter 1.6

1.6.1.1 Replace "2009" by "2011" and "2008" by "2010".

1.6.1.2 Amend to read as follows:

"1.6.1.2 *(Deleted)*".

1.6.1.4 Introduce a new transitional measure as follows:

"1.6.1.4 Instructions in writing which meet the requirements of section 5.4.3 applicable up to 31 December 2010 may continue to be used until 31 December 2012."

Replace "1.6.1.4-1.6.1.7 *(Reserved)*" by "1.6.1.5-1.6.1.7 *(Reserved)*".

1.6.1.8 At the end, add "provided that the requirements in 5.3.2.2.1 and 5.3.2.2.2 that the plate, numbers and letters shall remain affixed irrespective of the orientation of the vehicle or wagon are met".

1.6.1.13 Amend to read as follows:

"1.6.1.13 *(Deleted)*".

1.6.1.14 Amend to read as follows:

"1.6.1.14 IBCs manufactured before 1 January 2011 and conforming to a design type which has not passed the vibration test of 6.5.6.13 of ADR or which was not required to meet the criteria of 6.5.6.9.5 (d) of ADR at the time it was subjected to the drop test, may still be used."

1.6.1.17 and 1.6.1.18 Amend to read as follows:

"1.6.1.17 and 1.6.1.18 *(Deleted)*".

Add the following new transitional measures:

"1.6.1.19 Provisions concerning the classification of environmentally hazardous substances applicable until 31 December 2010 may be applied until 31 December 2012."

"1.6.1.20 Notwithstanding the requirements of Chapter 3.4 applicable as from 1 January 2011, dangerous goods packed in limited quantities, other than those which are assigned figure "0" in column (7a) of table A of Chapter 3.2, may continue to be carried until 30 June 2015 in accordance with the requirements of Chapter 3.4 in force up to 31 December 2010."

1.6.7.1.2 At the end of (b), add the following text:

"When in the general transitional provisions in 1.6.7.2 no date is specified after 'N.R.M.', it refers to N.R.M. after 26 May 2000. When in the supplementary transitional provisions in 1.6.7.3, no date is specified, it refers to N.R.M. after 26 May 2000."

1.6.7.2.1.1 Replace table 1.6.7.2.1.1 by the following table:

"1.6.7.2.1.1 Table of general transitional provisions: Dry cargo		
Paragraphs	Subject	Time limit and comments
9.1.0.12.1	Ventilation of holds	N.R.M. Renewal of the certificate of approval after 31 December 2018 Until then, the following requirements apply on board vessels in service:

1.6.7.2.1.1 Table of general transitional provisions: Dry cargo		
Paragraphs	Subject	Time limit and comments
		Each hold shall have appropriate natural or artificial ventilation; For the carriage of substances of Class 4.3, each hold shall be equipped with forced-air ventilation; the appliances used for this purpose must be so constructed that water cannot enter the hold.
9.1.0.12.3	Ventilation of service spaces	N.R.M. Renewal of the certificate of approval after 31 December 2018
9.1.0.17.2	Gas-tight openings facing holds	N.R.M. Renewal of the certificate of approval after 31 December 2018 Until then, the following requirements apply on board vessels in service: Openings of accommodation and the wheelhouse facing the holds must be capable of being tightly closed.
9.1.0.17.3	Entrances and openings in the protected area	N.R.M. Renewal of the certificate of approval after 31 December 2018 Until then, the following requirements apply on board vessels in service: Openings of engine rooms and service spaces facing the holds must be capable of being tightly closed.
9.1.0.31.2	Air intakes of engines	N.R.M. Renewal of the certificate of approval after 31 December 2034
9.1.0.32.2	Air pipes 50 cm above the deck	N.R.M. Renewal of the certificate of approval after 31 December 2018
9.1.0.34.1	Position of exhaust pipes	N.R.M. Renewal of the certificate of approval after 31 December 2018
9.1.0.35	Stripping pumps in the protected area	N.R.M. Renewal of the certificate of approval after 31 December 2018 Until then, the following requirements apply on board vessels in service: In the event of the carriage of substances of Class 4.1, UN No. 3175, of all substances of Class 4.3 in bulk or unpackaged and polymeric beads, expandable, of Class 9, UN No. 2211, the stripping of the holds may only be effected using a stripping installation located in the protected area. The stripping installation located above the engine room must be clamped.
9.1.0.40.1	Fire extinguishers, two pumps, etc.	N.R.M. Renewal of the certificate of approval after 31 December 2018
9.1.0.40.2	Fire extinguishing systems permanently fixed in engine rooms	N.R.M. Renewal of the certificate of approval after 31 December 2034

1.6.7.2.1.1 Table of general transitional provisions: Dry cargo		
Paragraphs	Subject	Time limit and comments
9.1.0.41 in conjunction with 7.1.3.41	Fire and naked light	N.R.M. Renewal of the certificate of approval after 31 December 2018 Until then, the following requirements apply on board vessels in service: Outlets of funnels shall be located not less than 2 m from the nearest point on hold hatchways. Heating and cooking appliances shall be permitted only in metal-based accommodation and wheelhouses. However: - Heating appliances fuelled with liquid fuels having a flashpoint above 55 °C shall be permitted in engine rooms; - Central-heating boilers fuelled with solid fuels shall be permitted in spaces situated below deck and accessible only from the deck.
9.2.0.31.2	Air intakes of engines	N.R.M. Renewal of the certificate of approval after 31 December 2034
9.2.0.34.1	Position of exhaust pipes	N.R.M. Renewal of the certificate of approval after 31 December 2018
9.2.0.41 in conjunction with 7.1.3.41	Fire and naked light	N.R.M. Renewal of the certificate of approval after 31 December 2018 Until then, the following requirements apply on board vessels in service: Outlets of funnels shall be located not less than 2 m from the nearest point on hold hatchways. Heating and cooking appliances shall be permitted only in metal-based accommodation and wheelhouses. However: - Heating appliances fuelled with liquid fuels having a flashpoint above 55 °C shall be permitted in engine rooms; - Central-heating boilers fuelled with solid fuels shall be permitted in spaces situated below deck and accessible only from the deck.

1.6.7.2.2.2 Replace table 1.6.7.2.2.2 by the following table:

"1.6.7.2.2.2 Table of general transitional provisions: Tank vessels		
Paragraphs	Subject	Time limit and comments
1.2.1	Limited explosion risk electrical apparatus	N.R.M. Renewal of the certificate of approval after 31 December 2034 Until then, the following requirements apply on board vessels in service:

1.6.7.2.2.2 Table of general transitional provisions: Tank vessels		
Paragraphs	Subject	Time limit and comments
		Limited explosion risk electrical apparatus is:
		- Electrical apparatus which, during normal operation, does not cause sparks or exhibit surface temperatures exceeding 200 °C; or
		- Electrical apparatus with a spray-water protected housing which, during normal operation, does not exhibit surface temperatures above 200 °C.
1.2.1	Hold space	N.R.M. Renewal of the certificate of approval after 31 December 2038 for Type N open vessels whose hold spaces contain auxiliary appliances and which are carrying only substances of Class 8, with remark 30 in column (20) of Table C of Chapter 3.2.
1.2.1	Flame arrester Test according to standard EN 12 874:1999	N.R.M. from 1 January 2001 Renewal of the certificate of approval after 31 December 2034 Until then, the following requirements are applicable on board vessels in service: Flame arresters shall be of a type approved by the competent authority for the use prescribed.
1.2.1	High velocity vent valve Test according to standard EN 12 874:1999	N.R.M. Renewal of the certificate of approval after 31 December 2034 Until then, the following requirements are applicable on board vessels in service: High velocity vent valves shall be of a type approved by the competent authority for the use prescribed.
7.2.2.6	Approved gas detection system	N.R.M. Renewal of the certificate of approval after 31 December 2010
7.2.2.19.3	Vessels used for propulsion	N.R.M. Renewal of the certificate of approval after 31 December 2044
7.2.3.20	Use of cofferdams for ballasting	N.R.M. Renewal of the certificate of approval after 31 December 2038 Until then, the following requirements are applicable on board vessels in service: Cofferdams may be filled with water during unloading to provide trim and to permit residue-free drainage if possible.

1.6.7.2.2.2 Table of general transitional provisions: Tank vessels		
Paragraphs	Subject	Time limit and comments
7.2.3.20.1	Ballast water Prohibition against filling cofferdams with water	N.R.M. Renewal of the certificate of approval after 31 December 2038 Until then, the following requirements apply on board vessels in service: Cofferdams may be filled with ballast water only when cargo tanks are empty.
7.2.3.20.1	Proof of stability in the event of a leak connected with ballast water	N.R.M. Renewal of the certificate of approval after 31 December 2044 for Type G and Type N vessels
7.2.3.31.2	Motor vehicles only outside the cargo area	N.R.M. Renewal of the certificate of approval after 31 December 2034 for Type N vessels Until then, the following requirements apply on board vessels in service: The vehicle shall not be started on board.
7.2.3.51.3	Live sockets	N.R.M. Renewal of the certificate of approval after 31 December 2010 for Type G and Type N vessels
7.2.4.22.3	Sampling from other openings	N.R.M. Renewal of the certificate of approval after 31 December 2018 Until then, on board Type N open vessels in service cargo tank covers may be opened during loading for control and sampling.
9.3.2.0.1 (c) 9.3.3.0.1 (c)	Protection of vapour pipes against corrosion	N.R.M. from 1 January 2001 Renewal of the certificate of approval after 31 December 2034
9.3.1.0.3 (d) 9.3.2.0.3 (d) 9.3.3.0.3 (d)	Fire-resistant materials of accommodation and wheelhouse	N.R.M. Renewal of the certificate of approval after 31 December 2034
9.3.3.8.1	Continuation of class	N.R.M. Renewal of the certificate of approval after 31 December 2044 for Type N open vessels with flame arresters and Type N open vessels Until then, the following requirements apply on board vessels in service: Except where otherwise provided, the type of construction, the strength, the subdivision, the equipment and the gear of the vessel shall conform or be equivalent to the construction requirements for classification in the highest class of a recognized classification society.

1.6.7.2.2.2 Table of general transitional provisions: Tank vessels		
Paragraphs	Subject	Time limit and comments
9.3.1.10.2 9.3.2.10.2 9.3.3.10.2	Door coamings, etc.	N.R.M. Renewal of the certificate of approval after 31 December 2034 Until then, the following requirements apply on board vessels in service, with the exception of Type N open vessels: This requirement may be met by fitting vertical protection walls not less than 0.50 m in height; Until then, on board vessels in service less than 50.00 m long, the height of 0.50 m may be reduced to 0.30 m in passageways leading to the deck.
9.3.1.10.3 9.3.2.10.3 9.3.3.10.3	Height of sills of hatches and openings above the deck	N.R.M. from 1 January 2005 Renewal of the certificate of approval after 31 December 2010
9.3.1.11.1 (b)	Ratio of length to diameter of pressure cargo tanks	N.R.M. Renewal of the certificate of approval after 31 December 2044
9.3.3.11.1 (d)	Limitation of length of cargo tanks	N.R.M. Renewal of the certificate of approval after 31 December 2044
9.3.1.11.2 (a)	Arrangement of cargo tanks Distance between cargo tanks and side walls Height of saddles	N.R.M. Renewal of the certificate of approval after 31 December 2044 for Type G vessels whose keels were laid before 1 January 1977
9.3.1.11.2 (a)	Arrangement of cargo tanks Distance between cargo tanks and side walls Height of saddles	N.R.M. Renewal of the certificate of approval after 31 December 2044 Until then, the following requirements apply on board vessels in service whose keels were laid after 31 December 1976: Where tank volume is more than 200 m <sup>3</sup> or where the ratio of length to diameter is less than 7 but more than 5, the hull in the tank area shall be such that, in the event of a collision, the tanks remain intact as far as possible. This requirement shall be considered as having been met where, in the tank area, the vessel:
		- is double-hulled with a distance of at least 80 cm between the side plating and the longitudinal bulkhead, - or is designed as follows:
		(a) Between the gangboard and the top of the floorplates there shall be side stringers at regular intervals of not more than 60 cm;

1.6.7.2.2.2 Table of general transitional provisions: Tank vessels		
Paragraphs	Subject	Time limit and comments
		(b) The side struts shall be supported by web frames spaced at intervals of not more than 2.00 m. The height of the web frames shall be not less than 10% of the depth and in any event not less than 30 cm. They shall be fitted with a face plate made of flat steel having a cross section of not less than 15 cm <sup>2</sup> ;
		(c) The side stringers referred to in (a) shall have the same height as the web frames and be fitted with a face plate made of flat steel having a cross section of not less than 7.5 cm <sup>2</sup> .
9.3.1.11.2 (a)	Distance between suction wells and floor plates	N.R.M. Renewal of the certificate of approval after 31 December 2044
9.3.1.11.2 (b) 9.3.2.11.2 (b) 9.3.3.11.2 (a)	Cargo tank fastenings	N.R.M. Renewal of the certificate of approval after 31 December 2044
9.3.1.11.2 (c) 9.3.2.11.2 (c) 9.3.3.11.2 (b)	Capacity of suction well	N.R.M. Renewal of the certificate of approval after 31 December 2044
9.3.1.11.2 (d) 9.3.2.11.2 (d)	Side struts between the hull and the cargo tanks	N.R.M. from 1 January 2001 Renewal of the certificate of approval after 31 December 2044
9.3.1.11.3 (a)	End bulkheads of cargo area with "A-60" insulation. Distance of 0.50 m from cargo tanks to end bulkheads	N.R.M. Renewal of the certificate of approval after 31 December 2044
9.3.2.11.3 (a) 9.3.3.11.3 (a)	Width of cofferdams of 0.60 m Hold spaces with cofferdams or "A-60" insulated bulkheads Distance of 0.50 m from cargo tanks in hold spaces	N.R.M. Renewal of the certificate of approval after 31 December 2044 Until then, the following requirements apply on board vessels in service: Type C: minimum width of cofferdams: 0.50 m; Type N: minimum width of cofferdams: 0.50 m, on board vessels with a deadweight of up to 150 t: 0.40 m; Type N open: cofferdams shall not be required on board vessels with deadweight up to 150 t: The distance between cargo tanks and end bulkheads of hold spaces shall be at least 0.40 m.
9.3.3.11.4	Penetrations through the end bulkheads of hold spaces	N.R.M. from 1 January 2005 Renewal of the certificate of approval after 31 December 2044 for Type N open vessels whose keels were laid before 1 January 1977.

1.6.7.2.2.2 Table of general transitional provisions: Tank vessels		
Paragraphs	Subject	Time limit and comments
9.3.3.11.4	Distance of piping in relation to the bottom	N.R.M. from 1 January 2005 Renewal of the certificate of approval after 31 December 2038
9.3.3.11.4	Shut-off devices of the loading and unloading pipes in the cargo tank from which they come	N.R.M. from 1 January 2005 Renewal of the certificate of approval after 31 December 2018
9.3.3.11.6 (a)	Form of cofferdam arranged as a pump room	N.R.M. Renewal of the certificate of approval after 31 December 2044 for Type N vessels whose keels were laid before 1 January 1977.
9.3.3.11.7	Distance between the cargo tanks and the outer wall of the vessel	N.R.M. after 1 January 2001 Renewal of certificate of approval after 31 December 2038
9.3.3.11.7	Width of double hull	N.R.M. after 1 January 2010 Renewal of certificate approval after 31 December 2038
9.3.3.11.7	Distance between the suction well and the bottom structures	N.R.M. after 1 January 2003 Renewal of certificate of approval after 31 December 2038
9.3.3.11.8	Arrangement of service spaces located in the cargo area below decks	N.R.M. Renewal of the certificate of approval after 31 December 2038 for Type N open vessels
9.3.1.11.8 9.3.3.11.9	Dimensions of openings for access to spaces within the cargo area	N.R.M. Renewal of the certificate of approval after 31 December 2018
9.3.1.11.8 9.3.2.11.10 9.3.3.11.9	Interval between reinforcing elements	N.R.M. Renewal of the certificate of approval after 31 December 2044
9.3.2.12.1 9.3.3.12.1	Ventilation openings in hold spaces	N.R.M. from 1 January 2003 Renewal of the certificate of approval after 31 December 2018
9.3.1.12.2 9.3.3.12.2	Ventilation systems in double-hull spaces and double bottoms	N.R.M. Renewal of the certificate of approval after 31 December 2018
9.3.1.12.3 9.3.2.12.3 9.3.3.12.3	Height above the deck of the air intake for service spaces located below deck	N.R.M. Renewal of the certificate of approval after 31 December 2018
9.3.1.12.6 9.3.2.12.6 9.3.3.12.6	Distance of ventilation inlets from cargo area	N.R.M. from 1 January 2003 Renewal of the certificate of approval after 31 December 2044

1.6.7.2.2.2 Table of general transitional provisions: Tank vessels		
Paragraphs	Subject	Time limit and comments
9.3.1.12.6 9.3.2.12.6 9.3.3.12.6	Permanently installed flame screens	N.R.M. from 1 January 2003 Renewal of the certificate of approval after 31 December 2018
9.3.3.12.7	Approval of flame arresters	N.R.M. Renewal of the certificate of approval after 31 December 2018 for Type N vessels whose keels were laid before 1 January 1977.
9.3.1.13 9.3.3.13	Stability (general)	N.R.M. Renewal of the certificate of approval after 31 December 2044
9.3.3.13.3 paragraph 2	Stability (general)	N.R.M. as from 1 January 2007 Renewal of the certificate of approval after 31 December 2044
9.3.1.14 9.3.3.14	Stability (intact)	N.R.M. Renewal of the certificate of approval after 31 December 2044
9.3.2.14.2	Stability (intact)	N.R.M. Renewal of the certificate of approval after 31 December 2044
9.3.1.15	Stability (damaged condition)	N.R.M. Renewal of the certificate of approval after 31 December 2044
9.3.3.15	Stability (damaged condition)	N.R.M. after 1 January 2007 Renewal of certificate of approval after 31 December 2044
9.3.1.16.1 9.3.3.16.1	Distance of openings of engine rooms from the cargo area	N.R.M. Renewal of the certificate of approval after 31 December 2044
9.3.3.16.1	Internal combustion engines outside the cargo area	N.R.M. Renewal of the certificate of approval after 31 December 2034 for Type N open vessels
9.3.1.16.2 9.3.3.16.2	Hinges of doors facing the cargo area	N.R.M. Renewal of the certificate of approval after 31 December 2034 for vessels whose keels were laid before 1 January 1977 where alterations would obstruct other major openings.
9.3.3.16.2	Engine rooms accessible from the deck	N.R.M. Renewal of the certificate of approval after 31 December 2034 for Type N open vessels

1.6.7.2.2.2 Table of general transitional provisions: Tank vessels		
Paragraphs	Subject	Time limit and comments
9.3.1.17.1 9.3.3.17.1	Accommodation and wheelhouse outside the cargo area	N.R.M. Renewal of the certificate of approval after 31 December 2044 for vessels whose keels were laid before 1 January 1977, provided that there is no connection between the wheelhouse and other enclosed spaces. Renewal of the certificate of approval after 31 December 2044 for vessels up to 50 m in length whose keels were laid before 1 January 1977 and whose wheelhouses are located in the cargo area even if it provides access to another enclosed space, provided that safety is ensured by appropriate service requirements of the competent authority.
9.3.3.17.1	Accommodation and wheelhouse outside the cargo area	N.R.M. Renewal of the certificate of approval after 31 December 2044 for Type N open vessels
9.3.1.17.2 9.3.2.17.2 9.3.3.17.2	Arrangement of entrances and openings of forward superstructures	N.R.M. Renewal of the certificate of approval after 31 December 2044
9.3.1.17.2 9.3.2.17.2 9.3.3.17.2	Entrances facing the cargo area	N.R.M. Renewal of the certificate of approval after 31 December 2044 for vessels up to 50 m in length whose keels were laid before 1 January 1977, provided that gas screens are installed.
9.3.3.17.2	Entrances and openings	N.R.M. Renewal of the certificate of approval after 31 December 2044 for Type N open vessels
9.3.3.17.3	Entrances and openings must be capable of being closed	N.R.M. Renewal of the certificate of approval after 31 December 2010 for Type N open vessels
9.3.1.17.4 9.3.3.17.4	Distance of openings from the cargo area	N.R.M. Renewal of the certificate of approval after 31 December 2044
9.3.3.17.5 (b), (c)	Approval of shaft passages and displaying of instructions	N.R.M. Renewal of the certificate of approval after 31 December 2018 for Type N open vessels
9.3.1.17.6 9.3.3.17.6	Pump-room below deck	N.R.M. Renewal of the certificate of approval after 31 December 2018 Until then, the following requirements apply on board vessels in service: Pump-rooms below deck shall: - Meet the requirements for service spaces: - For Type G vessels: 9.3.1.12.3; - For Type N vessels: 9.3.3.12.3; - Be equipped with a gas detection system referred to in 9.3.1.17.6 or 9.3.3.17.6.

1.6.7.2.2.2 Table of general transitional provisions: Tank vessels		
Paragraphs	Subject	Time limit and comments
9.3.2.20.2 9.3.3.20.2	Intake valve	N.R.M. Renewal of the certificate of approval after 31 December 2018
9.3.3.20.2	Filling of cofferdams with pump	N.R.M. Renewal of the certificate of approval after 31 December 2018 for Type N open vessels
9.3.2.20.2 9.3.3.20.2	Filling of cofferdams within 30 minutes	N.R.M. Renewal of the certificate of approval after 31 December 2018
9.3.3.21.1 (b)	Liquid level gauge	N.R.M. from 1 January 2005 Renewal of the certificate of approval after 31 December 2018 for vessels of Type N open with flame-arrester and those of Type N open Until then, on board vessels in service fitted with gauging openings, such openings shall: - Be arranged so that the degree of filling can be measured using a sounding rod; - Be fitted with an automatically-closing cover.
9.3.3.21.1 (g)	Sampling opening	N.R.M. Renewal of the certificate of approval after 31 December 2018 for Type N open vessels
9.3.1.21.4 9.3.2.21.4 9.3.3.21.4	Liquid-level alarm device independent from the liquid-level gauge	N.R.M. Renewal of the certificate of approval after 31 December 2018
9.3.1.21.5 (a) 9.3.2.21.5 (a) 9.3.3.21.5 (a)	Socket close to the shore connections of the loading and unloading pipes and switching off of vessel's pump	N.R.M. Renewal of the certificate of approval after 31 December 2018
9.3.1.21.5 (b) 9.3.2.21.5 (b) 9.3.3.21.5 (d)	Installation of on-board pump switch-off from the shore	N.R.M. Renewal of the certificate of approval after 31 December 2006
9.3.2.21.5 (c)	Device for rapid shutting off of refuelling	N.R.M. Renewal of the certificate of approval after 31 December 2008
9.3.1.21.7 9.3.2.21.7 9.3.3.21.7	Vacuum or over-pressure alarms in cargo tanks for the carriage of substances <u>without</u> remark 5 in column (20) of Table C of Chapter 3.2	N.R.M. from 1 January 2001 Renewal of the certificate of approval after 31 December 2018
9.3.1.21.7 9.3.2.21.7 9.3.3.21.7	Temperature alarms in cargo tanks	N.R.M. from 1 January 2001 Renewal of the certificate of approval after 31 December 2018

1.6.7.2.2.2 Table of general transitional provisions: Tank vessels		
Paragraphs	Subject	Time limit and comments
9.3.1.22.1 (b)	Height of cargo tank openings above the deck	N.R.M. Renewal of the certificate of approval after 31 December 2044
9.3.3.22.1 (b)	Cargo tank openings 0.50 m above the deck	N.R.M. Renewal of the certificate of approval after 31 December 2044 for vessels whose keels were laid before 1 January 1977.
9.3.1.22.4	Prevention of spark-formation by closure devices	N.R.M. from 1 January 2003 Renewal of the certificate of approval after 31 December 2018
9.3.1.22.3 9.3.2.22.4 (b) 9.3.3.22.4 (b)	Position of outlets of valves above the deck	N.R.M. Renewal of the certificate of approval after 31 December 2018
9.3.2.22.4 (b) 9.3.3.22.4 (b)	Pressure setting of high velocity vent valves	N.R.M. Renewal of the certificate of approval after 31 December 2018
9.3.3.23.2	Test pressure for cargo tanks	N.R.M. Renewal of the certificate of approval after 31 December 2044 for vessels whose keels were laid before 1 January 1977, for which a test pressure of 15 kPa (0.15 bar) is required. Until then, a test pressure of 10 kPa (0.10 bar) shall be sufficient.
9.3.3.23.2	Test pressure for cargo tanks	N.R.M. Renewal of the certificate of approval after 31 December 2044 for oil-separator vessels in service before 1 January 1999. Until then, a test pressure of 5 kPa (0.05 bar) is sufficient.
9.3.3.23.3	Test pressure for pipes for loading and unloading	N.R.M. Renewal of the certificate of approval at the latest by 1 January 2039 for oil-separator vessels in service before 1 January 1999. Until then, a test pressure of 400 kPa (4 bar) is sufficient.
9.3.2.25.1 9.3.3.25.1	Shut-down of cargo pumps	N.R.M. Renewal of the certificate of approval after 31 December 2018
9.3.1.25.1 9.3.2.25.1 9.3.3.25.1	Distance of pumps, etc. from accommodation, etc.	N.R.M. Renewal of the certificate of approval after 31 December 2044
9.3.1.25.2 (d) 9.3.2.25.2 (d)	Position of loading and unloading pipes on deck	N.R.M. Renewal of the certificate of approval after 31 December 2044
9.3.1.25.2 (e) 9.3.2.25.2 (e) 9.3.3.25.2 (e)	Distance of shore connections from accommodation, etc.	N.R.M. Renewal of the certificate of approval after 31 December 2034

1.6.7.2.2.2 Table of general transitional provisions: Tank vessels		
Paragraphs	Subject	Time limit and comments
9.3.2.25.2 (i)	Pipes for loading and unloading, and vapour pipes, shall not have flexible connections fitted with sliding seals.	N.R.M. from 1 January 2009 Vessels in service having connections with sliding seals may no longer transport substances with toxic or corrosive properties (see column (5) of Table C of Chapter 3.2, hazards 6.1 and 8) following the renewal of the certificate of approval after 31 December 2008. Vessels in service shall not have flexible connections fitted with sliding seals following the renewal of the certificate of approval after 31 December 2018.
9.3.3.25.2 (h)	Pipes for loading and unloading, and vapour pipes, shall not have flexible connections fitted with sliding seals	N.R.M. from 1 January 2009 Vessels in service having connections with sliding seals may no longer transport substances with corrosive properties (see column (5) of Table C of Chapter 3.2, hazard 8) following the renewal of the certificate of approval after 31 December 2008. Vessels in service shall not have flexible connections with sliding seals following the renewal of the certificate of approval after 31 December 2018.
9.3.2.25.8 (a)	Ballasting suction pipes located within the cargo area but outside the cargo tanks	N.R.M. Renewal of the certificate of approval after 31 December 2018
9.3.2.25.9 9.3.3.25.9	Loading and unloading flow	N.R.M. from 1 January 2003 Renewal of the certificate of approval after 31 December 2018
9.3.3.25.12	9.3.3.25.1 (a) and (c), 9.3.3.25.2 (e), 9.3.3.25.3 and 9.3.3.25.4 (a) are not applicable for Type N open with the exception of Type N open carrying corrosive substances (see Chapter 3.2, Table C, column (5), hazard 8)	N.R.M. Renewal of the certificate of approval after 31 December 2018 This time limit concerns only Type N open vessels carrying corrosive substances (see Chapter 3.2, Table C, column (5), hazard 8).
9.3.1.31.2 9.3.2.31.2 9.3.3.31.2	Distance of engine air intakes from the cargo area	N.R.M. Renewal of the certificate of approval after 31 December 2044
9.3.1.31.4 9.3.2.31.4 9.3.3.31.4	Temperature of outer parts of engines, etc.	N.R.M. Renewal of the certificate of approval after 31 December 2018 Until then, the following requirements apply on board vessels in service: The temperature of outer parts shall not exceed 300 °C.

1.6.7.2.2.2 Table of general transitional provisions: Tank vessels		
Paragraphs	Subject	Time limit and comments
9.3.1.31.5 9.3.2.31.5 9.3.3.31.5	Temperature in the engine room	N.R.M. Renewal of the certificate of approval after 31 December 2018 Until then, the following requirements apply on board vessels in service: The temperature in the engine room shall not exceed 45 °C.
9.3.1.32.2 9.3.2.32.2 9.3.3.32.2	Openings of air pipes 0.50 m above the deck	N.R.M. Renewal of the certificate of approval after 31 December 2010
9.3.3.34.1	Exhaust pipes	N.R.M. Renewal of the certificate of approval after 31 December 2018
9.3.1.35.1 9.3.3.35.1	Stripping and ballast pumps in the cargo area	N.R.M. Renewal of the certificate of approval after 31 December 2034
9.3.3.35.3	Suction pipes for ballasting located within the cargo area but outside the cargo tanks	N.R.M. Renewal of the certificate of approval after 31 December 2018
9.3.1.35.4	Stripping installation of the pump-room outside the pump-room	N.R.M. from 1 January 2003 Renewal of the certificate of approval after 31 December 2018
9.3.1.40.1 9.3.2.40.1 9.3.3.40.1	Fire extinguishing systems, two pumps, etc.	N.R.M. Renewal of the certificate of approval after 31 December 2018
9.3.1.40.2 9.3.2.40.2 9.3.3.40.2	Fixed fire extinguishing system in engine room	N.R.M. Renewal of the certificate of approval after 31 December 2034
9.3.1.41.1 9.3.3.41.1	Outlets of funnels located not less than 2 m from the cargo area	N.R.M. Renewal of the certificate of approval after 31 December 2044 for vessels whose keels were laid before 1 January 1977.
9.3.3.41.1	Outlets of funnels	N.R.M. at the latest by 1 January 2039 for oil-separator vessels
9.3.1.41.2 9.3.2.41.2 9.3.3.41.2 in conjunction with 7.2.3.41	Heating, cooking and refrigerating appliances	N.R.M. Renewal of the certificate of approval after 31 December 2010

1.6.7.2.2.2 Table of general transitional provisions: Tank vessels		
Paragraphs	Subject	Time limit and comments
9.3.3.42.2	Cargo heating system	N.R.M. Renewal of the certificate of approval after 31 December 2034 for Type N vessels Until then, the following requirements apply on board vessels in service: This can be achieved by an oil separator fitted to the condensed water return pipe.
9.3.1.51.2 9.3.2.51.2 9.3.3.51.2	Visual and audible alarm	N.R.M. Renewal of the certificate of approval after 31 December 2034
9.3.1.51.3 9.3.2.51.3 9.3.3.51.3	Temperature class and explosion group	N.R.M. Renewal of the certificate of approval after 31 December 2034
9.3.3.52.1 (b), (c), (d) and (e)	Electrical installations	N.R.M. Renewal of the certificate of approval after 31 December 2034 for Type N open vessels
9.3.1.52.1 (e) 9.3.3.52.1 (e)	Electrical installations of the "certified safe" type in the cargo area	N.R.M. Renewal of the certificate of approval after 31 December 2034 for vessels whose keels were laid before 1 January 1977.
		Until then, the following conditions shall be met during loading, unloading and gas-freeing on board vessels having non-gastight wheelhouse openings (e.g. doors, windows, etc.) in the cargo area:
		(a) All electrical installations designed to be used shall be of a limited explosion-risk type, i.e. they shall be so designed that there is no sparking under normal operating conditions and the temperature of their outer surfaces does not rise above 200 °C, or be of a type protected against water spray the temperature of whose outer surfaces does not exceed 200 °C under normal operating conditions;
		(b) Electrical installations which do not meet the requirements of (a) above shall be marked in red and it shall be possible to switch them off by means of a central switch.
9.3.3.52.2	Accumulators located outside the cargo area	N.R.M. Renewal of the certificate of approval after 31 December 2034 for Type N open vessels
9.3.1.52.3 (a) 9.3.1.52.3 (b) 9.3.3.52.3 (a) 9.3.3.52.3 (b)	Electrical installations used during loading, unloading or gas-freeing	N.R.M. Renewal of the certificate of approval after 31 December 2034 for the following installations on vessels whose keels were laid before 1 January 1977:

1.6.7.2.2.2 Table of general transitional provisions: Tank vessels		
Paragraphs	Subject	Time limit and comments
		<ul style="list-style-type: none"> <li>- Lighting installations in accommodation, with the exception of switches near the entrances to accommodation;</li> <li>- Radio telephone installations in accommodation and wheelhouses and combustion engine control appliances.</li> </ul>
		<p>Until then, all other electrical installations shall meet the following requirements:</p> <p>(a) Generators, engines, etc. IP13 protection mode;</p> <p>(b) Control panels, lamps, etc. IP23 protection mode;</p> <p>(c) Appliances, etc. IP55 protection mode.</p>
9.3.3.52.3 (a) 9.3.3.52.3 (b)	Electrical installations used during loading, unloading or gas-freeing	<p>N.R.M.</p> <p>Renewal of the certificate of approval after 31 December 2034 for Type N open vessels</p>
9.3.1.52.3 (b) 9.3.2.52.3 (b) 9.3.3.52.3 (b) in conjunction with 3 (a)	Electrical installations used during loading, unloading and gas-freeing	<p>N.R.M.</p> <p>Renewal of the certificate of approval after 31 December 2034</p> <p>Until then, on board vessels in service, paragraph (3) (a) shall not apply to:</p> <ul style="list-style-type: none"> <li>- Lighting installations in accommodation, with the exception of switches near entrances to accommodation;</li> <li>- Radio telephone installations in accommodation and wheelhouses.</li> </ul>
9.3.1.52.4 9.3.2.52.4 9.3.3.52.4 last sentence	Disconnection of such installations from a centralized location	<p>N.R.M.</p> <p>Renewal of the certificate of approval after 31 December 2034</p>
9.3.3.52.4	Red mark on electrical installations	<p>N.R.M.</p> <p>Renewal of the certificate of approval after 31 December 2034 for Type N open vessels</p>
9.3.3.52.5	Shutting down switch for continuously driven generator	<p>N.R.M.</p> <p>Renewal of the certificate of approval after 31 December 2034 for Type N open vessels</p>
9.3.3.52.6	Permanently fitted sockets	<p>N.R.M.</p> <p>Renewal of the certificate of approval after 31 December 2034 for Type N open vessels</p>
9.3.1.56.1 9.3.3.56.1	Metallic sheaths for all cables in the cargo area	<p>N.R.M.</p> <p>Renewal of the certificate of approval after 31 December 2034 for vessels whose keels were laid before 1 January 1977.</p>
9.3.3.56.1	Metallic sheath for all cables in the cargo area	<p>N.R.M. by 1 January 2039 at the latest for oil-separator vessels"</p>

1.6.7.3. Add under sub-section 1.6.7.3 Table of supplementary transitional provisions:

"1.6.7.3 Table of supplementary transitional provisions		
Paragraphs	Subject	Time limit and comments
9.3.3.8.1	Classification	N.R.M. Renewal of the certificate of approval after 31 December 2044 for Type N open vessels with flame arresters and Type N open vessels"

1.6.7.4.2 Transitional periods applicable to substances, Identification Nos. 9005 and 9006

Delete "N1".

1.6.7.5 Insert the following new sub-section 1.6.7.5:

**"1.6.7.5 Transitional provisions concerning the modification of tank vessels**

1.6.7.5.1 The modification of the cargo area of a vessel in order to achieve a Type N double-hull vessel is admissible until 31 December 2018 under the following conditions:

(a) The modified or new cargo area shall comply with the provisions of ADN. Transitional provisions under 1.6.7.2.2 may not be applied for the cargo area;

(b) The vessel parts outside of the cargo area shall comply with the provisions of ADN. Moreover, the following transitional provisions under 1.6.7.2.2 may be applied: 1.2.1, 9.3.3.0.3 (d), 9.3.3.51.3 and 9.3.3.52.4 last sentence-;

(c) If goods which require explosion protection are entered in the list according to 1.16.1.2.5, accommodation and wheelhouses shall be equipped with a fire alarm system according to 9.3.3.40.2.3;

(d) The application of this sub-section shall be entered in the certificate of approval under No. 12 (Additional observations).

1.6.7.5.2 Modified vessels may continue to be operated beyond 31 December 2018. The time limits stipulated in the applied transitional provisions under 1.6.7.2.2 shall be observed."

1.6.7.6 Insert the following new subsection 1.6.7.6 as follows:

**"1.6.7.6 Transitional provisions concerning the transport of gases in tank vessels**

Tank vessels in service on 1 January 2011 with a pump room below deck may continue to transport the substances listed in the following table until the renewal of the certificate of approval after 1 January 2045.

UN No. or ID No.	Class and classification code	Name and description
1005	2, 2TC	AMMONIA, ANHYDROUS
1010	2, 2F	1,2-BUTADIENE, STABILIZED
1010	2, 2F	1,3-BUTADIENE, STABILIZED
1010	2, 2F	BUTADIENES STABILIZED or BUTADIENES AND HYDROCARBON MIXTURE, STABILIZED, having a vapour pressure at 70 °C not exceeding 1.1 MPa (11 bar) and a density at 50 °C not lower than 0.525 kg/l
1011	2, 2F	BUTANE
1012	2, 2F	1-BUTYLENE
1020	2,2A	CHLOROPENTAFLUOROETHANE (REFRIGERANT GAS R 115)
1030	2,2F	1,1-DIFLUOROETHANE (REFRIGERANT GAS R 152a)
1033	2,2F	DIMETHYL ETHER
1040	2,2TF	ETHYLENE OXIDE WITH NITROGEN up to a total pressure of 1 MPa (10 bar) at 50 °C
1055	2,2F	ISOBUTYLENE
1063	2,2F	METHYL CHLORIDE (REFRIGERANT GAS R 40)
1077	2,2F	PROPYLENE
1083	2,2F	TRIMETHYLAMINE, ANHYDROUS
1086	2,2F	VINYL CHLORIDE, STABILIZED
1912	2,2F	METHYL CHLORIDE AND METHYLENE CHLORIDE MIXTURE
1965	2,2F	HYDROCARBON GAS MIXTURE, LIQUEFIED, N.O.S., (MIXTURE A)
1965	2,2F	HYDROCARBON GAS MIXTURE, LIQUEFIED, N.O.S., (MIXTURE A0)
1965	2,2F	HYDROCARBON GAS MIXTURE, LIQUEFIED, N.O.S., (MIXTURE A01)
1965	2,2F	HYDROCARBON GAS MIXTURE, LIQUEFIED, N.O.S., (MIXTURE A02)
1965	2,2F	HYDROCARBON GAS MIXTURE, LIQUEFIED, N.O.S., (MIXTURE A1)
1965	2,2F	HYDROCARBON GAS MIXTURE, LIQUEFIED, N.O.S., (MIXTURE B)
1965	2,2F	HYDROCARBON GAS MIXTURE, LIQUEFIED, N.O.S., (MIXTURE B1)
1965	2,2F	HYDROCARBON GAS MIXTURE, LIQUEFIED, N.O.S., (MIXTURE B2)
1965	2,2F	HYDROCARBON GAS MIXTURE, LIQUEFIED, N.O.S., (MIXTURE C)
1969	2,2F	ISOBUTANE
1978	2,2F	PROPANE
9000		AMMONIA, ANHYDROUS, DEEPLY REFRIGERATED"

## Chapter 1.7

1.7.1.1 In the second sentence, replace "2005" with "2009" (twice).

Replace the last sentence by the following: "Explanatory material can be found in "Advisory Material for the IAEA Regulations for the Safe Transport of Radioactive Material (2005 Edition)", Safety Standard Series No. TS-G-1.1 (Rev.1), IAEA, Vienna (2008)."

1.7.1.2 Amend the first sentence to read as follows: "The objective of ADN is to establish requirements that shall be satisfied to ensure safety and to protect persons, property and the environment from the effects of radiation in the carriage of radioactive material."

1.7.1.3 In the third sentence, replace "that is characterized" by "that are characterized".

1.7.1.5 Renumber the text after the heading as 1.7.1.5.1 and amend the beginning and sub-paragraph (a) to read as follows:

"1.7.1.5.1 Excepted packages which may contain radioactive material in limited quantities, instruments, manufactured articles and empty packagings as specified in 2.2.7.2.4.1 shall be subject only to the following provisions of Parts 5 to 7 of ADR:

(a) The applicable provisions specified in 5.1.2, 5.1.3.2, 5.1.4, 5.1.5.4, 5.2.1.9 and 7.5.11 CV33 (5.2) of ADR;".

The last sentence becomes new paragraph 1.7.1.5.2.

1.7.2.3 At the end of the second sentence, replace "and 1.7.2.5" with ", 1.7.2.5 and 7.5.11 CV33 (1.1) of ADR".

1.7.2.5 Replace "shall receive appropriate training concerning" with "shall be appropriately trained in".

## Chapter 1.10

Add a new 1.10.2.3 and 1.10.2.4 to read as follows:

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

1.10.2.4 Records of all security training received shall be kept by the employer and made available to the employee or competent authority, upon request. Records shall be kept by the employer for a period of time established by the competent authority."

Table 1.10.5 In the third column, for Class 6.2, amend the text in parentheses to read "(UN Nos. 2814 and 2900, except for animal material)".

1.10.6 Amend to read as follows:

"1.10.6 For radioactive material, the provisions of this Chapter are deemed to be complied with when the provisions of the Convention on Physical Protection of Nuclear

Material<sup>1</sup> and the IAEA circular on "The Physical Protection of Nuclear Material and Nuclear Facilities"<sup>2</sup> are applied."

## Chapter 1.15

1.15.3.8 Replace "EN 45004:1995 (control mechanism)" by "EN ISO/IEC 17020:2004 (inspection bodies)".

## Chapter 1.16

1.16.1.2.6 Replace text by "(Deleted)".

1.16.4.1 Replace "EN 45004:1995" by "EN ISO/IEC 17020:2004".

## Part 2

### Chapter 2.1

Insert a new 2.1.2.3 to read as follows and renumber 2.1.2.3 to 2.1.2.6 accordingly:

"2.1.2.3 A substance may contain technical impurities (for example those deriving from the production process) or additives for stability or other purposes that do not affect their classification. However, a substance mentioned by name, i.e. listed as a single entry in Table A of Chapter 3.2, containing technical impurities or additives for stability or other purposes affecting its classification shall be considered a solution or mixture (see 2.1.3.3)."

2.1.3.3 Amend to read as follows:

"2.1.3.3 A solution or mixture composed of a single predominant substance mentioned by name in Table A of Chapter 3.2 and one or more substances not subject to ADN and/or traces of one or more substances mentioned by name in Table A of Chapter 3.2, shall be assigned the UN number and proper shipping name of the predominant substance mentioned by name in Table A of Chapter 3.2 unless:

(a) The solution or mixture is mentioned by name in Table A of Chapter 3.2;

(b) The name and description of the substance mentioned by name in Table A of Chapter 3.2 specifically indicate that they apply only to the pure substance;

(c) The class, classification code, packing group, or physical state of the solution or mixture is different from that of the substance mentioned by name in Table A of Chapter 3.2; or

(d) The hazard characteristics and properties of the solution or mixture necessitate emergency response measures that are different from those required for the substance mentioned by name in Table A of Chapter 3.2.

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<sup>1</sup> IAEACIRC/274/Rev.1, IAEA, Vienna (1980).

<sup>2</sup> IAEACIRC/225/Rev.4 (Corrected), IAEA, Vienna (1999). See also "Guidance and Considerations for the Implementation of INFCIRC/225/Rev.4, the Physical Protection of Nuclear Material and Nuclear Facilities, IAEA-TECDOC-967/Rev.1.

In those other cases, except the one described in (a), the solution or mixture shall be classified as a substance not mentioned by name in the relevant class under a collective entry listed in sub-section 2.2.x.3 of that class taking account of the subsidiary risks presented by that solution or mixture, if any, unless the solution or mixture does not meet the criteria of any class, in which case it is not subject to ADN."

2.1.3.4.1 Move the entry "UN 2481 ETHYL ISOCYANATE" from the first indent (Class 3) to the second indent (Class 6.1).

2.1.3.5 Replace "2.1.2.4" with "2.1.2.5".

2.1.3.5.3 (a) In the text in parenthesis, add: ", for which special provision 290 of Chapter 3.3 applies," after "excepted packages".

2.1.3.6 Replace "2.1.2.4" with "2.1.2.5".

## Chapter 2.2

2.2.1.1.1 Add a new paragraph at the end to read as follows:

"For the purposes of Class 1, the following definition applies:

*Phlegmatized* means that a substance (or "phlegmatizer") has been added to an explosive to enhance its safety in handling and carriage. The phlegmatizer renders the explosive insensitive, or less sensitive, to the following actions: heat, shock, impact, percussion or friction. Typical phlegmatizing agents include, but are not limited to: wax, paper, water, polymers (such as chlorofluoropolymers), alcohol and oils (such as petroleum jelly and paraffin)."

2.2.1.1.6 In the last sentence of Note 2, insert "articles and" before "packages".

2.2.1.1.7.5 In Note 1, replace "all pyrotechnic composition" with "all pyrotechnic substances".

Amend Note 2 to read as follows:

**"NOTE 2:** *"Flash composition" in this table refers to pyrotechnic substances in powder form or as pyrotechnic units as presented in the fireworks, that are used to produce an aural effect, or used as a bursting charge or lifting charge, unless the time taken for the pressure rise is demonstrated to be more than 8 ms for 0.5 g of pyrotechnic substance in the HSL Flash Composition Test in Appendix 7 of the Manual of Tests and Criteria.*"

In the default fireworks classification table, replace "pyrotechnic composition" with "pyrotechnic substance" whenever it appears.

2.2.1.1.8 For "POWDER, SMOKELESS", add ", 0509" after "UN Nos. 0160, 0161".

2.2.2.1.1 Delete Note 4.

2.2.2.1.5 Under "Oxidizing gases", amend the second sentence ("Oxidizing ability... 10156-2:2005") to read as follows:

"These are pure gases or gas mixtures with an oxidizing power greater than 23.5% as determined by a method specified in ISO 10156:1996 or ISO 10156-2:2005."

2.2.2.3 Replace "density" with "mass density" (8 times) and replace "relative density" with "mass density" (5 times).

2.2.3.2.1 Replace "2.3.3.2" with "2.3.3.3" at the end.

2.2.3.3 Under classification code F1, amend the name and description for UN No. 1999 to read "TARS, LIQUID, including road oils, and cutback bitumens".

2.2.42.1.3 Amend to read as follows:

"2.2.42.1.3 Self-heating of a substance is a process where the gradual reaction of that substance with oxygen (in air) generates heat. If the rate of heat production exceeds the rate of heat loss, then the temperature of the substance will rise which, after an induction time, may lead to self-ignition and combustion."

2.2.43.3 Under classification code "W1" for the two entries for UN No. 1391, delete "having a flash-point above 60 °C".

Under classification code "WF1", replace the two entries for UN No. 1391 with the two following new entries:

"3482 ALKALI METAL DISPERSION, FLAMMABLE or  
3482 ALKALINE EARTH METAL DISPERSION, FLAMMABLE".

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

<i>Organic peroxide</i>	<i>Column</i>	<i>Amendment</i>
tert-AMYLPEROXY-3,5,5-TRIMETHYLHEXANOATE	Subsidiary risks and remarks	Delete "3)"
DI-(2-tert-BUTYLPEROXYISOPROPYL)BENZENE(S)	Organic peroxide	Amend to read "DI-(tert-BUTYLPEROXYISOPROPYL)BENZENE(S)"
2,5-DIMETHYL-2,5-DI-(tert-BUTYLPEROXY)HEXANE (Concentration > 52 – 100)	(First row) Delete	

Insert the following new entries:

<i>Organic peroxide</i>	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
2,5-DIMETHYL-2,5-DI-(tert-BUTYLPEROXY)HEXANE	> 90 - 100					OP5				3103
2,5-DIMETHYL-2,5-DI-(tert-BUTYLPEROXY)HEXANE	> 52 - 90	≥ 10				OP7				3105

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

**"NOTE:** *Genetically modified microorganisms and organisms shall be assigned to this Class if they meet the conditions for this Class.*"

2.2.61.1.2 Add a new subdivision at the end to read as follows:

"TFW Toxic flammable substances, which, in contact with water, emit flammable gases".

(Consequential amendment)

2.2.61.3 Under classification code "TFC", add at the end (the text in parentheses is deleted):

"3488 TOXIC BY INHALATION LIQUID, FLAMMABLE, CORROSIVE, N.O.S. with an inhalation toxicity lower than or equal to 200 ml/m<sup>3</sup> and saturated vapour concentration greater than or equal to 500 LC<sub>50</sub>

3489 TOXIC BY INHALATION LIQUID, FLAMMABLE, CORROSIVE, N.O.S. with an inhalation toxicity lower than or equal to 1000 ml/m<sup>3</sup> and saturated vapour concentration greater than or equal to 10 LC<sub>50</sub>

3492 TOXIC BY INHALATION LIQUID, CORROSIVE, FLAMMABLE, N.O.S. with an inhalation toxicity lower than or equal to 200 ml/m<sup>3</sup> and saturated vapour concentration greater than or equal to 500 LC<sub>50</sub>

3493 TOXIC BY INHALATION LIQUID, CORROSIVE, FLAMMABLE, N.O.S. with an inhalation toxicity lower than or equal to 1000 ml/m<sup>3</sup> and saturated vapour concentration greater than or equal to 10 LC<sub>50</sub>".

After classification code "TFC", add a new branch to read as follows:

<b>flammable, water-reactive</b> <b>TFW</b>	3490	TOXIC BY INHALATION LIQUID, WATER-REACTIVE, FLAMMABLE, N.O.S. with an inhalation toxicity lower than or equal to 200 ml/m <sup>3</sup> and saturated vapour concentration greater than or equal to 500 LC <sub>50</sub>
	3491	TOXIC BY INHALATION LIQUID, WATER-REACTIVE, FLAMMABLE, N.O.S. with an inhalation toxicity lower than or equal to 1000 ml/m <sup>3</sup> and saturated vapour concentration greater than or equal to 10 LC <sub>50</sub>

2.2.62.1.3 Delete the definition of "Genetically modified microorganisms and organisms".

2.2.7.1.3 In the definition of *Fissile material*, amend the text before sub-paragraphs (a) and (b) to read:

"*Fissile nuclides* means uranium-233, uranium-235, plutonium-239 and plutonium-241. *Fissile material* means a material containing any of the fissile nuclides. Excluded from the definition of fissile material are:".

2.2.7.2.2.1 In the table, under "Kr-79", in the third column, replace " $1 \times 10^0$ " with " $2 \times 10^0$ ".

2.2.7.2.3.1.2 (a) (ii) Replace "providing they" by "that".

2.2.7.2.3.1.2 (a) (iii) and (iv) Replace "excluding material classified as fissile according to 2.2.7.2.3.5" with "excluding fissile material not excepted under 2.2.7.2.3.5".

2.2.7.2.3.1.2 (c) At the beginning, insert "meeting the requirements of 2.2.7.2.3.1.3," after "excluding powders,".

2.2.7.2.3.4.1 In the second sentence, insert ", taking into account the provisions of 6.4.8.14 of ADR," after "package".

2.2.7.2.3.5 Amend the introductory sentence before sub-paragraph (a) to read as follows:

"Packages containing fissile material shall be classified under the relevant entry of Table 2.2.7.2.1.1, the description of which includes the words "FISSILE" or "fissile-excepted". Classification as "fissile-excepted" is allowed only if one of the conditions (a) to (d) of this paragraph is met. Only one type of exception is allowed per consignment (see also 6.4.7.2 of ADR)."

2.2.7.2.3.5 (a) Amend to read as follows:

"(a) A mass limit per consignment, provided that the smallest external dimension of each package is not less than 10 cm, such that:

$$\frac{\text{mass of uranium - 235 (g)}}{X} + \frac{\text{mass of other fissile material (g)}}{Y} < 1$$

where X and Y are the mass limits defined in Table 2.2.7.2.3.5, provided that either:

- (i) each individual package contains not more than 15 g of fissile nuclides; for unpackaged material, this quantity limitation shall apply to the consignment being carried in or on the conveyance; or
- (ii) the fissile material is a homogeneous hydrogenous solution or mixture where the ratio of fissile nuclides to hydrogen is less than 5% by mass; or
- (iii) there are not more than 5 g of fissile nuclides in any 10 litre volume of material.

Beryllium shall not be present in quantities exceeding 1% of the applicable consignment mass limits provided in Table 2.2.7.2.3.5 except where the concentration of beryllium in the material does not exceed 1 gram beryllium in any 1 000 grams.

Deuterium shall also not be present in quantities exceeding 1% of the applicable consignment mass limits provided in Table 2.2.7.2.3.5 except where deuterium occurs up to natural concentration in hydrogen."

2.2.7.2.3.5 (b) Replace "fissile material is" by "fissile nuclides are".

2.2.7.2.3.5 (d) Amend to read as follows:

"(d) Plutonium containing not more than 20% of fissile nuclides by mass up to a maximum of 1 kg of plutonium per consignment. Shipments under this exception shall be under exclusive use."

2.2.7.2.4.1.1 (b) At the end, add "as specified in Table 2.2.7.2.4.1.2".

2.2.7.2.4.1.1 (d) At the end, add "as specified in Table 2.2.7.2.4.1.2".

2.2.7.2.4.1.3 In the first sentence before sub-paragraph (a), replace "provided that" with "only if".

2.2.7.2.4.1.4 At the beginning, replace "Radioactive material with an activity not exceeding the limit" with "Radioactive material in forms other than as specified in 2.2.7.2.4.1.3 and with an activity not exceeding the limits".

2.2.7.2.4.1.5 In the first sentence, delete "with an activity not exceeding the limit specified in column 4 of Table 2.2.7.2.4.1.2" and replace "provided that" with "only if".

2.2.7.2.4.1.6 The first amendment only applies to the French version. At the end, replace "provided that" with "only if".

2.2.7.2.4.2 Replace "if the conditions of 2.2.7.2.3.1 and 4.1.9.2 are met" with "if the definition of LSA in 2.2.7.1.3 and the conditions of 2.2.7.2.3.1, 4.1.9.2 and 7.5.11 CV33 (2) of ADR are met".

2.2.7.2.4.3 Replace "if the conditions of 2.2.7.2.3.2 and 4.1.9.2 are met" with "if the definition of SCO in 2.2.7.1.3 and the conditions of 2.2.7.2.3.2, 4.1.9.2 and 7.5.11 CV33 (2) of ADR are met".

2.2.8.1.6 At the end of the second paragraph, replace "OECD Guideline 404<sup>7</sup>." with "OECD Test Guideline 404<sup>7</sup> or 435<sup>8</sup>. A substance which is determined not to be corrosive in accordance with OECD Test Guideline 430<sup>9</sup> or 431<sup>10</sup> may be considered not to be corrosive to skin for the purposes of ADN without further testing."

2.2.9.1.10.3 Renumber footnotes 9 and 10 as 11 and 12. Add the following text at the end: "unless they are classified as not environmentally hazardous according to Regulation 1272/2008/EC<sup>13</sup>".

2.2.9.1.11 In the second sentence, insert "of toxic substances or" before "of infectious substances".

Renumber footnote 11 as 14.

In Note 3, add the following sentence at the end: "*Genetically modified live animals shall be carried under terms and conditions of the competent authorities of the countries of origin and destination.*"

2.2.9.1.14 In the Note, amend the proper shipping name of UN No. 3166 to read:

*"UN No. 3166 engine, internal combustion or vehicle, flammable gas powered or 3166 vehicle, flammable liquid powered or 3166 engine, fuel cell, flammable gas powered or 3166 engine, fuel cell, flammable liquid powered or 3166 vehicle, fuel cell, flammable gas powered or 3166 vehicle, fuel cell, flammable liquid powered,"*

2.2.9.3 Replace "List of collective entries" with "List of entries".

2.2.9.3 For code M11, amend the proper shipping name for UN 3359 to read "FUMIGATED CARGO TRANSPORT UNIT".

## Chapter 2.3

2.3.3.1 Amend to read as follows:

### **2.3.3.1 Determination of flash-point**

2.3.3.1.1 The following methods for determining the flash-point of flammable liquids may be used:

#### International standards:

ISO 1516 (Determination of flash/no flash – Closed cup equilibrium method)

ISO 1523 (Determination of flash point – Closed cup equilibrium method)

ISO 2719 (Determination of flash point – Pensky-Martens closed cup method)

<sup>7</sup> OECD Guideline for the testing of chemicals No. 404 "Acute Dermal Irritation/Corrosion" 2002.

<sup>8</sup> OECD Guideline for the testing of chemicals No. 435 "In Vitro Membrane Barrier Test Method for Skin Corrosion" 2006.

<sup>9</sup> OECD Guideline for the testing of chemicals No. 430 "In Vitro Skin Corrosion: Transcutaneous Electrical Resistance Test (TER)" 2004.

<sup>10</sup> OECD Guideline for the testing of chemicals No. 431 "In Vitro Skin Corrosion: Human Skin Model Test" 2004.

<sup>13</sup> Regulation 1272/2008/EC of the European Parliament and of the Council of 16 December 2008 on classification, labelling and packaging of substances and mixtures (Official Journal of the European Unions No. L 353 of 30.12.2008).

ISO 13736 (Determination of flash point – Abel closed-cup method)

ISO 3679 (Determination of flash point – Rapid equilibrium closed cup method)

ISO 3680 (Determination of flash/no flash – Rapid equilibrium closed cup method)

National standards:

*American Society for Testing Materials International, 100 Barr Harbor Drive, PO Box C700, West Conshohocken, Pennsylvania, USA 19428-2959:*

ASTM D3828-07a, Standard Test Methods for Flash Point by Small Scale Closed-Cup Tester

ASTM D56-05, Standard Test Method for Flash Point by Tag Closed-Cup Tester

ASTM D3278-96(2004)e1, Standard Test Methods for Flash Point of Liquids by Small Scale Closed-Cup Apparatus

ASTM D93-08, Standard Test Methods for Flash Point by Pensky-Martens Closed-Cup Tester

*Association française de normalisation, AFNOR, 11, rue de Pressensé, F-La Plaine Saint-Denis Cedex:*

French Standard NF M 07 - 019

French Standards NF M 07 - 011 / NF T 30 - 050 / NF T 66 - 009

French Standard NF M 07 - 036

*Deutsches Institut für Normung, Burggrafenstr. 6, D-10787 Berlin:*

Standard DIN 51755 (flash-points below 65 °C)

*State Committee of the Council of Ministers for Standardization, RUS-113813, GSP, Moscow, M-49 Leninsky Prospect, 9:*

GOST 12.1.044-84

2.3.3.1.2 *Existing text of 2.3.3.1.2 with the following modification:* amend subparagraph (d) to read as follows:

"(d) International Standards EN ISO 13736 and EN ISO 2719, Method B."

2.3.3.1.3 *Existing text of 2.3.3.1.6 with the following modifications:* amend the first sentence to read "The standards listed in 2.3.3.1.1 shall only be used for flash-point ranges which are specified therein." In the second sentence, replace "the method" with "the standard".

2.3.3.1.4 *Existing text of 2.3.3.1.7 with the following modification:* delete "in accordance with 2.3.3.1.5" and "in accordance with 2.3.3.1.4".

2.3.3.1.5 *Existing text of 2.3.3.1.8."*

2.3.3.2 Insert a new sub-section 2.3.3.2 to read as follows and renumber 2.3.3.2 accordingly:

### "2.3.3.2 *Determination of initial boiling point*

The following methods for determining the initial boiling point of flammable liquids may be used:

International standards:

ISO 3924 (Petroleum products – Determination of boiling range distribution – Gas chromatography method)]

ISO 4626 (Volatile organic liquids – Determination of boiling range of organic solvents used as raw materials)

ISO 3405 (Petroleum products – Determination of distillation characteristics at atmospheric pressure)

National standards:

*American Society for Testing Materials International, 100 Barr Harbor Drive, PO Box C700, West Conshohocken, Pennsylvania, USA 19428-2959:*

ASTM D86-07a, Standard Test Method for Distillation of Petroleum Products at Atmospheric Pressure

ASTM D1078-05, Standard Test Method for Distillation Range of Volatile Organic Liquids

Further acceptable methods:

Method A.2 as described in Part A of the Annex to Commission Regulation (EC) No 440/2008<sup>1</sup>."

## Chapter 2.4

2.4.1.4 The two first amendments do not apply to the English text.

Amend the definition of "NOEC" to read as follows:

"- NOEC (No Observed Effect Concentration): the test concentration immediately below the lowest tested concentration with statistically significant adverse effect. The NOEC has no statistically significant adverse effect compared to the control;"

The fourth amendment does not apply to the English text.

After the definition of "GLP", add the following new definition:

"- EC<sub>x</sub>: the concentration associated with x% response;"

2.4.2.1 Rearrange the indents to read as follows:

- "(a) Acute aquatic toxicity;
- (b) Chronic aquatic toxicity;
- (c) Potential for or actual bioaccumulation; and
- (d) Degradation (biotic or abiotic) for organic chemicals."

<sup>1</sup> Commission Regulation (EC) No 440/2008 of 30 May 2008 laying down test methods pursuant to Regulation (EC) No 1907/2006 of the European Parliament and of the Council on the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH) (Official Journal of the European Union, No. L 142 of 31.05.2008, p.1-739 and No. L 143 of 03.06.2008, p.55).

2.4.2.3 At the beginning, add the following two new paragraphs:

"**Acute aquatic toxicity** means the intrinsic property of a substance to be injurious to an organism in a short-term aquatic exposure to that substance.

**Acute (short-term) hazard**, for classification purposes, means the hazard of a chemical caused by its acute toxicity to an organism during short-term aquatic exposure to that chemical."

The existing text becomes the new third paragraph.

2.4.2.4 *Text of existing 2.4.2.6, with the following modifications:*

At the beginning, add the following two new paragraphs:

"**Chronic aquatic toxicity** means the intrinsic property of a substance to cause adverse effects to aquatic organisms during aquatic exposures which are determined in relation to the life-cycle of the organism.

**Long-term hazard**, for classification purposes, means the hazard of a chemical caused by its chronic toxicity following long-term exposure in the aquatic environment."

The existing text becomes the new third paragraph.

Amend the last sentence to read as follows: "The NOECs or other equivalent ECx shall be used."

2.4.2.5 *Text of existing 2.4.2.4. The modifications do not apply to the English text.*

2.4.2.6 *Text of existing 2.4.2.5, with the following modifications:*

At the beginning, add the following new paragraph:

"**Degradation** means the decomposition of organic molecules to smaller molecules and eventually to carbon dioxide, water and salts."

In the second sentence of the new second paragraph, replace "OECD biodegradability tests (OECD Test Guideline 301 (A - F))" with "biodegradability tests (A-F) of OECD Test Guideline 301". The amendments to the fourth sentence and to the new third paragraph do not apply to the English text.

In sub-paragraph (a), at the end, after "has been degraded", insert the following text: ", unless the substance is identified as a complex, multi-component substance with structurally similar constituents. In this case, and where there is sufficient justification, the 10-day window condition may be waived and the pass level applied at 28 days<sup>4</sup>."

2.4.3 Amend title to read as follows:

**2.4.3 Substance classification categories and criteria**

2.4.3.1 In subparagraphs (a) and (b), replace "the tables" with "table 2.4.3.1".

Replace the tables with the following table:

---

<sup>4</sup> See Chapter 4.1 and Annex 9, paragraph A9.4.2.2.3 of the GHS.

Table 2.4.3.1: Categories for substances hazardous to the aquatic environment (see Note 1)

<b>(a) Acute (short-term) aquatic hazard</b>	
<b>Category Acute 1:</b> (Note 2)	
96 hr LC <sub>50</sub> (for fish)	≤ 1 mg/l and/or
48 hr EC <sub>50</sub> (for crustacea)	≤ 1 mg/l and/or
72 or 96 hr ErC <sub>50</sub> (for algae or other aquatic plants)	≤ 1 mg/l (see Note 3)
<b>Category Acute 2:</b>	
96 hr LC <sub>50</sub> (for fish)	> 1 but ≤ 10 mg/l and/or
48 hr EC <sub>50</sub> (for crustacea)	>1 but ≤ 10 mg/l and/or
72 or 96 hr ErC <sub>50</sub> (for algae or other aquatic plants)	>1 but ≤ 10 mg/l (see Note 3)
<b>Category Acute 3:</b>	
96 hr LC <sub>50</sub> (for fish)	>10 but ≤ 100 mg/l and/or
48 hr EC <sub>50</sub> (for crustacea)	>10 but ≤ 100 mg/l and/or
72 or 96 hr ErC <sub>50</sub> (for algae or other aquatic plants)	>10 but ≤ 100 mg/l (see Note 3)
<b>(b) Long-term aquatic hazard</b> (see also figure 2.4.3.1)	
(i) Non-rapidly degradable substances (see Note 4) for which there are adequate chronic toxicity data available	
<b>Category Chronic 1:</b> (see Note 2)	
Chronic NOEC or EC <sub>x</sub> (for fish)	≤ 0.1 mg/l and/or
Chronic NOEC or EC <sub>x</sub> (for crustacea)	≤ 0.1 mg/l and/or
Chronic NOEC or EC <sub>x</sub> (for algae or other aquatic plants)	≤ 0.1 mg/l
<b>Category Chronic 2:</b>	
Chronic NOEC or EC <sub>x</sub> (for fish)	≤ 1 mg/l and/or
Chronic NOEC or EC <sub>x</sub> (for crustacea)	≤ 1 mg/l and/or
Chronic NOEC or EC <sub>x</sub> (for algae or other aquatic plants)	≤ 1 mg/l
(ii) Rapidly degradable substances for which there are adequate chronic toxicity data available	
<b>Category Chronic 1:</b> (see Note 2)	
Chronic NOEC or EC <sub>x</sub> (for fish)	≤ 0.01 mg/l and/or
Chronic NOEC or EC <sub>x</sub> (for crustacea)	≤ 0.01 mg/l and/or
Chronic NOEC or EC <sub>x</sub> (for algae or other aquatic plants)	≤ 0.01 mg/l
<b>Category Chronic 2:</b>	
Chronic NOEC or EC <sub>x</sub> (for fish)	≤ 0.1 mg/l and/or
Chronic NOEC or EC <sub>x</sub> (for crustacea)	≤ 0.1 mg/l and/or
Chronic NOEC or EC <sub>x</sub> (for algae or other aquatic plants)	≤ 0.1 mg/l
<b>Category Chronic 3:</b>	
Chronic NOEC or EC <sub>x</sub> (for fish)	≤ 1 mg/l and/or
Chronic NOEC or EC <sub>x</sub> (for crustacea)	≤ 1 mg/l and/or
Chronic NOEC or EC <sub>x</sub> (for algae or other aquatic plants)	≤ 1 mg/l

(iii) Substances for which adequate chronic toxicity data are not available

**Category Chronic 1:** (see Note 2)

96 hr LC<sub>50</sub> (for fish) ≤ 1 mg/l and/or

48 hr EC<sub>50</sub> (for crustacea) ≤ 1 mg/l and/or

72 or 96 hr ErC<sub>50</sub> (for algae or other aquatic plants) ≤ 1 mg/l (see Note 3)

and the substance is not rapidly degradable and/or the experimentally determined BCF is ≥ 500 (or, if absent, the log K<sub>ow</sub> ≥ 4) (see Notes 4 and 5).

**Category Chronic 2:**

96 hr LC<sub>50</sub> (for fish) > 1 but ≤ 10 mg/l and/or

48 hr EC<sub>50</sub> (for crustacea) > 1 but ≤ 10 mg/l and/or

72 or 96 hr ErC<sub>50</sub> (for algae or other aquatic plants) > 1 but ≤ 10 mg/l (see Note 3)

and the substance is not rapidly degradable and/or the experimentally determined BCF is ≥ 500 (or, if absent, the log K<sub>ow</sub> ≥ 4) (see Notes 4 and 5).

**Category Chronic 3:**

96 hr LC<sub>50</sub> (for fish) > 10 but ≤ 100 mg/l and/or

48 hr EC<sub>50</sub> (for crustacea) > 10 but ≤ 100 mg/l and/or

72 or 96 hr ErC<sub>50</sub> (for algae or other aquatic plants) > 10 but ≤ 100 mg/l (see Note 3)

and the substance is not rapidly degradable and/or the experimentally determined BCF is ≥ 500 (or, if absent, the log K<sub>ow</sub> ≥ 4) (see Notes 4 and 5).

(c) **"Safety net" classification**

**Category Chronic 4:**

Poorly soluble substances for which no acute toxicity is recorded at levels up to the water solubility, and which are not rapidly degradable and have a log K<sub>ow</sub> ≥ 4, indicating a potential to bioaccumulate, will be classified in this category unless other scientific evidence exists showing classification to be unnecessary. Such evidence would include an experimentally determined BCF < 500, or a chronic toxicity NOECs > 1 mg/l, or evidence of rapid degradation in the environment.

Substances which come under Category Chronic 4 alone are not considered to be environmentally hazardous in the sense of ADN.

***NOTE 1:** The organisms, fish, crustacea and algae are tested as surrogate species covering a range of trophic levels and taxa, and the test methods are highly standardized. Data on other organisms may also be considered, however, provided they represent equivalent species and test endpoints.*

***NOTE 2:** When classifying substances as Acute 1 and/or Chronic 1 it is necessary at the same time to indicate an appropriate M factor (see 2.4.4.6.4) to apply the summation method.*

***NOTE 3:** Where the algal toxicity ErC<sub>50</sub> (= EC<sub>50</sub>(growth rate)) falls more than 100 times below the next most sensitive species and results in a classification based solely on this effect, consideration shall be given to whether this toxicity is representative of the toxicity to aquatic plants. Where it can be shown that this is not the case, professional judgment shall be used in deciding if classification shall be applied. Classification shall be based on the ErC<sub>50</sub>. In circumstances where the basis of the EC<sub>50</sub> is not specified and no ErC<sub>50</sub> is recorded, classification shall be based on the lowest EC<sub>50</sub> available.*

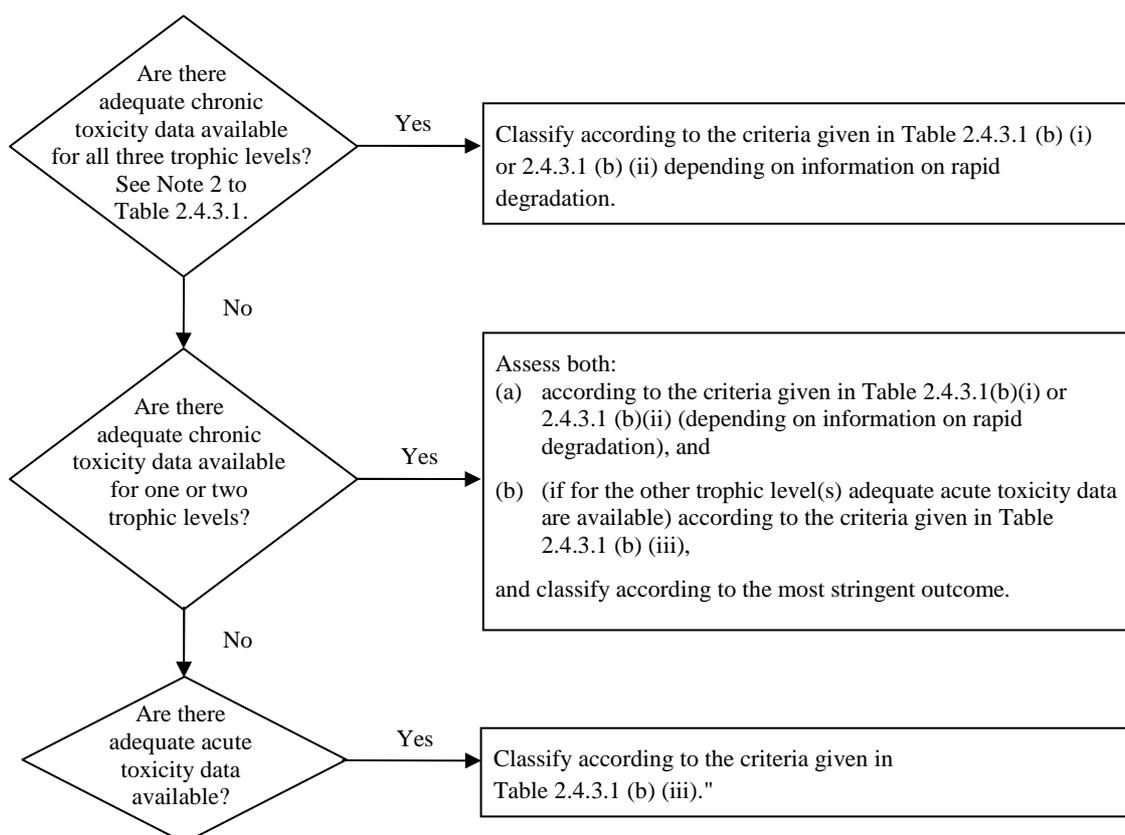
***NOTE 4:** Lack of rapid degradability is based on either a lack of ready biodegradability or other evidence of lack of rapid degradation. When no useful data on degradability are*

available, either experimentally determined or estimated data, the substance shall be regarded as not rapidly degradable.

**NOTE 5:** Potential to bioaccumulate, based on an experimentally derived  $BCF \geq 500$  or, if absent, a  $\log K_{ow} \geq 4$  provided  $\log K_{ow}$  is an appropriate descriptor for the bioaccumulation potential of the substance. Measured  $\log K_{ow}$  values take precedence over estimated values and measured BCF values take precedence over  $\log K_{ow}$  values."

2.4.3.1 Add the following figure:

**"Figure 2.4.3.1: Categories for substances long-term hazardous to the aquatic environment**



2.4.3.2 Add a new paragraph to read as follows:

"2.4.3.2 The classification scheme in Table 2.4.3.2 below summarizes the classification criteria for substances.

**Table 2.4.3.2: Classification scheme for substances hazardous to the aquatic environment**

Classification categories			
Acute hazard (Note 1)	Long-term hazard (Note 2)		
	Adequate chronic toxicity data available		Adequate chronic toxicity data not available (Note 1)
	Non-rapidly degradable substances (Note 3)	Rapidly degradable substances (Note 3)	
<b>Category: Acute 1</b>	<b>Category: Chronic 1</b>	<b>Category: Chronic 1</b>	<b>Category: Chronic 1</b>
$L(E)C_{50} \leq 1.00$	$NOEC \text{ or } EC_x \leq 0.1$	$NOEC \text{ or } EC_x \leq 0.01$	$L(E)C_{50} \leq 1.00$ and lack of rapid degradability and/or $BCF \geq 500$ or, if absent $\log K_{ow} \geq 4$
<b>Category: Acute 2</b>	<b>Category: Chronic 2</b>	<b>Category: Chronic 2</b>	<b>Category: Chronic 2</b>
$1.00 < L(E)C_{50} \leq 10.0$	$0.1 < NOEC \text{ or } EC_x \leq 1$	$0.01 < NOEC \text{ or } EC_x \leq 0.1$	$1.00 < L(E)C_{50} \leq 10.0$ and lack of rapid degradability and/or $BCF \geq 500$ or, if absent $\log K_{ow} \geq 4$
<b>Category: Acute 3</b>		<b>Category: Chronic 3</b>	<b>Category: Chronic 3</b>
$10.0 < L(E)C_{50} \leq 100$		$0.1 < NOEC \text{ or } EC_x \leq 1$	$10.0 < L(E)C_{50} \leq 100$ and lack of rapid degradability and/or $BCF \geq 500$ or, if absent $\log K_{ow} \geq 4$
	<b>Category: Chronic 4 (Note 4)</b> Example: (Note 5) No acute toxicity and lack of rapid degradability and $BCF \geq 500$ or, if absent $\log K_{ow} \geq 4$ , unless $NOECs > 1 \text{ mg/l}$		

**NOTE 1:** Acute toxicity band based on  $L(E)C_{50}$  values in mg/l for fish, crustacea and/or algae or other aquatic plants (or Quantitative Structure Activity Relationships (QSAR) estimation if no experimental data<sup>5</sup>).

**NOTE 2:** Substances are classified in the various chronic categories unless there are adequate chronic toxicity data available for all three trophic levels above the water solubility or above 1 mg/l. ("Adequate" means that the data sufficiently cover the endpoint of concern. Generally this would mean measured test data, but in order to avoid unnecessary testing it can on a case by case basis also be estimated data, e.g. (Q)SAR, or for obvious cases expert judgement).

<sup>5</sup> Special guidance is provided in Chapter 4.1, paragraph 4.1.2.13 and Annex 9, Section A9.6 of the GHS.

**NOTE 3:** Chronic toxicity band based on NOEC or equivalent  $EC_x$  values in mg/l for fish or crustacea or other recognized measures for chronic toxicity.

**NOTE 4:** The system also introduces a "safety net" classification (referred to as category Chronic 4) for use when the data available do not allow classification under the formal criteria but there are nevertheless some grounds for concern.

**NOTE 5:** For poorly soluble substances for which no acute toxicity has been demonstrated at the solubility limit, and are both not rapidly degraded and have a potential to bioaccumulate, this category should apply unless it can be demonstrated that the substance does not require classification for aquatic long-term hazards."

2.4.4.1 In the first sentence, replace "meaning acute categories 1 to 3 and Chronic categories 1 to 4" with ", meaning categories Acute 1 to 3 and Chronic 1 to 4". The second amendment does not apply to the English text.

Amend the second paragraph to read as follows:

"The "relevant ingredients" of a mixture are those which are present in a concentration equal to or greater than 0.1% (by mass) for ingredients classified as Acute and/or Chronic 1 and equal to or greater than 1% for other ingredients, unless there is a presumption (e.g. in the case of highly toxic ingredients) that an ingredient present at less than 0.1% can still be relevant for classifying the mixture for aquatic environmental hazards."

2.4.4.2 In the heading of the figure, replace "chronic" with "long-term".

In the figure, in the middle column, modify the three bullet points to read them as sub-paragraphs (a), (b) and (c). In the new sub-paragraph (c), replace "formula" with "formulas" and insert "or EqNOECm" after " $L(E)C_{50}$ " and "or "Chronic"" after ""Acute"". In the right column, replace "chronic toxicity" with "long-term" (four times).

2.4.4.3 Amend to read as follows:

**2.4.4.3 Classification of mixtures when toxicity data are available for the complete mixture**

2.4.4.3.1 When the mixture as a whole has been tested to determine its aquatic toxicity, this information shall be used for classifying the mixture according to the criteria that have been agreed for substances. The classification is normally based on the data for fish, crustacea and algae/plants (2.4.2.3 and 2.4.2.4). When adequate acute or chronic data for the mixture as a whole are lacking, "bridging principles" or "summation method" shall be applied (see 2.4.4.4 and 2.4.4.5).

2.4.4.3.2 The long-term hazard classification of mixtures requires additional information on degradability and in certain cases bioaccumulation. There are no degradability and bioaccumulation data for mixtures as a whole. Degradability and bioaccumulation tests for mixtures are not used as they are usually difficult to interpret, and such tests may be meaningful only for single substances.

2.4.4.3.3 Classification for categories Acute 1, 2 and 3

(a) When there are adequate acute toxicity test data ( $LC_{50}$  or  $EC_{50}$ ) available for the mixture as a whole showing  $L(E)C_{50} \leq 1$  mg/l:

Classify the mixture as Acute 1, 2 or 3 in accordance with Table 2.4.3.1 (a);

(b) When there are acute toxicity test data ( $LC_{50}(s)$  or  $EC_{50}(s)$ ) available for the mixture as a whole showing  $L(E)C_{50}(s) > 1$  mg/l, or above the water solubility:

No need to classify for acute hazard under ADN.

## 2.4.4.3.4 Classification for categories Chronic 1, 2 and 3

(a) When there are adequate chronic toxicity data ( $EC_x$  or NOEC) available for the mixture as a whole showing  $EC_x$  or NOEC of the tested mixture  $\leq 1\text{mg/l}$ :

(i) classify the mixture as Chronic 1, 2 or 3 in accordance with Table 2.4.3.1 (b) (ii) (rapidly degradable) if the available information allows the conclusion that all relevant ingredients of the mixture are rapidly degradable;

(ii) classify the mixture as Chronic 1, 2 or 3 in all other cases in accordance with Table 2.4.3.1 (b) (i) (non-rapidly degradable);

(b) When there are adequate chronic toxicity data ( $EC_x$  or NOEC) available for the mixture as a whole showing  $EC_x(s)$  or NOEC(s) of the tested mixture  $> 1\text{mg/l}$  or above the water solubility:

No need to classify for long-term hazard under ADN.

## 2.4.4.3.5 Classification for category Chronic 4

If there are nevertheless reasons for concern:

Classify the mixture as Chronic 4 (safety net classification) in accordance with Table 2.4.3.1 (c)".

2.4.4.4 Amend the heading to read as follows: "***Classification of mixtures when toxicity data are not available for the complete mixture: bridging principles***".

2.4.4.4.2 Amend to read as follows:

"2.4.4.4.2 *Dilution*

Where a new mixture is formed by diluting a tested mixture or a substance with a diluent which has an equivalent or lower aquatic hazard classification than the least toxic original ingredient and which is not expected to affect the aquatic hazards of other ingredients, then the resulting mixture shall be classified as equivalent to the original tested mixture or substance. Alternatively, the method explained in 2.4.4.5 may be applied."

2.4.4.4.3 At the beginning, replace "one production batch of a complex mixture" with "a tested production batch of a mixture". Insert "untested" after "another" and replace "and produced" with "when produced". At the end of the first sentence, insert "untested" before "batch".

2.4.4.4.4 The first amendment does not apply to the English text.

At the beginning, replace "If a mixture" with "If a tested mixture" and insert "the" before "ingredients". Insert "untested" after "concentrated" and "tested" after "original".

2.4.4.4.5 Amend the text after the title to read as follows:

"For three mixtures (A, B and C) with identical ingredients, where mixtures A and B have been tested and are in the same toxicity category, and where untested mixture C has the same toxicologically active ingredients as mixtures A and B but has concentrations of toxicologically active ingredients intermediate to the concentrations in mixtures A and B, then mixture C is assumed to be in the same category as A and B."

2.4.4.4.6 In sub-paragraph (b), insert "essentially" before "the same". In sub-paragraph (d), replace "Classifications" with "Data on aquatic hazards" and "the same" with "substantially equivalent". Amend the text after sub-paragraph (d) to read as follows:

"If mixture (i) or (ii) is already classified based on test data, then the other mixture can be assigned the same hazard category."

2.4.4.5 In the heading, insert "toxicity" before "data".

2.4.4.5.2 Amend to read as follows:

"2.4.4.5.2 Mixtures may be made of a combination of both ingredients that are classified (as Acute 1 to 3 and/or Chronic 1 to 4) and those for which adequate toxicity test data are available. When adequate toxicity data are available for more than one ingredient in the mixture, the combined toxicity of those ingredients shall be calculated using the following additivity formulas (a) or (b), depending on the nature of the toxicity data:

(a) Based on acute aquatic toxicity:

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

where:

$C_i$  = concentration of ingredient i (mass percentage);

$L(E)C_{50i}$  =  $LC_{50}$  or  $EC_{50}$  for ingredient i (mg/l);

$n$  = number of ingredients, 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;

The calculated toxicity shall be used to assign that portion of the mixture an acute hazard category which is then subsequently used in applying the summation method;

(b) Based on chronic aquatic toxicity:

$$\frac{\sum C_i + \sum C_j}{EqNOEC_m} = \sum_n \frac{C_i}{NOEC_i} + \sum_n \frac{C_j}{0.1 \times NOEC_j}$$

where:

$C_i$  = concentration of ingredient i (mass percentage) covering the rapidly degradable ingredients;

$C_j$  = concentration of ingredient j (mass percentage) covering the non-rapidly degradable ingredients;

$NOEC_i$  = NOEC (or other recognized measures for chronic toxicity) for ingredient covering the rapidly degradable ingredients, in mg/l;

$NOEC_j$  = NOEC (or other recognized measures for chronic toxicity) for ingredient i covering the non-rapidly degradable ingredients, in mg/l;

$n$  = number of ingredients, and i and j are running from 1 to n;

$EqNOEC_m$  = equivalent NOEC of the part of the mixture with test data;

The equivalent toxicity thus reflects the fact that non-rapidly degrading substances are classified one hazard category level more “severe” than rapidly degrading substances.

The calculated equivalent toxicity shall be used to assign that portion of the mixture a long-term hazard category, in accordance with the criteria for rapidly degradable substances (Table 2.4.3.1 (b) (ii)), which is then subsequently used in applying the summation method."

2.4.4.5.3 In the first sentence, replace "each substance" with "each ingredient", "same species" with "same taxonomic group", "daphnia" with "crustacea" and "three species" with "three groups". In the second sentence, replace "species" with "taxonomic group". In the last sentence, insert "and chronic" before "toxicity" and "and/or Chronic 1, 2 or 3" after "Acute 1, 2 or 3".

2.4.4.6.1 The amendment does not apply to the English text.

2.4.4.6.2 Amend the heading to read "Classification for categories Acute 1, 2 and 3".

2.4.4.6.2.1 In the first sentence, replace "shall be" with "are". In the second sentence, insert "the concentrations (in %) of" before "these ingredients". Delete "category" (twice).

2.4.4.6.2.4: Add "the concentrations of " before "classified ingredients".

Amend title and column headings of Table 2.4.4.6.2.4 as follows:

**"Table 2.4.4.6.2.4 Classification of a mixture for acute hazards based on summation of the concentrations of classified ingredients**

<i>Sum of the concentrations (in %) of ingredients classified as:</i>	<i>Mixture classified as:"</i>
---	--------------------------------

2.4.4.6.3 Amend the heading to read "*Classification for categories Chronic 1, 2, 3 and 4*".

2.4.4.6.3.1 The first amendment does not apply to the English text. In the second sentence, insert "the concentrations (in %) of" before "these ingredients".

2.4.4.6.3.2 Insert "the concentrations (in %) of" after "the sum of" (twice).

2.4.4.6.3.5 Amend to read as follows:

"2.4.4.6.3.5 The classification of mixtures for long-term hazards based on this summation of the concentrations of classified ingredients is summarized in Table 2.4.4.6.3.5 (former Table 2.4.4.6.3.4) below."

2.4.4.6.3.5 Amend title and column headings of Table 2.4.4.6.3.5 as follows:

**"Table 2.4.4.6.3.5 Classification of a mixture for long-term hazards based on summation of the concentrations of classified ingredients**

<i>Sum of the concentrations (in %) of ingredients classified as:</i>	<i>Mixture classified as:"</i>
---	--------------------------------

2.4.4.6.4 In the first sentence, replace "Category acute 1 ingredients with toxicities well below 1 mg/l may influence" with "Acute 1 or Chronic 1 ingredients with acute toxicities well below 1 mg/l and/or chronic toxicities well below 0.1 mg/l (if non-rapidly degradable) and 0.01 mg/l (if rapidly degradable) may influence".

In the second sentence, insert "and Chronic 1" after "the concentrations of Acute 1". In the last sentence, insert "and/or chronic" after "specific acute".

2.4.4.6.4 Replace Table 2.4.4.6.4 with the following table:

**"Table 2.4.4.6.4: Multiplying factors for highly toxic ingredients of mixtures**

<i>Acute toxicity</i> <i>L(E)C<sub>50</sub> value</i>	<i>M factor</i>	<i>Chronic toxicity</i> <i>NOEC value</i>	<i>M factor</i>	
			<i>NRD<sup>a</sup> ingredients</i>	<i>RD<sup>b</sup> ingredients</i>
0.1 < L(E)C <sub>50</sub> ≤ 1	1	0.01 < NOEC ≤ 0.1	1	–
0.01 < L(E)C <sub>50</sub> ≤ 0.1	10	0.001 < NOEC ≤ 0.01	10	1
0.001 < L(E)C <sub>50</sub> ≤ 0.01	100	0.0001 < NOEC ≤ 0.001	100	10
0.0001 < L(E)C <sub>50</sub> ≤ 0.001	1 000	0.00001 < NOEC ≤ 0.0001	1 000	100
0.00001 < L(E)C <sub>50</sub> ≤ 0.0001	10 000	0.000001 < NOEC ≤ 0.00001	10 000	1 000
(continue in factor 10 intervals)		(continue in factor 10 intervals)		

<sup>a</sup> *Non-rapidly degradable.*

<sup>b</sup> *Rapidly degradable.*"

2.4.4.6.5 In the first sentence, replace "aquatic hazard" with "aquatic toxicity".

## Part 3

### Chapter 3.1

3.1.2.8.1 In the first sentence, insert "or 318" after "special provision 274".

3.1.2.8.1.1 In the first sentence, replace ", if relevant a biological name," with "or biological name,".

Delete 3.1.2.9 and add a new 3.1.3 to read as follows:

#### **"3.1.3 Solutions or mixtures**

**NOTE:** *Where a substance is specifically mentioned by name in Table A of Chapter 3.2, it shall be identified in carriage by the proper shipping name in Column (2) of Table A of Chapter 3.2. Such substances may contain technical impurities (for example those deriving from the production process) or additives for stability or other purposes that do not affect its classification. However, a substance mentioned by name containing technical impurities or additives for stability or other purposes affecting its classification shall be considered a solution or mixture (see 2.1.3.3).*

3.1.3.1 A solution or mixture is not subject to ADN if the characteristics, properties, form or physical state of the solution or mixture are such that it does not meet the criteria, including human experience criteria, for inclusion in any class.

3.1.3.2 A solution or mixture composed of a single predominant substance mentioned by name in Table A of Chapter 3.2 and one or more substances not subject to ADN and/or traces of one or more substances mentioned by name in Table A of Chapter 3.2, shall be assigned the UN number and proper shipping name of the predominant substance mentioned by name in Table A of Chapter 3.2 unless:

(a) The solution or mixture is mentioned by name in Table A of Chapter 3.2;

(b) The name and description of the substance mentioned by name in Table A of Chapter 3.2 specifically indicate that they apply only to the pure substance;

(c) The class, classification code, packing group, or physical state of the solution or mixture is different from that of the substance mentioned by name in Table A of Chapter 3.2; or

(d) The hazard characteristics and properties of the solution or mixture necessitate emergency response measures that are different from those required for the substance mentioned by name in Table A of Chapter 3.2.

Qualifying words such as "SOLUTION" or "MIXTURE", as appropriate, shall be added as part of the proper shipping name, for example, "ACETONE SOLUTION". In addition, the concentration of the mixture or solution may also be indicated after the basic description of the mixture or solution, for example, "ACETONE 75% SOLUTION".

3.1.3.3 A solution or mixture that is not mentioned by name in Table A of Chapter 3.2 and that is composed of two or more dangerous goods shall be assigned to an entry that has the proper shipping name, description, class, classification code and packing group that most precisely describe the solution or mixture."

## Chapter 3.2

3.2.1 Amend the explanatory notes for column (7a) to read as follows:

"Column (7a) "Limited Quantities"

Provides the maximum quantity per inner packaging or article for carrying dangerous goods as limited quantities in accordance with Chapter 3.4."

### Table A

For UN Nos. 0323, 0366, 0441, 0445, 0455, 0456, 0460 and 0500, add "347" in column (6).

For UN Nos. 1092, 1098, 1135, 1143, 1163, 1182, 1185, 1238, 1239, 1244, 1251, 1510, 1541, 1580, 1595, 1605, 1647, 1670, 1695, 1752, 1809, 1810, 1834, 1838, 1892, 1994, 2232, 2334, 2337, 2382, 2407, 2474, 2477, 2480, 2481, 2482, 2483, 2484, 2485, 2486, 2487, 2488, 2521, 2605, 2606, 2644, 2646, 2668, 3023, 3079 and 3246 add "354" in column (6).

For UN Nos. 1092, 1098, 1135, 1143, 1163, 1182, 1185, 1238, 1239, 1244, 1251, 1541, 1580, 1595, 1605, 1647, 1670, 1695, 1752, 1809, 1810, 1838, 1892, 1994, 2232, 2334, 2337, 2382, 2407, 2474, 2477, 2480, 2482, 2484, 2485, 2486, 2487, 2488, 2521, 2606, 2644, 2646, 2668, 3023, 3246 and 3381 to 3390 amend the code in column (7b) to read "E0".

For UN Nos. 1320, 1321, 1348, 1431, 1445, 1446, 1447, 1448, 1449, 1463, 1469, 1470, 1500, 1511, 1571, 1868, 1872, 1950 (classification code 5 FC), 2441, 2464, 2573, 2719, 2741, 2925 (II, III), 2926 (II, III), 3085 (I, II, III), 3087 (I, II, III), 3126 (II, III), 3128 (II, III), 3179 (II, III), 3180 (II, III), 3191 (II, III), 3192 (II, III), 3206 (II, III), 3369, 3408 (II, III), 3477, 9000, add "EP" in column (9).

For UN Nos. 1353, 1373, 1389, 1390, 1391 (both entries), 1392, 1393, 1421, 1477 (PG II and III), 1481 (PG II and III), 1483 (PG II and III), 1740 (PG II and III), 2430 (PG I, II and III), 2583, 2584, 2585, 2586, 2837 (PG II and III), 2985, 2986, 2987, 2988, 3089 (PG II and III), 3145 (PG I, II and III), 3167, 3168, 3169, 3211 (PG II and III), 3215, 3216, 3218 (PG II and III), 3401 and 3402, delete "274" in column (6).

For UN Nos. 1002 and 1956, delete "292" in column (6).

For UN Nos. 1267, 1268 and 3259, delete "649" in column (6).

For UN Nos. 1391, 1779, 3176 (II), 3463, 3470, 3478, amend to read "1" in column (12).

For UN Nos. 1450 and 3213 (PG II and III), replace "604" with "350" in column (6).

For UN Nos. 1461 and 3210 (PG II and III), replace "605" with "351" in column (6).

For UN Nos. 1463, 3408 (II), 3471 (II), amend to read "2" in column (12).

For UN Nos. 1482 (PG II and III) and 3214, replace "608" with "353" in column (6).

For UN Nos. 1748 (PG II), 2208 and 2880 (PG II and III), delete "313" in column (6).

For UN Nos. 1779, 3463 and 3473, insert "VE01" in column (10)

For UN Nos. 1851, 3248 and 3249, all packing groups, delete "274" in column (6).

For UN Nos. 1950 (twelve times) and 2037 (nine times), add "344" in column (6).

For UN Nos. 2235, 2236, 3409 and 9000, add "TOX, A" in column (9) and "VE02" in column (10).

For UN Nos. 2605 and 3079, replace "3" with "6.1" in column (3a) and replace "3 + 6.1" with "6.1 + 3" in column (5). In column (3b) amend the code to read "TF1".

For UN Nos. 2910, 2916, 2917, 2919 and 3323, add "325" in column (6).

For UN Nos. 3090, 3091, 3480 and 3481, add "656" in column (6).

For UN Nos. 3132 (I, II, III), 3135 (I, II, III) and 3396 (I, II, III), insert "HA08" in column (11).

For UN Nos. 3134 (I, II, III) and 3495, add "TOX" in column (9).

For UN Nos. 3328, 3329, 3330 and 3331, add "326" in column (6).

For UN Nos. 3480 and 3481, add "348" in column (6).

UN 0154 Amend to read "3" in column (12).

UN 1002 Add "655" in column (6).

UN 1040 Add "342" in column (6) (twice).

UN 1066 Add "653" in column (6).

UN 1072 Add "355" in column (6).

UN 1266 Add "163" in column (6) (seven times).

(All packing groups)

UN 1267 Add "357" in column (6) (four times).

(All packing groups)

- UN 1391 Delete the second entry. In the first entry, delete "having a flash-point above 60 °C" in column (2).
- UN 1462 Delete "606" and insert "352" in column (6).
- UN 1510 Replace "5.1" with "6.1" in column (3a) and replace "5.1+6.1" with "6.1+5.1" in column (5). In column (3b), replace "OT1" with "TO1".
- UN 1649 Delete the second entry. In the first entry, delete "having a flash-point above 60 °C" in column (2).
- UN 1704 In column (3b), replace "T2" with "T1".
- UN 1748 Delete "589" in column (6) (twice).
- UN 1810 Replace "8" with "6.1" in column (3a) and replace "8" with "6.1+8" in column (5).  
Replace "II" with "I" in column (4).  
In column (3b) amend the code to read "TC3".
- UN 1834 Replace "8" with "6.1+8" in column (5).  
In column (3a), replace "8" with "6.1".  
In column (3b) amend the code to read "TC3"
- UN 1838 Replace "8" with "6.1" in column (3a) and replace "8" with "6.1+8" in column (5).  
Replace "II" with "I" in column (4).  
In column (3b) amend the code to read "TC3".
- UN 1942 Add "LO04" in column (11).
- UN 1956 Delete "567" in column (6).
- UN 1977 Add "345 346" in column (6).
- UN 1999 (PG II and III) In column (2), amend the name and description to read "TARS, LIQUID, including road oils, and cutback bitumens" (six times). The texts in parenthesis remain unchanged. Amend the alphabetical index accordingly.
- UN 2030 Delete the second entry. In the first entry, delete ", having a flash-point above 60 °C" in column (2).
- UN 2187 Insert "T" in column (8).
- UN 2447 In the French text, amend the designation in column (2) to read as follows: "PHOSPHORE BLANC FONDU".
- UN 2474 Replace "II" with "I" in column (4).
- UN 2481 Replace "3" with "6.1" in column (3a) and replace "3 + 6.1" with "6.1 + 3" in column (5).  
In column (3b) amend the code to read "TF1".  
In column (12) amend to read "0".
- UN 2483 Replace "3" with "6.1" in column (3a) and replace "3 + 6.1" with "6.1 + 3" in column (5).

	In column (3b) amend the code to read "TF1".
UN 2486	Replace "3" with "6.1" in column (3a) and replace "3 + 6.1" with "6.1 + 3" in column (5)
	In column (3b) amend the code to read "TF1".
	In column (4), replace "II" with "I".
UN 2668	Replace "II" with "I" in column (4).
UN 3166	In column (2), insert "or engine, fuel cell, flammable gas powered or engine, fuel cell, flammable liquid powered or vehicle, fuel cell, flammable gas powered or vehicle, fuel cell, flammable liquid powered" at the end. Amend the alphabetical index accordingly.
UN 3212	In column (6), replace "559" with "349".
UN 3359	In column (2), amend the proper shipping name to read "FUMIGATED CARGO TRANSPORT UNIT". Amend the alphabetical index accordingly.
UN 3468	Add "356" in column (6).
UN 3471 (II and III)	Add "802" in column (6).
UN 3473	Add "PP, EX, A" in column (9).
UN 3474	In column (2), amend the name and description to read "1-HYDROXYBENZOTRIAZOLE MONOHYDRATE". Amend the alphabetical index accordingly.
UN 3477	Delete "EX" in column (9).

In column (7a), for all entries except for goods not subject to ADN and for goods the carriage of which is prohibited, replace the alphanumeric code for limited quantities (LQ) with the maximum quantity per inner packaging or article for carrying dangerous goods as limited quantities given in Chapter 3.2 of the Model Regulations annexed to the UN Recommendations on the Transport of Dangerous Goods, sixteenth revised edition (ST/SG/AC.10/1/Rev.16), as indicated below:

Replace the alphanumeric code LQ with "0" for:

- All entries of Class 1, Class 6.2 and Class 7;
- Class 2 gases of classification codes 1F, 2F, 3F, 4F, 6F (except fuel cell cartridges of UN Nos. 3478 and 3479) and 7F;
- Class 2 gases of classification codes 1O, 2O and 3O;
- Class 2 gases of groups T, TF, TC, TO, TFC and TOC, except aerosols of UN 1950 and small receptacles containing gas of UN 2037;
- UN 2857;
- Class 3 entries of packing group I, except for UN Nos. 1133, 1139, 1210, 1263, 1267, 1268, 1863, 1866 and 3295;
- UN Nos. 3064, 3256, 3343 and 3357;
- Class 4.1 entries of packing group I;

- Class 4.1 entries of classification code SR2 (temperature controlled substances);
- Class 4.1 entries of classification code D, packing group II (UN Nos. 2555, 2556, 2557, 2907, 3319 and 3344);
- Class 4.1 molten substances of classification code F2 (UN 3176, packing groups II and III and UN 2304) and for UN 2448;
- Entries of Class 4.2, except for UN 3400;
- Class 4.3 entries of packing group I;
- UN Nos. 1418 (packing groups II and III), 1436 (packing groups II and III), 3135 (packing groups II and III), 3209 (packing groups II and III) and 3292;
- Class 5.1 entries of packing group I;
- UN Nos. 2426, 3356 and 3375 (twice);
- Class 5.2 entries of classification code P2 (temperature controlled substances);
- Class 6.1 entries of packing group I;
- Class 6.1 entries of packing group II of UN Nos. 1569, 1600, 1693, 1697, 1700, 1701, 1737, 1738, 2016, 2017, 2312, 3124, 3250, 3416, 3417 and 3448;
- Class 8 entries of packing group I;
- Class 8 entries of packing group II of UN Nos. 2028, 2442, 2576, 2826 and 3301;
- UN 2215, MALEIC ANHYDRIDE, MOLTEN;
- UN Nos. 2590, 2990, 3072, 3090, 3091, 3245 (twice), 3257 (twice), 3258, 3268, 3316 (packing groups II and III), 3480 and 3481;
- UN Nos. 1162, 1196, 1250, 1298, 1305, 1724, 1728, 1747, 1753, 1762, 1763, 1766, 1767, 1769, 1771, 1781, 1784, 1799, 1800, 1801, 1804, 1816, 1818, 2434, 2435, 2437, 2985, 2986, 2987, 3361, 3362.

Replace the alphanumeric code LQ with "25 ml" for:

- UN Nos. 3221 and 3223 (liquids of types B and C);
- UN Nos. 3101 and 3103 (liquids of types B and C).

Replace the alphanumeric code LQ with "100 ml" for UN 1704 and for Class 6.1 entries of packing group II for which LQ17 is assigned in column (7a), except for UN Nos. 1569, 1693, 1701, 1737, 1738 and 3416.

Replace the alphanumeric code LQ with "100 g" for:

- UN Nos. 3222 and 3224 (solids of types B and C);
- UN Nos. 3102 and 3104 (solids of types B and C).

Replace the alphanumeric code LQ with "120 ml" for:

- Class 2 gases of classification codes 1A, 2A, 3A, 4A and 6A, except for UN 2857;
- Aerosols of UN 1950 with classification codes 5T, 5TC, 5TF, 5TFC, 5TO and 5TOC;

- Small receptacles containing gas of UN 2037 with classification codes 5T, 5TC, 5TF, 5TFC, 5TO and 5TOC;

- Fuel cell cartridges of UN Nos. 3478 and 3479.

Replace the alphanumeric code LQ with "125 ml" for:

- UN Nos. 3225, 3227 and 3229 (liquids of types D, E and F);

- UN Nos. 3105, 3107 and 3109 (liquids of types D, E and F).

Replace the alphanumeric code LQ with "500 ml" for:

- Class 3 entries of packing group I of UN Nos. 1133, 1139, 1210, 1263, 1267, 1268, 1863, 1866 and 3295;

- Class 4.3 entries of packing group II for which LQ10 is assigned in column (7a);

Replace the alphanumeric code LQ with "500 ml or 500 g" for fuel cell cartridges of UN 3476.

Replace the alphanumeric code LQ with "500 g" for:

- UN 1396, packing group II and Class 4.3 entries of packing group II for which LQ11 is assigned in column (7a), except for UN Nos. 1418, 1436, 3135 and 3209;

- Class 6.1 entries of packing group II for which LQ18 is assigned in column (7a), except for UN Nos. 1697, 1700, 1704, 3124, 3417 and 3448;

- UN Nos. 3226, 3228 and 3230 (solids of types D, E and F);

- UN 3400 (packing group II);

- UN Nos. 3106, 3108 and 3110 (solids of types D, E and F).

Replace the alphanumeric code LQ with "1 L" for:

- Aerosols of UN 1950 with classification codes 5A, 5C, 5CO, 5F, 5FC and 5O and for small receptacles containing gas of UN 2037 with classification codes 5A, 5F and 5O;

- Class 3 entries of packing group II, except for UN Nos. 1133, 1139, 1162, 1169, 1196, 1197, 1210, 1250, 1263, 1266, 1286, 1287, 1298, 1305, 1306, 1866, 1999, 2985, 3064, 3065, 3269 and 3357;

- Fuel cell cartridges of UN 3473;

- Class 4.3 entries of packing group III for which LQ13 is assigned in column (7a);

- Class 5.1 entries of packing group II for which LQ10 is assigned in column (7a);

- Class 8 entries of packing group II for which LQ22 is assigned in column (7a), except for UN Nos. 1724, 1728, 1747, 1753, 1762, 1763, 1766, 1769, 1771, 1781, 1784, 1799, 1800, 1801, 1804, 1816, 1818, 2434, 2435, 2437, 2442, 2826, 2986, 2987 and 3301;

- UN Nos. 2794, 2795 and 2800;

- UN Nos. 2315 and 3151.

Replace the alphanumeric code LQ with "1 kg" for:

- Class 4.1 entries of packing group II, except for UN Nos. 2555, 2556, 2557, 2907, 3176, 3319 and 3344;
- UN 3400 (packing group III);
- UN 1408;
- Class 4.3 entries of packing group III for which LQ12 is assigned in column (7a), except for UN Nos. 1418, 1436, 3135 and 3209;
- Class 5.1 entries of packing group II for which LQ11 is assigned in column (7a);
- UN 3423 and Class 8 entries of packing group II for which LQ23 is assigned in column (7a);
- UN Nos. 2212, 3152 and 3432;

Replace the alphanumeric code LQ with "1 L or 1 kg" for fuel cell cartridges of UN 3477.

Replace the alphanumeric code LQ with "2 kg" for UN 3028.

Replace the alphanumeric code LQ with "5 L" for:

- Class 3 entries of packing group II of UN Nos. 1133, 1139, 1169, 1197, 1210, 1263, 1266, 1286, 1287, 1306, 1866, 1999, 3065 and 3269;
- Class 3 entries of packing group III, except for UN 3256;
- Class 5.1 entries of packing group III for which LQ13 is assigned in column (7a);
- Class 6.1 entries of packing group III for which LQ7 is assigned in column (7a);
- Class 8 entries of packing group III for which LQ7 is assigned in column (7a);
- UN Nos. 1941, 1990 and 3082.

Replace the alphanumeric code LQ with "5 kg" for:

- Class 4.1 entries of packing group III, except for UN Nos. 2304, 2448 and 3176;
- Class 5.1 entries of packing group III for which LQ12 is assigned in column (7a);
- Class 6.1 entries of packing group III for which LQ9 is assigned in column (7a);
- UN 2809 and Class 8 entries of packing group III for which LQ24 is assigned in column (7a);
- Class 9 entries of packing group III for which LQ27 is assigned in column (7a), except for UN 2590;
- UN 2969.

For UN Nos. 1043 and 3359, the content in column (7a) remains blank.

Add the following new entries and amend the alphabetical index accordingly:

(1)	(2)	(3a)	(3b)	(5)	(4)	(6)	(7a)	(7b)	(8)	(9)	(10)		(11)		(12)	(13)
0509	POWDER, SMOKELESS	1	1.4C		1.4		0	E0		PP		LO01	HA01, HA03, HA04, HA05, HA06		1	
1471	LITHIUM HYPOCHLORITE, DRY or LITHIUM HYPOCHLORITE MIXTURE	5.1	O2	III	5.1		5 kg	E1		PP					0	
3482	ALKALI METAL DISPERSION, FLAMMABLE or ALKALINE EARTH METAL DISPERSION, FLAMMABLE	4.3	WF1	I	4.3 +3	182 183 506	0	E0		PP, EX, A	VE01		HA08		1	
3483	MOTOR FUEL ANTI-KNOCK MIXTURE, FLAMMABLE	6.1	TF1	I	6.1 +3		0	E5		PP, EP, EX, TOX, A	VE01, VE02				2	
3484	HYDRAZINE AQUEOUS SOLUTION, FLAMMABLE with more than 37% hydrazine, by mass	8	CFT	I	8 +3 +6.1	530	0	E0		PP, EP, EX, TOX, A	VE01, VE02				2	
3485	CALCIUM HYPOCHLORITE, DRY, CORROSIVE or CALCIUM HYPOCHLORITE MIXTURE, DRY, CORROSIVE with more than 39% available chlorine (8.8% available oxygen)	5.1	OC2	II	5.1 +8	314	1 kg	E2		PP					0	
3486	CALCIUM HYPOCHLORITE MIXTURE, DRY, CORROSIVE with more than 10% but not more than 39% available chlorine	5.1	OC2	III	5.1 +8	314	5 kg	E1		PP					0	
3487	CALCIUM HYPOCHLORITE, HYDRATED, CORROSIVE or CALCIUM HYPOCHLORITE, HYDRATED MIXTURE, CORROSIVE with not less than 5.5% but not more than 16% water	5.1	OC2	II	5.1 +8	314 322	1 kg	E2		PP					0	
3487	CALCIUM HYPOCHLORITE, HYDRATED, CORROSIVE or CALCIUM HYPOCHLORITE, HYDRATED MIXTURE, CORROSIVE with not less than 5.5% but not more than 16% water	5.1	OC2	III	5.1 +8	314	5 kg	E1		PP					0	
3488	TOXIC BY INHALATION LIQUID, FLAMMABLE, CORROSIVE, N.O.S. with an inhalation toxicity lower than or equal to 200 ml/m <sup>3</sup> and saturated vapour concentration greater than or equal to 500 LC <sub>50</sub>	6.1	TFC	I	6.1 +3 +8	274	0	E0		PP, EP, EX, TOX, A	VE02, VE02				2	

(1)	(2)	(3a)	(3b)	(5)	(4)	(6)	(7a)	(7b)	(8)	(9)	(10)	(11)	(12)	(13)
3489	TOXIC BY INHALATION LIQUID, FLAMMABLE, CORROSIVE, N.O.S. with an inhalation toxicity lower than or equal to 1000 ml/m <sup>3</sup> and saturated vapour concentration greater than or equal to 10 LC <sub>50</sub>	6.1	TFC	I	6.1 +3 +8	274	0	E0		PP, EP, EX, TOX, A	VE01, VE02		2	
3490	TOXIC BY INHALATION LIQUID, WATER-REACTIVE, FLAMMABLE, N.O.S. with an inhalation toxicity lower than or equal to 200 ml/m <sup>3</sup> and saturated vapour concentration greater than or equal to 500 LC <sub>50</sub>	6.1	TFW	I	6.1 +4.3 +3	274	0	E0		PP, EP, EX, TOX, A	VE01, VE02		2	
3491	TOXIC BY INHALATION LIQUID, WATER-REACTIVE, FLAMMABLE, N.O.S. with an inhalation toxicity lower than or equal to 1000 ml/m <sup>3</sup> and saturated vapour concentration greater than or equal to 10 LC <sub>50</sub>	6.1	TFW	I	6.1 +4.3 +3	274	0	E0		PP, EP, EX, TOX, A	VE01, VE02		2	
3492	TOXIC BY INHALATION LIQUID, CORROSIVE, FLAMMABLE, N.O.S. with an inhalation toxicity lower than or equal to 200 ml/m <sup>3</sup> and saturated vapour concentration greater than or equal to 500 LC <sub>50</sub>	6.1	TFC	I	6.1 +8 +3	274	0	E0		PP, EP, EX, TOX, A	VE01, VE02		2	
3493	TOXIC BY INHALATION LIQUID, CORROSIVE, FLAMMABLE, N.O.S. with an inhalation toxicity lower than or equal to 1000 ml/m <sup>3</sup> and saturated vapour concentration greater than or equal to 10 LC <sub>50</sub>	6.1	TFC	I	6.1 +8 +3	274	0	E0		PP, EP, EX, TOX, A	VE01, VE02		2	
3494	PETROLEUM SOUR CRUDE OIL, FLAMMABLE, TOXIC	3	FT1	I	3 +6.1	343	0	E0	T	PP, EP, EX, TOX, A	VE01, VE02		2	
3494	PETROLEUM SOUR CRUDE OIL, FLAMMABLE, TOXIC	3	FT1	II	3 +6.1	343	1 l	E2	T	PP, EP, EX, TOX, A	VE01, VE02		2	
3494	PETROLEUM SOUR CRUDE OIL, FLAMMABLE, TOXIC	3	FT1	III	3 +6.1	343	5 l	E1	T	PP, EP, EX, TOX, A	VE01, VE02		0	
3495	IODINE	8	CT2	III	8 + 6.1	279 802	5 kg	E1		PP, EX, TOX, A	VE02		0	
3496	Batteries, nickel-metal hydride	9	M11	NOT SUBJECT TO ADN										

**3.2.2 Table B**

The amendment does not apply to the English text.

**3.2.3 Explanations concerning Table C**

Explanatory notes for column (20), explanation No. 5, fourth sentence:

Insert "and the corresponding piping" after "cargo tanks".

Explanatory notes for column (20), explanation 11 (f):

Insert "and the corresponding piping" after "it".

Explanatory notes for column (20), add remark 39 as follows:

"39. (a) The joints, outlets, closing devices and other technical equipment shall be of such a sort that there cannot be any leakage of carbon dioxide during normal transport operations (cold, fracturing of materials, freezing of fixtures, run-off outlets etc.).

(b) The loading temperature (at the loading station) shall be mentioned in the transport document.

(c) An oxygen meter shall be kept on board, together with instructions on its use which can be read by everyone on board. The oxygen meter shall be used as a testing device when entering holds, pump rooms, areas situated at depth and when work is being carried out on board.

(d) At the entry of accommodation and in other places where the crew may spend time there shall be a measuring device which lets off an alarm when the oxygen level is too low or when the CO<sub>2</sub> level is too high.

(e) The loading temperature (established after loading) and the maximum duration of the journey shall be mentioned in the transport document."

**Table C**

Title of column (10), the amendment does not apply to the English text.

Title of column (12), the amendment does not apply to the English text.

For UN numbers 1005, 1010 (3 times), 1011, 1012, 1020, 1030, 1033, 1055, 1063, 1077, 1083, 1086, 1912, 1965 (9 times), 1969, 1978 and 9000: Insert "no" in column (14).

UN 1999 (PG III), in column (2), amend the name and description to read "TARS, LIQUID, including road oils, and cutback bitumens".

UN 2486 Replace "3" with "6.1" in column (3a) and replace "3 + 6.1" with "6.1 + 3" in column (5). In column (3b) amend the code to read "TF1". Replace "II" with "I" in column (4). Replace "2" with "1" in column (13).

UN 3079 Replace "3" with "6.1" in column (3a) and replace "3 + 6.1 + inst. + N3" with "6.1 + 3 + unst. + N3" in column (5). In column (3b) amend the code to read "TF1".

Substance Nos. 9005 and 9006, introduce "N2" in column (5).

Add the following new entries:

(1)	(2)	(3a)	(3b)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)
UN No. or substance identification No.	Name and description	Class	Classification code	Packing group	Dangers	Type of tank vessel	Cargo tank design	Cargo tank type	Cargo tank equipment	Opening pressure of the high-velocity vent valve in kPa	Maximum degree of filling in %	Relative density at 20 °C	Type of sampling device	Pump room below deck permitted	Temperature class	Explosion group	Anti-explosion protection required	Equipment required	Number of blue cones/lights	Additional requirements/Remarks
2187	CARBON DIOXIDE, REFRIGERATED LIQUID	2	3A		2.2	G	1	1	1		95		1	yes			no	PP	0	31, 39
3295	HYDROCARBONS, LIQUID, N.O.S. CONTAINS ISOPRENE AND PENTADIENE (vp 50 > 110 kPa), STABILIZED	3	F1	I	3, inst. (N2, CMR)	C	2	2	3	50	95	0,6 78	1	yes	T4 <sup>3)</sup>	II B <sup>4)</sup>	yes	PP,EX, A	1	3,27, 29
3494	PETROLEUM CRUDE OIL, ACID, INFLAMMABLE, TOXIC	3	TF1	I	3+6.1+(N1, N2, N3, CMR, F)	C	*	*	*	*	95		1	no	T4 <sup>3)</sup>	II B <sup>4)</sup>	yes	PP, EP, EX, TOX, A	2	14; 27; *See flowchart
3494	PETROLEUM CRUDE OIL, ACID, INFLAMMABLE, TOXIC	3	TF1	II	3+6.1+(N1, N2, N3, CMR, F)	C	*	*	*	*	95		2	no	T4 <sup>3)</sup>	II B <sup>4)</sup>	yes	PP, EP, EX, TOX, A	2	14; 27; *See flowchart
3494	PETROLEUM CRUDE OIL, ACID, INFLAMMABLE, TOXIC	3	TF1	III	3+6.1+(N1, N2, N3, CMR, F)	C	*	*	*	*	95		2	no	T4 <sup>3)</sup>	II B <sup>4)</sup>	yes	PP, EP, EX, TOX, A	0	14; 27; *See flowchart

Replace the entry for UN No. 2672 by the following two entries:

(1)	(2)	(3a)	(3b)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)
UN No. or substance identification No.	Name and description	Class	Classification code	Packing group	Dangers	Type of tank vessel	Cargo tank design	Cargo tank type	Cargo tank equipment	Opening pressure of the high-velocity vent valve in kPa	Maximum degree of filling in %	Relative density at 20 °C	Type of sampling device	Pump room below deck permitted	Temperature class	Explosion group	Anti-explosion protection required	Equipment required	Number of blue cones/lights	Additional requirements/Remarks
2672	AMMONIA SOLUTION, relative density between 0.880 and 0.957 at 15°C in water, with more than 10% but not more than 35% ammonia (more than 25% but not more than 35% ammonia)	8	C5	III	8+N1	C	2	2	1	50	95	0,88 <sup>10)</sup> – 0,96 <sup>10)</sup>	2	yes			no	PP, EP	0	
2672	AMMONIA SOLUTION, relative density between 0.880 and 0.957 at 15°C in water, with more than 10% but not more than 35% ammonia (more than 25% ammonia)	8	C5	III	8+N1	N	2	2		10	95	0,88 <sup>10)</sup> – 0,96 <sup>10)</sup>	2	yes			no	PP, EP	0	

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Flowchart after Table C Replace "density" with "relative density" in the description of column (12).

3.2.4.2 Replace "density" by "relative density" in item 2.2.

3.2.4.3 At the end, insert Remark 39 as follows:

**"Remark 39:** Reference shall be made in column (20) to remark 39 for the carriage of UN No. 2187 CARBON DIOXIDE, REFRIGERATED LIQUID of Class 2."

## Chapter 3.3

### 3.3.1

**SP172** At the end, add the following new sentence: "For packing, see also 4.1.9.1.5 of ADR."

**SP188** In (b), at the end of the second sentence, delete ", except those manufactured before 1 January 2009 which may be carried in accordance with this special provision and without this marking until 31 December 2010".

In (f), at the beginning, insert "button cell batteries installed in equipment (including circuit boards), or" after "Except for packages containing".

**SP198** Insert ", perfumery products" after "paint" and ", 1266" after "1263" respectively.

**SP219** Amend to read as follows:

**"219** Genetically modified microorganisms (GMMOs) and genetically modified organisms (GMOs) packed and marked in accordance with packing instruction P904 of 4.1.4.1 of ADR are not subject to any other requirements of ADN.

If GMMOs or GMOs meet the criteria for inclusion in Class 6.1 or 6.2 (see 2.2.61.1 and 2.2.62.1) the requirements in ADN for the carriage of toxic substances or infectious substances apply."

**SP 251** In the first paragraph, replace "the code "LQ0"" with "the quantity "0"". In the last paragraph, delete "in accordance with the LQ code defined in 3.4.6".

**SP290** Amend to read as follows:

**"290** When this radioactive material meets the definitions and criteria of other classes as defined in Part 2, it shall be classified in accordance with the following:

(a) Where the substance meets the criteria for dangerous goods in excepted quantities as set out in Chapter 3.5, the packagings shall be in accordance with 3.5.2 and meet the testing requirements of 3.5.3. All other requirements applicable to radioactive material, excepted packages as set out in 1.7.1.5 shall apply without reference to the other class;

(b) Where the quantity exceeds the limits specified in 3.5.1.2 the substance shall be classified in accordance with the predominant subsidiary risk. The transport document shall describe the substance with the UN number and proper shipping name applicable to the other class supplemented with the name applicable to the radioactive excepted package according to Column (2) of Table A of Chapter 3.2, and the substance shall be carried in accordance with the provisions applicable to that UN number. An example of the information shown on the transport document is:

"UN 1993, Flammable liquid, N.O.S. (ethanol and toluene mixture), Radioactive material, excepted package – limited quantity of material, 3, PG II".

In addition, the requirements of 2.2.7.2.4.1 shall apply;

(c) The provisions of Chapter 3.4 for the carriage of dangerous goods packed in limited quantities shall not apply to substances classified in accordance with sub-paragraph (b);

(d) When the substance meets a special provision that exempts this substance from all dangerous goods provisions of the other classes it shall be classified in accordance with the applicable UN number of Class 7 and all requirements specified in 1.7.1.5 shall apply."

**SP292** Amend to read as follows:

"**292** (Deleted)".

**SP302** Amend to read as follows:

"**302** Fumigated cargo transport units containing no other dangerous goods are only subject to the provisions of 5.5.2."

**SP304** Amend to read as follows:

"**304** This entry may only be used for the transport of non-activated batteries which contain dry potassium hydroxide and which are intended to be activated prior to use by addition of an appropriate amount of water to the individual cells."

**SP313** Amend to read as follows:

"**313** (Deleted)".

**SP503** Delete "or yellow".

**SP559** Amend to read as follows:

"**559** (Deleted)".

**SP567** Amend to read as follows:

"**567** (Deleted)".

**SP589** Amend to read as follows:

"**589** (Deleted)".

**SP593** Replace "P203 (12)" with "P203, paragraph (6) for open cryogenic receptacles".

**SP604 to SP606** Amend to read as follows:

"**604 to 606** (Deleted)".

**SP608** Amend to read as follows:

"**608** (Deleted)".

**SP645** Insert a new second sentence to read as follows: "The approval shall be given in writing as a classification approval certificate (see 5.4.1.2.1 (g)) and shall be provided with a unique reference."

**SP649** Amend to read as follows:

"**649** (Deleted)".

**SP650** In sub-paragraph (e), amend the example to read as follows:

""UN 1263 WASTE PAINT, 3, II", or "UN 1263 WASTE PAINT, 3, PG II".

**SP653** Amend the beginning to read as follows:

"The carriage of this gas in cylinders having a test pressure capacity product of maximum 15 MPa.litre (150 bar.litre) is not subject ...".

In the fifth indent, replace "marked with 'UN 1013'" with "marked with 'UN 1013' for carbon dioxide or 'UN 1066' for nitrogen, compressed".

3.3.1 Add the following new special provisions:

**"342** Glass inner receptacles (such as ampoules or capsules) intended only for use in sterilization devices, when containing less than 30 ml of ethylene oxide per inner packaging with not more than 300 ml per outer packaging, may be carried in accordance with the provisions in Chapter 3.5, irrespective of the indication of "E0" in column (7b) of Table A of Chapter 3.2 provided that:

(a) After filling, each glass inner receptacle has been determined to be leak-tight by placing the glass inner receptacle in a hot water bath at a temperature, and for a period of time, sufficient to ensure that an internal pressure equal to the vapour pressure of ethylene oxide at 55 °C is achieved. Any glass inner receptacle showing evidence of leakage, distortion or other defect under this test shall not be carried under the terms of this special provision;

(b) In addition to the packaging required by 3.5.2, each glass inner receptacle is placed in a sealed plastics bag compatible with ethylene oxide and capable of containing the contents in the event of breakage or leakage of the glass inner receptacle; and

(c) Each glass inner receptacle is protected by a means of preventing puncture of the plastics bag (e.g. sleeves or cushioning) in the event of damage to the packaging (e.g. by crushing).

**343** This entry applies to crude oil containing hydrogen sulphide in sufficient concentration that vapours evolved from the crude oil can present an inhalation hazard. The packing group assigned shall be determined by the flammability hazard and inhalation hazard, in accordance with the degree of danger presented.

**344** The provisions of 6.2.6 of ADR shall be met.

**345** This gas contained in open cryogenic receptacles with a maximum capacity of 1 litre constructed with glass double walls having the space between the inner and outer wall evacuated (vacuum insulated) is not subject to ADN provided each receptacle is carried in an outer packaging with suitable cushioning or absorbent materials to protect it from impact damage.

**346** Open cryogenic receptacles conforming to the requirements of packing instruction P203 of 4.1.4.1 of ADR and containing no dangerous goods except for UN No. 1977 nitrogen, refrigerated liquid, which is fully absorbed in a porous material are not subject to any other requirements of ADN.

**347** This entry shall only be used if the results of Test series 6 (d) of Part I of the Manual of Tests and Criteria have demonstrated that any hazardous effects arising from functioning are confined within the package.

**348** Batteries manufactured after 31 December 2011 shall be marked with the Watt-hour rating on the outside case.

**349** Mixtures of a hypochlorite with an ammonium salt are not to be accepted for carriage. UN No. 1791 hypochlorite solution is a substance of Class 8.

**350** Ammonium bromate and its aqueous solutions and mixtures of a bromate with an ammonium salt are not to be accepted for carriage.

**351** Ammonium chlorate and its aqueous solutions and mixtures of a chlorate with an ammonium salt are not to be accepted for carriage.

**352** Ammonium chlorite and its aqueous solutions and mixtures of a chlorite with an ammonium salt are not to be accepted for carriage.

**353** Ammonium permanganate and its aqueous solutions and mixtures of a permanganate with an ammonium salt are not to be accepted for carriage.

**354** This substance is toxic by inhalation.

**355** Oxygen cylinders for emergency use carried under this entry may include installed actuating cartridges (cartridges, power device of Division 1.4, Compatibility Group C or S), without changing the classification in Class 2 provided the total quantity of deflagrating (propellant) explosives does not exceed 3.2 g per oxygen cylinder. The cylinders with the installed actuating cartridges as prepared for carriage shall have an effective means of preventing inadvertent activation.

**356** Metal hydride storage system(s) installed in conveyances or in completed conveyance components or intended to be installed in conveyances shall be approved by the competent authority of the country of manufacture<sup>1</sup> before acceptance for carriage. The transport document shall include an indication that the package was approved by the competent authority of the country of manufacture<sup>1</sup> or a copy of the competent authority of the country of manufacture<sup>1</sup> approval shall accompany each consignment.

**357** Petroleum crude oil containing hydrogen sulphide in sufficient concentration that vapours evolved from the crude oil can present an inhalation hazard shall be consigned under the entry UN 3494 PETROLEUM SOUR CRUDE OIL, FLAMMABLE, TOXIC.

**655** Cylinders and their closures designed, constructed, approved and marked in accordance with Directive 97/23/EC<sup>3</sup> and used for breathing apparatus may be carried without conforming to Chapter 6.2 of ADR, provided that they are subject to inspections and tests specified in 6.2.1.6.1 of ADR and the interval between tests specified in packing instruction P200 in 4.1.4.1 of ADR is not exceeded. The pressure used for the hydraulic pressure test is the pressure marked on the cylinder in accordance with Directive 97/23/EC.

**656** The requirement of the first sentence of special provision 188 (e) does not apply to devices which are intentionally active in transport (radio frequency identification (RFID) transmitters, watches, sensors, etc.) and which are not capable of generating a dangerous evolution of heat.

Notwithstanding special provision 188 (b), batteries manufactured before 1 January 2009 may continue to be carried without the Watt-hour rating on the outside case after 31 December 2010."

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<sup>1</sup> If the country of manufacture is not a Contracting Party to ADN, the approval shall be recognized by the competent authority of a Contracting Party to ADN.

<sup>3</sup> Directive 97/23/EC of the European Parliament and of the Council of 29 May 1997 on the approximation of the laws of the Member States concerning pressure equipment (PED) (Official Journal of the European Communities No. L 181 of 9 July 1997, p. 1 - 55).

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## Chapter 3.4

Amend Chapter 3.4 to read as follows:

### "Chapter 3.4 Dangerous goods packed in limited quantities

3.4.1 This Chapter provides the provisions applicable to the carriage of dangerous goods of certain classes packed in limited quantities. The applicable quantity limit for the inner packaging or article is specified for each substance in Column (7a) of Table A of Chapter 3.2. In addition, the quantity "0" has been indicated in this column for each entry not permitted to be carried in accordance with this Chapter.

Limited quantities of dangerous goods packed in such limited quantities, meeting the provisions of this Chapter are not subject to any other provisions of ADN except the relevant provisions of:

- (a) Part 1, Chapters 1.1, 1.2, 1.3, 1.4, 1.5, 1.6, 1.8, 1.9;
- (b) Part 2;
- (c) Part 3, Chapters 3.1, 3.2, 3.3 (except special provisions 61, 178, 181, 220, 274, 625, 633 and 650 (e));
- (d) Part 4, paragraphs 4.1.1.1, 4.1.1.2, 4.1.1.4 to 4.1.1.8 of ADR;
- (e) Part 5, 5.1.2.1(a) (i) and (b), 5.1.2.2, 5.1.2.3, 5.2.1.9, 5.4.2;
- (f) Part 6, construction requirements of 6.1.4 and paragraphs 6.2.5.1 and 6.2.6.1 to 6.2.6.3 of ADR;

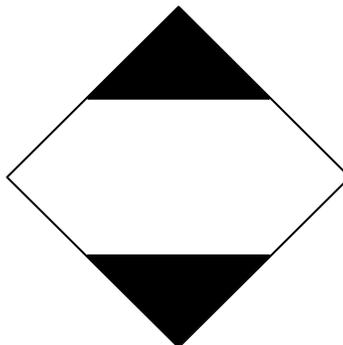
3.4.2 Dangerous goods shall be packed only in inner packagings placed in suitable outer packagings. Intermediate packagings may be used. However, the use of inner packagings is not necessary for the carriage of articles such as aerosols or "receptacles, small, containing gas". The total gross mass of the package shall not exceed 30 kg.

3.4.3 Shrink-wrapped or stretch-wrapped trays meeting the conditions of 4.1.1.1, 4.1.1.2 and 4.1.1.4 to 4.1.1.8 of ADR are acceptable as outer packagings for articles or inner packagings containing dangerous goods carried in accordance with this Chapter. Inner packagings that are liable to break or be easily punctured, such as those made of glass, porcelain, stoneware or certain plastics, shall be placed in suitable intermediate packagings meeting the provisions of 4.1.1.1, 4.1.1.2 and 4.1.1.4 to 4.1.1.8 of ADR, and be so designed that they meet the construction requirements of 6.1.4 of ADR. The total gross mass of the package shall not exceed 20 kg.

3.4.4 Liquid goods of Class 8, packing group II in glass, porcelain or stoneware inner packagings shall be enclosed in a compatible and rigid intermediate packaging.

3.4.5 and 3.4.6 (Reserved)

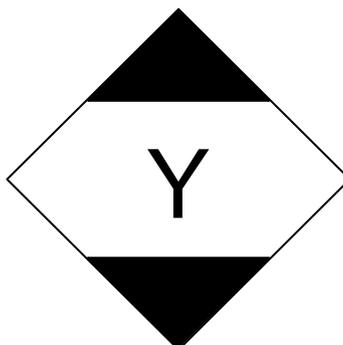
3.4.7 Except for air transport, packages containing dangerous goods in limited quantities shall bear the marking shown below.



The marking shall be readily visible, legible and able to withstand open weather exposure without a substantial reduction in effectiveness.

The top and bottom portions and the surrounding line shall be black. The centre area shall be white or a suitable contrasting background. The minimum dimensions shall be 100 mm × 100 mm and the minimum width of line forming the diamond shall be 2 mm. If the size of the package so requires, the dimension may be reduced, to be not less than 50 mm × 50 mm provided the marking remains clearly visible.

3.4.8 Packages containing dangerous goods consigned for air transport in conformity with the provisions of Part 3, Chapter 4 of the ICAO Technical Instructions for the Safe Transport of Dangerous Goods by Air shall bear the marking shown below.



The marking shall be readily visible, legible and able to withstand open weather exposure without a substantial reduction in effectiveness. The top and bottom portions and the surrounding line shall be black. The centre area shall be white or a suitable contrasting background. The minimum dimensions shall be 100 mm × 100 mm. The minimum width of line forming diamond shall be 2 mm. The symbol "Y" shall be placed in the centre of the mark and shall be clearly visible. If the size of the package so requires, the dimension may be reduced, to be not less than 50 mm × 50 mm provided the marking remains clearly visible.

3.4.9 Packages containing dangerous goods bearing the marking shown in 3.4.8 shall be deemed to meet the provisions of sections 3.4.1 to 3.4.4 of this Chapter and need not bear the marking shown in 3.4.7.

3.4.10 *(Reserved)*

3.4.11 When packages containing dangerous goods packed in limited quantities are placed in an overpack, the provisions of 5.1.2 shall apply. In addition the overpack shall be marked with the markings required by this Chapter unless the markings representative of all

dangerous goods in the overpack are visible. The provisions of 5.1.2.1 (a) (ii) and 5.1.2.4 apply only if other dangerous goods which are not packed in limited quantities are contained, and only in relation to these other dangerous goods.

3.4.12 In advance of carriage, consignors of dangerous goods packed in limited quantities shall inform the carrier in a traceable form of the total gross mass of such goods to be consigned.

3.4.13 (a) Transport units with a maximum mass exceeding 12 tonnes carrying packages with dangerous goods in limited quantities shall be marked in accordance with 3.4.15 at the front and at the rear except when orange-coloured plate marking is displayed in accordance with 5.3.2.

(b) Wagons carrying packages with dangerous goods in limited quantities shall be marked in accordance with 3.4.15 on both sides except when placards in accordance with section 5.3.1 are already affixed.

(c) Containers carrying packages with dangerous goods in limited quantities shall be marked in accordance with 3.4.12 on all four sides except

- when placards in accordance with section 5.3.1 are already affixed;
- for small containers loaded on a wagon;
- for containers loaded on a transport unit with a maximum mass less than or equal to 12 tonnes.

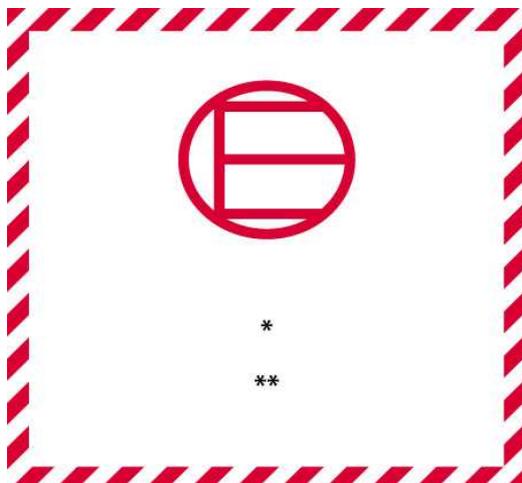
If the containers are loaded on a transport unit or wagon, the carrying transport unit or wagon need not be marked, except when the marking affixed to the containers is not visible from the outside of this carrying transport unit or wagon. In this latter case, the same marking shall also be affixed at the front and the rear of the carrying transport unit, or on both sides of the carrying wagon.

3.4.14 Markings specified in 3.4.13 may be dispensed with, if the total gross mass of the packages containing dangerous goods packed in limited quantities carried does not exceed 8 tonnes per transport unit or wagon.

3.4.15 The marking shall be that required in 3.4.7, except that the minimum dimensions shall be 250 mm × 250 mm."

## Chapter 3.5

3.5.4.2 Amend the figure to read as follows:



Excepted quantities mark  
Hatching and symbol of the same colour, black or red,  
on white or suitable contrasting background

\* *The first or only label number indicated in column (5) of Table A of Chapter 3.2 shall be shown in this location.*

\*\* *The name of the consignor or of the consignee shall be shown in this location if not shown elsewhere on the package.*

## Part 5

### Chapter 5.1

5.1.5.1.4 (a) Insert "the competent authority of the country of origin of the shipment and to" after "have been submitted to".

5.1.5.1.4 (b) At the end, insert "the competent authority of the country of origin of the shipment and" after "shall notify".

5.1.5.1.4 (d) In sub-paragraph (v), insert "(or of each fissile nuclide for mixtures when appropriate)" after "the mass of fissile material".

5.1.5.3.4 (d) and (e) Replace "when otherwise specified in the competent authority approval certificate of the country of origin of design (see 2.2.7.2.4.6)" with "under the provisions of 5.1.5.3.5".

5.1.5.3.5 Add a new paragraph 5.1.5.3.5 to read as follows:

"5.1.5.3.5 In all cases of international carriage of packages requiring competent authority design or shipment approval, for which different approval types apply in the different countries concerned by the shipment, the categorization shall be in accordance with the certificate of the country of origin of design."

5.1.5.4 Add a new sub-section 5.1.5.4 to read as follows, and renumber existing 5.1.5.4 as 5.1.5.5:

**"5.1.5.4 Specific provisions for excepted packages**

5.1.5.4.1 Excepted packages shall be legibly and durably marked on the outside of the packaging with:

- (a) The UN number preceded by the letters "UN";
- (b) An identification of either the consignor or consignee, or both; and
- (c) The permissible gross mass if this exceeds 50 kg.

5.1.5.4.2 The documentation requirements of Chapter 5.4 do not apply to excepted packages of radioactive material, except that the UN number preceded by the letters "UN" and the name and address of the consignor and the consignee shall be shown on a transport document such as a bill of lading, air waybill or CMR or CIM consignment note."

## Chapter 5.2

5.2.1.7.2 Amend the second sentence to read "The marking of excepted packages shall be as required by 5.1.5.4.1."

5.2.1.7.8 Amend to read as follows:

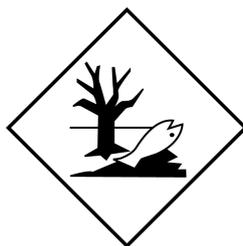
"5.2.1.7.8 In all cases of international carriage of packages requiring competent authority design or shipment approval, for which different approval types apply in the different countries concerned by the shipment, marking shall be in accordance with the certificate of the country of origin of the design."

5.2.1.8.1 Amend to read as follows:

"5.2.1.8.1 Packages containing environmentally hazardous substances meeting the criteria of 2.2.9.1.10 shall be durably marked with the environmentally hazardous substance mark shown in 5.2.1.8.3 with the exception of single packagings and combination packagings where such single packagings or inner packagings of such combination packagings have:

- a quantity of 5 l or less for liquids; or
- a net mass of 5 kg or less for solids."

5.2.1.8.3 Amend the mark to read as follows:



Symbol (fish and tree): black on white or suitable contrasting background

5.2.1.9.1 Replace "ISO 780:1985" with "ISO 780:1997".

5.2.1.9.2 (d) Delete "or" at the end.

5.2.1.9.2 (e) Add "or" at the end.

5.2.1.9.2 Add a new sub-paragraph (f) to read as follows:

"(f) Combination packagings containing hermetically sealed inner packagings each containing not more than 500 ml."

5.2.2.1.11.2 (b) In the second sentence, insert "(or mass of each fissile nuclide for mixtures when appropriate)" after "the mass of fissile material".

5.2.2.1.11.5 Amend to read as follows:

"5.2.2.1.11.5 In all cases of international carriage of packages requiring competent authority design or shipment approval, for which different approval types apply in the different countries concerned by the shipment, labelling shall be in accordance with the certificate of the country of origin of design."

5.2.2.2.2 In the title of the label for CLASS 4.1 HAZARD, add "solid" before "desensitized". (*Editorial amendment*)

### Chapter 5.3

5.3.2.1.4 In the first sentence, replace "under exclusive use" with "required to be carried under exclusive use". In the second sentence, insert "when required to be" before "carried under exclusive use."

5.3.2.3.2 Insert the following new line after the line for code 668:

"X668 highly toxic substance, corrosive, which reacts dangerously with water<sup>1</sup>".

### Chapter 5.4

5.4.0 Amend to read as follows:

#### "5.4.0 General

5.4.0.1 Unless otherwise specified, any carriage of goods governed by ADN shall be accompanied by the documentation prescribed in this Chapter, as appropriate.

*NOTE: For the list of documentation to be carried on board vessels, see 8.1.2.*

5.4.0.2 The use of electronic data processing (EDP) or electronic data interchange (EDI) techniques as an aid to or instead of paper documentation is permitted, provided that the procedures used for the capture, storage and processing of electronics data meet the legal requirements as regards the evidential value and availability of data during carriage in a manner at least equivalent to that of paper documentation.

5.4.0.3 When the dangerous goods transport information is given to the carrier by EDP or EDI techniques, the consignor shall be able to give the information to the carrier as a paper document, with the information in the sequence required by this Chapter."

5.4.1.1.1 (e) At the end, add the following new Note:

*"NOTE: The number, type and capacity of each inner packaging within the outer packaging of a combination packaging is not required to be indicated."*

## 5.4.1.1.2 Examples of permitted dangerous goods descriptions

Amend to read as follows:

"UN 1203 MOTOR SPIRIT, 3 (N2, CMR, F), II"; or  
 "UN 1203 MOTOR SPIRIT, 3 (N2, CMR, F), PG II".

## 5.4.1.1.3 In the first paragraph, delete "the UN number and". Amend the four examples to read as follows:

"UN 1230 WASTE METHANOL, 3 (6.1), II", or

"UN 1230 WASTE METHANOL, 3 (6.1), PG II", or

"UN 1993 WASTE FLAMMABLE LIQUID, N.O.S. (toluene and ethyl alcohol), 3, II", or

"UN 1993 WASTE FLAMMABLE LIQUID, N.O.S. (toluene and ethyl alcohol), 3, PG II".

## 5.4.1.1.4 Amend to read as follows:

"5.4.1.1.4 (Deleted)".

## 5.4.1.1.6.1 At the end, replace "proper shipping name required in 5.4.1.1.1 (b)" with "dangerous goods description specified in 5.4.1.1.1 (a) to (d)".

## 5.4.1.1.18 Insert a new paragraph to read as follows:

"5.4.1.1.18 *Special provisions for carriage of environmentally hazardous substances (aquatic environment)*

When a substance belonging to one of classes 1 to 9 meets the classification criteria of 2.2.9.1.10, the transport document shall bear the additional inscription "ENVIRONMENTALLY HAZARDOUS". This additional requirement does not apply to UN Nos. 3077 and 3082 or for the exceptions listed in 5.2.1.8.1.

The inscription "MARINE POLLUTANT" (according to 5.4.1.4.3 of the IMDG Code) instead of "ENVIRONMENTALLY HAZARDOUS" is acceptable for carriage in a transport chain including maritime carriage."

Re-number existing paragraph 5.4.1.1.18 as 5.4.1.1.19.

## 5.4.1.2.1 Transfer the Note under (e) to under (g).

Amend sup-paragraph (g) to read as follows:

"(g) When fireworks of UN Nos. 0333, 0334, 0335, 0336 and 0337 are carried, the transport document shall bear the inscription:

"Classification of fireworks by the competent authority of XX with the firework reference XX/YYZZZZ".

The classification approval certificate need not be carried with the consignment, but shall be made available by the consignor to the carrier or the competent authorities for control purposes. The classification approval certificate or a copy of it shall be in an official language of the forwarding country, and also, if that language is not German, English or French, in German, English or French."

Add a new Note to read as follows:

**NOTE:** *The classification reference(s) shall consist of the ADN Contracting Party in which the classification code according to special provision 645 of 3.3.1 was approved, indicated by the distinguishing sign for motor vehicles in international*

traffic (XX)<sup>2</sup>, the competent authority identification (YY) and a unique serial reference (ZZZZ). Examples of such classification references are:

GB/HSE123456

D/BAM1234."

5.4.1.2.5.1 (c) In the second sentence, insert "(or mass of each fissile nuclide for mixtures when appropriate)" after "the mass of fissile material".

5.4.1.2.5.1 (j) At the end, add: "For radioactive material for which the A<sub>2</sub> value is unlimited, the multiple of A<sub>2</sub> shall be zero."

5.4.1.2.5.3 Amend to read as follows:

"5.4.1.2.5.3 In all cases of international carriage of packages requiring competent authorities design or shipment approval, for which different approval types apply in the different countries concerned by the shipment, the UN number and proper shipping name required in 5.4.1.1.1 shall be in accordance with the certificate of the country of origin of design."

5.4.1.4.2 Replace "5.4.4" with "5.4.5". Renumber footnote 2 as 3.

5.4.2 Amend the heading to read as follows:

**"5.4.2 Large container, vehicle or wagon packing certificate".**

5.4.2 Renumber footnotes 3 and 4 as 4 and 5 respectively. In footnote<sup>4</sup> (renumbered 5), amend 5.4.2.3 as follows:

"5.4.2.3 If the dangerous goods documentation is presented to the carrier by means of EDP or EDI transmission techniques, the signature(s) may be electronic signature(s) or may be replaced by the name(s) (in capitals) of the person authorized to sign."

In footnote<sup>4</sup> (renumbered 5), add a new paragraph 5.4.2.4 to read as follows:

"5.4.2.4 When the dangerous goods transport information is given to a carrier by EDP or EDI techniques and subsequently the dangerous goods are transferred to a carrier that requires a paper dangerous goods transport document, the carrier shall ensure that the paper document indicates "Original received electronically" and the name of the signatory shall be shown in capital letters."

5.4.3.2 Amend to read as follows:

"5.4.3.2 These instructions shall be provided by the carrier to the master in the language(s) that the master and the expert can read and understand before loading. The master shall ensure that each member of the crew concerned understands and is capable of carrying out the instructions properly."

5.4.3.3 Amend to read as follows:

"5.4.3.3 Before loading, the members of the crew shall inform themselves of the dangerous goods to be loaded and consult the instructions in writing for details on actions to be taken in the event of an accident or emergency."

5.4.3.4 On the first page of the instructions in writing, amend the title to read "INSTRUCTIONS IN WRITING ACCORDING TO ADN".

<sup>2</sup> Distinguishing sign for motor vehicles in international traffic prescribed in the Vienna Convention on Road Traffic (1968).

Amend the second page of the model of the instructions in writing as follows:

In the heading of the table, insert "to be taken" before "subject to prevailing circumstances" (*editorial amendment*).

In the first line of the table, replace the first label by model label No. 1 in 5.2.2.2.2.

In the sixth line, delete the third sentence in column (3).

In the seventh line in column (2), in the fourth sentence, insert "or self-ignition" after "vapours". At the end, insert the following new sentence: "Risk of explosion of desensitized explosives after loss of desensitizer.". Delete the text in column (3).

In the eighth line in column (2), in the first sentence, insert "fire by" before "spontaneous combustion". Delete the text in column (3).

Amend the third page of the model of the instructions in writing as follows:

In the first line of the table, delete the first sentence in column (2) and amend the second sentence in column (2) to read as follows: "Risk of vigorous reaction, ignition and explosion in contact with combustible or flammable substances.

In the second line, in column (2), insert "or self-ignition" after "vapours".

In the third line, in column (2), amend the first sentence to read as follows: "Risk of intoxication by inhalation, skin contact or ingestion." In the third column, delete the second sentence.

In the fourth line, in column (2), insert "May cause serious disease in humans or animals." after "Risk of infection".

In the sixth line, delete the text in column (3).

In the seventh line, in column (2), amend the first sentence to read as follows: "Risk of burns by corrosion". Insert the following new third sentence: "Spilled substance may evolve corrosive vapours." In the last sentence, delete "and the sewage system". Delete the text in column (3).

In the eighth line, in column (2), in the last sentence, delete "and the sewage system". Delete the text in column (3).

On the fourth page of the model, at the beginning, insert the following new table:

"Additional guidance to members of the crew on the hazard characteristics of dangerous goods, indicated by marks, and on actions to be taken subject to prevailing circumstances"		
Mark	Hazard characteristics	Additional guidance
(1)	(2)	(3)
 Environmentally hazardous substances	Risk to the aquatic environment.	
 Elevated temperature substances	Risk of burns by heat.	Avoid contact with hot parts of the transport unit and the spilled substance."

5.4.4 Insert a new section 5.4.4 to read as follows:

"5.4.4 **Retention of dangerous goods transport information**

5.4.4.1 The consignor and the carrier shall retain a copy of the dangerous goods transport document and additional information and documentation as specified in ADN, for a minimum period of three months.

5.4.4.2 When the documents are kept electronically or in a computer system, the consignor and the carrier shall be able to reproduce them in a printed form."

Re-number 5.4.4 as 5.4.5.

## Chapter 5.5

Amend to read as follows:

### "Chapter 5.5 Special provisions

5.5.1 *(Deleted)*

5.5.2 **Special provisions applicable to fumigated cargo transport units (UN 3359)**

5.5.2.1 **General**

5.5.2.1.1 Fumigated cargo transport units (UN 3359) containing no other dangerous goods are not subject to any provisions of ADN other than those of this section.

5.5.2.1.2 When the fumigated cargo transport unit is loaded with dangerous goods in addition to the fumigant, any provision of ADN relevant to these goods (including placarding, marking and documentation) applies in addition to the provisions of this section.

5.5.2.1.3 Only cargo transport units that can be closed in such a way that the escape of gas is reduced to a minimum shall be used for the carriage of cargo under fumigation.

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**5.5.2.2 Training**

Persons engaged in the handling of fumigated cargo transport units shall be trained commensurate with their responsibilities.

**5.5.2.3 Marking and placarding**

5.5.2.3.1 A fumigated cargo transport unit shall be marked with a warning mark, as specified in 5.5.2.3.2, affixed at each access point in a location where it will be easily seen by persons opening or entering the cargo transport unit. This mark shall remain on the cargo transport unit until the following provisions are met:

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

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

5.5.2.3.2 The fumigation warning mark shall be rectangular and shall not be less than 300 mm wide and 250 mm high. The markings shall be in black print on a white background with lettering not less than 25 mm high. An illustration of this mark is given in the figure below.

**Fumigation warning mark**

*(Existing fumigation warning sign unchanged)*

5.5.2.3.3 If the fumigated cargo transport unit has been completely ventilated either by opening the doors of the unit or by mechanical ventilation after fumigation, the date of ventilation shall be marked on the fumigation warning mark.

5.5.2.3.4 When the fumigated cargo transport unit has been ventilated and unloaded, the fumigation warning mark shall be removed.

5.5.2.3.5 Placards conforming to model No. 9 (see 5.2.2.2.2) shall not be affixed to a fumigated cargo transport unit except as required for other Class 9 substances or articles packed therein.

**5.5.2.4 Documentation**

5.5.2.4.1 Documents associated with the carriage of cargo transport units that have been fumigated and have not been completely ventilated before carriage shall include the following information:

- "UN 3359, fumigated cargo transport unit, 9", or "UN 3359, fumigated cargo transport unit, class 9";

- The date and time of fumigation; and

- The type and amount of the fumigant used.

These particulars shall be drafted in an official language of the forwarding country and also, if the language is not English, French or German, in English, French or German, unless agreements, if any, concluded between the countries concerned in the transport operation provide otherwise.

5.5.2.4.2 The documents may be in any form, provided they contain the information required in 5.5.2.4.1. This information shall be easy to identify, legible and durable.

5.5.2.4.3 Instructions for disposal of any residual fumigant including fumigation devices (if used) shall be provided.

5.5.2.4.4 A document is not required when the fumigated cargo transport unit has been completely ventilated and the date of ventilation has been marked on the warning mark (see 5.5.2.3.3 and 5.5.2.3.4)."

## Part 7

7.1.4.5 Amend the title to read as follows:

**"Prohibition of mixed loading (seagoing vessels; inland navigation vessels carrying containers)"**

7.1.5.8.1, 7.2.5.8.1 Amend to read as follows: "In the States where the reporting duty is in force, the master of the vessel shall provide information in accordance with paragraph 1.1.4.6.1."

*Consequential amendment:*

7.1.5.8.2, 7.1.5.8.3, 7.1.5.8.4, 7.2.5.8.2, 7.2.5.8.3, 7.2.5.8.4 Replace the text by "(Deleted)".

7.2.2.19.3 Add the following new paragraph at the end:

"Vessels moving only type N open tank vessels do not have to meet the requirements of paragraphs 9.3.3.10.1, 9.3.3.10.2 and 9.3.3.12.6. In this case the following entry shall be made in the certificate of approval or provisional certificate of approval under number 5, permitted derogations: "Derogation from 9.3.3.10.1, 9.3.3.10.2 and 9.3.3.12.6; the vessel may only move tank vessels of type N open."."

7.2.3.7.5 Insert "by the master" after "withdrawn".

7.2.3.7.6 Insert a new paragraph 7.2.3.7.6 to read as follows:

"7.2.3.7.6 Before taking measures which could cause hazards as described in section 8.3.5, cargo tanks and pipes in the cargo area shall be cleaned and gas-freed. The result of the gas-freeing shall be documented in a gas-free certificate. The condition of being gas-free may only be declared and certified by a person approved by the competent authority."

7.2.3.20.2 Replace the text by "(Deleted)".

7.2.4.1.1 Amend the first bullet to read as follows:

"- residual cargo, washing water, cargo residues and slops contained in not more than six approved receptacles for residual products and receptacles for slops having a maximum individual capacity of not more than 2 m<sup>3</sup>. These receptacles for residual products shall meet the requirements of international regulations applicable to the substance concerned. The receptacles for residual products and the receptacles for slops shall be properly secured in the cargo area and comply with the provisions of 9.3.2.26.4 or 9.3.3.26.4 concerning them;

7.2.4.2.2, 7.2.4.2.3 Replace "required column (16)" by "required in column (17)".

7.2.4.11 Amend the title to read "**Loading plan**".

7.2.4.11.1 Replace the text by "(Deleted)".

7.2.4.15 Amend the title to read as follows: "**Measures to be taken after unloading (stripping system)**" and delete the Note.

7.2.4.15.1 Amend to read as follows:

"7.2.4.15.1 If the provisions listed in 1.1.4.6.1 foresee the application of a stripping system, the cargo tanks and the cargo piping shall be emptied by means of the stripping system in accordance with the conditions laid down in the testing procedure after each unloading operation. This provision need not be complied with if the new cargo is the same as the previous cargo or a different cargo, the carriage of which does not require a prior cleaning of the cargo tanks.

Residual cargo shall be discharged ashore by means of the equipment provided for that effect (article 7.04 Nr. 1 and appendix II model 1 of CDNI) or shall be stored in the vessel's own tank for residual products or in receptacles for residual products according to 7.2.4.1.1."

7.2.4.15.2 Amend to read as follows:

"7.2.4.15.2 During the filling of the receptacle for residual products, released gases shall be safely evacuated."

7.2.4.15.3 Amend to read as follows:

"7.2.4.15.3 The gas-freeing of cargo tanks and pipes for loading and unloading shall be carried out in compliance with the conditions of 7.2.3.7."

7.2.4.18 Amend to read as follows:

"7.2.4.18 ***Blanketing of the cargo and inerting***

7.2.4.18.1 In cargo tanks and the corresponding piping, inerting in the gaseous phase or blanketing of the cargo may be necessary. Inerting and blanketing of the cargo are defined as follows:

- Inerting: cargo tanks and the corresponding piping and other spaces for which this process is prescribed in column (20) of Table C of chapter 3.2 are filled with gases or vapours which prevent combustion, do not react with the cargo and maintain this state;
- Blanketing of the cargo: spaces in the cargo tanks above the cargo and the corresponding piping are filled with a liquid, gas or vapour so that the cargo is separated from the air and this state is maintained.

7.2.4.18.2 For certain substances the requirements for inerting and blanketing of the cargo in cargo tanks, in the corresponding piping and in adjacent empty spaces are given in column (20) of Table C of Chapter 3.2.

7.2.4.18.3 (*Reserved*).

7.2.4.18.4 Inerting or blanketing of flammable cargoes shall be carried out in such a way as to reduce the electrostatic charge as far as possible when the inerting agent is added."

7.2.4.19 Amend to read as follows:

"7.2.4.19 (*Deleted*)"

7.2.4.76 Amend the last paragraph to read as follows:

"Oil separator vessels may, however, be moored by means of appropriate synthetic ropes during the reception of oily and greasy wastes resulting from the operation of vessels, as may supply vessels and other vessels during the delivery of products for the operation of vessels."

## Part 8

8.1.2.1 (b), replace "the container packing certificate" with "the large container, vehicle or wagon packing certificate".

8.1.2.3 (j), 8.1.6.6 Replace the text by "(Deleted)".

8.1.6.2 In the first sentence, replace "products" by "products for the operation of the vessel and residual cargo".

8.1.10 Replace the text by "(Deleted)".

8.2.2.3.1.3 Amend the second paragraph, third indent to read as follows:

"- handling of receptacles for residual products;"

8.2.2.3.3.1 and 8.2.2.3.3.2 Replace "density" with "mass density, relative density" (twice).

8.2.2.3.3.2 Amend the seventh indent to read as follows:

"- cleaning of cargo tanks, e.g. gas freeing, washing, residual cargo and receptacles for residual products;"

8.2.2.7.1.3 and 8.2.2.7.2.3 Add the following text as a footnote to the term "list of questions":

"Note by the secretariat: the catalogue of questions and additional guidance for its application are available on the website of the secretariat of the United Nations Economic Commission for Europe (<http://www.unece.org/trans/danger/danger.htm>)."

8.6.1.3 and 8.6.1.4 Under point 11 replace "mass density" with "relative density".

8.6.4 Replace section 8.6.4 by "(Deleted)".

## Part 9

9.1.0.40.2.5 (e) (iii), 9.3.1.40.2.5 (e) (iii), 9.3.2.40.2.5 (e) (iii), 9.3.3.40.2.5 (e) (iii) For "toxic substances" read "dangerous substances".

9.3.1.53.4, 9.3.2.53.4, 9.3.3.53.4 Amend to read as follows: "Receptacles for residual products shall be capable of being earthed."

9.3.2.21.7 and 9.3.3.21.7 In the second paragraph, first line, add "and unloading" after "loading". In the second paragraph, fourth line, add "or unloading" before "operation".

9.3.2.25.2 (f), 9.3.3.25.2 (f) Delete the second paragraph.

9.3.2.25.2 (g), 9.3.3.25.2 (g) Replace the text by "(Deleted)".

9.3.2.25.10, 9.3.3.25.10 Replace the text by "(Deleted)".

9.3.2.26 Amend the title and paragraphs 9.3.2.26.1 to 9.3.2.26.3 to read as follows:

**“9.3.2.26 Tanks and receptacles for residual products and receptacles for slops**

9.3.2.26.1 If vessels are provided with a tank for residual products, it shall comply with the provisions of 9.3.2.26.3 and 9.3.2.26.4. Receptacles for residual products and receptacles for slops shall be located only in the cargo area. During the filling of the receptacles for residual products, means for collecting any leakage shall be placed under the filling connections.

9.3.2.26.2 Receptacles for slops shall be fire resistant and shall be capable of being closed with lids (drums with removable heads, code 1A2, ADR). The receptacles for slops shall be marked and be easy to handle.

9.3.2.26.3 The maximum capacity of a tank for residual products is 30 m<sup>3</sup>."

9.3.2.26.4 Instead of "residual cargo tank" read "tank for residual products".

In the second paragraph, replace "Intermediate bulk containers (IBCs), tank containers and portable tanks intended to collect cargo remains, cargo residues or slops" by "Receptacles for residual products".

In the third paragraph, replace "Residual cargo tanks, intermediate bulk containers (IBCs), tank containers and portable tanks" by "Receptacles for residual products".

In the last paragraph, replace "Residual cargo tanks, intermediate bulk containers (IBCs), tank containers and portable tanks" by "Receptacles for residual products and receptacles for slops".

9.3.3.11.4 In the third paragraph, insert: "loading and" before "unloading". Insert a new third sentence to read "These pipes shall be fitted at least 0.60m above the bottom."

9.3.3.11.7 Delete the following text:

"For double hull construction with the tanks integrated in the vessel's structure or where hold spaces contain cargo tanks which are independent of the structure of the vessel, or"

9.3.3.18 Second paragraph, insert "(0.035 bar)" after "3.5 kPa"

9.3.3.22.5 (a) The amendment does not apply to English version.

9.3.3.25.2 (h) Amend to read as follows:

"(h) Pipes for loading and unloading, and vapour pipes, shall not have flexible connections fitted with sliding seals."

9.3.3.26 Amend the title and paragraphs 9.3.3.26.1 to 9.3.3.26.3 to read as follows:

**9.3.3.26 Receptacles for residual products and receptacles for slops**

9.3.3.26.1 If vessels are provided with a tank for residual products, it shall comply with the provisions of 9.3.3.26.3 and 9.3.3.26.4. Receptacles for residual products and receptacles for slops shall be located only in the cargo area. During filling of receptacles for residual products, means for collecting any leakage shall be placed under the filling connections.

9.3.3.26.2 Receptacles for slops shall be fire resistant and shall be capable of being closed with lids (drums with removable heads, code 1A2, ADR). The receptacles for slops shall be marked and easy to handle.

9.3.3.26.3 The maximum capacity of a tank for residual products is 30 m<sup>3</sup>."

9.3.3.26.4 Instead of "residual cargo tanks" read "tank for residual products".

In the second paragraph, replace "Intermediate bulk containers (IBCs), tank containers and portable tanks intended to collect cargo remains, cargo residues or slops" by "Receptacles for residual products".

In the third paragraph, replace "Residual cargo tanks, intermediate bulk containers (IBCs), tank containers and portable tanks" by "Receptacles for residual products".

In the last paragraph, replace "Residual cargo tanks, intermediate bulk containers (IBCs), tank containers and portable tanks" by "Receptacles for residual products and receptacles for slops".

9.3.3.26.5 Amend to read as follows:

"9.3.3.26.5 Paragraphs 9.3.3.26.1, 9.3.3.26.3 and 9.3.3.26.4 above do not apply to oil separator vessels."

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