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### Inland Transport Committee

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#### Working Party on the Transport of Dangerous Goods

#### Joint Meeting of Experts on the Regulations annexed to the European Agreement concerning the International Carriage of Dangerous Goods by Inland Waterways (ADN) (ADN Safety Committee)

#### Twenty-ninth session

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Item 5 of the provisional agenda

#### Reports of informal working groups

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### **Consolidated version (taking into account the corrections from document ECE/TRANS/WP.15/AC.2/2016/30 corr. 1)**

### **Proposal for the implementation of the modified explosion protection concept on inland water way vessels**

#### **Transmitted by the Central Commission for the Navigation of the Rhine (CCNR)**

## **I. Introduction**

1. Based on the discussion of documents ECE/TRANS/WP.15/AC.2/2016/21 and informal document INF.16 presented during the 28th session of the ADN Safety Committee as well as additional comments transmitted to the informal working group on explosion protection on tank vessels after the session, the informal working group has prepared the following proposal for the modification of the explosion protection concept in ADN.

2. The basic concept of the modified explosion protection consists on the following principles:

(a) Basic safety measures which have to be met in case the vessel stays in an onshore assigned zone (for example terminals, locks). All vessels – dry cargo vessels, tank vessels –having an ADN certificate of approval have to be equipped as follows:

(i) Surface temperatures have to be below 200 °C.

(ii) Electrical equipment has to be of the type "limited explosion risk" (comparable to zone 2) as defined in ADN 1.2.1 whereas the surface temperature is limited to 200 °C.

(iii) If vessels – dry cargo vessels, tank vessels, pushed convoys and side-by-side formations – the equipment of which does not fulfil these requirements mentioned in 1 and 2, such equipment

- has to be switched off; or
- in rooms where such equipment is installed an overpressure of 0.1 kPa has to be assured accompanied by a continuous control of the concentration of

flammable substances (as just required in **9.3.x.52.3**) if the tank vessel stays in or near to an onshore zone 2. The gas detection system has to be calibrated with n-Hexane. The limiting value for switching off the ventilators etc. (see **9.3.2.52.3**) is 20% of the lower explosion limit of n-Hexane.

- With pushed convoys and side-by-side formations a vessel which is required to be in possession of a certificate of approval for the carriage of dangerous goods is equal to an onshore assigned zone.

(b) Extended and modified safety measures (in addition to the basic measures in (a) above) for tank vessels, pushed convoys and side-by-side formations of type G, C, N to be complied with if the product list of the vessel contains substances which need explosion safety measures (see also informal document INF.23 of the 22<sup>nd</sup> session):

- (i) Specifying a zone 2 on board the vessel;
- (ii) Explosion protection requirements also for non-electrical equipment within the zones on board the vessel;
- (iii) The electrical and the non-electrical equipment used within the respective zone on board the vessel have to fulfil the requirements applicable for that zone;
- (iv) If the product list contains substances of temperature class T4, T5 or T6 the respective maximum surface temperature is applicable;
- (v) Autonomous protective systems (flame arresters, high velocity vent valves etc.) have to be chosen according to the requirements specified in Table C;
- (vi) Additional measures to prevent explosive vapour/air mixtures from the cargo from entering the area of accommodation, wheelhouse etc. outside the cargo area.

3. This concept for a modified explosion protection on inland waterway vessels requires changes to paragraphs 1.2.1, 3.2.3.2, 9.1.0.12.3, 9.1.0.51, 9.1.0.52, 9.3.x.10, 9.3.x.12, 9.3.x.51, 9.3.x.52, 9.3.x.53 and consequential changes to paragraphs:

1.4.3.3, 1.4.2.2, 1.4.3.7.1, 1.6.7.2, 3.2.3.1, 3.2.3.3, 3.2.4.3, 5.4.3.4, 7.1 (7.1.2.19.1, 7.1.3.51.1, 7.1.3.51.2, 7.1.3.51.4, 7.1.3.51.5, 7.1.3.52.1, 7.1.3.52.2, 7.1.4.4.4, 7.1.4.13.1, 7.1.4.13.2, 7.1.4.13.3, 7.1.4.53, 7.1.4.75), 7.2 (7.2.2.0, 7.2.2.6, 7.2.2.19.3, 7.2.2.22, 7.2.3.6, 7.2.3.41, 7.2.3.51, 7.2.3.51.1, 7.2.3.51.2, 7.2.4.16, 7.2.4.16.3, 7.2.4.16.6, 7.2.4.16.7, 7.2.4.16.8, 7.2.4.16.12, 7.2.4.17, 7.2.4.17.1, 7.2.4.22.1 bis 7.2.4.22.7, 7.2.4.25, 7.2.4.25.5, 7.2.4.28.2, 7.2.4.41, 7.2.4.51, 7.2.4.51.1, 7.2.4.51.2, 7.2.4.53, 7.2.4.74), 8.1 (8.1.2.1, 8.1.2.2, 8.1.2.3, 8.1.5.2, 8.1.6.3, 8.1.6.5, 8.1.7, 8.1.7.1), 8.2 (8.2.2.3.1.1, 8.2.2.3.1.3), 8.3 (8.3.2, 8.3.4, 8.3.5) 8.6 (8.6.1.1 bis 8.6.1.4, 8.6.3), 9.1 (9.1.0.12.1, 9.1.0.12.2, 9.1.0.56), 9.3 (9.3.x.8.2 bis 9.3.x.10.4, 9.3.x.11.2, 9.3.x.17.1, 9.3.x.17.6, 9.3.x.17.8, 9.3.3.20.4, 9.3.3.20.5, 9.3.x.21.1, 9.3.x.21.7, 9.3.2.22.4, 9.3.2.22.5, 9.3.3.22.4, 9.3.3.22.5, 9.3.x.25.3, 9.3.2.25.9, 9.3.3.25.9, 9.3.2.26, 9.3.2.26.1 bis 9.3.2.26.4, 9.3.3.26, 9.3.3.26.1 bis 9.3.3.26.4, 9.3.2.28, 9.3.3.28, 9.3.2.31.3, 9.3.3.31.3, 9.3.2.31.4, 9.3.3.31.4, 9.3.1.41.3, 9.3.x.50, 9.3.x.50.1, 9.3.x.50.2, 9.3.x.50.2, 9.3.x.54.1 bis 9.3.x.54.4, 9.3.1.56).

4. The wording regarding the explosion protection topics was chosen as used by ATEX Directives (1999/92 EU and 2014/34 EU), if acceptable.

5. The proposal consists of 2 parts:

(a) Proposals concerning explicitly the explosion protection concept including the drawing of the zoning; and

(b) Proposals for editorial changes, which raised during the work on the modification of the explosion protection concept.

6. Compared to document ECE/TRANS/WP.15/AC.2/2016/21 the following changes have been made:

(a) Adopted modifications by the Safety Committee for the ADN 2017 (ECE/ADN/36) have been taken into account and if necessary adapted (e.g. references).

(b) Consequences from modifications adopted by the Safety Committee for ADN 2017 have been taken into account as well (e.g. sub group of the explosion group IIB with respect to autonomous protective systems).

(c) The wording of chapters of ADN 2015, which will no longer exist with the modified explosion protection concept are transferred to the respective transitional provision.

(d) Two new definitions have been added for:

*Spill coaming* (recommendation of the Safety Committee)

*Device for the safe depressurization of cargo tanks* (Specification of deflagration safety and steady burning)

*No change to the definition for 'Highest class'*

(e) In Chapter 8 it is explicitly mentioned that repair of explosion proof equipment and installation, as well as of autonomous protective systems is allowed only by competent persons

(f) Training concerning explosion safety widened

(g) Again implemented that the limiting surface temperature may be reached by cooling down

(h) Modification of the minimum distance of openings from zone 0 to the border of zone 1 for openings having a maximum diameter of 0.026 m (1 inch).

7. As agreed with the informal working group on Degassing "flammable gas detector" was replaced by "gas detector".

The informal working group sees this proposed basic concept as feasible for new vessels.

8. The informal working group invites the Safety Committee to discuss this proposal.

## Annex 1

## Proposals to implement the new zone concept in ADN

## 1.2 Definitions

<i>en, fr, de, ru</i>	<i>Paragraphs</i>	<i>Reason / Explanation</i>
<p><i>Autonomous protective systems</i>  <i>Systèmes de protection autonome</i>  <i>Schutzsysteme, autonom</i>  <i>Система защиты, автономно</i></p>	<p><b><u>Autonomous protective systems:</u></b> means all devices which are intended to halt incipient explosions immediately and/or to limit the effective range of an explosion and which are separately made available on the market for use as autonomous systems. This includes flame arresters, high velocity vent valves and deflagration safe vacuum valves.            (See the respective definitions)</p>	<p>New definition            This definition is necessary, because it is used in table C, explanations to column 16, in 8.1.2.3 and 8.1.7.            The definitions of the single autonomous protective systems stay</p>
<p><i>Cargo area</i>  <i>Zone de cargaison</i>  <i>Bereich der Ladung</i>  <i>Грузовое пространство</i></p>	<p><b><u>Cargo area:</u></b> the whole of the following spaces <del>on board of tank vessels (see figures below)</del>  <u>Space below deck:</u>            the space between two vertical planes perpendicular to the centre-line plane of the vessel, which comprises cargo tanks, hold spaces, cofferdams, double-hull spaces and double bottoms; these planes normally coincide with the outer cofferdam bulkheads or hold end bulkheads . <del>Their</del> intersection line with the deck is referred to as the boundary of the cargo area part below deck  <u>Cargo area (main part above deck) (when anti-explosion protection is required—comparable to zone 1)</u> means the space which is bounded:            —at the sides, by the shell plating extending upwards from the decks sides;            —fore and aft, by planes inclined at 45° towards the cargo area, starting at the boundary of the cargo area part below deck;            —vertically, 3 m above the deck;  <u>Space above deck:</u> the space bounded            - athwart, by ships vertical planes corresponding to the side plating            - fore and aft, by vertical planes coinciding with the outer cofferdam bulkheads or the hold end bulkheads  <u>and</u>            - upwards, by a horizontal plane 2.50 m above deck  <u>The boundary plane fore and aft is referred to as the “boundary plane of the cargo area”.</u></p>	<p>New zone concept            Editorial            Like wording of "Protected area"</p>

<i>en, fr, de, ru</i>	<i>Paragraphs</i>	<i>Reason / Explanation</i>
<p><i>Cargo area</i> <i>Zone de cargaison</i> <i>Bereich der Ladung</i> <i>Грузовое пространство</i></p>	<p><b><i>Drawing to cross out</i></b></p>	
<p><i>Cargo area (additional part above deck)</i> <i>Partie supplémentaire de la zone de cargaison au-dessus du pont</i> <i>Zusätzlicher Teil des Bereichs der Ladung oberhalb des Decks</i> <i>Дополнительная часть надпалубного грузового пространства</i></p>	<p><del><i>Cargo area (additional part above deck) (when anti-explosion protection is required, comparable to zone 1) means the spaces not included in the main part of the cargo area above deck comprising 1.00 m radius spherical segments centred over the ventilation openings of the cofferdams and the service spaces located in the cargo area part below the deck and 2.00 m spherical segments centred over the ventilation openings of the cargo tanks and the opening of the pump rooms;</i></del></p>	<p>No longer necessary New zone concept</p>
<p><i>Cargo pump-room</i> <i>Chambre des pompes</i> <i>Pumpenraum</i> <i>Отделение грузовых насосов</i></p>	<p><b><i>Cargo pump-room (when anti-explosion protection is required, comparable to zone 1)</i></b> means a service space where the cargo pumps and stripping pumps are installed together with their operational equipment;</p>	<p>New zone concept</p>
<p><i>Cargo tank</i> <i>Citernes de cargaison</i> <i>Ladetank</i> <i>Грузовой танк</i></p>	<p><b><i>Cargo tank (when anti-explosion protection is required, comparable to zone 0)</i></b> means a tank which is permanently attached to the vessel and intended for the carriage of dangerous goods.</p>	<p>New zone concept</p>
<p><i>Certified safe type electrical apparatus</i> <i>Matériel électrique de type certifié de sécurité</i> <i>Elektrische Einrichtung vom Typ "bescheinigte</i></p>	<p><del><i>Certified safe type electrical apparatus</i> means an electrical apparatus which has been tested and approved by the competent authority regarding its safety of operation in an explosive atmosphere, e.g.:</del></p> <ul style="list-style-type: none"> <li><del>—intrinsicly safe apparatus;</del></li> <li><del>—flameproof enclosure apparatus;</del></li> </ul>	<p>New zone concept</p>

en, fr, de, ru	Paragraphs	Reason / Explanation
<p>Sicherheit"</p> <p>Электрооборудование гарантированного типа безопасности</p>	<p>—apparatus protected by pressurization; —powder filling apparatus; —apparatus protected by encapsulation; —increased safety apparatus.</p> <p><b>NOTE:</b> Limited explosion risk apparatus is not covered by this definition</p>	
<p>Classification of explosion hazardous areas Classement d'atmosphère explosible Einteilung von explosionsge-fährdeten Bereiche Классификация Взрывоопасные зоны</p>	<p><b>Classification of hazardous areas</b> (see Directive 1999/92/CE<sup>1</sup>)</p> <p>Zone 0: areas in which dangerous explosive atmospheres of gases, vapours or <u>mist is present continuously or for long periods or frequently</u> <del>sprays exist permanently or during long periods;</del></p> <p>Zone 1: areas in which dangerous explosive atmospheres of gases, vapours or <u>mist is likely to occur in normal operation</u> <del>sprays are likely to occur occasionally;</del></p> <p>Zone 2: areas in which dangerous explosive atmospheres of gases, vapours or <u>mist is not likely to occur in normal operation but, if it does occur, will persist for a short period only;</u> <del>sprays are likely to occur rarely and if so for short periods only;</del></p> <p>See also Zoning.</p>	<p>Wording according to 2014/34 EU</p> <p>editorial</p>
<p>Cofferdam Cofferdam Kofferdamm: Кoffфердам</p>	<p><b>Cofferdam</b> (<del>when anti explosion protection is required, comparable to zone 1</del>) means an athwartship compartment which is bounded by watertight bulkheads and which can be inspected. The cofferdam shall extend over the whole area of the end bulkheads of the cargo tanks. The bulkhead not facing the cargo area (<u>outer cofferdam bulkhead</u>) shall extend from one side of the vessel to the other and from the bottom to the deck in one frame plane;</p>	<p>New zone concept</p>
<p>device for the safe depressurization of the cargo tanks Vorrichtung zum gefahrlosen Entspannen der Ladetanks</p>	<p><b>Device for the safe depressurization of the cargo tanks</b> means a manually operated or remote-operated device which is mounted in such a way that the depressurization of the cargo tanks is <u>riskless possible</u>. When the vessel substance list according to 1.16.1.2.5 contains substances for which explosion protection is required in column (17) of Table C in 3.2.3.2 it shall be <u>deflagration safe against atmospheric explosions and capable of withstanding steady burning of the most critical substance in the vessel substance list</u>. The deflagration safety shall be tested according to the International standard ISO 16852:2010<sup>2</sup>; and it has to be proven that the <u>applicable requirements are fulfilled (e.g. conformity assessment procedure according to Directive 2014/34/EC<sup>3</sup>, or ECE Trade 391<sup>4</sup> or at least equivalent)</u>. The deflagration safety may be ensured by an integrated flame arrester plate stack or a flame arrester.</p>	<p>New zone concept</p> <p>New definition</p> <p>Clarification concerning the flame arrester plate stack similar to 9.3.x.22.4</p> <p>ADN wording</p>

<sup>1</sup> Official Journal of the European Communities No. L 23 of 28 January 2000, S. 57

<sup>2</sup> Identical to EN ISO 16852:2010

<sup>3</sup> Journal of the European Communities No. L 23 of 26 February 2014, S. 309.

<sup>4</sup> A Common Regulatory Framework for Equipment Used in Environments with an Explosive Atmosphere, United Nations, 2011.

<i>en, fr, de, ru</i>	<i>Paragraphs</i>	<i>Reason / Explanation</i>
<p><i>Equipment</i> <i>Appareil</i> <i>Gerät</i> <i>прибор</i></p>	<p><b><u>Equipment</u></b> (see Directive 2014/34 EU<sup>5</sup>) means electrical or non-electrical machines, apparatus, fixed or mobile devices, control components and instrumentation thereof and detection or prevention systems which, separately or jointly, are intended for the generation, transfer, storage, measurement, control and conversion of energy and/or the processing of material and which are capable of causing an explosion through their own potential sources of ignition;</p> <p><u>Equipment having a UN number carried as a cargo are not included</u></p>	<p>New zone concept</p> <p>Aligning language versions</p>
<p><i>Equipment category</i> <i>Catégorie d'appareils</i> <i>Geräteategorie</i> <i>Категория приборов</i></p>	<p><b><u>Equipment category</u></b> (see Directive 2014/34 EC<sup>6</sup>) means the classification of equipment to be used within potentially explosive atmosphere determining the requisite level of protection to be ensured</p> <p><u>Equipment category 1 comprises equipment designed to be capable of functioning in conformity with the operational parameters established by the manufacturer and ensuring a very high level of protection.</u></p> <p><u>Equipment in this category is intended for use in areas in which explosive atmospheres caused by mixtures of air and gases, vapours or mists or by air/dust mixtures are present continuously, for long periods or frequently.</u></p> <p><u>Equipment in this category must ensure the requisite level of protection, even in the event of rare incidents relating to equipment, and is characterised by means of protection such that:</u></p> <ul style="list-style-type: none"> <li>- <u>either, in the event of failure of one means of protection, at least an independent second means provides the requisite level of protection,</u></li> <li>- <u>or the requisite level of protection is assured in the event of two faults occurring independently of each other.</u></li> </ul> <p><u>Equipment category 1 according to Directive 2014/34/EC<sup>7</sup> is marked as II 1 G. Such equipment corresponds to EPL "Ga" according to IEC 60079-0.</u></p> <p><u>Equipment category 1 is suitable to be used in zone 0, 1 and 2</u></p> <p><u>Equipment category 2 comprises equipment designed to be capable of functioning in conformity with the operational parameters established by the manufacturer and of ensuring a high level of protection.</u></p> <p><u>Equipment in this category is intended for use in areas in which explosive atmospheres caused by gases, vapours, mists or air/dust mixtures are likely to occur occasionally.</u></p> <p><u>The means of protection relating to equipment in this category ensure the requisite level of</u></p>	<p>New zone concept</p> <p>New definition</p>

<sup>5</sup> Official Journal of the European Communities No. L 23 of 26. February 2014, S. 309

<sup>6</sup> Official Journal of the European Communities No. L 23 of 26. February 2014, S. 309

<sup>7</sup> Official Journal of the European Communities No. L 23 of 26 February 2014, S. 309.

<i>en, fr, de, ru</i>	<i>Paragraphs</i>	<i>Reason / Explanation</i>
	<p><u>protection, even in the event of frequently occurring disturbances or equipment faults which normally have to be taken into account.</u></p> <p><u>Equipment category 2 according to Directive 2014/34/EC<sup>8</sup> is marked as II 2 G. Such equipment corresponds to EPL "Gb" according to IEC 60079-0.</u></p> <p><u>Equipment category 2 is suitable to be used in zone 1 and 2</u></p> <p><u>Equipment category 3 comprises equipment designed to be capable of functioning in conformity with the operating parameters established by the manufacturer and ensuring a normal level of protection.</u></p> <p><u>Equipment in this category is intended for use in areas in which explosive atmospheres caused by gases, vapours, mists, or air/dust mixtures are unlikely to occur or, if they do occur, are likely to do so only infrequently and for a short period only.</u></p> <p><u>Equipment in this category ensures the requisite level of protection during normal operation.</u></p> <p><u>Equipment category 3 according to Directive 2014/34/EU<sup>9</sup> is marked as II 3 G. Such equipment corresponds to EPL "Gc" according to IEC 60079-0.</u></p> <p><u>Equipment category 3 is suitable to be used in zone 2</u></p>	
<p><i>Equipment intended for use in potentially explosive atmospheres</i>  <i>Appareil pour l'utilisation dans atmosphère explosible</i>  <i>Gerät zum Einsatz in explosionsgefährdeten Bereichen</i>  <i>Прибор, предназначенный для использования во взрывоопасной атмосфере</i></p>	<p><b><u>Equipment intended for use in potentially explosive atmospheres</u></b> means electrical or non-electrical equipment where measures are taken to prevent that the equipment's own ignition sources become effective. Such equipment has to fulfil the requirements to be used within the respective zone. They shall be tested according to their type of protection and it has to be proven that the applicable requirements are fulfilled (e.g. conformity assessment procedure according to Directive 2014/34/EU<sup>10</sup>, or IECEx-System<sup>11</sup> or ECE Trade 391<sup>12</sup> or at least equivalent).</p>	<p>New zone concept New definition</p>

<sup>8</sup> Official Journal of the European Communities No. L 23 of 26 February 2014, S. 309.

<sup>9</sup> Official Journal of the European Communities No. L 23 of 26 February 2014, S. 309.

<sup>10</sup> Official Journal of the European Communities No. L 23 of 2. February 2014, S. 309.

<sup>11</sup> <http://iecex.com/rules>.

<sup>12</sup> A Common Regulatory Framework for Equipment Used in Environments with an Explosive Atmosphere, United Nations 2011.



<i>en, fr, de, ru</i>	<i>Paragraphs</i>	<i>Reason / Explanation</i>
<p><i>Equipment protection level</i></p> <p><i>Niveau de Protection</i></p> <p><i>Geräteschutzniveau</i></p> <p><i>Уровень защиты приборов</i></p>	<p><b><u>Equipment protection level (EPL<sup>13</sup>)</u></b> (see IEC 60079-0) means level of protection assigned to equipment based on its likelihood of becoming a source of ignition.</p> <p><b><u>EPL Ga</u></b></p> <p>Equipment having a "very high" level of protection. Such equipment corresponds to equipment category 1 according to Directive 2014/34/EC<sup>14</sup>. Equipment EPL Ga is suitable to be used in zone 0, 1 and 2</p> <p><b><u>EPL Gb</u></b></p> <p>Equipment having a "high" level of protection. Such equipment corresponds to equipment category 12 according to Directive 2014/34/EC<sup>15</sup>. Equipment EPL Gb is suitable to be used in zone 1 and 2</p> <p><b><u>EPL Gc</u></b></p> <p>Equipment having an "enhanced" level of protection. Such equipment corresponds to equipment category 3 according to Directive 2014/34/EC<sup>16</sup>. Equipment EPL Gc is suitable to be used in zone 2.</p>	New zone concept
<p><i>Explosion hazardous areas</i></p> <p><i>Atmosphère explosible</i></p> <p><i>Explosionsgefährdete Bereiche:</i></p> <p><i>Взрывоопасные зоны</i></p>	<p><b><u>Explosion <del>danger</del>-hazardous areas</u></b> means areas in which an explosive atmosphere may occur in such quantities as to require <del>of such a scale that</del> special protection measures <del>are necessary</del> to ensure the safety and health of the persons affected (see Directive 1999/92/EC<sup>17</sup>) <u>They are classified in terms of zones on the basis of the frequency and duration of the occurrence of an explosive atmosphere. See classification of explosion hazardous areas, explosion protection zoning with tank vessels and protected area with dry cargo vessels</u></p>	<p>Clarification</p> <p>Link to zoning</p>
<p><i>Explosion protection</i></p> <p><i>Protection contre les explosions</i></p> <p><i>Explosionsschutz:</i></p> <p><i>Защита против взрывов</i></p>	<p><b><u>Explosion protection</u></b></p> <p><u>The whole of the requirements which have to be fulfilled and means which have to be taken to avoid damages by explosions</u></p> <p><u>This includes:</u></p>	<p>New definition</p> <p>Aligning language versions</p>

<sup>13</sup> Abbreviation for: Equipment Protection Level.

<sup>14</sup> Official Journal of the European Communities No. L 23 of 26 February 2014, S. 309.

<sup>15</sup> Official Journal of the European Communities No. L 23 of 26 February 2014, S. 309.

<sup>16</sup> Official Journal of the European Communities No. L 23 of 26 February 2014, S. 309.

<sup>17</sup> Official Journal of the European Communities No. L 23 of 28 January 2000, S. 57

<i>en, fr, de, ru</i>	<i>Paragraphs</i>	<i>Reason / Explanation</i>
	<p><u>Organizational measures such as for example :</u></p> <ul style="list-style-type: none"> <li>- <u>Assigning explosion hazardous areas (zoning): in which dangerous explosive atmospheres of gases, vapours or sprays are likely to occur (see Directive 1999/92 EC<sup>18</sup>) either</u> <ul style="list-style-type: none"> <li>a) <u>permanently or during long periods (Zone 0)</u></li> <li>b) <u>occasionally in normal operation (Zone 1)</u></li> <li>c) <u>rarely and if so for short periods only (Zone 2)</u></li> </ul> </li> <li>- <u>Preventing of ignition sources (Use of low-sparking hand-tools, no smoking, use of personal protective equipment including dissipative shoes, non isolating gloves etc.)</u></li> <li>- <u>Providing working instructions</u></li> </ul> <p><u>As well as technical means such as for example</u></p> <ul style="list-style-type: none"> <li>- <u>Use of installations and equipment for which it is proven that the applicable requirements to be used within the respective potentially explosive atmospheres are fulfilled.</u></li> <li>- <u>Use of autonomous protective systems</u></li> <li>- <u>Monitoring of potentially explosive atmospheres by the use of gas detection systems and gas detectors.</u></li> </ul>	<p>Aligning language versions</p>
<p><i>Flame arrester</i> <i>Coupe flammes</i> <i>Flammendurchschlagsicherung</i> <i>Пламегазитель</i></p>	<p><b><i>Flame arrester</i></b> means a device mounted in the vent of part of an installation or in the interconnecting piping of a system of installations, the purpose of which is to permit flow but prevent the propagation of a flame front. The flame arrester shall be tested according to the <del>European</del> International standard EN ISO 16852:2010<sup>19</sup>; and it has to be proven that the <u>applicable requirements are fulfilled (e.g. conformity assessment procedure according to Directive 2014/34/EC<sup>20</sup>, or ECE Trade 391<sup>21</sup> or at least equivalent).</u></p>	<p>Wording according to 2014/34 EU</p>
<p><i>Gas detection system</i> <i>Détection de gaz</i> <i>Gasspüranlage:</i> <i>газодетекторная система</i></p>	<p><i>Gas detection system</i> means a <del>fixed</del> <u>steady state monitoring</u> system capable of detecting in time significant concentrations of flammable gases <del>given off by the cargoes</del> at concentrations below <del>the their</del> <u>lower explosion limit LEL</u> and capable of activating the alarms <u>when a limiting value is exceeded</u>. It has to be calibrated at least according to n-Hexane. The detection level of the sensors is 10% of the LEL of n-Hexane as a maximum. It has to be certified according to IEC/EN<sup>22</sup> 60079-29-1:2011 and with electronically driven systems in addition according to EN50271:2011. <u>If it is used in explosion hazardous areas it has to be suitable to be used in the respective zone and</u></p>	<p>Basic safety concept</p> <p>Agreed upon with IWG "Gasfree"</p>

<sup>18</sup> Official Journal of the European Communities No. L 23 of 28 January 2000, S. 57

<sup>19</sup> Identical to EN ISO 16852:2010

<sup>20</sup> Journal of the European Communities No. L 23 of 26 February 2014, S. 309.

<sup>21</sup> A Common Regulatory Framework for Equipment Used in Environments with an Explosive Atmosphere, United Nations, 2011.

<sup>22</sup> IEC/EN means: This standard is available as an IEC standard and as an European standard

<i>en, fr, de, ru</i>	<i>Paragraphs</i>	<i>Reason / Explanation</i>
	<p>it has to be proven that the applicable requirements are fulfilled (e.g. conformity assessment procedure according to Directive 2014/34/EC<sup>23</sup> or IECEx-System<sup>24</sup> or ECE Trade 391<sup>25</sup> or at least equivalent).</p>	
<p><i>Gas detector</i> <i>Détecteur de gaz inflammable</i> <i>Gasspürgerät:</i> <i>Индикатор легковоспламеняющихся газов</i></p>	<p><b><i>Flammable Gas detector</i></b> means a <u>portable</u> device allowing measurement of any significant concentration of flammable gases <del>given off by the cargo</del> below the <del>lower explosive limit</del> <u>LEL</u> and which clearly indicates the <del>presence of higher</del> concentrations of such gases. <del>Flammable Gas</del> detectors may be designed for measuring flammable gases only but also for measuring both flammable gases and oxygen. <u>The detection level of the sensors is 5% of the LEL of the most critical substance in the vessel substance list as a maximum.</u></p> <p><u>The gas detector has to be certified according to IEC/EN<sup>26</sup> 60079-29-1. If it is used in explosion hazardous areas it shall be in addition suitable to be used in the respective zone and it has to be proven that the applicable requirements are fulfilled (e.g. conformity assessment procedure according to Directive 2014/34/EC<sup>27</sup>, or ECE Trade 391<sup>28</sup> or at least equivalent).</u></p> <p>This device shall be so designed that measurements are possible without the necessity of entering the spaces to be checked;</p>	<p>Basic safety concept</p> <p>Agreed upon with IWG on degassing of cargo tanks</p> <p>Aligning language versions</p>

<sup>23</sup> Journal of the European Communities No. L 23 of 26. February 2014, S. 309

<sup>24</sup> <http://iecex.com/rules>

<sup>25</sup> A Common Regulatory Framework for Equipment Used in Environments with an Explosive Atmosphere, United Nations 2011

<sup>26</sup> IEC/EN means: This standard is available as an IEC standard and as a European standard.

<sup>27</sup> Journal of the European Communities No. L 23 of 26 February 2014, S. 309.

<sup>28</sup> A Common Regulatory Framework for Equipment Used in Environments with an Explosive Atmosphere, United Nations, 2011.

<p><i>High-velocity vent valve</i>  <i>Souape de dégagement à grande vitesse</i>  <i>Hochgeschwindigkeits-ventil:</i>  <i>Быстродействующий выпускной клапан</i></p>	<p><b>High-velocity vent valve</b> means a pressure relief valve designed to have nominal flow velocities which exceed the flame velocity of the <u>flammable explosive</u> mixture, thus preventing flame transmission. <u>When the vessel substance list according to 1.16.1.2.5 contains substances for which explosion protection is required in column (17) of Table C in 3.2.3.2 this pressure relief device shall be tested in accordance with international standard ISO 16852:2010<sup>29</sup> and it has to be proven that the applicable requirements are fulfilled (e.g. conformity assessment procedure according to Directive 2014/34/EC<sup>30</sup>, or ECE Trade 391<sup>31</sup> or at least equivalent);</u></p>	<p>Clarification  Wording according to ATEX  ADN wording</p>
<p><i>Hold</i>  <i>Cale</i>  <i>Laderaum</i>  <i>Трюм</i></p>	<p><del><b>Hold</b> when anti-explosion protection is required, comparable to zone 1</del> <del>see Classification of zones</del>) means a part of the vessel which, whether covered by hatchway covers or not, is bounded fore and aft by bulkheads and which is intended to carry goods in packages or in bulk. The upper boundary of the hold is the upper edge of the hatchway coaming. Cargo extending above the hatchway coaming shall be considered as loaded on deck;</p>	<p>New zone concept</p>
<p><i>Hold space</i>  <i>Espace de cale</i>  <i>Aufstellungsraum</i>  <i>Трюмное помещение</i></p>	<p><del><b>Hold space</b> when anti-explosion protection is required, comparable to zone 1</del>) means an enclosed part of the vessel which is bounded fore and aft by watertight bulkheads and which is intended only to carry cargo tanks independent of the vessel's hull.</p>	<p>New zone concept</p>
<p><i>Limited explosion risk electrical apparatus</i>  <i>Matériel électrique à risque limité</i>  <i>Elektrische Einrichtung vom Typ "begrenzte Explosionsgefahr":</i>  <i>Электрооборудование с ограниченной опасностью взрыва</i></p>	<p><b>Limited explosion risk electrical apparatus</b> means an electrical apparatus which, during normal operation, does not cause sparks or exhibits surface temperatures which are above <u>200°C the required temperature class</u>, including e.g.:</p> <ul style="list-style-type: none"> <li>- three-phase squirrel cage rotor motors;</li> <li>- brushless generators with contactless excitation;</li> <li>- fuses with an enclosed fuse element;</li> <li>- contactless electronic apparatus;</li> </ul> <p>or means an electrical apparatus <del>with an enclosure protected against water jets at least hose-proof (degree of protection IP55 or higher) which during normal operation does not exhibit surface temperatures which are above the required temperature class</del> <u>200 °C</u>;</p>	<p>Basic safety concept</p>
<p><i>Opening pressure</i>  <i>Pression d'ouverture</i>  <i>Öffnungsdruck</i>  <i>Давление срабатывания</i></p>	<p><b>Opening pressure</b> means the pressure referred to in a <del>list of substances</del> <u>vessel substance list in Chapter 3.2.3.2.3.2, Table C, column (10)</u>, at which the <u>pressure relief device / high velocity vent valves</u> open. For pressure tanks, the opening pressure of the safety valve shall be established in accordance with the requirements of the competent authority or a recognized classification society;</p>	<p>Clarification  ADN wording</p>
<p><i>Oxygen measuring system</i>  <i>Expéditeur d'oxygène</i></p>	<p><b>Oxygen measuring system</b> means a steady-state monitoring device capable of detecting in time <u>any significant reduction of oxygen content of the air and capable of activating the alarms in case</u></p>	<p>New definition  New zone concept</p>

<sup>29</sup> Identical to EN ISO 16852:2010

<sup>30</sup> Journal of the European Communities No. L 23 of 26 February 2014, S. 309.

<sup>31</sup> A Common Regulatory Framework for Equipment Used in Environments with an Explosive Atmosphere, United Nations, 2011.

<p><i>Sauerstoffmessanlage:</i> <i>Кислорододетекторная система</i></p>	<p>the oxygen concentration reaches 19.5 vol %.</p> <p>This device shall be tested according to the European standard IEC/EN<sup>32</sup> 50104:2011. If it is used in explosion hazardous areas it has to be proven that the applicable requirements are fulfilled (e.g. conformity assessment procedure according to Directive 2014/34/EC<sup>33</sup>, IECEx-System<sup>34</sup>, or ECE/Trade/391<sup>35</sup> or at least equivalent).</p> <p>Oxygen measuring system may be a device of measuring oxygen only or part of a combination device for measuring both flammable gas and oxygen.</p>	<p>Wording according to ATEX</p>
<p><i>Oxygen meter</i> <i>Oxygène-mètre</i> <i>Sauerstoffmessgerät</i> <i>Кислорододетекторная система</i></p>	<p><b>Oxygen meter:</b> means a <u>portable</u> device allowing measuring of any significant reduction of the oxygen content of the air. Oxygen meters may either be a device for measuring oxygen only or part of a combination device for measuring both flammable gas and oxygen. This device shall be so designed that measurements are possible without the necessity of entering the spaces to be checked.</p> <p><u>It shall be tested according to the European standard IEC/EN<sup>36</sup> 50104:2011. If it is used in explosion hazardous areas it has to be proven that the applicable requirements are fulfilled (e.g. conformity assessment procedure according to Directive 2014/34/EC<sup>37</sup>, IECEx-System<sup>38</sup>, or ECE/Trade/391<sup>39</sup> or at least equivalent).</u></p>	<p>ADN wording</p>
<p><i>Pressure relief device</i> <i>Souape de surpression</i> <i>Überdruckventil:</i> <i>Клапан повышенного давления</i></p>	<p><b>Pressure relief device</b> means an <del>spring loaded device</del> <u>automatically activated safety valve</u> <del>which is activated automatically by pressure</del> the purpose of which is to protect the cargo tank against unacceptable excess internal pressure.</p>	<p>Clarification</p>
<p><i>Protected area</i> <i>Zone protégée</i> <i>Geschützter Bereich:</i> <i>Защищенная зона</i></p>	<p><b>Protected area means</b> the whole of the following spaces on board of dry cargo vessels</p> <p>(a) the hold or holds (when <del>anti</del> explosion protection is required, <del>comparable to zone 1</del>);</p> <p>(b) the space situated above the deck (when <del>anti</del> explosion protection is required, <del>comparable to zone 2</del>), bounded:</p> <p>(i) athwartships, by vertical planes corresponding to the side plating;</p> <p>(ii) fore and aft, by vertical planes corresponding to the end bulkheads of the hold; and</p> <p>(iii) upwards, by a horizontal plane 2.00 m above the upper level of the load, but at least by a horizontal plane 3.00 m above the deck.</p>	<p>Clarification</p> <p>Wording according to Directive 2014/34/EU</p>

<sup>32</sup> IEC/EN means: This standard is available as an IEC standard and as an European standard

<sup>33</sup> Journal of the European Communities No. L 23 of 26 February 2014, S. 309.

<sup>34</sup> <http://iecex.com/rules>

<sup>35</sup> A Common Regulatory Framework for Equipment Used in Environments with an Explosive Atmosphere, United Nations, 2011.

<sup>36</sup> IEC/EN means: This standard is available as an IEC standard and as an European standard

<sup>37</sup> Journal of the European Communities No. L 23 of 26 February 2014, S. 309.

<sup>38</sup> <http://iecex.com/rules>

<sup>39</sup> A Common Regulatory Framework for Equipment Used in Environments with an Explosive Atmosphere, United Nations, 2011.

<p><i>Protective coaming, liquid tight</i>  <i>Seuil de protection, étanche aux liquides</i>  <i>Schutzsüll, flüssigkeitsdicht</i>  <i>Коминг защиты, герметичный</i></p>	<p><b><i>Protective coaming, liquid tight</i></b> means a liquid tight coaming on deck at the height of the outer cargo tank bulkhead (see drawing zoning) but maximum at a distance of 0.6 m inside the outer cofferdam bulkhead or hold end bulkheads which prevents liquid from entering the fore and aft parts of the vessel. The protective coaming has either to extend from one side of the vessel to the other or to be fixed between the spill coamings. The connection between the protective coamings and the spill coaming has to be liquid tight.</p>	<p>New zone concept  New definition</p>
<p><i>Protective gloves</i>  <i>Gants de protection</i>  <i>Schutzhandschuhe:</i>  <i>защитные перчатки</i></p>	<p><b><i>Protective gloves</i></b> means gloves which protect the wearer's hands during work in a danger area. The choice of appropriate gloves shall correspond to the dangers likely to arise. For protective gloves, see for example European standard EN 374-1:2003, EN 374-2:2015<del>2003</del> or EN 374-3:2003 + AC:2006-4:2014; In case of dangers caused by electrostatic charging/discharging: European standard EN 16350: 2015</p>	<p>Clarification</p>
<p><i>Protective shoes (or protective boots)</i>  <i>Chaussures de protection (ou bottes de protection)</i>  <i>Schutzschuhe (oder Schutzstiefel)</i>  <i>Защитная обувь (или защитные сапоги)</i></p>	<p><b><i>Protective shoes (or protective boots)</i></b> means shoes or boots which protect the wearer's feet during work in a danger area. The choice of appropriate protective shoes or boots shall correspond to the dangers likely to arise e.g. electrostatic charging/discharging. For protective shoes or boots, see for example European international standard EN-ISO 20345: 2012 or 20346:2014;</p>	<p>Clarification</p>
<p><i>Protective suit</i>  <i>Habits de protection</i>  <i>Schutzanzug:</i>  <i>Защитный костюм</i></p>	<p><b><i>Protective suit</i></b> means a suit which protects the wearer's body during work in a danger area. The choice of appropriate suit shall correspond to the dangers likely to arise. For protective suits, see for example European standard EN 340:2003 ISO 13688:2013<sup>40</sup>; In case of dangers caused by electrostatic charging/discharging: European standard EN 1149-5: 2008</p>	<p>Clarification</p>
<p><i>Protection wall, gas and liquid tight</i>  <i>Mur de protection, étanches aux gaz et aux liquides</i>  <i>Schutzwand, gas- und flüssigkeitsdicht</i>  <i>Стена защиты, герметичная</i></p>	<p><b><i>Protection wall, gas and liquid tight</i></b> means a gas and liquid tight wall on deck at the height of the boundary plane of the cargo area preventing gases to enter areas outside the cargo area.</p>	<p>New zone concept  New definition</p>
<p><i>Sampling opening</i></p>	<p><b><i>Sampling opening</i></b> means a closable opening of the cargo tank with a diameter of not more than 0.30 m. When the list of substances on the vessel substance list according to 1.16.1.2.5 contains</p>	<p>Clarification  ADN wording</p>



<sup>40</sup> Identical to EN ISO 16852:2010

<p><i>Dispositif de prise d'échantillons ouvert</i></p> <p><i>Probeentnahmeöffnung:</i></p> <p><i>Отверстие для взятия проб</i></p>	<p>substances for which <del>explosion protection against explosion</del> is required in column (17) of Table C of Chapter in 3.2.3.2, it shall be deflagration safe and capable of withstanding steady burning for the most critical substance in the substance list, so designed that the opening period will be as short as possible and that <del>the flame arrester plate stack</del> it cannot remain open without external intervention. The <del>deflagration safety flame arrester plate stack</del> shall be of a type approved by the competent authority for this purpose shall be tested according to the international standard ISO 16852:2010<sup>41</sup> and it has to be proven that the applicable requirements are fulfilled (e.g. conformity assessment procedure according to Directive 2014/34/EC<sup>42</sup>, or ECE Trade 391<sup>43</sup> or at least equivalent) The deflagration safety may be ensured by an integrated flame arrester plate stack or a flame arrester.;</p>	<p>New zone concept</p> <p>Wording according to ATEX</p> <p>Aligning language versions</p>
<p><i>Spill coaming</i></p> <p><i>Spillsüll</i></p>	<p><b><i>Spill coaming</i></b> means a coaming on deck of the vessel parallel to the side plating with closable openings, to prevent the trespassing of liquids from the ship. The connection to the protective coamings, if installed has to liquid tight.</p>	<p>New definition</p>
<p><i>Types of protection</i></p> <p><i>Types de protection</i></p> <p><i>Zündschutzarten</i></p> <p><i>Типы защиты:</i></p>	<p><i>Types of protection:</i></p> <p><u>electrical equipment</u> (see IEC 60079-0:2011 or at least equivalent)</p> <p>EEx (d): flameproof enclosure (IEC 60079-1:2007 2014 or at least equivalent);</p> <p>EEx (e): increased safety (IEC 60079-7:2006 or at least equivalent);</p> <p>EEx (ia) and EEx (ib): intrinsic safety (IEC 60079-11:2011 or at least equivalent);</p> <p>EEx (m): encapsulation (IEC 60079-18:2009 or at least equivalent);</p> <p>EEx (p): pressurized apparatus (IEC 60079-2:2007 2014 or at least equivalent);</p> <p>EEx (q): powder filling (IEC 60079-5:2007 or at least equivalent);</p> <p><u>Non-electrical equipment</u> (see IEC EN 13463-1:2009 or at least equivalent)</p> <p><u>EEx (fr): flow restricting enclosure</u> (EN 13463-2:2005 or at least equivalent)</p> <p><u>EEx (d): flameproof enclosure</u> (EN 13463-3:2005 or at least equivalent)</p> <p><u>EEx (c): constructional safety</u> (EN 13463-5:2011 or at least equivalent)</p> <p><u>EEx (b): control of ignition source</u> (EN 13463-6:2005) or at least equivalent</p> <p><u>EEx (k): liquid immersion:</u> (EN 13463-8:2003 or at least equivalent)</p>	<p>Clarification</p> <p>New zone concept</p>
<p><i>Ullage opening</i></p>	<p><b><i>Ullage opening</i></b> means a closable opening of the residual cargo tanks with a diameter of maximum 0.1 m. The ullage opening is to be designed in such a way that it is possible to</p>	<p>New definition</p>

<sup>41</sup> Identical to EN ISO 16852:2010

<sup>42</sup> Journal of the European Communities No. L 23 of 26 February 2014, S. 309.

<sup>43</sup> A Common Regulatory Framework for Equipment Used in Environments with an Explosive Atmosphere, United Nations, 2011.


<p><i>Orifice de jaugeage</i> <i>Peilöffnung:</i> <i>Отверстие для замеров</i></p>	<p>determine the degree of filling by the use of gauging rods.</p>	
<p><i>Vacuum valve</i> <i>Souape de souspression</i> <i>Unterdruckventil:</i> <i>вакуумный клапан</i></p>	<p><b>Vacuum valve</b> means an <del>spring loaded device</del> <u>automatically activated safety valve which is activated automatically by pressure</u> the purpose of which is to protect the cargo tank against unacceptable negative internal pressure. <u>When the vessel substance list according to 1.16.1.2.5 contains substances for which explosion protection is required in column (17) of Table C in 3.2.3.2 it shall be deflagration safe against atmospheric explosions of the most critical substance in the vessel substance list. The deflagration safety shall be tested according to the International standard ISO 16852:2010<sup>44</sup>; and it has to be proven that the applicable requirements are fulfilled (e.g. conformity assessment procedure according to Directive 2014/34/EC<sup>45</sup>, or ECE Trade 391<sup>46</sup> or at least equivalent). The deflagration safety may be ensured by an integrated flame arrester plate stack or a flame arrester.</u></p>	<p>Clarification ADN wording Adopted text from IWG 'Substances' ADN wording</p>
<p><i>Zoning</i> <i>Classification des zones</i> <i>Zoneneinteilung</i> <i>Классификация зон</i></p>	<p>This zoning (see drawing) applies for tank vessels whose vessel substance list according to <u>1.16.1.2.5 contains substances for which explosion protection is required in column (17) of Table C of 3.2.3.2</u></p> <p><b>Zone 0:</b> comprises:</p> <p> - <u>Inside all cargo tanks, receptacles for residual products and for slops, pipings containing cargoes or cargo vapours including their equipment as well as pumps and compressors.</u></p> <p><b>Zone 1:</b> comprises:</p> <p> - <u>All compartments within the part of the cargo area below deck being not part of zone 0.</u></p> <p>- <u>Closed compartments on deck within the cargo area.</u></p> <p>- <u>The deck from one side of the vessel to the other within the cargo area up to the cofferdam bulkheads.</u></p> <p><u>Up to a distance of at least 1.6 m to the boundary plane of the cargo area the height is 2.5 m above deck, at least, however, 1.5 m above the highest piping carrying cargoes or cargo vapours.</u></p> <p><u>Whereas every opening in zone 0 except the high velocity vent valves / safety valves of pressurized cargo tanks shall be surrounded by an annulus zone 1</u></p>	<p>New zone concept New definition ADN wording 2x</p>

<sup>44</sup> Identical to EN ISO 16852:2010

<sup>45</sup> Journal of the European Communities No. L 23 of 26 February 2014, S. 309.

<sup>46</sup> A Common Regulatory Framework for Equipment Used in Environments with an Explosive Atmosphere, United Nations, 2011.



	<p><u>having at least a width of 2.5 m. With openings the diameter of which is less than 0.026 m (1") the distance to the outer cofferdam bulkhead can be reduced to 0,5 m, provided it is ensured that such an opening is not opened to the atmosphere within this distance.</u></p> <p><u>Adjacent (fore and aft) till the outermost cargo tank shots the height is 0.25 m above deck.</u></p> <p><u>If the ship is build with hold spaces or a cofferdam/ part of a cofferdam is arranged as a service space the adjacent height (fore and aft) till the boundary plane of the cargo area is 1.0 m above deck (see drawing).</u></p> <ul style="list-style-type: none"> <li>- <u>An area surrounding cylindrically the high velocity vent valve/safety valve of pressurized cargo tanks with a radius of 3.0 m up to a height of 4.0 m above the opening of the high velocity vent valve/safety valve of pressurized cargo tanks.</u></li> <li>- <u>A spherical segment surrounding the ventilation openings of the service spaces located within the cargo area which are actively ventilated, comprising a radius of 1.0 m centered over the opening.</u></li> </ul> <p><b>Zone 2:</b> comprises:</p> <ul style="list-style-type: none"> <li>-  <u>An area on deck within the cargo area of 1.0 m in height and length following zone 1.</u></li> <li>- <u>On the fore deck and the aft deck an area of the entire width of the vessel adjacent to boundary plane of the cargo area, with a complete length of 7.5 m. Between the lateral side of the vessel and the protection wall this area equals the length and height of the dimensions of the lateral side of the protection wall. Apart from that, the height is 0.5 m.</u></li> </ul> <p><u>This part is not part of zone 2 in case the protection wall extends from one side of the vessel to the other and there are no openings.</u></p> <ul style="list-style-type: none"> <li>- <u>An area following zone 1 around the high velocity vent valve/safety valve of pressure cargo tanks having an expansion of 3.0 m.</u></li> <li>- <u>A spherical segment following zone 1 which surrounds the ventilation openings of the service spaces located within the cargo area which are actively ventilated, comprising a radius of 1.0m centred over the opening.</u></li> </ul>	<p>Aligning language versions</p>
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### 1.3.2 Nature of the training

<i>Paragraphs</i>	<i>Modification</i>	<i>Reason / Explanation</i>
<b>1.3.2.5</b> new	<u>Working instructions concerning explosion protection</u> <u>The safety training referred to in 1.3.2.3 shall be supplemented by working instructions concerning explosion protection.</u>	See definition ,Explosionprotection – Organizational measures.

### 1.4 Safety obligations of the participants

<i>Paragraphs</i>	<i>Modification</i>	<i>Reason / Explanation</i>
<b>1.4.2.2</b>	<b><i>Carrier</i></b>	
<b>1.4.2.2.1 (f)</b>	<del>(Reserved)</del> <u>ascertain that within the explosion hazardous areas only electrical and non-electrical installations and equipment is used which at least fulfil the requirements for being used within the respective zone.</u>	New zone concept
<b>1.4.3.3</b>	<b><i>Filler</i></b>	
<b>1.4.3.3 (r)</b>	He shall ascertain that, when prescribed in 7.2.4.25.5 and explosion protection is necessary according to 3.2.3.2 Table C column (17), there is a flame-arrester in the vapour return piping to protect the vessel against detonations and <del>flame fronts</del> <u>passage of flames from the landward shore side which corresponds at least to the explosion group/subgroup in column (16) of Table C in 3.2.3.2.</u>	Clarification ADN wording
<b>1.4.3.3 (s)</b>	He shall ascertain that the loading flows conform to the <del>loading</del> <u>instructions on loading and unloading flows</u> referred to in 9.3.2.25.9 or 9.3.3.25.9 and that the pressure at the crossing-point of the <del>venting piping/vapour return piping or the compensation pipe</del> <u>pressure relief device/ high velocity vent valve.</u>	New zone concept ADN wording
<b>1.4.3.7</b>	<b><i>Unloader</i></b>	
<b>1.4.3.7.1 (i)</b>	Ascertain that, <del>when prescribed in 7.2.4.25.5</del> there is a flame-arrester in the vapour return piping in case a connection to the venting piping is necessary, and explosion protection is necessary according to 3.2.3.2 Table C column (17), to protect the vessel against detonations and <del>flame fronts</del> <u>passage of flames from the landward shore side which corresponds at least to the explosion group/subgroup in column (16) of Table C in 3.2.3.2.;</u>	Clarification 7.2.4.25.5 refers to loading only ADN wording
<b>1.4.3.7.1 (j)</b>	Ascertain that the unloading flows conform to the <del>loading</del> <u>instructions on loading and unloading flows</u> referred to in 9.3.2.25.9 or 9.3.3.25.9 and that the pressure at the connecting point of the <del>gas discharge pipe-venting piping/vapour</del>	Clarification

return piping does not exceed the opening pressure of the pressure relief device/high velocity vent valve;

ADN wording

## 1.6.7.2 Transitional Measures

1.6.7.2.1.1 Table of general transitional provisions: Dry cargo			Reason / Explanation
Paragraphs	Subject	Time limit and comments	
<b><u>7.1.2.19.1</u></b>	<u>Vessels used for propulsion</u> <u>Adoption to the new requirements in 9.1.0.12.4, 9.1.0.40.2, 9.1.0.51 and 9.1.0.52</u>	<u>N.R.M. from 1 January 2017</u> <u>Renewal of the certificate of approval after 31 December 2034</u> <u>Until then, the requirements of 7.2.2.19.1 which applied in ADN until 31 December 2016 apply on board vessels in service,</u>	New transitional provision
<b><u>7.1.3.41</u></b>	<u>Smoking</u>	<u>N.R.M. from 1 January 2017</u> <u>Renewal of the certificate of approval after 31 December 2018</u>	New transitional provision
<b><u>7.1.3.51.1</u></b>	<u>Non-electrical installations and equipment</u>	<u>N.R.M. from 1 January 2017</u> <u>Renewal of the certificate of approval after 31 December 2024</u>	New transitional provision
<b><u>7.1.4.13.1</u></b>	<u>Disconnection of installations and equipment marked in red areas</u>	<u>N.R.M. from 1 January 2017</u> <u>Renewal of the certificate of approval after 31 December 2034</u>	New transitional provision Like tank vessels
<b><u>7.1.4.13.1</u></b>	<u>Installations and equipment generating surface temperatures above 200°C</u>	<u>N.R.M. from 1 January 2017</u> <u>Renewal of the certificate of approval after 31 December 2034</u>	New transitional provision Like tank vessels
<b><u>7.1.4.53</u></b>	<u>Lighting in explosion hazardous area zone 2</u>	<u>N.R.M. from 1 January 2017</u> <u>Renewal of the certificate of approval after 31 December 2020</u>	editorial
<b><u>8.1.2.2</u></b> <b><u>(e) – (h)</u></b>	<u>Documents which have to be available on board</u>	<u>N.R.M. from 1 January 2017</u> <u>Renewal of the certificate of approval after 31 December 2018</u>	New transitional provision
<b><u>8.6.1.1</u></b> <b><u>8.6.1.2</u></b>	<u>Change in certificate of approval</u>	<u>N.R.M. from 1 January 2017</u> <u>Renewal of the certificate of approval after 31 December 2016</u>	New transitional provision
<b><u>9.1.0.12.3</u></b>	<u>Ventilation of accommodation, wheelhouse</u>	<u>N.R.M. from 1 January 2017</u>	New transitional provision

1.6.7.2.1.1 Table of general transitional provisions: Dry cargo			Reason / Explanation
Paragraphs	Subject	Time limit and comments	
		<u>Renewal of the certificate of approval after 31 December 2034</u>	
<b><u>9.1.0.12.3</u></b>	<u>Provision of accommodation, wheelhouse and service spaces in case surface temperatures higher than mentioned in 9.1.0.51 occur or electrical equipment not fulfilling the requirements given in 9.1.0.52.1 is used</u>	<u>N.R.M. from 1 January 2017</u> <u>Renewal of the certificate of approval after 31 December 2034</u>	New transitional provision
<b><u>9.1.0.12.4</u></b>	<u>Ventilation openings</u>	<u>N.R.M. from 1 January 2017</u> <u>Renewal of the certificate of approval after 31 December 2034</u>	New transitional provision
<b><u>9.1.0.12.5</u></b>	<u>Ventilators in the protected area and electric motors for hold ventilators arranged in the air flow</u> <u>Temperature class, explosion group</u>	<u>N.R.M. from 1 January 2017</u> <u>Renewal of the certificate of approval after 31 December 2034</u>	Editorial  New transitional provision
<b><u>9.1.0.51</u></b>	<u>Surface temperatures including outer parts of engines as well as that of their air inlets and exhaust ducts</u>	<u>N.R.M. from 1 January 2017</u> <u>Renewal of the certificate of approval after 31 December 2034</u>	New transitional provision
<b><u>9.1.0.52.1</u></b>	<u>Electrical installations, equipment and material for installations outside the protected area</u>	<u>N.R.M. from 1 January 2017</u> <u>Renewal of the certificate of approval after 31 December 2034</u> <u>It shall be possible to isolate the electrical equipment in the protected area by means of centrally located switches except where:</u> <u>- in the holds it is of a certified safe type corresponding at least to temperature class T4 and explosion group II B; and</u> <u>- in the protected area on the deck it is of the limited explosion risk type.</u> <u>The corresponding electrical circuits shall have control lamps to indicate whether or not the circuits are live.</u> <u>The switches shall be protected against unintended unauthorized operation. The</u>	New transitional provision  Like tank vessels

1.6.7.2.1.1 Table of general transitional provisions: Dry cargo			Reason / Explanation
Paragraphs	Subject	Time limit and comments	
		<u>sockets used in this area shall be so designed as to prevent connections being made except when they are not live. Submerged pumps installed or used in the holds shall be of the certified safe type at least for temperature class T4 and explosion group II B.</u>	
<b><u>9.1.0.52.2</u></b>	<u>Marking in red of electrical installations and equipment</u>	<u>N.R.M. from 1 January 2017</u> <u>Renewal of the certificate of approval after 31 December 2034</u>	New transitional provision Like tank vessels
<b><u>9.1.0.52.5</u></b>	<u>Breakdown of the power supply of safety and control installations</u>	<u>N.R.M. from 1 January 2017</u> <u>Renewal of the certificate of approval after 31 December 2024</u>	New transitional provision
<b><u>9.1.0.53.6</u></b>	<u>Non-electrical installations and equipment within the protected area</u>	<u>N.R.M. from 1 January 2017</u> <u>Renewal of the certificate of approval after 31 December 2034</u>	New transitional provision

1.6.7.2.2.2 Table of general transitional provisions: Tank vessels			Reason / Explanation
Paragraphs	Subject	Time limit and comments	
<b><u>1.2.1</u></b>	<u>Cargo area</u> <u>Dimensions on deck</u>	<u>N.R.M. from 1 January 2017</u> <u>Renewal of the certificate of approval after 31 December 2034</u> <u>Until then, the following requirements apply on board vessels in service:</u> <u>The dimension corresponds to a frustum with</u> <u>Base: from board to board and from outer cofferdam bulkhead to outer cofferdam bulkhead</u> <u>Inclination or the narrow side: 45°</u> <u>Inclination or the long side: 90°</u> <u>Height: 3.0 m</u> <u>Dimension of zone 1 corresponds to the cargo area on deck</u>	New transitional provision
<b><u>1.2.1</u></b>	<u>Device for the safe depressurization of the cargo tanks</u>	<u>N.R.M. from 1 January 2017</u> <u>Renewal of the certificate of approval after 31 December 2034</u>	New transitional provision

1.6.7.2.2 Table of general transitional provisions: Tank vessels			Reason / Explanation
Paragraphs	Subject	Time limit and comments	
	<u>Deflagration safety</u> <u>Test according to standard ISO 16852:2010 resp. EN ISO 16852:2010 / proof that 'the applicable requirements are fulfilled'</u>	<u>Until then, the following requirements are applicable on board vessels in service:</u> <u>The deflagration safety shall be tested according to the standard EN 12874:2001 including the manufacturer confirmation according to Directive 94/9/EG or at least equivalent on board vessels built or modified from 1 January 2001 or if they have been replaced from 1 January 2001. In other cases, they shall be of a type approved by the competent authority for the use prescribed</u>	
<b>1.2.1</b>	Flame arresters test according to standard <del>EN</del> ISO 16852: 2010 <u>resp. EN ISO 16852: 2010</u>	<u>N.R.M. from 1 January 2015</u> <u>Renewal of the certificate of approval after 31 December 2034</u>  Until then, the following requirements are applicable on board vessels in service: Flame arresters shall be tested according to the standard EN 12874: <del>1999</del> <u>2001</u> on board vessels built or modified from 1 January 2001 or if they have been replaced from 1 January 2001. In other cases, they shall be of a type approved by the competent authority for the use prescribed.	editorial
<b>1.2.1</b>	<u>Flame arresters</u> <u>proof that 'the applicable requirements are fulfilled'</u>	<u>N.R.M. from 1 January 2017</u> <u>Renewal of the certificate of approval after 31 December 2034</u>	New transitional provision
<b>1.2.1</b>	<u>Gas detection system</u> <u>test according to IEC 60079-29-1:2011 and EN50271:2011</u>	<u>N.R.M. from 1 January 2017</u> <u>Renewal of the certificate of approval after 31 December 2024</u>	New transitional provision
<b>1.2.1</b>	<u>Gas detector</u> <u>test according to IEC 60079-29-1:2011</u>	<u>N.R.M. from 1 January 2017</u> <u>Renewal of the certificate of approval after 31 December 2018</u>	New transitional provision
<b>1.2.1</b>	High velocity vent valve Test according to standard ISO 16852:2010 <u>resp. EN ISO 16852:2010 / proof that 'the applicable requirements are fulfilled'</u>	<u>N.R.M. from 1 January 2015</u> <u>Renewal of the certificate of approval after 31 December 2034</u>  Until then, the following requirements are applicable on board vessels in service: <u>High velocity vent valves shall tested according to the standard EN 12874: <del>1999</del> 2001 including the manufacturer confirmation according to Directive 94/9/EG or at least equivalent conform to the standard EN 12874:1999 on board vessels built or modified from 1 January 2001 or if they have been replaced from 1 January</u>	editorial

1.6.7.2.2.2 Table of general transitional provisions: Tank vessels			Reason / Explanation
Paragraphs	Subject	Time limit and comments	
		2001. In other cases, they shall be of a type approved by the competent authority for the use prescribed.	
<b><u>1.2.1</u></b>	<u>Oxygen measuring system testing according to EN 50104:2011 Etc.</u>	<u>N.R.M. from 1 January 2017</u> <u>Renewal of the certificate of approval after 31 December 2018</u>	New transitional provision
<b><u>1.2.1</u></b>	<u>Oxygen meter testing according to EN 50104:2011</u>	<u>N.R.M. from 1 January 2017</u> <u>Renewal of the certificate of approval after 31 December 2018</u>	New transitional provision
<b><u>1.2.1</u></b>	<u>Sampling opening</u> <u>Deflagration safety</u> <u>Test according to standard ISO 16852:2010 resp. EN ISO 16852:2010 / proof that 'the applicable requirements are fulfilled'</u>	<u>N.R.M. from 1 January 2017</u> <u>Renewal of the certificate of approval after 31 December 2034</u> <u>Until then, the following requirements are applicable on board vessels in service:</u> <u>The deflagration safety of the sampling opening shall be tested according to the standard EN 12874:2001 including the manufacturer confirmation according to Directive 94/9/EG or at least equivalent on board vessels built or modified from 1 January 2001 or if they have been replaced from 1 January 2001. In other cases, they shall be of a type approved by the competent authority for the use prescribed.</u>	New transitional provision
<b><u>1.2.1</u></b>	<u>Zoning</u> <u>Zone 1</u> <u>Dimension</u>  <u>Zone 2</u>	<u>N.R.M. from 1 January 2017</u> <u>Renewal of the certificate of approval after 31 December 2034</u> <u>Until then, the following requirements apply on board vessels in service:</u> <u>The dimension corresponds to a frustum with</u> <u>Base: from board to board and from outer cofferdam bulkhead to outer cofferdam bulkhead</u> <u>Inclination or the narrow side: 45°</u> <u>Inclination or the long side: 90°</u> <u>Height: 3,0 m</u>  <u>N.R.M. from 1 January 2017</u>	New transitional provision

<i>1.6.7.2.2.2 Table of general transitional provisions: Tank vessels</i>			<i>Reason / Explanation</i>
<i>Paragraphs</i>	<i>Subject</i>	<i>Time limit and comments</i>	
	<u>Dimension</u>	<u>Renewal of the certificate of approval after 31 December 2034</u>	
<b><u>7.2.2.6</u></b>	<u>Gas detection system:</u> <u>Calibration based on n-Hexane</u>	<u>N.R.M. from 1 January 2017</u> <u>Renewal of the certificate of approval after 31 December 2018</u>	New transitional provision
<b><u>7.2.2.19.3</u></b>	<u>Vessels used for propulsion</u> <u>Adoption to the new requirements in 9.3.3.12.4, 9.3.3.51 and 9.3.3.52.1 to 9.3.3.52.8</u>	<u>N.R.M. from 1 January 2017</u> <u>Renewal of the certificate of approval after 31 December 2034</u>	New transitional provision
<b><u>7.2.2.19.4</u></b>	<u>Vessels of a convoy for which explosion protection is required</u>	<u>N.R.M. from 1 January 2017</u> <u>Renewal of the certificate of approval after 31 December 2034</u> <u>Until then, the requirements of 7.2.2.19.3 which applied in ADN until 31 December 2016 apply on board vessels in service</u>	New transitional provision
<b><u>7.2.3.41</u></b>	<u>Smoking</u>	<u>N.R.M. from 1 January 2017</u> <u>Renewal of the certificate of approval after 31 December 2018</u>	New transitional provision
<b><u>7.2.3.51.4</u></b>	<u>Disconnection of electrical installations and equipment marked in red</u>	<u>N.R.M. from 1 January 2017</u> <u>Renewal of the certificate of approval after 31 December 2034</u>	New transitional provision for non-electrical installations and equipment  transitional provision for electrical installations and equipment now in 9.3.1.52.1e), 9.3.3.52.1 e)
<b><u>7.2.3.51.5</u></b>	<u>Surface temperatures in case temperature class T4, T5 or T6 is required</u>	<u>N.R.M. from 1 January 2017</u> <u>Renewal of the certificate of approval after 31 December 2018</u>	
<b><u>7.2.4.25.5</u></b>	<u>Explosion group / subgroup</u>	<u>N.R.M. from 1 January 2017</u>	<u>New transitional</u>



1.6.7.2.2 Table of general transitional provisions: Tank vessels			Reason / Explanation
Paragraphs	Subject	Time limit and comments	
		<u>Renewal of the certificate of approval after 31 December 2024</u>	<u>provision</u>
<b>8.1.2.3</b> <b>(r), (s), (t),</b> <b>(v)</b>	<u>Documents which have to be available on board</u>	<p><u>N.R.M. from 1 January 2017</u></p> <p><u>Renewal of the certificate of approval after 31 December 2018</u></p> <p><u>Until then, the following requirements apply on board vessels in service:</u></p> <p><u>In addition to the documents required by the Regulations referred to in 1.1.4.6, the following documents shall be on board:</u></p> <p><u>(a) a drawing indicating the boundaries of the cargo area and the location of the electrical equipment installed in this area;</u></p> <p><u>(b) a list of the electrical equipment referred to in (a) above including the following particulars:</u></p> <p><u>machine or appliance, location, type of protection, type of protection against explosion, testing body and approval number;</u></p> <p><u>(c) a list of or general plan indicating the electrical equipment outside the cargo area which may be operated during loading, unloading or degassing.</u></p> <p><u>The documents listed above shall bear the stamp of the competent authority issuing the certificate of approval.</u></p>	<p>New transitional provision</p> <p>Detailed text because 9.3.1.50 of ADN 2015 now deleted</p> <p>Agreed upon in January meeting of the safety committee</p>
<b>8.1.2.3 (u)</b>	<u>Documents which have to be available on board</u> <u>drawing showing the boundaries of the zones</u>	<p><u>N.R.M. from 1 January 2017</u></p> <p><u>Renewal of the certificate of approval after 31 December 2034</u></p>	New transitional provision
<b>8.1.7.2</b>	<u>Installations , equipment and autonomous protective systems: Testing of installations, equipment and autonomous protective systems as well as compliance of the documents required 8.1.2.3 r) to v) with the situation on board</u>	<p><u>N.R.M. from 1 January 2017</u></p> <p><u>Renewal of the certificate of approval after 31 December 2018</u></p>	New transitional provision

<i>1.6.7.2.2 Table of general transitional provisions: Tank vessels</i>			<i>Reason / Explanation</i>
<i>Paragraphs</i>	<i>Subject</i>	<i>Time limit and comments</i>	
<b><u>8.1.7.2</u></b>	<u>Marking of installations and equipment to be used in explosion hazardous areas as well as of autonomous protective systems</u>	<u>N.R.M. from 1 January 2017</u> <u>Renewal of the certificate of approval after 31 December 2024</u>	New transitional provision
<b><u>8.6.1.3</u></b> <b><u>8.6.1.4</u></b>	<u>Modification of the certificate of approval</u>	<u>N.R.M. from 1 January 2017</u> <u>Renewal of the certificate of approval after 31 December 2016</u>	New transitional provision
<b><u>9.3.1.8.3</u></b> <b><u>9.3.2.8.3</u></b> <b><u>9.3.3.8.3</u></b>	<u>Ensure compliance of the oxygen measuring system</u>	<u>N.R.M. from 1 January 2017</u> <u>Renewal of the certificate of approval after 31 December 2018</u>	New transitional provision
<b><u>9.3.1.8.4</u></b> <b><u>9.3.2.8.4</u></b> <b><u>9.3.3.8.4</u></b>	<u>Compliance of the documents in 8.1.3.2 r) to v)</u>	<u>N.R.M. from 1 January 2017</u> <u>Renewal of the certificate of approval after 31 December 2016</u>	New transitional provision
<b><u>9.3.1.10.1</u></b> <b><u>9.3.2.10.1</u></b> <b><u>9.3.3.10.1</u></b>	<u>Penetration of gases and liquids into the wheelhouse, Windows to open</u>	<u>N.R.M. from 1 January 2017</u> <u>Renewal of the certificate of approval after 31 December 2024</u>	New transitional provision
<b><u>9.3.1.10.2</u></b> <b><u>9.3.2.10.2</u></b> <b><u>9.3.3.10.2</u></b>	<u>Height of protective coaming</u>	<u>N.R.M. from 1 January 2017</u> <u>Renewal of the certificate of approval after 31 December 2018</u>	New transitional provision
<b><u>9.3.1.10.3</u></b> <b><u>9.3.2.10.3</u></b> <b><u>9.3.3.10.3</u></b>	<u>Protection wall</u>	<u>N.R.M. from 1 January 2017</u> <u>Renewal of the certificate of approval after 31 December 2024</u>	New transitional provision
<b><u>9.3.1.10. 2 4</u></b> <b><u>9.3.2.10. 2 4</u></b> <b><u>9.3.3.10.-2 4</u></b>	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	Number changed

1.6.7.2.2 Table of general transitional provisions: Tank vessels			Reason / Explanation
Paragraphs	Subject	Time limit and comments	
		m may be reduced to 0.30 m in passageways leading to the deck	
<u>9.3.1.12.4</u> <u>9.3.2.12.4</u> <u>9.3.3.12.4</u>	<u>Ventilation of the wheelhouse</u>	<u>N.R.M. from 1 January 2017</u>  <u>Renewal of the certificate of approval after 31 December 2024</u>	New transitional provision
<u>9.3.1.12.4</u> <u>9.3.2.12.4</u> <u>9.3.3.12.4</u>	<u>Provision of wheelhouse in case surface temperatures higher than mentioned in 9.1.x.51 a) occur</u>	<u>N.R.M. from 1 January 2017</u>  <u>Renewal of the certificate of approval after 31 December 2034</u>	New transitional provision
<u>9.3.1.12.4</u> <u>9.3.2.12.4</u> <u>9.3.3.12.4</u>	<u>Provision of accommodation, wheelhouse and service spaces in case surface temperatures higher than mentioned in 9.1.x.51 a) occur or electrical equipment not fulfilling the requirements given in 9.1.0.52.1 is used</u>	<u>N.R.M. from 1 January 2017</u>  <u>Renewal of the certificate of approval after 31 December 2034</u>	New transitional provision wheelhouse
<u>9.3.1.12.4</u> <u>9.3.3.12.4</u>	<u>Electrical installations and equipment used during loading, unloading, degassing and when near to or within a shore-side assigned zone</u>	<u>N.R.M. from 1 January 2017</u>  <u>Renewal of the certificate of approval after 31 December 2034</u>  <u>Until then on board of type G and type N vessels whose keels were laid before 1 January 1977 all electrical equipment except the lighting installations in accommodation, radio telephone installations in accommodation and wheelhouses and combustion engine control appliances shall meet the following requirements::</u>  <u>Generators, engines, etc.: IP13 protection mode;</u>  <u>Control panels, lamps, switches near the entrances to accommodation etc.:IP23 protection mode;</u>  <u>Appliances, etc. IP55 protection mode.</u>	In ADN 2015: 9.3.1.52.3 a) 9.3.1.52.3 b) 9.3.3.52.3 a) 9.3.3.52.3 b) adapted
<u>9.3.1.12.4</u> <u>9.3.2.12.4</u> <u>9.3.3.12.4</u>	<u>Non-electrical installations and equipment used during loading, unloading, degassing and when near to or within a shore-side assigned zone</u>	<u>N.R.M. from 1 January 2017</u>  <u>Renewal of the certificate of approval after 31 December 2034</u>	New transitional provision

1.6.7.2.2.2 Table of general transitional provisions: Tank vessels			Reason / Explanation
Paragraphs	Subject	Time limit and comments	
<u>9.3.1.12.4(b)</u> <u>9.3.2.12.4(b)</u> <u>9.3.3.12.4(b)</u>	<u>Gas detection system: T90-time</u>	<u>N.R.M. from 1 January 2017</u> <u>Renewal of the certificate of approval after 31 December 2034</u>	New transitional provision
<u>9.3.1.12.4</u> <u>9.3.2.12.4</u> <u>9.3.3.12.4</u>	<u>Alarm if not cleared</u>	<u>N.R.M. from 1 January 2017</u> <u>Renewal of the certificate of approval after 31 December 2024</u>	New transitional provision
<u>9.3.1.12.6</u> <u>9.3.2.12.6</u> <u>9.3.3.12.6</u>	Distance of the ventilation openings <u>of accommodations, wheelhouse, service spaces</u> from cargo area	<u>N.R.M. from 1 January 2017</u> <u>Renewal of the certificate of approval after 31 December <del>2044</del> 2034</u>	New transitional provision wheelhouse
<u>9.3.1.12.6</u> <u>9.3.2.12.6</u> <u>9.3.3.12.6</u>	Permanently installed <del>flame screens</del> <u>devices according to 9.3.x.40.2.2 c.</u>	<u>N.R.M. from 1 January 2003</u> <u>Renewal of the certificate of approval after 31 December 2018</u>	Editorially adapted
<u>9.3.3.12.7</u>	<u>Approval of flame arresters</u>	<del>N.R.M.</del> <del>Renewal of the certificate of approval after</del> <del>31 December 2018 for Type N vessels whose keels were laid before 1 January 1977.</del>	
<u>9.3.1.17.6</u> <u>9.3.2.17.6</u> <u>9.3.3.17.6</u>	<u>Distance ventilation openings of the pump room to wheelhouse</u>	<u>N.R.M. from 1 January 2017</u> <u>Renewal of the certificate of approval after 31 December 2034</u>	New transitional provision
<u>9.3.1.17.6</u> <u>9.3.2.17.6</u> <u>9.3.3.17.6</u>	<u>Oxygen measuring system</u> <u>Limiting value for alarm</u>	<u>N.R.M. from 1 January 2017</u> <u>Renewal of the certificate of approval after 31 December 2018</u>	New transitional provision
<u>9.3.1.17.6</u> <u>9.3.2.17.6</u> <u>9.3.3.17.6</u>	<u>Alarm if not cleared</u>	<u>N.R.M. from 1 January 2017</u> <u>Renewal of the certificate of approval after 31 December 2024</u>	New transitional provision
<u>9.3.1.21.7</u> <u>9.3.2.21.7</u> <u>9.3.3.21.7</u>	<u>Alarm if not cleared</u>	<u>N.R.M. from 1 January 2017</u> <u>Renewal of the certificate of approval after 31 December 2024</u>	New transitional provision

1.6.7.2.2.2 Table of general transitional provisions: Tank vessels			Reason / Explanation
Paragraphs	Subject	Time limit and comments	
<b><u>9.3.2.20.4</u></b> <b><u>9.3.3.20.4</u></b>	<u>Explosion group / subgroup</u>	<u>N.R.M. from 1 January 2017</u> <u>Renewal of the certificate of approval after 31 December 2024</u>	Explaining 'type approved by the competent authority for the use prescribed' in ADN 2015
<b><u>9.3.3.21.1 (g)</u></b> <b><u>9.3.2.21.1 (g)</u></b>	<u>Explosion group / subgroup</u>	<u>N.R.M. from 1 January 2017</u> <u>Renewal of the certificate of approval after 31 December 2024</u>	Explaining 'type approved by the competent authority for the use prescribed' in ADN 2015
<b><u>9.3.2.22.4 (a)</u></b> <b><u>9.3.3.22.4 (e)</u></b>	Pressure setting of <u>over pressure valve / high velocity vent valves</u>	N.R.M. Renewal of the certificate of approval after 31 December 2018	editorial In ADN 2015 9.3.2.22.4 (b), 9.3.3.22.4 (b)
<b><u>9.3.1.22.3</u></b> <b><u>9.3.2.22.4 (b)</u></b> <b><u>9.3.3.22.4 (b)</u></b> <b><u>9.3.2.22.4 (a)</u></b> <b><u>9.3.3.22.4 (a)</u></b>	Position of outlets of <u>valves pressure relief devices / high velocity vent valves</u> above the deck	N.R.M. Renewal of the certificate of approval after 31 December 2018	editorial In ADN 2015 9.3.2.22.4 (b), 9.3.3.22.4 (b)
<b><u>9.3.2.22.4 (d)</u></b> <b><u>9.3.3.22.4 (e)</u></b>	<u>Explosion group / subgroup</u>	<u>N.R.M. from 1 January 2017</u> <u>Renewal of the certificate of approval after 31 December 2024</u>	Explaining 'type approved by the competent authority for the use prescribed' in ADN 2015
<b><u>9.3.2.26.2</u></b> <b><u>9.3.3.26.2 (b)</u></b>	<u>Explosion group / subgroup</u>	<u>N.R.M. from 1 January 2017</u> <u>Renewal of the certificate of approval after 31 December 2024</u>	New transitional provision
<b><u>9.3.1.51 (a)</u></b> <b><u>9.3.2.51 (a)</u></b> <b><u>9.3.3.51 (a)</u></b>	Surface temperature of non-electrical installations and equipment not exceeding 200°C	<u>N.R.M. from 1 January 2017</u> <u>Renewal of the certificate of approval after 31 December 2034</u>	New transitional provision

1.6.7.2.2.2 Table of general transitional provisions: Tank vessels			Reason / Explanation
Paragraphs	Subject	Time limit and comments	
<del>9.3.1.31.4</del> <del>9.3.2.31.4</del> <del>9.3.3.31.4</del> <del>9.3.1.51 (b)</del> <del>9.3.2.51 (b)</del> <del>9.3.3.51 (b)</del>	Temperature of outer parts of engines <del>etc.</del> , as well as that of their air inlets and exhaust ducts	N.R.M. <u>Renewal of the certificate of approval after 31 December 2018</u>  Renewal of the certificate of approval after 31 December 2018  Until <del>than</del> <u>31. December 2018</u> , the following requirements apply on board vessels in service:  The temperature of outer parts shall not exceed 300 °C.	Missing  Existing transitional provision 9.3.1.31.4 9.3.2.31.4 9.3.3.31.4
<del>9.3.1.51.2</del> <del>9.3.2.51.2</del> <del>9.3.3.51.2</del> <del>9.3.1.52.4</del> <del>9.3.2.52.4</del> <del>9.3.3.52.4</del>	Visual and audible alarm	N.R.M.  Renewal of the certificate of approval after 31 December 2034	Number adapted
<del>9.3.1.52.1</del> <del>9.3.2.52.1</del> <del>9.3.3.52.1</del>	Electrical installations of the "limited explosion risk" type	N.R.M. <u>Renewal of the certificate of approval after 31 December 2034</u>  <u>Renewal of the certificate of approval after 31 December 2018</u>  <u>Until than the following on board vessels whose keels were laid before 1 January 1995 the requirements of 9.3.1.52.3, 9.3.2.52.3, 9.3.3.52.3 of the ADN which applied until 31 December 2016 apply on board vessels in service.</u>	Editorial  In ADN 2015 9.3.1.52.3, 9.3.2.52.3, 9.3.3.52.3
<del>9.3.1.52.1</del> <del>9.3.3.52.1</del>	Electrical installations of the "limited explosion risk" type	N.R.M. <u>Renewal of the certificate of approval after 31 December 2034</u>  <u>On vessels whose keels were laid before 1 January 1977 electrical installations except lighting installations in accommodation, radio telephone installations in accommodation and wheelhouses and combustion engine control appliances used during loading, unloading and degassing shall meet the following requirements:</u>  <u>Generators, engines, control panels, lamps, etc. I P13 protection mode;</u>  <u>Appliances, etc.: IP55 protection mode</u>	Existing transitional provision from 9.3.1.52.3 (a) 9.3.1.52.3 (b) 9.3.3.52.3 (a) 9.3.3.52.3 (b)
<del>9.3.1.52.3 (a)</del> <del>9.3.1.52.3 (b)</del>	Electrical installations used during loading,	N.R.M.  Renewal of the certificate of approval after 31 December 2034 for the following installations on vessels whose keels were laid before	Now in 9.3.1.52.1  <u>9.3.2.52.1</u>

1.6.7.2.2.2 Table of general transitional provisions: Tank vessels			Reason / Explanation
Paragraphs	Subject	Time limit and comments	
<b>9.3.3.52.3 (a)</b> <b>9.3.3.52.3 (b)</b>	unloading or gas freeing	1 January 1977:  – Lighting installations in accommodation, with the exception of switches near the entrances to accommodation;  – Radio telephone installations in accommodation and wheelhouses and combustion engine control appliances.  Until then, all other electrical installations shall meet the following requirements:  (a) Generators, engines, etc. IP13 protection mode;  (b) Control panels, lamps, etc. IP23 protection mode;  (c) Appliances, etc. IP55 protection mode	<u>9.3.3.52.1</u>
<b>9.3.3.52.1 b), e), d) and e)</b>	Electrical installations	N.R.M.  Renewal of the certificate of approval after 31 December 2034 for Type N open vessels	
<b>9.3.1.52.1 e)</b> <b>9.3.3.52.1 e).</b>	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	Now in <u>9.3.2.12.4</u> <u>9.3.3.12.4</u>

1.6.7.2.2.2 Table of general transitional provisions: Tank vessels			Reason / Explanation
Paragraphs	Subject	Time limit and comments	
		<del>switch.</del>	
<b>9.3.3.52.2</b> <b>9.3.3.52.1 b),</b> <b>e), d) and e)</b>	Electrical installations / <u>echo sounding devices</u>	N.R.M. Renewal of the certificate of approval after 31 December 2034 for Type N open vessels	Number adapted
<b>9.3.3.52.2</b> <b>9.3.3.52.10</b>	Accumulators located outside the cargo area	N.R.M. Renewal of the certificate of approval after 31 December 2034 for Type N open vessels	Number adapted
<b>9.3.1.52.4</b> <b>9.3.2.52.4</b> <b>9.3.3.52.4</b> <b>9.3.1.52.3</b> <b>9.3.2.52.3</b> <b>9.3.3.52.3</b>  <b>Last sentence</b>	Disconnection of such installations from a centralized location	N.R.M. Renewal of the certificate of approval after 31 December <del>2034</del> <u>2024</u>	Number adapted
<b>9.3.3.52.4</b> <b>9.3.3.52.3</b>	Electrical installations and equipment ; marking in red	N.R.M. from 1 January 2017 Renewal of the certificate of approval after 31 December 2034 for Type N open vessels.	Number adapted
<b>9.3.3.52.6</b> <b>9.3.3.52.9</b>	Permanently fitted sockets	N.R.M. Renewal of the certificate of approval after 31 December 2034 for Type N open vessels	Number adapted
<b>9.3.1.53.1</b> <b>9.3.2.53.1</b> <b>9.3.3.53.1</b>	<b><u>Type and location of electrical installations and equipment intended to be used in explosion hazardous areas</u></b>  <b><u>Zone 0, zone 1</u></b>	N.R.M. from 1 January 2017 <u>Renewal of the certificate of approval after 31 December 2034</u> <u>Until than the following requirements apply on board vessels whose keels were laid before 1 January 1995</u> <u>(a) In cargo tanks, residual cargo tanks, and piping for loading and unloading only measuring, regulation and alarm devices of the EEx (ia) type of protection may be installed</u> <u>(b) The electrical equipment in the cargo area on deck shall be of the certified safe</u>	Detailed text because 9.3.1.52 of ADN 2015 which contained this text is now with different content



1.6.7.2.2 Table of general transitional provisions: Tank vessels			Reason / Explanation
Paragraphs	Subject	Time limit and comments	
		<p><u>type</u></p> <p><u>(c) in the cofferdams, double-hull spaces, double bottoms hold spaces and the service spaces in the cargo area below deck only the following equipment may be installed:</u></p> <p><u>– measuring, regulation and alarm devices motors driving essential equipment such as ballast pumps of the certified safe type;</u></p> <p><u>– lighting appliances of the “flame-proof enclosure” or “apparatus protected by pressurization” type of protection;</u></p> <p><u>For the selection of equipment selected for use in zones presenting an explosion risk, the explosion groups and temperature classes assigned to the substances carried in the vessel substance list shall be taken into consideration (See column (15) and (16) of Table C in 3.2.3.2)</u></p> <p><u>Electrical equipment used during loading, unloading and degassing during berthing and which are located outside the cargo area shall be at least of the “limited explosion risk” type except they are located in spaces fulfilling the following requirements .</u></p> <p><u>1. A ventilation system at least of the ‘limited explosion risk’ type ensuring at least an overpressure of 0.1 kPa (0.001 bar) the air intakes of the ventilation system shall be located as far away as possible, however, not less than 6.00 m from the cargo area and not less than 2.00 m above the deck is installed;</u></p> <p><u>2. None of the windows is capable of being opened;</u></p> <p><u>3. A continuously measuring gas detection system at least of the ‘limited explosion risk’ type with sensors at the suction inlets of the ventilation system as well as directly at the top edge of the sill of the entrance doors of the accommodation and service spaces is installed;</u></p> <p><u>4. The ventilators are switched off when the gas concentration reaches 20% of the lower explosive limit;</u></p> <p><u>5. In case the overpressure is not maintained, the concentration of 20 % of the lower explosion limit is reached, in the event of failure of the gas detection system, the electrical installations not being at least of the ‘limited explosion risk’ type, shall be switched off automatically and the emergency lighting shall be activated.</u></p>	<p>Existing transitional provision 9.3.1.52.1 (e)</p> <p>9.3.3.52.1 (e)</p> <p>ADN wording</p> <p>Agreed upon in January meeting of the safety committee</p>

1.6.7.2.2 Table of general transitional provisions: Tank vessels			Reason / Explanation
Paragraphs	Subject	Time limit and comments	
		<p>The emergency shall comply at least with the “limited explosion risk” type.</p> <p>The automatic switch-off device is set so that no automatic switching-off may occur while the vessel is under way.</p> <p>Aerials for electronic apparatus shall be situated at least at a distance of 2 m from the cargo area.</p> <p>On board vessels in service at 1. January 2017 whose keels were laid before 1 January 1977 the following requirements apply: On board vessels having non-gastight wheelhouse openings (e.g. doors, windows, etc.) in the cargo area until then the following shall apply during loading, unloading and degassing:</p> <p>(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;</p> <p>(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.</p>	
<u>9.3.1.53.1</u> <u>9.3.2.53.1</u> <u>9.3.3.53.1</u>	<u>Type and location of electrical installations and equipment intended to be used in explosion hazardous areas</u>  <u>Zone 2</u>	<u>N.R.M. from 1 January 2017</u>  <u>Renewal of the certificate of approval after 31 December 2034</u>	New transitional provision
<u>9.3.1.53.1</u> <u>9.3.2.53.1</u> <u>9.3.3.53.1</u>	<u>Temperature class and explosion group of non-electrical installations and equipment</u>	<u>N.R.M. from 1 January 2017</u>  <u>Renewal of the certificate of approval after 31 December 2034</u>	New transitional provision
<u>9.3.1.53.1</u> <u>9.3.2.53.1</u> <u>9.3.3.53.1</u>	<u>Temperature class and explosion group of electrical installations and equipment</u>	<u>N.R.M. from 1 January 2017</u>  <u>Renewal of the certificate of approval after 31 December 2034</u>	Explaining ‘type approved by the competent authority for the use prescribed’ in ADN 2015

1.6.7.2.2.2 Table of general transitional provisions: Tank vessels			Reason / Explanation
Paragraphs	Subject	Time limit and comments	
<b><u>9.3.1.56.1</u></b> <b><u>9.3.3. 56.1</u></b> <b><u>9.3.1.53.2</u></b> <b><u>9.3.3.53.2</u></b>	Metallic sheaths for all electrical cables 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	Number adapted

### 3. Table C

Paragraphs	Modification	Reason / Explanation
<b>3.2.3.1</b> <i>Explanations concerning Table C: Column (10)</i>	"Opening pressure of the <u>pressure relief device</u> / high-velocity vent valve in kPa" Contains information concerning the opening pressure of the <u>pressure relief device</u> /high velocity vent valve in kPa.	Clarification
<b>3.2.3.1</b> <i>Explanations concerning Table C: Column (16)</i>	Contains the explosion group of the substance. Values between square brackets indicate the explosion group II B subgroups to be used in selecting the relevant self-contained protection systems (flame arresters, <del>pressure/vacuum valve, high velocity vent valves valves and device for the safe depressurization of cargo tanks with integrated backfire prevention device</del> <u>flame-arrester plate stack, and high velocity vent valves</u> ).	Adapted text from IWG 'Substances', slightly modified editorial
<b>3.2.3.1</b> <i>Explanations concerning Table C: Column (17)</i>	" <del>Anti</del> -Explosion protection required" Contains <del>a code referring information concerning the</del> protection against explosions. Yes <del>anti</del> explosion protection required No <del>anti</del> -explosion protection not required	Editorial Clarification
<b>3.2.3.1</b> <i>Explanations concerning Table C: Column (20) "Additional requirements/ Remarks" 5.</i>	This substance is liable to clog the venting piping and its fittings <del>resp. the fittings of the cargo tanks</del> . Careful surveillance should be ensured. If a closed <del>type tank vessel</del> <u>cargo tank</u> is required for the carriage of this substance <u>and explosion protection is necessary or the substance for which explosion protection is necessary is carried in a closed cargo tank, the cargo tank shall conform to 9.3.2.22.4 or 9.3.3.22.4 resp. the venting piping shall conform to 9.3.2.22.5 (a) (i), (ii), (iv), and 9.3.2.22.5 (b), (c) or (d) or to 9.3.3.22.5 (a) (i), (ii), (iv), and 9.3.3.22.5 (b) (c) or (d)</u> . This requirement does not apply when the cargo tanks and the corresponding piping are inerted in accordance with 7.2.4.18 <del>or when protection against explosions is not required in column (17) and when flame arresters have not been installed.</del>	Reference adapted

Paragraphs	Modification	Reason / Explanation
<p><b>3.2.3.1</b></p> <p><i>Explanations concerning Table C: Column (20) "Additional requirements/ Remarks" 6.</i></p>	<p>When external temperatures are below or equal to that indicated in column (20), the substance may only be carried in tank vessels equipped with the possibility of heating the cargo.</p> <p>In addition, in the event of carriage in a closed-type vessel <u>cargo tank</u>, <u>the venting piping, the safety valves as well as the flame arresters shall be heatable.</u></p> <p><del>if the tank vessel:</del></p> <p><del>— is fitted out in accordance with 9.3.2.22.5 (a) (i) or (d) or 9.3.3.22.5 (a) (i) or (d), it shall be equipped with pressure/vacuum valves capable of being heated; or</del></p> <p><del>— is fitted out in accordance with 9.3.2.22.5 (a) (ii), (v), (b) or (c) or 9.3.3.22.5 (a) (ii), (v), (b) or (c), it shall be equipped with heatable venting piping and heatable pressure/vacuum valves; or</del></p> <p><del>— is fitted out in accordance with 9.3.2.22.5 (a) (iii) or (iv) or 9.3.3.22.5 (a) (iii) or (iv), it shall be equipped with heatable venting piping and with heatable pressure/vacuum valves and heatable flame arresters.</del></p> <p>The temperature of the venting piping, <u>pressure relief device/high velocity valve, vacuum valves, safety valves</u> and flame-arresters shall be kept at least above the melting point of the substance</p>	<p>Reference simplified</p> <p>ADN wording</p>
<p><b>3.2.3.1</b></p> <p><i>Explanations concerning Table C: Column (20) "Additional requirements/ Remarks" 7.</i></p>	<p>If a closed-type tank vessel <u>cargo tank</u> is required to carry this substance or if the substance is carried in a closed-type tank vessel <u>cargo tank</u>, <u>the venting piping, the safety valves as well as the flame arresters has to be heatable.</u></p> <p><del>— is fitted out in accordance with 9.3.2.22.5 (a) (i) or (d) or 9.3.3.22.5 (a) (i) or (d), it shall be equipped with heatable pressure/vacuum valves; or</del></p> <p><del>— is fitted out in accordance with 9.3.2.22.5 (a) (ii), (v), (b) or (c) or 9.3.3.22.5 (a) (ii), (v), (b) or (c), it shall be equipped with heatable venting piping and heatable pressure/vacuum valves; or</del></p> <p><del>— is fitted out in accordance with 9.3.2.22.5 (a) (iii) or (iv) or 9.3.3.22.5 (a) (iii) or (iv), it shall be equipped with heatable venting piping and with heatable pressure/vacuum valves and heatable flame arresters.</del></p> <p>The temperature of the venting piping, <u>pressure relief device/high velocity valve, vacuum valves, safety valves</u> and flame-arresters shall be kept at least above the melting point of the substance.</p>	<p>Reference simplified</p> <p>ADN wording</p> <p>Clarification</p>
<p><b>3.2.3.2</b></p> <p><b>Table C</b></p> <p><b>column (10)</b></p>	<p>Opening pressure of the <u>pressure relief device</u> / high-velocity vent valve in kPa</p>	<p>Clarification</p>
<p><b>3.2.3.2</b></p> <p><b>Table C</b></p>	<p>Footnotes related to the list of substances</p> <p>Footnote to all entries with T1 and T2 in column (15)</p> <p><u>12) (Deleted) This temperature class does not apply for the selection of the explosion protected installations and equipment. The surface temperature of the explosion protected equipment shall not exceed 200 °C</u></p>	<p>Basic safety concept</p>
<p><b>3.2.3.3</b></p> <p><b>Flowchart</b></p>	<p><u>Pressure relief device/ High-velocity vent valve opening pressure:</u></p> <p>4 x</p>	<p>Clarification</p>

<i>Paragraphs</i>	<i>Modification</i>	<i>Reason / Explanation</i>
<b>Scheme A:</b>		
<b>3.2.3.3 Flowchart Scheme B:</b>	<u>Pressure relief device/</u> High-velocity vent valve opening pressure: 3 x	Clarification
<b>3.2.3.3 Column (17):</b>	<b>Determination of whether <del>anti</del> explosion protection is required for electrical equipment and systems</b>	New zone concept
<b>3.2.3.3 Column (18):</b>	<b>Determination of whether personal protective equipment, escape devices, portable <del>flammable</del> gas detectors, portable toximeters or ambient-air-dependent breathing apparatus is required</b>	Agreed upon with IWG 'Gasfreeing'  Not for the German version
<b>3.2.4.3</b>	<b>Criteria for assignment of substances</b>	
<b>3.2.4.3 A. Columns (6), (7) and (8):</b>	with <u>pressure relief device /</u> high-velocity vent valve opening pressure 10 x	Clarification
<b>3.2.4.3 J.</b>	<b>Column (18): Determination of whether personal protective equipment, escape devices, portable <del>flammable</del> gas detectors, portable toximeters or ambient-airdependent breathing apparatus is required</b>	Agreed upon with IWG 'Gasfreeing'
<b>3.2.4.3 I.</b>	<b>Column (17): Determination of whether <del>anti</del> explosion protection is required for electrical equipment and systems</b>	New zone concept

## 5. Consignment procedures

Paragraphs	Modification	Reason / Explanation
5.4.3.4	<p>In the event of an accident or incident that may occur during carriage, the members of the crew shall take the following actions where safe and practicable to do so:</p> <ul style="list-style-type: none"> <li>– Inform all other persons on board about the emergency and keep them away as much as possible from the danger zone. Alert other vessels in the vicinity;</li> <li>– Avoid sources of ignition, in particular, do not smoke, use electronic cigarettes or similar devices or switch on or off any <del>electrical installation and equipment that is not the "certified safe" type</del> <u>does not fulfil the requirements to be used in zone 1 (that means no installations and equipment marked in red according to 9.1.0.52.1, 9.3.1.52.2, 9.3.2.52.2 or 9.3.3.52.2) and is not designed for use in emergency response</u></li> </ul>	<p>New zone concept</p> <p>Wording of directive 2014/34/EU</p>

## 7.1 Dry cargo vessels

Paragraphs	Modification	Reason / Explanation
7.1.2.19.1	<p>Where at least one vessel of a convoy or side-by-side formation is required to be in possession of a certificate of approval for the carriage of dangerous goods, all vessels of such convoy or side-by-side formation shall be provided with an appropriate certificate of approval.</p> <p>Vessels not carrying dangerous goods shall comply with the requirements of the following paragraphs: 1.16.1.1, 1.16.1.2, 1.16.1.3, <u>16.1.4</u>, 7.1.2.5, <u>8.1.4</u>, 8.1.5, 8.1.6.1, 8.1.6.3, 8.1.7, <del>8.1.8, 8.1.9</del>, <u>8.3.5</u>, 9.1.0.0, 9.1.0.12.3, <u>9.1.0.12.4</u>, 9.1.0.17.2, 9.1.0.17.3, 9.1.0.31, 9.1.0.32.2, 9.1.0.34, <u>9.1.0.40.2</u>, 9.1.0.41, <u>9.1.0.51</u>, <u>9.1.0.52</u>, <u>9.1.0.52.3</u>, <u>9.1.0.52.4</u>, <u>9.1.0.52.5</u>, <u>9.1.0.56</u>, 9.1.0.71 and 9.1.0.74.</p>	Basic safety concept
7.1.3.41	<b><u>Smoking, fire and naked light</u></b>	
7.1.3.41.1	<p><del>The use of fire or naked light is prohibited.</del></p> <p><del>This provision does not apply to the accommodation and the wheelhouse.</del></p> <p><u>Smoking, including electronic cigarettes and other similar devices, fire and naked light on board the vessel is prohibited.</u></p> <p><u>This prohibition shall be displayed on notice boards at appropriate places.</u></p> <p><u>The prohibition of smoking does not apply in accommodation or wheelhouses in case windows, doors, skylights and hatches are closed or the ventilation system is ensuring an overpressure of 0.1 kPa</u></p>	<p>Basic safety concept</p> <p>Aligning language versions</p>
7.1.3.51	<b><u>Electrical and non-electrical installations and equipment</u></b>	<p>Clarification</p> <p>Combined in one</p>

<i>Paragraphs</i>	<i>Modification</i>	<i>Reason / Explanation</i>
		paragraph like tank vessel
<b>7.1.3.51.1</b>	The electrical <u>and non-electrical</u> installations <u>and equipment</u> shall be properly maintained.	Clarification Combined in one paragraph like tank vessel
<b>7.1.3.51.2</b>		[Not applicable to the English text]
<b>7.1.3.51.4</b>	<p><del>The electrical installations in the holds shall be kept switched off and protected against unintentional connection.</del></p> <p><del>This provision does not apply to permanently installed cables passing through the holds, to movable cables connecting containers, or to electrical apparatus of a “certified safe type”.</del></p> <p><u>The electrical installations and equipment in the holds shall be kept switched off and protected against unintentional connection.</u></p> <p><u>This provision does not apply to permanently installed electrical cables passing through the holds, to movable electrical cables connecting containers stowed according to 7.1.4.4.4, or to electrical installations and equipment fulfilling at least the requirements for being used in zone 1</u></p>	ATEX wording
<b>7.1.4.4.4</b>	<p>The electrical <u>installations and</u> equipment fitted to the outside of a closed container may be connected with removable electrical cables in accordance with the provisions of <del>9.1.0.56</del>, <u>9.1.0.53.5</u> and be put into operation provided that:</p> <p>(a) Such electrical <u>installations and</u> equipment <del>is of a certified safe type</del> <u>fulfil the requirements for being used in zone 1 temperature class T4 and explosion group IIB</u>; or</p> <p>(b) Such electrical <u>installations and</u> equipment <del>is not of a certified safe type but not fulfilling the requirements referred to in (a)</del> <u>is separated sufficiently from other containers containing substances of:</u></p> <ul style="list-style-type: none"> <li>• Class 2 for which a label No. 2.1 is required in column (5) of Table A of <del>3.2.3.2-1</del>;</li> <li>• Class 3, packing group I or II;</li> <li>• Class 4.3;</li> <li>• Class 6.1; packing group I or II, with an additional hazard of Class 4.3;</li> <li>• Class 8, packing group I, with an additional hazard of Class 3; and</li> <li>• Class 8, packing group I or II, with an additional hazard of Class 4.3.</li> </ul> <p>This condition is deemed to be met if no container containing the above-mentioned substances is stowed within an area of cylindrical form with a radius of 2.4 m around the electrical <u>installations and</u> equipment and an</p>	<p>Adopted in January 2015</p> <p>Reference adapted</p> <p>Wording according to ATEX</p> <p>editorial</p>

Paragraphs	Modification	Reason / Explanation
	<p>unlimited vertical extension.</p> <p><del>This condition-</del> (a) or (b) does not apply if containers <u>with whose electrical installations and equipment does not fulfil the requirements to be used in explosion hazardous areas which is not of a certified safe type</u> and containers containing the above-mentioned substances are stowed in separate holds.</p>	
<b>7.1.4.4.5</b>	<p>The electrical <u>installations and equipment</u> fitted to an open container may not be connected with removable electrical cables in accordance with the provisions of <del>9.1.0.56</del> <u>9.1.0.53.5</u> nor be put into operation unless it <del>is of a certified safe type type</del> <u>fulfils the requirements for being used in zone 1 temperature class T4 and explosion group IIB</u>-or the container is placed in a hold which does not contain containers with substances referred to in 7.1.4.4.4 (b).</p>	<p>Adopted in January 2015</p> <p>Reference adapted</p> <p>Wording according to ATEX</p>
<b>7.1.4.13</b>	<p><b><u>Measures to be taken before and during loading, unloading as well as during a stay near to or within a shore-side assigned zone</u></b></p> <p><del>The holds and cargo areas shall be cleaned prior to loading. The holds shall be ventilated</del></p>	<p>Basic safety concept</p> <p>Like tank vessel</p>
<b><u>7.1.4.13.1</u> new</b>	<p><u>During loading and unloading or during a stay near to or within a shore-side assigned zone electrical and non-electrical installations and equipment not fulfilling the requirements mentioned in 9.1.0.52.1 or having a surface temperature higher than 200°C (marked in red according to 9.1.0.51 and 9.1.0.52.2) shall be switched off, cooled down below 200°C or the measures mentioned in 7.1.4.13.2 shall be taken</u></p>	<p>Basic safety concept</p> <p>7.1.4.13 of ADN 2015 now in 7.1.4.13.3</p>
<b><u>7.1.4.13.2</u> new</b>	<p><u>7.1.4.13.1 does not apply in the accommodation, wheelhouse and service spaces in case</u></p> <p><u>(a) the ventilation system is adjusted to guarantee an overpressure of at least 0.1 kPa and</u></p> <p><u>(b) the gas detection system is switched on and is measuring continuously</u></p>	<p>Basic safety concept</p>
<b><u>7.1.4.13.3</u> new</b>	<p><u>The holds and cargo areas shall be cleaned prior to loading. The holds shall be ventilated</u></p>	<p>In ADN 2015 7.2.4.13</p>
<b>7.1.4.53</b>	<p><b><u>Lighting</u></b></p> <p>If loading or unloading is performed at night or in conditions of poor visibility, effective lighting shall be provided. If provided from the deck, it shall be effected by properly secured electric lamps which shall be positioned in such a way that they cannot be damaged. Where these lamps are positioned on deck in <del>the protected area</del> <u>zone 2</u>, they shall <u>fulfil the requirements for being used in zone 2</u> <del>be of "limited explosion risk" type</del>.</p>	<p>Wording according to ATEX Directive</p>
<b>7.1.4.75</b>	<p><b><u>Risk of sparking</u></b></p> <p>All electrically continuous connections between the vessel and the shore <del>as well as appliances used in the protected area</del> shall be so designed that they do not present a source of ignition.</p>	<p>New Zone concept</p>
<b>7.1.6.16</b>	<p><b><u>Measures to be taken during loading, carriage, unloading and handling of cargo</u></b></p>	<p>Agreed upon with</p>



Paragraphs	Modification	Reason / Explanation
	<p>The following additional requirements shall be met when they are indicated in column (11) of Table A of Chapter 3.2:</p> <p>IN01: After loading and unloading of these substances in bulk or unpackaged and before leaving the cargo transfer site, the concentration of gases in the accommodation, engine rooms and adjacent holds shall be measured by the signor or consignee using a <del>flammable</del> gas detector.</p>	<p>IWG 'Gasfreeing'</p> <p>Not for the German version</p>

## 7.2 Tank vessels

Paragraphs	Modification	Reason / Explanation
<b>7.2.2.0</b>	<p><b>Permitted vessels</b></p> <p><i>NOTE 1: The relief pressure of the safety valves <del>or of high velocity vent valves</del> shall be indicated in the certificate of approval (see 8.6.1.3).</i></p>	Clarification
<b>7.2.2.6</b>	<p><b>Gas detection system</b></p> <p><del>The sensors of the gas detection system shall be set at not more than 20% of the lower explosive limit of the substances allowed for carriage in the vessel.</del></p> <p><del>The system shall have been approved by the competent authority or a recognized classification society.</del></p> <p><u>When the vessel substance list according to 1.16.1.2.5 contains substances for which n-Hexane is not representative the gas detection system has to be calibrated in addition according to the most critical LEL of the substances allowed for carriage in the vessel.</u></p>	<p>Now in definition</p> <p>Approval no longer necessary</p> <p>Basic safety concept</p> <p>ADN wording</p>
<b>7.2.2.19</b>	<p><b>Pushed convoys and side-by-side formations</b></p>	
<b>7.2.2.19.3</b>	<p>When a pushed convoy or a side-by-side formation comprises a tank vessel carrying dangerous substances, vessels used for propulsion shall meet the requirements of the following paragraphs:</p> <p>1.16.1.1, 1.16.1.2, 1.16.1.3, 1.16.1.4, 7.2.2.5, 8.1.4, 8.1.5, <u>8.3.5</u>, 8.1.6.1, 8.1.6.3, 8.1.7, <del>8.1.8, 8.1.9</del>, 9.3.3.0.1, 9.3.3.0.3 d), 9.3.3.0.5, 9.3.3.10.1, 9.3.3.10.2, <u>9.3.3.10.5</u>, 9.3.3.12.4, 9.3.3.12.6, <del>9.3.3.16</del>, <u>9.3.3.16.1, 9.3.3.16.2</u>, 9.3.3.17.1 to 9.3.3.17.4, 9.3.3.31.1 to 9.3.3.31.5, 9.3.3.32.2, 9.3.3.34.1, 9.3.3.34.2, 9.3.3.40.1, (however, one single fire or ballast pump shall be sufficient), 9.3.3.40.2, 9.3.3.41, <del>9.3.3.50.1 e)</del>, <u>9.3.3.51, 9.3.3.52.1 to 9.3.3.52.8</u>, <del>9.3.3.52.3 to 9.3.3.52.6, 9.3.3.56.5</del>, 9.3.3.71 and 9.3.3.74.</p> <p>Vessels moving only <del>type N open</del> tank vessels whose vessel substance list according to 1.16.1.2.5 contains only substances for which explosion protection is not required do not have to meet the requirements of paragraphs 9.3.3.10.1, <u>9.3.3.10.5</u>, <del>9.3.3.10.2</del> and 9.3.3.12.6, 9.3.3.51 and 9.3.3.52.1. 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, <del>9.3.3.10.2</del> <u>9.3.3.10.5</u>, 9.3.3.12.6, 9.3.3.51 and 9.3.3.52.1; the vessel may only move tank vessels of <del>type N open</del> whose vessel substance list according to 1.16.1.2.5 contains only substances for</p>	<p>Basic safety concept</p> <p>Agreed upon in January meeting of the safety committee</p> <p>New zone concept</p> <p>Reference adapted</p> <p>ADN wording 2x</p>

Paragraphs	Modification	Reason / Explanation
	<del>which explosion protection is not required."</del>	
<b>7.2.2.19.4 new</b>	<p><u>During loading and unloading of substances for which in column (17) of Table C of 3.2.3.2 explosion protection is required on deck the other vessels of the convoy only installations and equipment shall be used which fulfils the requirements of 9.3.3.53. This does not apply to</u></p> <p>(a) <u>installations and equipment of vessels linked for or behind the vessel which is loaded or unloaded, if the vessel which is loaded or unloaded tank vessel is equipped with a protective wall at the respective end</u></p> <p>(b) <u>installations and equipment of tank vessels linked alongside to the vessel which is loaded or unloaded, if such installations or equipment is installed behind a protective wall according to 9.3.3.10.3 and this protective wall is not next to the cargo area of the vessel which is loaded or unloaded tank vessel.</u></p>	<p>Basic safety concept</p> <p>New zone concept</p>
<b>7.2.2.22</b>	<p><b><u>Cargo tank openings</u></b></p> <p><del>When substances for which a type C vessel is required in column (6) of Table C of 3.2.3.2 are carried, the pressure relief device / high velocity vent valves shall be set so that blowing-off does not normally occur while the vessel is under way.</del></p>	<p>Not necessary because the opening pressure is given in Table C, Column (6)</p>
<b>7.2.3.1.5</b>	<p>Before any person enters cargo tanks, the cargo pump-rooms below deck, cofferdams, double-hull spaces, double bottoms or hold spaces:</p> <p>(a) When dangerous substances of Classes 2, 3, 4.1, 6.1, 8 or 9 for which a <del>flammable</del> gas detector is required in column (18) of Table C of Chapter 3.2 are carried on board the vessel, it shall be established, by means of this device that the gas concentration in these cargo tanks, cargo pump-rooms below deck, cofferdams, double-hull spaces, double bottoms or hold spaces is not more than 50% of the lower explosive limit of the cargo. For the cargo pump-rooms below deck this may be determined by means of the permanent gas detection system;</p>	<p>Agreed upon with IWG 'Gasfreeing'</p> <p>Not for the German version</p>
<b>7.2.3.6</b>	<p><b><u>Gas detection systems</u></b></p> <p>The gas detection systems shall be maintained <del>and calibrated</del> <u>by instructed personnel</u> in accordance with the instructions of the manufacturer.</p>	<p>Clarification</p> <p>Calibration now in definition</p>
<b>7.2.3.41</b>	<p><b><u>Smoking, fire and naked light</u></b></p>	<p>Clarification</p>
<b>7.2.3.41.1</b>	<p><del>The use of fire or naked light is prohibited while substances or articles of Divisions 1.1, 1.2, 1.3, 1.5 or 1.6 of Class 1 are on board and the holds are open or the goods to be loaded are located at a distance of less than 50 m from the vessel.</del></p> <p><u>Smoking, including electronic cigarettes and other similar devices fire and naked light on board the vessel is prohibited. This prohibition shall be displayed on notice boards at appropriate places. The prohibition of smoking does not apply in accommodation or wheelhouses in case the ventilation system is ensuring an overpressure of 0.1 kPa</u></p>	<p>Clarification</p>
<b>7.2.3.51</b>	<p><b><u>Electrical and non-electrical installations and equipment</u></b></p>	<p>clarification</p>

<i>Paragraphs</i>	<i>Modification</i>	<i>Reason / Explanation</i>
<b>7.2.3.51.1</b>	The electrical <u>and non-electrical</u> installations <u>and equipment</u> shall be properly maintained.	clarification
<b>7.2.3.51.2</b>	The use of movable electric cables is prohibited in the <del>cargo area</del> <u>explosion hazardous areas</u> . This provision does not apply to: – intrinsically safe electric circuits; – electric cables for connecting signal lights or gangway lighting, provided the socket is permanently fitted to the vessel close to the signal mast or gangway; – electric cables for connecting submerged pumps on board oil separator vessels.	Wording according to ATEX Directive
<b><u>7.2.3.51.4 new</u></b>	<u>During a stay near to or within a shore-side assigned zone, electrical and non-electrical installations and equipment not complying with the requirements as mentioned in 9.3.x.51 (a), 9.3.x.51 (b), 9.3.x.51 (c) or 9.3.x.52.1 (marked in red according to 9.3.x.51 and 9.3.x.52.3), shall be switched off, cooled down below the temperature mentioned in 9.3.x.51 (a), resp. 9.3.x.51 (b) or the measures mentioned in 7.2.3.51.6 shall be taken</u>  <u>When the vessel substance list according to 1.16.1.2.5 contains substances for which explosion protection is required in column (17) of Table C of 3.2.3.2, this provision applies also during loading and unloading and when degassing during berthing</u>	Basic safety concept  ADN wording Agreed upon in January meeting of the safety committee
<b><u>7.2.3.51.5 new</u></b>	<u>When the vessel substance list according to 1.16.1.2.5 contains substances for which in column (15) of Table C of 3.2.3.2, the temperature classes T4, T5 or T6 is indicated, surface temperatures occurring within the assigned zones shall be below 135°C (T4), 100°C (T5) or 85°C (T6) respectively</u>	Basic safety concept ADN wording
<b><u>7.2.3.51.6 new</u></b>	<u>7.2.3.51.4 and 7.2.3.51.5 do not apply in the accommodations, wheelhouse and service spaces in case</u> <u>(a) the ventilation system is adjusted to guarantee an overpressure of at least 0,1 kPa and</u> <u>(b) the gas detection system is switched on, detecting continuously..</u>	Basic safety concept
<b><u>7.2.3.51.7 new</u></b>	<u>Installations and equipment according to 7.2.3.51.4 which have been switched off during loading and unloading, degassing during berthing or a stay near to or within a shore-side assigned zone, may only be switched on after the vessel stays no longer near to or within a shore-side assigned zone or in wheelhouse, accommodations and service spaces 10% of the LEL of n-Hexane or 10% of the LEL of the cargo is underrun.</u> <u>The results of the measurements shall be recorded in writing.</u>	Basic safety concept agreed upon with IWG ‘degassing Agreed upon in January meeting of the safety committee
<b>7.2.4.16</b>	<b><i>Measures to be taken during loading, carriage, unloading and handling of the cargo</i></b>	
<b>7.2.4.16.3</b>	The shut-off devices of the loading and unloading piping, <u>if installed</u> , as well as of the pipes, if installed, of the stripping systems shall remain closed except during loading, unloading, stripping, cleaning or <del>gas</del>	Clarification Agreed upon in

Paragraphs	Modification	Reason / Explanation
	<del>freeing</del> degassing operations.	January meeting of the safety committee
7.2.4.16.6	In case of recovery of the gas-air mixture from shore into the vessel, the pressure at the connection point, <u>venting piping/vapour return piping</u> shall not be more than the opening pressure of the pressure relief device/ high velocity vent valves.	Clarification ADN wording
7.2.4.16.7	When a tank vessel conforms to 9.3.2.22.5 4 (b) or 9.3.3.22.5 4 (b), the individual cargo tanks shall be closed off during transport and opened during loading, unloading and <del>gas freeing</del> degassing.	Reference Agreed upon in January meeting of the safety committee
7.2.4.16.8	Persons entering the premises located in the cargo area below deck during loading or unloading shall wear the PP equipment referred to in 8.1.5 if this equipment is prescribed in column (18) of Table C of <del>Chapter 3.2.3.2.</del> Persons connecting or disconnecting the loading and unloading piping or the venting piping, <u>relieving pressure in cargo tanks</u> , taking samples, carrying out measurements, <u>cleaning or replacing the flame arrester plate stack (see 7.2.4.22) relieving pressure in cargo tanks</u> , shall wear the PP equipment referred to in 8.1.5 if this equipment is prescribed in column (18) of Table C in <del>chapter 3.2.3.2.</del> They shall also wear protective equipment A if a toximeter (TOX) is prescribed in column (18) of Table C in <del>chapter 3.2.3.2.</del>	Clarification
7.2.4.16.12	<del>For substances requiring protection against explosions according to column (17) of Table C of Chapter 3.2, the connection of the venting piping to the shore installation shall be such that the vessel is protected against detonations and the passage of flames from the shore.</del> Is, in case explosion protection is required according to column (17) of Table C of <del>Chapter</del> in 3.2.3.2, ensured by the shore, that the venting piping is such that that the vessel is protected against detonations and the passage of flames from the shore? ( <u>Explosion group / subgroup according to 3.2.3.2 Table C, column (16)</u> ) The protection of the vessel against detonations and the passage of flames from the shore is not required when the cargo tanks are inerted in accordance with 7.2.4.18.	Adopted change for 2017 Clarification
7.2.4.17	<i>Closing of windows and doors</i>	
7.2.4.17.1	During loading, unloading, <del>gas freeing</del> degassing operations, or a stay near to or within a shore-side assigned <u>zone</u> all entrances or openings of spaces which are accessible from the deck and all openings of spaces facing the outside shall remain closed.  This provision does not apply to: – air intakes of running engines;	Basic safety concept Agreed upon in January meeting of the safety committee Reference adjusted

Paragraphs	Modification	Reason / Explanation
	<ul style="list-style-type: none"> <li>– ventilation inlets of engine rooms while the engines are running;</li> <li>– air intakes of the overpressure ventilation system referred to in 9.3.1 <del>52.3.12.4</del>, 9.3.2 <del>52.3.12.4</del> or 9.3.3 <del>52.3.12.4</del>;</li> <li>– air intakes <del>of air conditioning installations</del> if these openings are fitted with a gas detection system referred to in 9.3.1 <del>52.3.12.4</del>, 9.3.2 <del>52.3.12.4</del> or 9.3.3 <del>52.3.12.4</del></li> </ul> <p>These entrances and openings may only be opened when necessary and for a short time, after the master has given his permission.</p>	
<b>7.2.4.22</b>	<b><i>Opening of openings of cargo tanks</i></b>	
<b>7.2.4.22.1</b>	<p>Opening of cargo tanks apertures shall be permitted only after the tanks have been relieved of pressure.</p> <p><u>Pressure relief of cargo tanks is permitted only when using the device for safe pressure relief prescribed in 9.3.2.22.4 (a) and 9.3.2.22.4 (b) or 9.3.3.22.4 (a) and 9.3.3.22.4 (b).</u></p> <p><u>When in column (17) of Table C of 3.2.3.2 explosion protection is required, the opening of cargo tank covers shall be permitted only if the cargo tanks are discharged and the concentration of flammable gases in the tank is less than 10% of the LEL of the cargo/last cargo.</u></p> <p><u>The results of the measurements shall be recorded in writing. To carry out this measurements it is not permitted to enter into the cargo tanks</u></p>	<p>7.2.4.22.6 of ADN 2015</p> <p>Reference adjusted</p> <p>Clarification</p> <p>Aligning language versions</p>
<b>7.2.4.22.2</b>	<p>Opening of sampling outlets <del>openings and ullage openings and opening of the housing of the flame arrester</del> shall not be permitted except for the purpose of taking samples <u>as well as</u> inspecting or cleaning empty cargo tanks.</p> <p><del>When in column (17) of Table C of Chapter 3.2 anti explosion protection is required, the opening of cargo tank covers or of the housing of the flame arrester for the purpose of mounting or removing the flame arrester plate stack in unloaded cargo tanks shall be permitted only if the cargo tanks in question have been gas freed and the concentration of flammable gases in the tanks is less than 10% of the lower explosive limit.</del></p>	<p>ADN wording</p> <p>Clarification</p> <p>Now parts in 9.2.4.22.6</p>
<b>7.2.4.22.3</b>	<p>Sampling shall be permitted only if a device prescribed in column (13) of Table C <del>of Chapter in 3.2.3.2</del> or a device ensuring a higher level of safety is used.</p> <p>Opening of sampling outlets <del>openings and ullage openings</del> of cargo tanks loaded with substances for which marking with one or two blue cones or one or two blue lights is prescribed in column (19) of Table C <del>of Chapter in 3.2.3.2</del> shall be permitted only when loading has been interrupted for not less than 10 minutes.</p>	<p>ADN wording</p> <p>No ullage openings allowed with cargo tanks</p>

Paragraphs	Modification	Reason / Explanation
7.2.4.22.5	<p><del>The duration of opening shall be limited to the time necessary for control, cleaning, replacing the flame arrester, gauging or sampling.</del></p> <p><u>Opening of the housing of the flame arrester shall not be permitted except for the purpose of cleaning of the flame arrester stake plate or replacing the flame arrester stake plate by one identical in construction. The opening is permitted only if the concentration of flammable gases in the tanks is less than 10% of the LEL of the cargo / last cargo.</u></p> <p><u>The results of the measurements shall be recorded in writing.</u></p> <p><u>Cleaning and replacing of the flame arrester plate stack shall be carried out by trained and instructed personnel.</u></p>	<p>New zone concept</p> <p>editorial</p>
7.2.4.22.6	<p><del>Pressure relief of cargo tanks is permitted only when carried out by means of the device for safe pressure relief prescribed in 9.3.2.22.4 (a) or 9.3.3.22.4 (a).</del></p> <p><u>For the operations according to 7.2.4.22.4 and 7.2.4.22.5 only low-sparking hand tools (e.g. chromium vanadium steel screwdrivers and wrenches) shall be used.</u></p>	new zone concept
7.2.4.22.7	<p><del>The provisions of 7.2.4.22.1 to 7.2.4.22.6 above shall not apply to oil separator or supply vessels</del></p> <p><u>The duration of opening shall be limited to the time necessary for control, cleaning, replacing the flame arrester plate stack or sampling.</u></p>	<p>Clarification</p> <p>7.2.4.22.5 of ADN 2015</p>
<u>7.2.4.22.8 new</u>	<u>The provisions of 7.2.4.22.1 to 7.2.4.22.7 above shall not apply to oil separator or supply vessels.</u>	<p>Clarification</p> <p>7.2.4.22.7 of ADN 2015</p>
7.2.4.25	<b><i>Cargo and venting piping</i></b>	Clarification
7.2.4.25.5	<p>The gas/air mixtures shall be returned ashore through a vapour return piping during loading operations when a closed <del>type vessel</del> <u>cargo tank</u> is required in column (7) of Table C of Chapter 3.2.</p> <p><u>For substances for which explosion protection is required according to column (17) of Table C of Chapter 3.2, it shall be ensured that the vapour return piping is such that that the vessel is protected against detonations and the passage of flames from the shore. The protection against detonations and the passage of flames from the shore shall at least correspond to the explosion group / subgroup according to 3.2.3.2 Table C, column (16)</u></p> <p><u>The protection of the vessel against detonations and the passage of flames from the shore are not required when the cargo tanks are inerted in accordance with 7.2.4.18.</u></p>	<p>Not identique to the german version of ADN2015</p> <p>Clarification</p> <p>sentence needs to be underlined</p>
<u>7.2.4.25.7 new</u>	<u>For connecting or disconnecting cargo and venting piping only low-sparking hand tools (e.g.chromium vanadium steel screwdrivers and wrenches) shall be used.</u>	<p>Clarification</p> <p>ADN wording</p>

<i>Paragraphs</i>	<i>Modification</i>	<i>Reason / Explanation</i>
<b>7.2.4.28.2</b>	When water-spraying is required in column (9) of Table C of 3.2.3.2 and the pressure of the gaseous phase in the cargo tanks may reach 80% of the relief pressure of the <u>pressure relief device</u> / high velocity vent valves, the master shall take all measures compatible with safety to prevent the pressure from reaching that value. He shall in particular activate the water-spray system.	Clarification
<b>7.2.4.41</b>	<b><u>Smoking, fire or naked light</u></b> During loading, unloading or <del>gas freeing</del> <u>degassing</u> operations <u>smoking</u> , fires and naked lights are prohibited on board the vessel. However, the provisions of 7.2.3.42.3 and 7.2.3.42.4 are applicable.	Clarification Agreed upon in January meeting of the safety committee
<b>7.2.4.51</b>	<b><u>Electrical installations and equipment</u></b>	ATEX wording
<b>7.2.4.51.1</b>	<del>During loading, unloading or gas freeing operations, only electrical equipment conforming to the rules for construction in Part 9 or which are installed in spaces complying with the conditions of 9.3.1.52.3, 9.3.2.52.3 or 9.3.3.52.3, may be used. All other electrical equipment marked in red shall be switched off.</del> <i>(Deleted)</i>	Now in 7.2.3.51.4 new and 7.2.3.51.5 new
<b>7.2.4.51.2</b>	<del>Electrical equipment which has been switched off by the device referred to in 9.3.1.52.3, 9.3.2.52.3 or 9.3.3.52.3 shall only be switched on after the gas free condition has been established in these spaces.</del> <i>(Deleted)</i>	Now in 7.2.3.51.7 new
<b>7.2.4.53</b>	<b><u>Lighting</u></b> If loading or unloading is performed at night or in conditions of poor visibility, effective lighting shall be provided. If provided from the deck, it shall be effected by properly secured electric lamps which shall be positioned in such a way that they cannot be damaged. <del>Where these lamps are positioned in the cargo area, they shall be of the "certified safe" type.</del>	New zone concept
<b>7.2.4.74</b>	<b><u>Prohibition of smoking, fire and naked light</u></b> <del>The prohibition of smoking does not apply in accommodation or wheelhouses conforming to the provisions of 9.3.1.52.3, 9.3.2.52.3 or 9.3.3.52.3</del> <i>(Deleted)</i>	Now combined in 7.2.3.41

## 8. General requirements applicable to vessels, installations and equipment

Paragraphs	Modification	Reason / Explanation
8.1.2.1	(j) <u>the documents referred to in 8.1.3.1</u>	
8.1.2.2	<p>In addition to the documents prescribed in 8.1.2.1, the following documents shall be <del>carried</del> <u>available</u> on board dry cargo vessels:</p> <p>(a) The stowage plan prescribed in 7.1.4.11;</p> <p>(b) The ADN specialized knowledge certificate prescribed in 8.2.1.2;</p> <p>(c) For vessels complying with the additional requirements for double-hull vessels:</p> <ul style="list-style-type: none"> <li>– a damage-control plan;</li> <li>– the documents concerning intact stability as well as all conditions of intact stability taken into account for the damaged stability calculation in a form the master understands;</li> <li>– the certificate of the recognised classification society (see 9.1.0.88 or 9.2.0.88);</li> </ul> <p>(d) The inspection certificates concerning the fixed fire extinguishing systems prescribed in 9.1.0.40.2.9.</p> <p>(e) <u>A list or a drawing indicating the fixed electrical installations and equipment suitable to be used in zone 1 and the installations and equipment complying with 9.1.0.51</u></p> <p>(f) <u>A list or a drawing of the fixed installations and equipment which is not allowed to be used during loading, unloading, degassing during berthing or during a stay near to or within a shore-side assigned zone (marked in red according to 9.1.0.52.2).</u></p> <p>(g) <u>A drawing showing the borders of the zones and indicating within the respective zone the installed electrical and non-electrical installations and equipment intended for use in potentially explosive areas.</u></p> <p>(h) <u>A list of the installations and equipment referred to under (g) with the following information:</u></p> <ul style="list-style-type: none"> <li>- <u>Installation / Equipment, location, marking (Explosion protection level according to 60079-0, Equipment category according to Directive 2014/34 EU or at least equivalent protection level including explosion group and temperature class, type of protection, test body) in case of electrical equipment to be used in zone 1 (alternative a copy of e.g. the certificate of conformity according to Directive 2014/34/EC)<sup>47</sup></u></li> <li>- <u>Installation /Equipment, location, marking (Explosion protection level according to 60079-0, Equipment category according to Directive 2014/34 EU or at least equivalent protection level including explosion group and temperature class, type of protection, identification number) in case of electrical equipment to be</u></li> </ul>	<p>New zone concept</p> <p>Editorial</p> <p>Aligning language versions</p>

<sup>47</sup> Official Journal of the European Communities No. L 23 of 26 February 2014, S.309



Paragraphs	Modification	Reason / Explanation
	<p><u>used in zone 2 as well as in case of non-electrical equipment to be used in zone 1 and zone 2 (alternative a copy of e.g. the certificate of conformity according to Directive 2014/34/EC)<sup>48</sup></u></p> <p><u>The documents listed in (e) to (h) shall bear the stamp of the competent authority issuing the certificate of approval.</u></p>	
<p><b>8.1.2.3</b></p>	<p>In addition to the documents prescribed in 8.1.2.1, the following documents shall be <del>carried</del> <u>available</u> on board tank vessels:</p> <p>(a) The cargo stowage plan prescribed in 7.2.4.11.2;</p> <p>(b) The ADN specialized knowledge certificate prescribed in 7.2.3.15;</p> <p>(c) For vessels which have to conform to the conditions of damage-control (see 9.3.1.15, 9.3.2.15 or 9.3.3.15) – a damage-control plan;</p> <p>– the documents concerning intact stability as well as all conditions of intact stability taken into account for the damaged stability calculation in a form the master understands; the stability booklet and the proof of the loading instrument having been approved by the recognized classification society;</p> <p>(d) <del>The documents concerning the electrical installations prescribed in 9.3.1.50, 9.3.2.50, or 9.3.3.50;</del> (deleted)</p> <p>(e) The certificate of class issued by the recognized classification society prescribed in 9.3.1.8.1, 9.3.2.8.1 or 9.3.3.8.1;</p> <p>(f) <u>The cargo pump-room inspection certificates according to 9.3.1.8.2, 9.3.2.8.2 or 9.3.3.8.2, the flammable gas detector or certificate of the gas detection system as well as the certificate of the oxygen measuring system</u> prescribed in 9.3.1.8.3, 9.3.2.8.3 or 9.3.3.8.3;</p> <p>(g) The vessel substance list prescribed in 1.16.1.2.5;</p> <p>(h) The inspection certificate for the hose assemblies for loading and unloading prescribed in 8.1.6.2;</p> <p>(i) The instructions relating to the loading and unloading flows prescribed in 9.3.2.25.9 or 9.3.3.25.9;</p> <p>(j) <i>(Deleted)</i></p> <p>(k) In the event of the carriage of goods having a melting point &gt; 0° C, heating instructions;</p> <p>(l) The inspection certificate for the pressure relief and vacuum relief valves prescribed in 8.1.6.5, except for open type N tank vessels, or open type N vessels with flame arresters;</p> <p>(m) The registration document referred to in 8.1.11;</p> <p>(n) For the carriage of refrigerated substances, the instruction required in 7.2.3.28;</p>	<p>New zone concept Editorial</p>

Paragraphs	Modification	Reason / Explanation
	<p>(o) The certificate concerning the refrigeration system, prescribed in 9.3.1.27.10, 9.3.2.27.10 or 9.3.3.27.10;</p> <p>(p) The inspection certificates concerning the fixed fire extinguishing systems prescribed in 9.3.1.40.2.9, 9.3.2.40.2.9 or 9.3.3.40.2.9; <del>and</del></p> <p>(q) When transporting refrigerated liquefied gases and the temperature is not controlled in accordance with 9.3.1.24.1 and 9.3.1.24.1 (c), the determination of the holding time (7.2.4.16.16, 7.2.4.16.17) <u>and the documentation of the</u><del>The heat transmission coefficient shall be documented and kept on board.</del></p> <p>(r) <u>a list or a drawing indicating the fixed installations and equipment suitable to be used in zone 1 and the installations and equipment complying with 9.3.x.51.</u></p> <p>(s) <u>a list or a drawing of the installations / equipment which during loading and unloading, degassing during berthing or during a stay near to or within a shore-side assigned zone (marked in red according to 9.3.1.52.3, 9.3.2.52.3 or 9.3.3.52.3).</u></p> <p>(t) <u>a drawing approved by a recognized classification society showing the boundaries of the zones and indicating within the respective zone the installed electrical and non-electrical installations and equipment intended for used in potentially explosive areas.;</u></p> <p>(u) <u>a list of the installation / equipment referred to under (t) as well as the autonomous systems with the following information:</u></p> <ul style="list-style-type: none"> <li>- <u>Installation / equipment, location, marking (Explosion protection level according to 60079-0, Equipment category according to Directive 2014/34 EU<sup>49</sup> or at least equivalent protection level including explosion group and temperature class, type of protection, test body) in case of electrical equipment to be used in zone 0 or zone 1 and in case of non-electrical equipment to be used in zone 0 (alternative a copy of e.g the certificate of conformity according to Directive 2014/34 EU)<sup>50</sup></u></li> <li>- <u>Installation / equipment, location, marking (Explosion protection level according to 60079-0, Equipment category according to Directive 2014/34 EU or at least equivalent protection level including explosion group and temperature class, type of protection, identification number) in case of electrical equipment to be used in zone 2 as well as in case of non-electrical equipment to be used in zone 1 and zone 2 (alternative a copy of the test certificate e.g. certificate of conformity according to Directive 2014/34 EU)<sup>51</sup></u></li> <li>- <u>autonomous protective systems: location, marking (explosion group / subgroup)</u></li> </ul> <p>(v) <u>a list of or general plan indicating the fixed installations and equipment installed outside the explosion hazardous areas, which are allowed to be operated during loading, unloading or degassing during berthing as well as during a stay near to or within a shore-side assigned zone if not referred to in (r) and (u).</u></p> <p><u>The documents listed in (r) to (v) above shall bear the stamp of the competent authority issuing the certificate of</u></p>	<p>Editorial</p> <p>Agreed upon in January meeting of the safety committee</p> <p>Aligning language versions</p>

<sup>49</sup> Official Journal of the European Communities No. L 23 of 26 February 2014, S.309

<sup>50</sup> Official Journal of the European Communities No. L 23 of 26 February 2014, S.309

<sup>51</sup> Official Journal of the European Communities No. L 23 of 26 February 2014, S.309

<i>Paragraphs</i>	<i>Modification</i>	<i>Reason / Explanation</i>
	<u>approval.</u>	
<b>8.1.5.1</b>	Insofar as the provisions of Chapter 3.2, Tables A or C require, the following equipment shall be available on board: PP: for each member of the crew, a pair of protective goggles, a pair of protective gloves, a protective suit and a suitable pair of protective shoes (or protective boots, if necessary). On board tank vessels, protective boots are required in all cases;  EP: a suitable escape device for each person on board;  EX: a <del>flammable</del> gas detector with the instructions for its use;  TOX: a toximeter with the instructions for its use;  A: a breathing apparatus ambient air-dependent.	Agreed upon with IWG 'Gasfreeing'  Not for the German version
<b>8.1.5.2</b>	(Reserved)  <u>Only low-sparking hand-tools (e.g. chromium vanadium steel screwdrivers and wrenches) shall be used for operations within the explosion hazardous areas as well as during a stay near to or within a shore-side assigned zone</u>	Clarification
<b>8.1.6.3</b>	The special equipment referred to in 8.1.5.1, <del>and</del> the gas detection system <u>as well as the oxygen measuring system</u> shall be checked and inspected in accordance with the instructions of the manufacturer by the manufacturer concerned or by persons authorized for this purpose by the competent authority. A certificate concerning <del>this</del> <u>each last</u> inspection shall be carried on board.	Clarification
<b>8.1.6.5</b>	<del>The pressure relief and vacuum relief valves prescribed in 9.3.1.22, 9.3.2.22, 9.3.2.26.4, 9.3.3.22 and 9.3.3.26.4 shall be inspected on each renewal of the certificate of approval by the manufacturer or by a firm approved by the manufacturer. A certificate concerning this inspection shall be carried on board.</del>  (deleted)	
<b>8.1.7</b>	<u>Installations, equipment and autonomous protective systems</u>  <u>Electrical installations</u>  <del>The insulation resistance of the electrical installations, the earthing and the certified safe type electrical equipment and the conformity of the documents required in 9.3.1.50.1, 9.3.2.50.1 or 9.3.3.50.1 with the circumstances on board shall be inspected whenever the certificate of approval is renewed and, in addition, within the third year from the date of issue of the certificate of approval by a person authorized for this purpose by the competent authority. An appropriate inspection certificate shall be kept on board.</del>	New zone concept  Now in 8.1.7.1 and 8.1.7.2
<b>8.1.7.1 new</b>	<u>Electrical installations and equipment</u>  <u>The insulation resistance of the electrical installations and equipment as well as their earthing shall be inspected whenever the certificate of approval is renewed and, in addition, within the third year from the date of issue of the certificate of approval by a person authorized for this purpose by the competent authority. An appropriate</u>	Clarification  8.1.7 of ADN 2015



Paragraphs	Modification	Reason / Explanation
	<p>Practical exercises:</p> <ul style="list-style-type: none"> <li>- Practical exercises, in particular with respect to entry into spaces, use of fire-extinguishers, fire-fighting equipment and personal protective equipment as well as <del>flammable</del> gas detectors, oxygen meters and toximeters.</li> </ul> <p>Stability:</p> <ul style="list-style-type: none"> <li>- parameters of relevance to stability;</li> <li>- heeling moments;</li> <li>- exemplary calculations;</li> <li>- damage stability, intermediate states and final state of flooding;</li> <li>- influence of free surfaces;</li> <li>- evaluation of stability on the basis of existing stability criteria (text of Regulations);</li> <li>- evaluation of intact stability with the help of the lever arm curve</li> <li>- application of loading instruments;</li> <li>- use of loading instruments;</li> <li>- application of the stability booklet according to 9.3.13.3.</li> </ul> <p><u>Basics of explosion protection</u></p> <ul style="list-style-type: none"> <li>- <u>according to the definition explosion protection</u></li> <li>- <u>-selection of appropriate installations and equipment</u></li> </ul>	
8.2.2.3.1.3	<p>Measurement techniques:</p> <ul style="list-style-type: none"> <li>- Measurements of toxicity, oxygen content, <u>concentration of flammable substances</u> <del>explosivity</del></li> </ul> <p><u>Basics of explosion protection</u></p> <ul style="list-style-type: none"> <li>- <u>according to the definition explosion protection</u></li> <li>- <u>selection of appropriate installations and equipment-</u></li> </ul>	editorial
8.3.2	<p><b>Portable lamps</b></p> <p><del>On board dry cargo vessels, The only portable lamps having their own source of power are permitted in the protected explosion hazardous area and on deck are lamps having their own source of power. On board tank vessels, the only portable lamps permitted in the cargo area and on the deck outside the cargo area are lamps having their own source of power</del> <u>Within explosion hazardous areas they have at least to comply with the necessary requirements valid for the respective zone.</u></p>	Basic safety concept  editorial
8.3.4	Prohibition on smoking, fire and naked light	Equal to 7.1.3.41,



Paragraphs	Modification	Reason / Explanation
<b>and 8.6.1.2</b>	Space reserved for the emblem and name of the State <b>ADN certificate of approval No.:</b> 1. Name of vessel..... 2. Official number ..... 3. Type of vessel ..... 4. Additional requirements: vessel referred to in 7.1.2.19.1 <sup>1</sup> vessel referred to in 7.2.2.19.3 <sup>1</sup> The vessel complies with the additional rules of construction referred to in 9.1.0.80 to 9.1.0.95/ 9.2.0.80 to 9.2.0.95 for double hull vessels <sup>1</sup> ) <u>Vessel complies to the rules of construction 9.1.0.12, 9.1.0.51, 9.1.0.52<sup>1</sup>)</u> <u>Vessel complies to the rules of construction 9.1.0.53<sup>1</sup>)</u> <u>Electrical and non-electrical installations and equipment to be used within the protected area:</u> - <u>temperature class</u> - <u>explosion group</u>	
<b>8.6.1.3 and 8.6.1.4</b>	7. opening pressure of the <u>pressure relief device</u> / high-velocity vent valve in kPa	Clarification
<b>8.6.1.3 and 8.6.1.4</b>	8. Additional equipment: <input type="checkbox"/> Sampling device connection for a sampling device.....       ..... yes/no <sup>12</sup> sampling opening .....       ..... yes/no <sup>12</sup> <input type="checkbox"/> Water-spray system ..... yes/no <sup>12</sup> Internal pressure alarm 40 kPa .....       ..... yes/ no <sup>12</sup> <input type="checkbox"/> Cargo heating system: possibility of cargo heating from shore ..... yes/ no <sup>12</sup> cargo heating installation on board ..... yes/ no <sup>12</sup> <input type="checkbox"/> Cargo refrigeration system ..... yes/ no <sup>12</sup>	

Paragraphs	Modification	Reason / Explanation
	<input type="checkbox"/> Inerting facilities ..... yes/ no <sup>12</sup> <input type="checkbox"/> Cargo pump-room below deck ..... yes/no <sup>1</sup> <input type="checkbox"/> Ventilation system ensuring an overpressure yes/no <sup>1</sup> <input checked="" type="checkbox"/> <del>Venting piping according to .....</del> <input type="checkbox"/> piping and installation heated ..... yes/ no <sup>12</sup> <input type="checkbox"/> Conforms to the rules of construction resulting from the remark(s) ..... of column (20) of Table C of 3.2.3.2 <sup>12</sup>	No longer necessary
<b>8.6.1.3</b> <b>and</b> <b>8.6.1.4</b>	<u>9. Electrical and non-electrical installations and equipment</u> <ul style="list-style-type: none"> <li>• Temperature class:</li> <li>• Explosion group:</li> <li><u>Autonomous protective systems:</u></li> <li>• <u>Explosion group / subgroup with explosion group II B</u></li> </ul>	New zone concept  Follow up the adopted proposals from IWG ,Substances'
<b>8.6.1.3</b> <b>and</b> <b>8.6.1.4</b>	<u>12. Additional observations:</u> <u>Vessel complies to the rules of construction 9.3.x.12, 9.3.x.51, 9.3.x.52 ..... yes/ no<sup>1</sup> :...</u>	Basic safety concept
<b>8.6.3</b> <b>ADN</b> <b>Checklist</b> <b>12.2</b>	Is it ensured that the shore installation is such that the pressure at the connecting point cannot exceed the opening pressure of the <u>pressure relief device / high-velocity vent valves</u> (pressure at connecting point __ kPa)?	Clarification
<b>8.6.3</b> <b>ADN</b> <b>Checklist</b> <b>12.3</b>	<del>When anti-</del> <u>Is, in case explosion protection is required in Chapter according to 3.2, in Table C, column (17) in 3.2.3.2 does ensured by the shore installation ensure- that the vapour return piping is such that the vessel is protected against detonations and flame fronts passage of flames from the shore. (Explosion group / subgroup according to 3.2.3.2 Table C, column (16))</u>	Clarification  Adapted modification  ADN wording
<b>8.6.3</b> <b>ADN</b> <b>Checklist</b> <b>18</b>	To be filled in only in the case of loading or unloading of substances for the carriage of which <del>a vessel of the closed cargo tank type</del> <u>or a vessel of the open type open cargo tank</u> with flame arrester is required.  Are the cargo tank hatches and cargo tank inspection, gauging and sampling openings closed or protected by flame arresters <del>in good condition</del> <u>fulfilling at least the requirements Table C, column (17) in 3.2.3.2 - ?</u>	Clarification



## 9.1 Dry cargo vessels

Paragraphs	Modification	Reason / Explanation
<b>9.1.0.12</b>	<b>Ventilation</b>	
<b>9.1.0.12.1</b>	<p>It must be possible to ventilate each hold by means of two mutually independent extraction ventilators having a capacity of not less than five changes of air per hour based on the volume of the empty hold. <del>The ventilator fan shall be designed so that no sparks may be emitted on contact of the impeller blades with the housing and no static electricity may be generated.</del> The extraction ducts shall be positioned at the extreme ends of the hold and extend down to not more than 50 mm above the bottom. The extraction of gases and vapours through the duct shall also be ensured for carriage in bulk.</p> <p>If the extraction ducts are movable they shall be suitable for the ventilator assembly and capable of being firmly fixed. Protection shall be ensured against bad weather and spray. The air intake shall be ensured during ventilation.</p>	<p>Like tank vessels Now in 9.1.0.12.5</p>
<b>9.1.0.12.3</b>	<p>Ventilation shall be provided for the accommodation, <u>wheelhouse</u> and for service spaces.</p> <p><u>If in the rooms during loading and unloading or during a stay near to or within a shore-side assigned zone higher temperatures as mentioned in 9.1.0.51 occur, or installations and equipment not fulfilling the requirements in 9.1.0.52.1 is used this installations and equipment has</u></p> <ol style="list-style-type: none"> <li>1. <u>to be switched off.</u></li> <li>2. <u>except if these spaces are equipped with</u> <ol style="list-style-type: none"> <li>(a) <u>a ventilation system equipped with alerting in case of a breakdown which is able to ensure an overpressure of 0.1 kPa (0.001 bar). The air intakes of the ventilation system shall be located as far away as possible, however, not less than 6.00 m from the protected area and not less than 2.00 m above the deck;</u></li> <li>(b) <u>a gas detection system equipped with alerting in case of a breakdown with sensors:</u> <ul style="list-style-type: none"> <li>– <u>at the suction inlets of the ventilation system;</u></li> <li>– <u>directly at the top edge of the sill of the entrance doors of the accommodation and service spaces;</u></li> </ul> <p><u>This gas detection system has to fulfil the following requirements:</u></p> <ul style="list-style-type: none"> <li>– <u>The t90-time shall to be lower or equal to 4 s</u></li> <li>– <u>The measurements shall be continuous.</u></li> <li>– <u>It shall be at least valid to be used in zone 2</u></li> </ul> </li> <li>(c) <u>an emergency lighting in the service spaces</u></li> </ol> <p><u>This is not necessary if the lighting in the service spaces is of the ‘limited explosion risk’ type.</u></p> </li> </ol>	<p>Basic safety concept Like tank vessels</p>

Paragraphs	Modification	Reason / Explanation
	<p><u>(d) The suction of the ventilation system shall be shut down when a concentration of 20% of the LEL of n-Hexane is reached. In such a case and in case of a breakdown of the ventilation system or of the gas detection systems installations and equipment not fulfilling the requirements of 9.1.0.51 and 9.1.0.52.1 shall be shut-off.</u></p> <p><u>These operations shall be performed immediately and automatically and activate the emergency lighting if necessary.</u></p> <p><u>(e) The ventilation system, the emergency lighting and the breakdown alarm shall be of the 'limited explosion risk' type . This shut-off shall be indicated in the accommodation and wheelhouse by visual and audible signals.</u></p> <p><u>(f) The automatic switching-off device is set so that no automatic switch off may occur while the vessel is under way.</u></p> <p><u>(g) The breakdown of the gas detection system or the ventilation system of the accommodation shall be indicated by visual and audible signals in the accommodation, wheelhouse and on deck. The breakdown of the gas detection system or the ventilation system of the wheelhouse and service spaces shall be indicated by visual and audible signals in the wheelhouse and on deck. The alarm has to be lead to the accommodation automatically if not cleared.</u></p>	Aligning language versions
9.1.0.12.4 new	<p><u>Notice boards shall be fitted at the ventilation inlets indicating the conditions when they shall be closed. All ventilation inlets of accommodation, wheelhouse and service spaces leading outside shall be located not less than 2.00 m from the protected area.</u></p> <p><u>Any ventilation inlets shall be fitted with devices according to 9.1.0.40.2.2 (c) enabling them to be closed rapidly. It shall be clear whether they are open or closed.</u></p>	Similar to tank vessel
9.1.0.12.5 new	<p><u>Ventilators including their motors within in the protected area and electric motors for hold ventilators which are arranged in the air flow shall fulfil at least the requirements for being zone 1. It has to correspond to temperature class T4 and explosion group IIB.</u></p>	Editorial In ADN 2015 9.1.0.12.5 and 9.1.0.52.2
9.1.0.42 – 9.1.0.51 <del>0</del>	reserved	
9.1.0.51 new	<p><b><u>Surface temperatures of installations and equipment</u></b></p> <p><u>The surface temperatures of electrical and non-electrical installations and equipment as well as the outer parts of engines and their inlets and exhaust ducts shall not exceed 200°C</u></p> <p><u>This provision does not apply if the following requirements are fulfilled:</u></p> <ul style="list-style-type: none"> <li>- <u>installations and equipment which generate surface temperatures higher than 200 °C shall have the possibility to be switched off. Such installations and equipment shall be marked in red.</u></li> </ul>	Basic safety concept

Paragraphs	Modification	Reason / Explanation
	<p><u>or</u></p> <ul style="list-style-type: none"> <li>- <u>accommodation, wheelhouse and service spaces where surface temperatures higher than 200 °C occur are equipped with a ventilation system according to 9.1.0.12.3</u></li> </ul> <p><u>Within the protected area 9.1.0.53.1 applies.</u></p>	
<b>9.1.0.52</b>	<b><i>Type and location of electrical <u>installations and equipment</u></i></b>	
<b>9.1.0.52.1</b>	<p><del>It shall be possible to isolate the electrical equipment in the protected area by means of centrally located switches except where:</del></p> <ul style="list-style-type: none"> <li><input type="checkbox"/> <del>in the holds it is of a certified safe type corresponding at least to temperature class T4 and explosion group II B; and</del></li> <li><input type="checkbox"/> <del>in the protected area on the deck it is of the limited explosion risk type.</del></li> </ul> <p><del>The corresponding electrical circuits shall have control lamps to indicate whether or not the circuits are live.</del></p> <p><del>The switches shall be protected against unintended unauthorized operation. The sockets used in this area shall be so designed as to prevent connections being made except when they are not live. Submerged pumps installed or used in the holds shall be of the certified safe type at least for temperature class T4 and explosion group II B.</del></p> <p><u>Electrical installations and equipment outside the protected area shall be at least of the "limited explosion risk" type.</u></p> <p><u>This provision does not apply to:</u></p> <ul style="list-style-type: none"> <li><u>(i) lighting installations in the accommodation and in the wheelhouse, except for switches near entrances to accommodation;</u></li> <li><u>(ii) mobile phones as well as fixed telephone installations and loading instruments in the accommodation or the wheelhouse</u></li> <li><u>(iii) electrical installations which during loading and unloading or during a stay near to or within a shore-side assigned zone are</u> <ul style="list-style-type: none"> <li>- <u>switched off or</u></li> <li>- <u>installed in spaces which are equipped with a ventilation system according to 9.1.0.12.3</u></li> </ul> </li> <li><u>(iv) radiotelephone installations and inland AIS (automatic identification systems) stations in the accommodation and in the wheelhouse if no part of an aerial for radiotelephone installations or AIS stations (Automatic Identification System) is situated above or within 2 m from the cargo area.</u></li> </ul>	<p>Basic safety concept</p> <p>9.1.0.52.1 of ADN 2015 now in 9.1.0.52.2, 9.1.0.52.3 and 9.1.0.53</p>
<b>9.1.0.52.2</b>	<p><del>Electric motors for hold ventilators which are arranged in the air flow shall be of the certified safe type.</del></p> <p><u>Electrical installations and equipment not complying with the requirements according to 9.1.0.52.1 as well as its switches shall be marked in red. The shut-off of such fixed installations and equipment shall be operated from a centralized location on board.</u></p>	<p>Basic safety concept</p> <p>9.1.0.52.2 of ADN 2015 now in 9.1.0.12.5</p>

<i>Paragraphs</i>	<i>Modification</i>	<i>Reason / Explanation</i>
<b><u>9.1.0.52.5</u> new</b>	<u>The breakdown of the power supply for the safety and control equipment shall be immediately indicated by visual and audible signals in the wheelhouse and on deck. The alarm has to be lead to the accommodation automatically if not cleared.</u>	Similar to tank vessel
<b><u>9.1.0.52.6</u> new</b>	<u>Switches, sockets and electrical cables on deck shall be protected against mechanical damage.</u>	In ADN 2015 9.1.0.56.1
<b><u>9.1.0.52.7</u> new</b>	<u>Sockets for the connection of signal lights and gangway lighting shall be solidly fitted to the vessel close to the signal mast or the gangway. Sockets intended to supply the submerged pumps, hold ventilators and containers shall be permanently fitted to the vessel in the vicinity of the hatches.</u>	In ADN 2015 9.1.0.52.3
<b><u>9.1.0.53</u> new</b>	<b><u>Type and location of the electrical and non-electrical equipment to be used within the protected area</u></b>	New zone concept
<b><u>9.1.0.53.1</u> new</b>	<u>It shall be possible to isolate the electrical installations and equipment in the protected area by means of centrally located switches except where:</u> <u>- in the holds it is-at least valid to be used in zone 1 to temperature class T4 and explosion group II B; and</u> <u>- in the protected area on the deck it is of the limited explosion risk type.</u> <u>The corresponding electrical circuits shall have control lamps to indicate whether or not the circuits are live.</u> <u>The switches shall be protected against unintended unauthorized operation. Submerged pumps installed or used in the holds shall be at least valid to be used in zone 1 temperature class T4 and explosion group II B.</u>	9.1.0.52.1 of ADN 2015  Clarification
<b><u>9.1.0.53.2</u> new</b>	<u>The sockets used in the protected area shall be so designed as to prevent plug connections and disconnections except when they are not live</u>	In ADN 2015 9.1.0.52.1  editorial
<b><u>9.1.0.53.3</u> new</b>	<u>Electrical cables within the protected area have to be reinforced or protected by a metallic shield or mounted using cable conduit, except optical fibers</u>	Comparable to tank vessels
<b><u>9.1.0.53.4</u> new</b>	<u>Movable electrical cables are prohibited in the protected area, except for intrinsically safe electric circuits or for the supply of signal lights and gangway lighting, for containers, for submerged pumps, hold ventilators and for electrically operated cover gantries.</u>	In ADN 2015 9.1.0.56.2
<b><u>9.1.0.53.5</u> new</b>	<u>For movable electrical cables permitted in accordance with 9.1.0.53.4 above, only rubber-sheathed electrical cables of type H07 RN-F in accordance with standard IEC-60 245-4:2011 or cables of at least equivalent design having conductors with a cross-section of not less than 1.5 mm<sup>2</sup>, shall be used. These cables shall be as short as possible and installed so that damage is not likely to occur.</u>	In ADN 2015 9.1.0.56.3  Similar to tank vessel
<b><u>9.1.0.53.6</u> new</b>	<u>The non-electrical installations and equipment to be used within the protected area during loading, unloading, or a stay near to or within a shore-side assigned zone have to fulfil at least the requirements to be used within the</u>	Comparable to tank vessels

<i>Paragraphs</i>	<i>Modification</i>	<i>Reason / Explanation</i>
	respective zone. It has to correspond at least to temperature class T4 and explosion group II B.	editorial
<b>9.1.0.5354</b> – <b>9.1.0.5569</b>	(Reserved)	
<b>9.1.0.56</b>	<i>Electric cables</i>	Now in 9.1.0.51 and 9.1.0.52
<b>9.1.0.56.1</b>	Cables and sockets in the protected area shall be protected against mechanical damage.	
<b>9.1.0.56.2</b>	Movable cables are prohibited in the protected area, except for intrinsically safe electric circuits or for the supply of signal lights and gangway lighting, for containers, for submerged pumps, hold ventilators and for electrically operated cover gantries.	
<b>9.1.0.56.3</b>	For movable cables permitted in accordance with 9.1.0.56.2 above, only rubber sheathed cables of type H07 RN-F in accordance with standard IEC 60 245 4:1994 or cables of at least equivalent design having conductors with a cross section of not less than 1.5 mm <sup>2</sup> , shall be used. These cables shall be as short as possible and installed so that damage is not likely to occur.	
<b>9.1.0.57-</b> <b>9.1.0.69</b>	<i>(Reserved)</i>	

### 9.3. x Tank vessels

<i>Paragraphs</i>	<i>Modification</i>	<i>Reason / Explanation</i>
<b>9.3.1.8</b> <b>9.3.2.8</b> <b>9.3.3.8</b>	<b>Classification</b>	
<b>9.3.1.8.2</b> <b>9.3.2.8.2</b> <b>9.3.3.8.2</b>	<p>The cargo pump-rooms shall be inspected by a recognised classification society whenever the certificate of approval has to be renewed as well as during the third year of validity of the certificate of approval. The inspection shall comprise at least:</p> <ul style="list-style-type: none"> <li>– an inspection of the whole system for its condition, for corrosion, leakage or conversion works which have not been approved;</li> <li>— a checking of the condition proper functioning of the gas detection system in the cargo pump rooms, if installed.</li> </ul> <p>Inspection certificates signed by the recognised classification society with respect to the inspection of the cargo pump-rooms shall be kept on board. The inspection certificates shall at least include particulars of the above inspection and the results obtained as well as the date of the inspection.</p>	Clarification also in 9.3.x.8.3

Paragraphs	Modification	Reason / Explanation
<p><b>9.3.1.8.3</b> <b>9.3.2.8.3</b> <b>9.3.3.8.3</b></p>	<p>The <del>condition</del> <u>proper functioning</u> of the gas detection system referred to in <del>9.3.2.52.3</del> <u>9.3.x.12.4 and 9.3.x.17.6</u> as well as the oxygen measuring system according to 9.3.x.17.6 shall be checked by a recognised classification society or by persons authorized for this purpose by the competent authority whenever the certificate of approval has to be renewed and during the third year of validity of the certificate of approval. A certificate signed by the <del>recognised classification society</del> shall be <u>available</u> kept on board.</p>	<p>Clarification Reference adjusted</p>
<p><b>9.3.1.8.4 new</b> <b>9.3.2.8.4 new</b> <b>9.3.2.8.4 new</b></p>	<p>The compliance of the documents referred to in 8.1.2.3 r) to v) with the reality on board shall be checked by a recognised classification society, an inspection body or by a person authorized by the competent authority whenever the certificate of approval has to be renewed and during the third year of validity of the certificate of approval. A certificate signed by the recognised classification society shall be available on board.</p>	<p>New zone concept</p>
<p><b>9.3.1.10</b> <b>9.3.2.10</b> <b>9.3.3.10</b></p>	<p><i>Protection against the penetration of <u>dangerous gases and the spreading of dangerous liquids</u></i></p>	<p>Clarification</p>
<p><b>9.3.1.10.1</b> <b>9.3.2.10.1</b> <b>9.3.3.10.1</b></p>	<p>The vessel shall be designed so as to prevent <u>dangerous gases and liquids</u> from penetrating into the accommodation, <u>wheelhouse</u> and the service spaces. None of the windows of this rooms is capable of being opened except its intended use is as an emergency exit and it is marked as such.</p>	<p>Clarification 2. sentence in ADN 2015 9.3.1.52.3</p>
<p><b>9.3.1.10.2</b> <b>9.3.2.10.2</b> <b>9.3.3.10.2</b></p>	<p>Outside the cargo area, the lower edges of door openings in the sidewalls of superstructures and the coamings of access hatches to under deck spaces shall have a height of not less than 0.50 m above the deck This requirement need not be complied with if the wall of the superstructures facing the cargo area extends from one side of the ship to the other and has doors the sills of which have a height of not less than 0.50 m. The height of this wall shall not be less than 2.00 m. In this case, the lower edges of door openings in the sidewalls of superstructures and the coamings of access hatches behind this wall shall have a height of not less than 0.10 m. The sills of engine room doors and the coamings of its access hatches shall, however, always have a height of not less than 0.50 m.</p> <p><u>Liquid tight protective coamings have to be mounted on deck at the height of the outer cargo tank bulkhead but maximum at a distance of 0,6 m inside the outer cofferdam bulkhead or hold end bulkheads. The protective coaming has either to extend from one side of the vessel to the other or to be fixed between the longitudinal spill coamings to prevent entering of liquids to the forepeak and afterpeak. The height of the protective coamings and the spill coamings has to be at least 0,075 m. The protective coaming may coincide with the protection according to 9.3.x.10.3 wall if the protection wall extends over the whole width of the vessel.</u></p>	<p>Now partly in 9.3.x.10.4  New zone concept</p>
<p><b>9.3.1.10.3</b></p>	<p>In the cargo area, the lower edges of door openings in the sidewalls of superstructures shall have a height of not less than 0.50 m above the deck and the sills of hatches and ventilation openings of premises located under the deck shall have a height of not less than 0.50 m above the deck. This requirement does not apply to access openings to double hull and double bottom spaces</p> <p><u>When the vessel substance list according to 1.16.1.2.5 will contain substances for which explosion protection is required in column (17) of Table C of 3.2.3.2, areas on deck outside the cargo area where non explosion protected equipment is used during loading and unloading, have to be protected by a gas and liquid tight protection wall to</u></p>	<p>New zone concept  ADN wording 9.3.1.10.3</p>

Paragraphs	Modification	Reason / Explanation
	<p><u>avoid gases and liquid to enter. It has either to extend from one side of the vessel to the other or surround the areas to protect in an U-shaped form. The wall has to cover the whole width of the area to protect and at least 1,0 m in the direction opposite to the cargo area (see drawing zoning). The height has to be of at least 1,0 m above the adjacent deck containing the cargo tanks within the cargo area The wall of the accommodation facing the cargo area and the side walls may be deemed as protection wall, if this walls do not contain openings and the dimensions of the protection wall are met. The protection wall is not necessary in case the distance between the areas to protect and the nearest safety valve, manifold, compressor on deck and the nearest opening of pressure cargo tanks is at least 12 m</u></p>	<p>Now in 9.3.1.10.4</p>
<p><b>9.3.2.10.3</b> <b>9.3.3.10.3</b></p>	<p><del>In the cargo area, the lower edges of door openings in the sidewalls of superstructures shall have a height of not less than 0.50 m above the deck and the sills of hatches and ventilation openings of premises located under the deck shall have a height of not less than 0.50 m above the deck. This requirement does not apply to access openings to double hull and double bottom spaces.</del></p> <p><u>When the vessel substance list according to 1.16.1.2.5 will contain substances for which explosion protection is required in column (17) of Table C of 3.2.3.2, areas on deck outside the cargo area where non explosion protected equipment is used during loading and unloading, have to be protected by a gas and liquid tight protection wall to avoid gases and liquid to enter. It has either to extend from one side of the vessel to the other or surround the areas to protect in an U-shaped form. The wall has to cover the whole width of the area to protect and at least 1,0 m in the direction opposite to the cargo area(see drawing zoning). The height has to be of at least 1,0 m above the deck of the cargo area The wall of the accommodation facing the cargo area and the side walls may be deemed as protection wall, if this walls do not contain openings and the dimensions of the protection wall are met. The protection wall is not necessary in case the distance between the areas to protect and the nearest high-velocity vent valve, the manifold, the cargo pump on deck and the nearest opening of pressure cargo tanks is at least 12 m</u></p>	<p>New zone concept ADN wording 9.3.2.10.3 9.3.3.10.3 now in 9.3.2.10.4 9.3.3.10.4</p>
<p><b>9.3.1.10.4</b> <b>9.3.2.10.4</b> <b>9.3.3.10.4</b></p>	<p><del>The bulwarks, foot rails, etc. shall be provided with sufficiently large openings which are located directly above the deck.</del></p> <p><u>On deck the lower edges of door-openings in the sidewalls of superstructures and the coamings of access hatches and ventilation openings to under-deck spaces shall have a height of not less than 0.50 m above the deck.</u></p> <p><u>This requirement does not apply to access openings to double-hull and double bottom spaces</u></p>	<p>Clarification 9.3.x.10.2 and 9.3.x.10.3 of ADN 2015</p>
<p><b>9.3.1.10.5 new</b> <b>9.3.2.10.5 new</b> <b>9.3.3.10.5 new</b></p>	<p><u>The bulwarks, foot-rails, etc. shall be provided with sufficiently large openings which are located directly above the deck.</u></p>	<p>In ADN 2015 9.3.x.10.4</p>
<p><b>9.3.1.11</b> <b>9.3.2.11</b> <b>9.3.3.11</b></p>	<p><i>Hold spaces and cargo tanks</i></p>	
<p><b>9.3.2.11.2</b></p>	<p>(a) In the cargo area (except cofferdams) the vessel shall be designed as a flush-deck double-hull vessel, with double-hull spaces and double bottoms, but without a trunk.</p>	

Paragraphs	Modification	Reason / Explanation
	<p>Cargo tanks independent of the vessel's hull and refrigerated cargo tanks may only be installed in a hold space which is bounded by double-hull spaces and double bottoms in accordance with 9.3.2.11.7 below. The cargo tanks shall not extend beyond the deck.</p> <p><del>Refrigerated cargo tank fastenings shall meet the requirements of a recognised classification society.</del></p> <p>(b) The cargo tanks independent of the vessel's hull shall be fixed so that they cannot float. <u>Refrigerated cargo tank fastenings shall meet the requirements of a recognised classification society.</u></p> <p>(c) The capacity of a suction well shall be limited to not more than 0.10 m<sup>3</sup>.</p> <p>(d) Side-struts linking or supporting the load-bearing components of the sides of the vessel with the load-bearing components of the longitudinal walls of cargo tanks and side-struts linking the load-bearing components of the vessel's bottom with the tank bottom are prohibited.</p> <p>(e) A local recess in the cargo deck, contained on all sides, with a depth greater than 0.1 m <u>but not deeper than 1.00 m</u>, designed to house the loading and unloading pump, is permitted if it fulfils the following conditions:</p> <ul style="list-style-type: none"> <li>- The recess shall not be greater than 1 m in depth.</li> <li>- The recess shall be located not less than <u>6.00</u> m from entrances and openings to accommodation and service spaces outside the cargo area.</li> <li>- The recess shall be located at a minimum distance from the side plating equal to one quarter of the vessel's breadth.</li> <li>- All pipes linking the recess to the cargo tanks shall be fitted with shut-off devices fitted directly on the bulkhead.</li> <li>- All the controls required for the equipment located in the recess shall be activated from the deck.</li> <li>- <del>If the recess is deeper than 0.5 m, it shall be provided with a permanent gas detection system which automatically indicates the presence of explosive gases by means of direct measuring sensors and actuates a visual and audible alarm when the gas concentration has reached 20% of the lower explosion limit. The sensors of this system shall be placed at suitable positions at the bottom of the recess. Measurement shall be continuous.</del></li> <li>- <del>Visual and audible alarms shall be installed in the wheelhouse and on deck and, when the alarm is actuated, the vessel loading and unloading system shall be shut down.</del></li> <li>- <del>Failure of the gas detection system shall be immediately signaled in the wheelhouse and on deck by means of visual and audible alarms.</del></li> <li>- It shall be possible to drain the recess using a system installed on deck in the cargo area and independent of any other system.</li> <li>- The recess shall be provided with a level alarm device which activates the draining system and triggers a visual and audible alarm in the wheelhouse and on deck when liquid accumulates at the bottom.</li> </ul>	<p>Clarification</p> <p>Now in (f)</p>



Paragraphs	Modification	Reason / Explanation
	<ul style="list-style-type: none"> <li>- When the recess is located above the cofferdam, the engine room bulkhead shall have an 'A-60' fire protection insulation according to SOLAS 74, Chapter II-2, Regulation 3.</li> <li>- When the cargo area is fitted with a water-spray system, electrical equipment located in the recess shall be protected against infiltration of water.</li> <li>- Pipes connecting the recess to the hull shall not pass through the cargo tanks.</li> </ul> <p>(f) <u>When the vessel substance list according to 1.16.1.2.5 will contain substances for which explosion protection is required in column (17) of Table C of 3.2.3.2 and the recess is deeper than 0.5 m, it shall be provided with a permanent gas detection system which automatically indicates the presence of explosive gases by means of direct-measuring sensors and actuates a visual and audible alarm when the gas concentration has reached 20% of the LEL of the cargo or 20% of the LEL of n-Hexane whatever gives the more critical value. The sensors of this system shall be placed at suitable positions at the bottom of the recess. Measurement shall be continuous.</u></p> <p><u>Visual and audible alarms shall be installed in the wheelhouse and on deck and, when the alarm is actuated, the vessel loading and unloading system shall be shut down.</u></p> <p><u>Breakdown of the gas detection system shall be immediately signaled in the wheelhouse and on deck by means of visual and audible alarms.</u></p>	<p>Clarification</p> <p>ADN wording</p> <p>Aligning language versions</p>
<p><b>9.3.1.12</b> <b>9.3.2.12</b> <b>9.3.3.12</b></p>	<p><b><i>Ventilation</i></b></p>	
<p><b>9.3.1.12.3</b> <b>9.3.2.12.3</b></p>	<p>(a) Any service spaces located in the cargo area below deck shall be provided with a system of forced ventilation with sufficient power for ensuring at least 20 changes of air per hour based on the volume of the space. The ventilation exhaust ducts shall be located up to 50 mm above the bottom of the service space.</p> <p>(b) <u>When the vessel substance list according to 1.16.1.2.5 will contain substances for which explosion protection is required in column (17) of Table C in 3.2.3.2 the fresh air inlets shall be located in the upper part; they shall be not less than 2.00 m above the deck, not less than 2.00 m from the openings of the cargo tanks and not less than 6.00 m from the outlets of safety valves.</u> The extension pipes which may be necessary may be of the hinged type.</p>	<p>Clarification</p> <p>ADN wording</p>
<p><b>9.3.3.12.3</b></p>	<p>(a) Any service spaces located in the cargo area below deck shall be provided with a system of forced ventilation with sufficient power for ensuring at least 20 changes of air per hour based on the volume of the space. The ventilation exhaust ducts shall be located up to 50 mm above the bottom of the service space.</p> <p>(b) <u>When the vessel substance list according to 1.16.1.2.5 will contain substances for which explosion protection is required in column (17) of Table C of 3.2.3.2 the fresh air inlets shall be located in the upper part; they shall be not less than 2.00 m above the deck, not less than 2.00 m from the openings of the cargo tanks and not less than 6.00 m from the outlets of safety valves.</u></p>	<p>Clarification</p> <p>ADN wording</p>

Paragraphs	Modification	Reason / Explanation
	<p>The extension pipes which may be necessary may be of the hinged type.</p> <p>(c) On board open type N vessels other suitable installations without ventilator fans shall be sufficient.</p>	
<p><b>9.3.1.12.4</b> <b>9.3.2.12.4</b></p>	<p>Ventilation of accommodation, wheelhouse and service spaces shall be possible</p> <p><u>When in this spaces during loading and unloading as well as during a stay near to or within a shore-side assigned zone surface temperatures higher than referred to in 9.3.x.51 a) or 9.3.x.51 b) occur or installations and equipment not fulfilling the requirements referred to 9.3.x.52.1</u></p> <p>1) <u>It shall be possible to switch off such installations and equipment:., except</u></p> <p>2) <u>This rooms are equipped with</u></p> <p style="padding-left: 20px;"><u>(a) a ventilation system equipped with alerting in case of a breakdown which is able to ensure an overpressure of 0.1 kPa (0.001 bar). The air intakes of the ventilation system shall be located as far away as possible, however, not less than 6.00 m from the cargo area and not less than 2.00 m above the deck;</u></p> <p style="padding-left: 20px;"><u>(b) a gas detection system equipped with alerting in case of a breakdown with sensors:</u></p> <ul style="list-style-type: none"> <li>- <u>at the suction inlets of the ventilation system;</u></li> <li>- <u>directly at the top edge of the sill of the entrance doors ;</u></li> </ul> <p style="padding-left: 20px;"><u>This gas detection system has to fulfil the following requirements:</u></p> <ul style="list-style-type: none"> <li>- <u>The t90-time shall to be lower or equal to 4 s</u></li> <li>- <u>The measurements shall be continuous.</u></li> <li>- <u>It shall be at least meet the requirements to be used in zone 1 explosion group IIC/temperature class T6</u></li> </ul> <p>(c) <u>an emergency lighting in the service spaces</u></p> <p style="padding-left: 20px;"><u>This is not necessary if the lighting in the service spaces is of the ‘limited explosion risk’ type.</u></p> <p>(d) <u>The ventilation system shall be shut down when a concentration of 20% of the LEL of n-Hexane is reached. In such a case and in case of a breakdown of the ventilation system or of the gas detection systems installations and equipment not fulfilling the requirements of 9.3.x.51 and 9.3.x.52.1 shall be shut-off.</u></p> <p style="padding-left: 20px;"><u>These operations shall be performed immediately and automatically and activate the emergency lighting if necessary.</u></p> <p>(e) <u>The ventilation system, the emergency lighting and the alerting in case of a breakdown shall be of the ‘limited explosion risk’ type . This shut-off shall be indicated in the accommodation and wheelhouse by visual and audible signals.</u></p> <p>(f) <u>The automatic switching-off device is set so that no automatic switch off may occur while the vessel is</u></p>	<p>Basic safety concept</p> <p>In ADN 2015 9.3.x.52.3</p>

Paragraphs	Modification	Reason / Explanation
	<p><u>under way.</u></p> <p><u>(g) The breakdown of the gas detection system or the ventilation system of the accommodation shall be indicated by visual and audible signals in the accommodation, wheelhouse and on deck.</u>  <u>The breakdown of the gas detection system or the ventilation system of the wheelhouse and service spaces shall be indicated by visual and audible signals in the wheelhouse and on deck. The alarm has to be lead to the accommodation automatically if not cleared.</u></p>	
<p><b>9.3.3.12.4</b></p>	<p>Ventilation of accommodation, <u>wheelhouse</u> and service spaces shall be possible</p> <p><u>When in this spaces during loading and unloading as well as during a stay near to or within a shore-side assigned zone surface temperatures higher than referred to in 9.3.3.51 a) or 9.3.3.51 b) occur or installations and equipment not fulfilling the requirements referred to 9.3.3.52.1</u></p> <p>1) <u>It shall be possible to switch off such installations and equipment:, except</u></p> <p>2) <u>This rooms are equipped with</u></p> <p><u>(a) a ventilation system equipped with alerting in case of a breakdown which is able to ensure an overpressure of 0.1 kPa (0.001 bar). The air intakes of the ventilation system shall be located as far away as possible, however, not less than 6.00 m from the cargo area and not less than 2.00 m above the deck;</u></p> <p><u>(b) a gas detection system equipped with alerting in case of a breakdown with sensors:</u></p> <ul style="list-style-type: none"> <li>- <u>at the suction inlets of the ventilation system;</u></li> <li>- <u>directly at the top edge of the sill of the entrance doors;</u></li> </ul> <p><u>This gas detection system has to fulfil the following requirements:</u></p> <ul style="list-style-type: none"> <li>- <u>The t90-time shall be lower or equal to 4 s</u></li> <li>- <u>The measurements shall be continuous.</u></li> <li>- <u>It shall be at least meet the requirements to be used in zone 1 explosion group IIC/temperature class T6</u></li> </ul> <p><u>(c) an emergency lighting in the service spaces</u></p> <p><u>This is not necessary if the lighting in the service spaces is of the ‘limited explosion risk’ type.</u></p> <p><u>(d) The ventilation system shall be shut down when a concentration of 20% of the LEL of n-Hexane is reached. In such a case and in case of a breakdown of the ventilation system or of the gas detection systems installations and equipment not fulfilling the requirements of 9.3.x.51 and 9.3.x.52.1 shall be shut-off.</u>  <u>These operations shall be performed immediately and automatically and activate the emergency lighting if necessary.</u></p>	<p>Basic safety concept</p> <p>In ADN 2015 9.3.x.52.3</p>

Paragraphs	Modification	Reason / Explanation
	<p><u>(e) The ventilation system, the emergency lighting and the alerting in case of a breakdown shall be of the 'limited explosion risk' type. This shut-off shall be indicated in the accommodation and wheelhouse by visual and audible signals.</u></p> <p><u>(f) The automatic switching-off device is set so that no automatic switch off may occur while the vessel is under way.</u></p> <p><u>(g) The breakdown of the gas detection system or the ventilation system of the accommodation shall be indicated by visual and audible signals in the accommodation, wheelhouse and on deck.</u></p> <p><u>(h) The breakdown of the gas detection system or the ventilation system of the wheelhouse and service spaces shall be indicated by visual and audible signals in the wheelhouse and on deck. The alarm has to be lead to the accommodation automatically if not cleared.</u></p> <p><u>These requirements do not apply to oil separator and supply vessels</u></p>	
<p><del>9.3.1.12.5</del> <del>9.3.2.12.5</del> <del>9.3.3.12.5</del></p>	<p><del>Ventilators used in the cargo area shall be designed so that no sparks may be emitted on contact of the impeller blades with the housing and no static electricity may be generated.</del></p> <p><del>(deleted)</del></p>	<p>Now covered by the request to use explosion protected equipment</p>
<p><del>9.3.1.12.6</del> <del>9.3.2.12.6</del></p>	<p><del>Notice boards shall be fitted at the ventilation inlets indicating the conditions under which they shall be closed. Any ventilation inlets of accommodation, wheelhouse and service spaces outside the cargo area leading outside shall be fitted with fire flaps fixed devices according to 9.3.x.40.2.2 c. which can be closed rapidly. It shall be clear whether they are open or closed.</del></p> <p><del>Such ventilation inlets shall be located not less than 2.00 m from the cargo area.</del></p> <p><del>Ventilation inlets of service spaces in the cargo area below deck may be located within such area.</del></p>	<p>Clarification</p>
<p><del>9.3.3.12.6</del></p>	<p><del>Notice boards shall be fitted at the ventilation inlets indicating the conditions under which they shall be closed. Any ventilation inlets of accommodation, wheelhouse and service spaces outside the cargo area leading outside shall be fitted with fire flaps fixed devices according to 9.3.3.40.2.2 c. which can be closed rapidly. It shall be clear whether they are open or closed.</del></p> <p><del>Such ventilation inlets shall be located not less than 2.00 m from the cargo area.</del></p> <p><del>Ventilation inlets of service spaces in the cargo area below deck may be located within such area.</del></p> <p><del>These requirements do not apply to oil separator and supply vessels</del></p>	
<p><del>9.3.2.12.7</del> <del>9.3.3.12.7</del></p>	<p><del>The flame arresters prescribed in 9.3.2.20.4, 9.3.2.22.4, 9.3.2.22.5 and 9.3.2.26.4 shall be of a type approved for this purpose by the competent authority</del></p> <p><del>(deleted)</del></p>	<p>Certification no longer necessary because now confirmatory</p>

Paragraphs	Modification	Reason / Explanation
		assessment required
<b>9.3.1.17</b> <b>9.3.2.17</b> <b>9.3.3.17</b>	<i>Accommodation and service spaces</i>	
<b>9.3.1.17.1</b> <b>9.3.2.17.1</b> <b>9.3.3.17.1</b>	Accommodation spaces and the wheelhouse shall be located outside the cargo area forward of the fore vertical <del>plane</del> or abaft the aft vertical <del>plane bounding the part of the cargo area below deck boundary plane of the cargo area</del> . Windows of the wheelhouse which are located not less than 1.00 m above the bottom of the wheelhouse may tilt forward	editorial
<b>9.3.1.17.6</b>	<p>A service space located within the cargo area below deck shall not be used as a cargo pump room for the vessel's own gas discharging system, e.g. compressors or the compressor/heat exchanger/pump combination, except where:</p> <ul style="list-style-type: none"> <li>– the pump-room is separated from the engine room or from service spaces outside the cargo area by a cofferdam or a bulkhead with an "A-60" fire protection insulation according to SOLAS 74, Chapter II-2, Regulation 3, or by a service space or a hold space;</li> <li>– the "A-60" bulkhead required above does not include penetrations referred to in 9.3.1.17.5 (a);</li> <li>– ventilation exhaust outlets are located not less than 6.00 m from entrances and openings of the accommodation, wheelhouse and service spaces;</li> <li>– the access hatches and ventilation inlets can be closed from the outside;</li> <li>– all piping for loading and unloading (at the suction side and delivery side) are led through the deck above the pump-room. The necessary operation of the control devices in the pump-room, starting of pumps or compressors and necessary control of the liquid flow rate shall be effected from the deck;</li> <li>– the system is fully integrated in the gas and liquid piping system;</li> <li>– <u>the cargo pump room is provided with a permanent oxygen measuring system which automatically indicates the amount of oxygen and which actuates a visual and audible alarm when the oxygen concentration has reached 19,5 % volume. The sensors of this system shall be placed at suitable positions at the bottom and at a height of 2,00 m. Measurement shall be continuous and displayed near to the entrance. The audible and visual alarms are installed in the wheelhouse and in the cargo pump-room and, when the alarm is actuated, the loading and unloading system is shut down.</u></li> </ul> <p><u>Failure of the oxygen measuring system shall be immediately signaled in the wheelhouse and on deck by means of audible and visual alarms. The alarm has to be lead to the accommodation automatically if not cleared</u></p> <ul style="list-style-type: none"> <li>– the ventilation system prescribed in 9.3.1.12.4 has a capacity of not less than 30 changes of air per hour based on the total volume of the service space.</li> </ul> <p><u>When the vessel substance list according to 1.16.1.2.5 will contain substances for which explosion protection is</u></p>	<p>Basic safety concept</p> <p>Clarification</p> <p>Aligning language versions</p> <p>ADN wording</p>

Paragraphs	Modification	Reason / Explanation
	<p><u>required in column (17) of Table C of 3.2.3.2, the cargo pump-room is provided in addition with a permanent gas detection system which automatically indicates the presence of <del>explosive</del> flammable gases or lack of oxygen by means of direct-measuring sensors and which actuates a visual and audible alarm when the gas concentration has reached 20% of the LEL <del>lower explosive limit of the cargo or 20% of the LEL of n-Hexane whatever gives the more critical value.</del> The sensors of this <u>gas detection</u> system shall be placed at suitable positions at the bottom and directly below the deck.</u></p> <p>Measurement shall be continuous <u>and displayed near to the entrance.</u></p> <p>The audible and visual alarms are installed in the wheelhouse and in the cargo pump-room and, when the alarm is actuated, the loading and unloading system is shut down.</p> <p>Failure of the gas detection system shall be immediately signaled in the wheelhouse and on deck by means of audible and visual alarms; <u>The alarm has to be lead to the accommodation automatically if not cleared.</u></p>	<p>ADN wording</p> <p>Clarification</p> <p>Aligning language versions</p>
<p><b>9.3.2.17.6</b> <b>9.3.3.17.6</b></p>	<p>A service space located within the cargo area below deck shall not be used as a cargo pump room for the loading and unloading system, except where:</p> <ul style="list-style-type: none"> <li>– the pump room is separated from the engine room or from service spaces outside the cargo area by a cofferdam or a bulkhead with an "A-60" fire protection insulation according to SOLAS 74, Chapter II-2, Regulation 3, or by a service space or a hold space;</li> <li>– the "A-60" bulkhead required above does not include penetrations referred to in 9.3.x.17.5 (a);</li> <li>– ventilation exhaust outlets are located not less than 6.00 m from entrances and openings of the accommodation, <u>wheelhouse</u> and service spaces outside the cargo area;</li> <li>– the access hatches and ventilation inlets can be closed from the outside;</li> <li>– all piping for loading and unloading as well as those of stripping systems are provided with shut-off devices at the pump suction side in the cargo pump-room immediately at the bulkhead. The necessary operation of the control devices in the pump-room, starting of pumps and necessary control of the liquid flow rate shall be effected from the deck;</li> <li>– the bilge of the cargo pump-room is equipped with a gauging device for measuring the filling level which activates a visual and audible alarm in the wheelhouse when liquid is accumulating in the cargo pump-room bilge;</li> <li>– <u>the cargo pump room is provided with a permanent oxygen detection system which automatically indicates the amount of oxygen by means of direct-measuring sensors and which actuates a visual and audible alarm when the oxygen concentration has reached 19,5 % volume. The sensors of this system shall be placed at suitable positions at the bottom and at a height of 2,00 m. Measurement shall be continuous and displayed near to the entrance.. The audible and visual alarms are installed in the wheelhouse and in the cargo pump-room and, when the alarm is actuated, the loading and unloading system is shut down.</u></li> </ul> <p><u>Failure of the oxygen detection system shall be immediately signaled in the wheelhouse and on deck by means of audible and visual alarms. The alarm has to be lead to the accommodation automatically if not cleared</u></p>	<p>Basic safety concept</p> <p>Clarification</p> <p>ADN wording</p>

Paragraphs	Modification	Reason / Explanation
	<p>– the ventilation system prescribed in 9.3.x.12.3 has a capacity of not less than 30 changes of air per hour based on the total volume of the service space.</p> <p><u>When the vessel substance list according to 1.16.1.2.5 will contain substances for which explosion protection is required in column (17) of Table C of 3.2.3.2, the cargo pump-room is provided in addition with a permanent gas-detection system which automatically indicates the presence of flammable gases or lack of oxygen by means of direct-measuring sensors and which actuates a visual and audible alarm when the gas concentration has reached 20% of the LEL lower explosive limit of the cargo or 20% of the LEL of n-Hexane whatever gives the more critical value. The sensors of this gas detection system shall be placed at suitable positions at the bottom and directly below the deck. Measurement shall be continuous.</u></p> <p>The audible and visual alarms are installed in the wheelhouse and in the cargo pump-room and, when the alarm is actuated, the loading and unloading system is shut down. Failure of the gas detection system shall be immediately signalled in the wheelhouse and on deck by means of audible and visual alarms the loading and unloading system is shut down. <u>The alarm has to be lead to the accommodation automatically if not cleared.</u></p>	<p>ADN wording Clarification  Aligning language versions</p>
9.3.3.17.8	9.3.3.17.5 (g), 9.3.3.17.6 and 9.3.3.17.7 <u>except the fixed oxygen measuring system</u> do not apply to open type N. 9.3.3.17.2, last sentence, 9.3.3.17.3, last sentence and 9.3.3.17.4 do not apply to oil separator and supply vessels.	Clarification
9.3.2.20.4 9.3.3.20.4	When the <del>list of substances on the vessel</del> <u>substance list</u> according to 1.16.1.2.5 contains substances for which protection against explosion is required in column (17) of Table C <del>of Chapter</del> <u>in 3.2.3.2</u> , the ventilation openings of cofferdams shall be fitted with a flame-arrester withstanding a deflagration. <u>The flame arresters shall be chosen based on the explosion groups / subgroup of the substances which will be in the vessel substance list (see column (16) of Table C in 3.2.3.2).</u>	Clarification ADN wording 2x
9.3.3.20.5	<del>9.3.3.20.4 above does not apply to open type N.</del> 9.3.3.20.4 above does not apply to oil separator and supply vessels.	superfluous
9.3.2.21 9.3.3.21	<b><i>Safety and control installations</i></b>	
9.3.2.21.1	<p>Cargo tanks shall be provided with the following equipment:</p> <ul style="list-style-type: none"> <li>(a) a mark inside the tank indicating the liquid level of 95%;</li> <li>(b) a level gauge;</li> <li>(c) a level alarm device which is activated at the latest when a degree of filling of 90% is reached;</li> <li>(d) a high level sensor for actuating the facility against overflowing at the latest when a degree of filling of 97.5% is reached;</li> <li>(e) an instrument for measuring the pressure of the vapour phase inside the cargo tank;</li> <li>(f) an instrument for measuring the temperature of the cargo, if in column (9) of Table C of 3.2.3.2 a heating</li> </ul>	

Paragraphs	Modification	Reason / Explanation
	<p>installation is required, or if a maximum temperature is indicated in column (20) of that list;</p> <p>(g) a <u>closable</u> connection for a closed-type or partly closed-type sampling device, and/or at least one sampling opening as required in column (13) of Table C <del>of Chapter</del> <u>in 3.2.3.2.</u></p> <p><u>When the vessel substance list according to 1.16.1.2.5 contains substances for which protection against explosion is required in column (17) of Table C in 3.2.3.2, the sampling opening shall be fitted with a flame-arrester withstanding a deflagration. The flame arresters shall be chosen based on the explosion groups / subgroup of the substances which will be in the vessel substance list (see column (16) of Table C in 3.2.3.2).</u></p>	<p>Clarification ADN wording 2x</p>
<p><b>9.3.3.21.1</b></p>	<p>Cargo tanks shall be provided with the following equipment:</p> <p>(a) a mark inside the tank indicating the liquid level of 97%;</p> <p>(b) a level gauge;</p> <p>(c) a level alarm device which is activated at the latest when a degree of filling of 90% is reached;</p> <p>(d) a high level sensor for actuating the facility against overflowing at the latest when a degree of filling of 97.5% is reached;</p> <p>(e) an instrument for measuring the pressure of the vapour phase inside the cargo tank;</p> <p>(f) an instrument for measuring the temperature of the cargo, if in column (9) of Table C of 3.2.3.2 a <del>heating installation</del> <u>possibility of heating the cargo or a heating system on board</u> is required, or if a maximum temperature is indicated in column (20) of that list;</p> <p>(g) a <u>closable</u> connection for a closed-type or partly closed-type sampling device, and/or at least one sampling opening as required in column (13) Table C <del>of Chapter</del> <u>in 3.2.3.2.</u></p> <p><u>When the vessel substance list according to 1.16.1.2.5 contains substances for which protection against explosion is required in column (17) of Table C in 3.2.3.2, the sampling opening shall be fitted with a flame-arrester withstanding a deflagration. The flame arresters shall be chosen based on the explosion groups / subgroup of the substances which will be in the vessel substance list (see column (16) of Table C in 3.2.3.2).</u></p>	<p>Clarification</p> <p>Clarification</p> <p>ADN wording 2x</p>
<p><b>9.3.2.21.7</b></p>	<p>When the pressure or temperature exceeds a set value, instruments for measuring the vacuum or overpressure of the gaseous phase in the cargo tank or the temperature of the cargo, shall activate a visual and audible alarm in the wheelhouse <u>and on deck. The alarm has to be lead to the accommodation automatically if not cleared. When the wheelhouse is unoccupied, the alarm shall also be perceptible in a location occupied by a crew member.</u></p> <p>When the pressure exceeds the set value during loading and unloading, the instrument for measuring the pressure shall, by means of the plug referred to in 9.3.2.21.5 above, initiate immediately an electrical contact which shall put into effect measures to interrupt the loading or unloading operation. If the vessel's own discharge pump is used, it shall be switched off automatically.</p> <p>The instrument for measuring the overpressure or vacuum shall activate the alarm at latest when</p> <p>(a) <u>the overpressure reaches 1.15 times the opening pressure of the pressure relief device / high velocity vent</u></p>	<p>Clarification</p>



Paragraphs	Modification	Reason / Explanation
	<p><u>valve</u>, or</p> <p>(b) <u>the lower limit of the construction vacuum pressure of the vacuum valve is reached</u> but not exceeding a <u>vacuum of 5 kPa (0.05 bar)</u>.</p> <p>The maximum allowable temperature is indicated in column (20) Table C of Chapter in 3.2.3.2. The sensors for the alarms mentioned in this paragraph may be connected to the alarm device of the sensor.</p> <p>When it is prescribed in column (20) Table C of Chapter in 3.2.3.2, the instrument for measuring the overpressure of the gaseous phase shall activate a visible and audible alarm in the wheelhouse <u>and on deck</u> when the overpressure exceeds 40 kPa (0.4 bar) during the voyage. <del>When the wheelhouse is unoccupied, the alarm shall also be perceptible in a location occupied by a crew member. The alarm has to be lead to the accommodation automatically if not cleared.</del></p>	<p>editorial</p> <p>Aligning language versions</p> <p>missing</p> <p>clarification</p>
<p><b>9.3.3.21.7</b></p>	<p>When the pressure or temperature exceeds a set value, instruments for measuring the vacuum or overpressure of the gaseous phase <u>in the cargo tank</u> in the cargo tank or the temperature of the cargo, shall activate a visual and audible alarm in the wheelhouse <u>and on deck</u>. <del>The alarm has to be lead to the accommodation automatically if not cleared. When the wheelhouse is unoccupied, the alarm shall also be perceptible in a location occupied by a crew member.</del></p> <p>When the pressure exceeds the set value during loading and unloading, the instrument for measuring the pressure shall, by means of the plug referred to in 9.3.3.21.5 above, initiate immediately an electrical contact which shall put into effect measures to interrupt the loading or unloading operation. If the vessel's own discharge pump is used, it shall be switched off automatically.</p> <p>The instrument for measuring the overpressure or vacuum shall activate the alarm at latest when</p> <p>(a) <u>the overpressure reaches 1.15 times the opening pressure of the pressure relief device / high velocity vent valve</u>, or</p> <p>(b) <u>the lower limit of the construction vacuum pressure of the vacuum valve</u> but not exceeding a <u>vacuum of 5 kPa (0.05 bar)</u>.</p> <p>The maximum allowable temperature is indicated in column (20) Table C of Chapter in 3.2.3.2. The sensors for the alarms mentioned in this paragraph may be connected to the alarm device of the sensor.</p> <p>When it is prescribed in column (20) Table C of Chapter in 3.2.3.2, the instrument for measuring the overpressure of the gaseous phase shall activate a visible and audible alarm in the wheelhouse <u>and on deck</u> when the overpressure exceeds 40 kPa (0.4 bar) during the voyage. <del>When the wheelhouse is unoccupied, the alarm shall also be perceptible in a location occupied by a crew member. The alarm has to be lead to the accommodation automatically if not cleared.</del> It shall be possible to read the gauges in direct proximity to the control for the water spray system.</p>	<p>missing</p> <p>clarification</p> <p>Aligning language versions</p> <p>editorial</p> <p>missing</p> <p>clarification</p>

Paragraphs	Modification	Reason / Explanation
9.3.2.22 9.3.2.22	<b>Cargo tank openings</b>	
9.3.2.22.4	<p>(a) Each cargo tank or group of cargo tanks connected to a common venting piping shall be fitted with: <del>safety devices for preventing unacceptable overpressures or vacuums. When anti explosion protection is required in column (17) of Table C of Chapter 3.2, the vacuum valve shall be fitted with a flame arrester capable of withstanding a deflagration and the pressure relief valve with a high velocity vent valve capable of withstanding steady burning.</del></p> <p><del>The gases shall be discharged upwards. The opening pressure of the high velocity vent valve and the opening pressure of the vacuum valve shall be indelibly indicated on the valves;</del></p> <ul style="list-style-type: none"> <li><del>– a connection for the safe return ashore of gases expelled during loading;</del></li> <li><del>– a device for the safe depressurization of the tanks. When the list of substances on the vessel according to 1.16.1.2.5 contains substances for which protection against explosion is required in column (17) of Table C of Chapter 3.2, this device shall include at least a flame arrester capable of withstanding steady burning and a stop valve which clearly indicates whether it is open or shut. which clearly indicates whether it is open or shut...</del></li> </ul> <p><u>– safety devices for preventing unacceptable overpressures or vacuums..</u></p> <p><u>The opening pressure of the pressure relief device and of the vacuum valve shall be indelibly indicated on the valves;</u></p> <p><u>The setting of the pressure relief device shall be such that during the transport operation they do not blow off until the maximum permissible working pressure of the cargo tanks is reached.</u></p> <p><u>The gases shall be discharged upwards</u></p> <p><u>The outlets of the pressure relief device shall be located not less than 1.00 m above the deck and at a distance of not less than 6.00 m from the accommodation, wheelhouse and from the service spaces outside the cargo area. Within a radius of 1.00 m round the outlet of the pressure relief device, there is no equipment allowed. Signs shall indicate the area as range of danger.</u></p> <p><del>b) The outlets of high velocity vent valves shall be located not less than 2.00 m above the deck and at a distance of not less than 6.00 m from the accommodation and from the service spaces outside the cargo area. This height may be reduced when within a radius of 1.00 m round the outlet of the high velocity vent valve, there is no equipment, no work is being carried out and signs indicate the area. The setting of the high velocity vent valves shall be such that during the transport operation they do not blow off until the maximum permissible working pressure of the cargo tanks is reached.</del></p> <p><u>(b) When the vessel substance list according to 1.16.1.2.5 will contain substances for which explosion protection is required in column (17) of Table C in 3.2.3.2,</u></p> <ul style="list-style-type: none"> <li><u>– the venting piping at the connection to the cargo tank has to be equipped with a flame arrester capable of</u></li> </ul>	<p>Clarification</p> <p>New zone concept</p> <p>editorial</p> <p>ADN wording 2x</p>

Paragraphs	Modification	Reason / Explanation
	<p><u>withstanding a detonation and</u></p> <p><u>– the vacuum valve as well as the device for the safe depressurization is deflagration safe. The deflagration safety can be assured by the use of a flame arrester capable of withstanding a deflagration.</u></p> <p><u>(c) When the vessel substance list according to 1.16.1.2.5 will contain substances for which explosion protection is required in column (17) of Table C in 3.2.3.2, or there is a T mentioned in column 3b the pressure relief device shall be a high velocity vent valve-.</u></p> <p><u>(d) If shut-off devices will be mounted between the venting piping and the cargo tank these devices have to mounted between the cargo tank and the flame arrester and each cargo tank has to be equipped with pressure relieve valves..</u></p> <p><u>(e) The autonomous protection system mentioned in b) and c) have to be chosen according to the explosion group / subgroup of the substances which will be listed in the vessel substance list (see column (16) of Table C in 3.2.3.2).</u></p> <p><u>The outlets of high-velocity vent valves shall be located not less than 2.00 m above the deck and at a distance of not less than 6.00 m from the accommodation, wheelhouse and from the service spaces outside the cargo area. This height may be reduced when within a radius of 1.00 m round the outlet of the high-velocity vent valve, there is no equipment. Signs shall indicate the area as range of danger.</u></p> <p><u>In case it is necessary that the pressure relief device / high-velocity vent valve, the vacuum valve, the flame arresters as well as the venting piping has to be heatable for carriage the mentioned safety devices shall be suited for the respective temperature.</u></p>	<p>More clear</p> <p>editorial</p> <p>Editorial</p> <p>ADN wording editorial</p>
<p><b>9.3.3.22.4</b></p>	<p>Each cargo tank or group of cargo tanks connected to a common venting piping shall be equipped as follows <del>fitted with safety devices for preventing unacceptable overpressures or vacuums.</del></p> <p><del>These safety devices shall be as follows:</del></p> <p><del>for the open N type:</del></p> <p>– with <del>safety</del> devices to prevent <u>unacceptable over pressure or vacuum</u>, designed to prevent any accumulation of water and its penetration into the cargo tanks;</p> <p><del>for the open N type with flame-arresters:</del></p> <p>– <del>equipment</del> devices to prevent <u>unacceptable over pressure or vacuum</u> fitted with flame-arresters capable of withstanding steady burning and designed to prevent any accumulation of water and its penetration into the cargo tank;</p> <p><u>The opening pressure of the safety devices shall be permanently marked on the valves.</u></p> <p><del>for the closed N type</del></p> <p>– <del>safety devices for preventing unacceptable overpressure or vacuum.</del> <u>Where antiexplosion protection is required in column (17) of Table C of Chapter 3.2, the vacuum valve shall be fitted with a flame arrester capable of</u></p>	<p>Aligning language versions</p> <p>double</p>

Paragraphs	Modification	Reason / Explanation
	<p><del>withstanding a deflagration and the pressure relief valve with a high velocity vent valve acting as a flame arrester capable of withstanding steady burning. Gases shall be discharged upwards. The opening pressure of the high-velocity vent valve and the opening pressure of the vacuum valve shall be permanently marked on the valves.</del></p> <p><del>—a connection for the safe return ashore of gases expelled during loading;</del></p> <p><del>(a) a device for the safe depressurization of the tanks. When the list of substances on the vessel according to 1.16.1.2.5 contains substances for which protection against explosion is required in column (17) of Table C of Chapter 3.2, this device shall include at least a fire resistant flame arrester and a stop valve which clearly indicates whether it is open or shut</del></p> <p><del>(b) The outlets of high-velocity vent valves shall be located not less than 2.00 m above the deck and at a distance of not less than 6.00 m from the accommodation and from the service spaces outside the cargo area. This height may be reduced when within a radius of 1.00 m round the outlet of the high-velocity vent valve, there is no equipment, no work is being carried out and signs indicate the area. The setting of the high-velocity vent valves shall be such that during the transport operation they do not blow off until the maximum permissible working pressure of the cargo tanks is reached.</del></p> <p>(a) <u>a connection for the safe return ashore of gases expelled during loading.</u></p> <p>(b) <u>a device for the safe depressurization of the tanks which clearly indicates whether it is open or shut.</u></p> <p>(c) <u>safety devices for preventing unacceptable overpressure or vacuum.</u> <u>The opening pressure of the pressure relief device and the opening pressure of the vacuum valve shall be permanently marked on the valves.</u></p> <p>(d) <u>If the vessel substance list according to 1.16.1.2.5 will contain substances for which explosion protection is required in column (17) of Table C in 3.2.3.2</u></p> <ul style="list-style-type: none"> <li>- <u>the venting piping at the connection to each cargo tank has to be equipped with a flame arrester capable of withstanding a detonation</u></li> <li>- <u>the vacuum valve as well as the device for the safe depressurization is deflagration safe. The deflagration safety can be assured by the use of a flame arrester,</u> <u>and</u></li> <li>- <u>the pressure relief device shall be a high velocity vent valve whereas the gases shall be discharged upwards. The setting of the pressure relief device shall be such that during the transport operation they do not blow off until the maximum permissible working pressure of the cargo tanks is reached.</u></li> </ul> <p><u>The autonomous protective systems shall be chosen according to the explosion group/subgroup of the substances which will be listed in the vessel substance list (see Table C, column (16) in 3.2.3.2)</u></p> <p><u>In case it is necessary that the high-velocity vent valve, the vacuum valve, the flame arresters as well as the venting piping has to be heatable for carriage the mentioned safety devices shall be suited for the respective temperature.</u></p> <p><u>The opening pressure of the pressure relief device, the vacuum valve and the high-velocity vent valve shall be indelibly indicated on the valves;</u></p>	<p>Similar to Type C vessels</p> <p>Aligning language versions</p> <p>superfluous</p> <p>ADN wording</p>

Paragraphs	Modification	Reason / Explanation
	<p><u>If shut-off devices will be mounted between the venting piping and the cargo tank this devices shall be mounted between the cargo tank and the flame arrestor and each cargo tank has to be equipped with its own pressure relieve valves.</u></p> <p>(e) <u>The outlets of high-velocity vent valves shall be located not less than 2.00 m above the deck and at a distance of not less than 6.00 m from openings of the accommodations, wheelhouse and the service spaces outside the cargo area. This height may be reduced to 1.00 m when within a radius of 1.00 m round the outlet there is no equipment. , no work is being carried out Signs shall indicate the area as range of danger.</u></p>	<p>superfluos</p> <p>Aligning language versions</p> <p>editorial</p>
<p><b>9.3.2.22.5</b> <b>9.3.3.22.5</b></p>	<p><b><u>Venting piping</u></b></p> <p>(a) <u>When two or more cargo tanks are connected by a joint venting piping, it is sufficient that the equipment according to 9.3.x.22.4 (devices for preventing unacceptable overpressure or vacuum, high velocity vent valve, deflagration safe vacuum valve, deflagration safe device for the safe depressurization of the tanks) is installed on the joint venting piping ( see also 7.2.4.16.7)</u></p> <p>(b) <u>When each cargo tank is connected to an own venting piping, each cargo tank or the associated venting piping has to be equipped according to 9.3.x.22.4</u></p> <p><del>(a) Insofar as anti explosion protection is prescribed in column (17) of Table C of Chapter 3.2, venting piping connecting two or more cargo tanks shall be fitted, at the connection to each cargo tank, with a flame arrester with a fixed or spring loaded plate stack, capable of withstanding detonation. This equipment may consist of:</del></p> <p><del>(i) a flame arrester fitted with a fixed plate stack, where each cargo tank is fitted with a vacuum valve capable of withstanding a deflagration and a high velocity vent valve capable of withstanding steady burning;</del></p> <p><del>(ii) a flame arrester fitted with a spring loaded plate stack, where each cargo tank is fitted with a vacuum valve capable of withstanding a deflagration;</del></p> <p><del>(iii) a flame arrester with a fixed or spring loaded plate stack;</del></p> <p><del>(iv) a flame arrester with a fixed plate stack, where the pressure measurement device is fitted with an alarm system in accordance with 9.3.3.21.7;</del></p> <p><del>(v) a flame arrester with a spring loaded plate stack, where the pressure measurement device is fitted with an alarm system in accordance with 9.3.3.21.7.</del></p> <p><del>Only substances which do not mix and which do not react dangerously with each other may be carried simultaneously in cargo tanks connected to a common venting piping;</del></p>	<p>Clarification</p> <p>9.3.2.22.5 d) in ADN 2015 now in 7.2.4.16.7</p> <p>More clear</p>

Paragraphs	Modification	Reason / Explanation
	<p><del>øF</del></p> <p><del>(b) Insofar as anti-explosion protection is prescribed in column (17) of Table C of Chapter 3.2, venting piping connecting two or more cargo tanks shall be fitted, at the connection to each cargo tank, with a pressure/vacuum valve incorporating a flame arrester capable of withstanding a detonation/deflagration so that any gas released is removed by the venting piping.</del></p> <p><del>Only substances which do not mix and which do not react dangerously with each other may be carried simultaneously in cargo tanks connected to a common venting piping;</del></p> <p><del>øF</del></p> <p><del>(c) Insofar as anti-explosion protection is prescribed in column (17) of Table C of Chapter 3.2, an independent venting piping for each cargo tank, fitted with a vacuum valve incorporating a flame arrester capable of withstanding a deflagration and a high-velocity vent valve incorporating a flame arrester capable of withstanding steady burning. Several different substances may be carried simultaneously;</del></p> <p><del>øF</del></p> <p><del>(d) Insofar as anti-explosion protection is prescribed in column (17) of Table C of Chapter 3.2, venting piping connecting two or more cargo tanks shall be fitted, at the connection to each cargo tank, with a shut-off device capable of withstanding adetonation, where each cargo tank is fitted with a vacuum valve capable of withstanding a deflagration and a high-velocity vent valve capable of withstanding steady burning.</del></p> <p><del>Only substances which do not mix and which do not react dangerously with each other may be carried simultaneously in cargo tanks connected to a common venting piping.</del></p>	
<p><b>9.3.1.25</b> <b>9.3.2.25</b> <b>9.3.3.25</b></p>	<p><b><i>Pumps and piping</i></b></p>	
<p><b>9.3.1.25.3</b> <b>9.3.2.25.3</b> <b>9.3.3.25.3</b></p>	<p>The distance referred to in 9.3.3.25.1 (c) and 9.3.3.25.2 (c) may be reduced to 3.00 m if a transverse bulkhead complying with 9.3.3.10.2 is situated at the end of the cargo area. The openings shall be provided with doors.</p> <p>The following notice shall be displayed on the doors:</p> <p><del>Do not open during loading and unloading without the permission of the master.</del></p> <p><del>Close immediately.</del></p> <p><i>(Deleted)</i></p>	<p>New zone concept</p>
<p><b>9.3.2.25.9</b> <b>9.3.3.25.9</b></p>	<p>The permissible loading and unloading flows shall be calculated.</p> <p>Calculations concern the permissible maximum loading and unloading flow for each cargo tank or each group of</p>	<p>Clarification</p>

Paragraphs	Modification	Reason / Explanation
	<p>cargo tanks, taking into account the design of the ventilation system.</p> <p>These calculations shall take into consideration the fact that in the event of an unforeseen cut-off of the vapour return piping of the shore facility, the safety devices of the cargo tanks will prevent pressure in the cargo tanks from exceeding the following values:</p> <p>over-pressure: <del>115%</del> of <u>1,15 times</u> the opening pressure of the <u>pressure relief device/</u> high-velocity vent valve;</p> <p>vacuum pressure: not more than the construction <del>vacuum</del> pressure but not exceeding <u>a vacuum of 5 kPa (0.05 bar)</u>.</p> <p>The main factors to be considered are the following:</p> <ol style="list-style-type: none"> <li>1. Dimensions of the ventilation system of the cargo tanks;</li> <li>2. Gas formation during loading: multiply the largest loading flow by a factor of not less than 1.25;</li> <li>3. Density of the vapour mixture of the cargo based on 50% volume vapour of 50% volume air;</li> <li>4. Loss of pressure through ventilation pipes, valves and fittings. Account will be taken of a 30% clogging of the mesh of the flame-arrester;</li> <li>5. Chocking pressure of the safety valves.</li> </ol> <p>The permissible maximum loading and unloading pressure for each cargo tank or for each group of cargo tanks shall be given in an on-board instruction.</p>	
<p><b>9.3.2.26</b> <b>9.3.3.26</b></p>	<p><b><i>Tanks and receptacles for residual products <del>and receptacles for slops</del></i></b></p>	
<p><b>9.3.2.26.1</b> <b>9.3.3.26.1</b></p>	<p>If vessels are provided with a tank <u>or a receptacle</u> for residual products it shall comply with the provisions of <u>9.3.x.26.2</u> and 9.3.x.26.3. Receptacles for residual products and receptacles for slops shall be located only in the cargo area <u>on deck and not less than a quarter of the vessel's breadth from the outer shell</u>. <del>During the filling of the receptacles for residual products, means for collecting any leakage shall be placed under the filling connections.</del></p>	<p>Clarification 9.3.2.26.4 9.3.3.26.4 of ADN 2015</p>
<p><b>9.3.2.26.2</b></p>	<p><del>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.</del></p> <p><u>Tanks for residual product shall be equipped with</u></p> <ul style="list-style-type: none"> <li>– <u>a level indicator</u></li> <li>– <u>connections with shut-off devices, for pipes and hose assemblies</u></li> <li>– <u>pressure relief device and vacuum relief valves.</u></li> </ul> <p><u>The setting of the pressure relief device shall be such that during the transport operation they do not blow off.</u> <u>This condition is met when the opening pressure of the valve meets the conditions set out in column (10) of</u></p>	<p>9.3.2.26.4 of ADN 2015</p> <p>9.3.2.26.2 in ADN 2015 now in definitions</p> <p>Clarification</p>

Paragraphs	Modification	Reason / Explanation
	<p><u>Table C in 3.2.3.2.</u></p> <p><u>When the vessel substance list according to 1.16.1.2.5 will contain substances for which explosion protection is required in column (17) of Table C in 3.2.3.2, the vacuum valve has to be deflagration safe. The deflagration safety may also be ensured by a flame arrester</u></p> <p><u>When the vessel substance list according to 1.16.1.2.5 will contain substances for which explosion protection is required in column (17) of Table C in 3.2.3.2, or there is a T mentioned in column 3b the pressure relief device shall be a high velocity vent valve-</u></p> <p><u>The high velocity vent valve shall be so regulated as not to open during carriage. This condition is met when the opening pressure of the valve meets the conditions set out in column (10) of Table C in 3.2.3.2;</u></p> <p><u>The high velocity vent valve and the deflagration safe vacuum valve have to be chosen according to the explosion group/subgroup of the substances listed in the vessel substance list (see column (16) of Table C in 3.2.3.2.)</u></p> <p><u>The maximum capacity of a tank for residual products is 30 m<sup>3</sup>.</u></p>	<p>ADN wording 3x</p> <p>New zone concept</p>
9.3.3.26.2	<p><del>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.</del></p> <p><u>The tank for residual products shall be equipped with:</u></p> <p><u>in the case of an open system:</u></p> <ul style="list-style-type: none"> <li><u>– a device for ensuring pressure equilibrium;</u></li> <li><u>– an ullage opening;</u></li> <li><u>– connections, with stop valves, for pipes and hose assemblies</u></li> </ul> <p><u>in the case of a protected system:</u></p> <ul style="list-style-type: none"> <li><u>– an ullage opening;</u></li> <li><u>– connections, with stop valves, for pipes and hose assemblies;</u></li> <li><u>– a device for ensuring pressure equilibrium, fitted with a flame-arrester capable of withstanding steady burning;</u></li> </ul> <p><u>in the case of a closed system:</u></p> <ul style="list-style-type: none"> <li><u>(a) - a level indicator</u></li> <li><u>– connections with shut-off devices, for pipes and hose assemblies</u></li> </ul>	<p>9.3.2.26.4 of ADN 2015</p> <p>9.3.3.26.2 of ADN 2015 now in definitions</p> <p>Aligning language versions</p> <p>New zone concept</p>



Paragraphs	Modification	Reason / Explanation
	<p><del>- pressure-relief device and vacuum relief valves.</del></p> <p><u>The setting of the pressure relief device shall be such that during the transport operation it does not blow off. This condition is met when the opening pressure of the valve meets the conditions set out in column (10) of Table C in 3.2.3.2 for the substances to be transported.</u></p> <p><u>(b) When the vessel substance list according to 1.16.1.2.5 will contain substances for which explosion protection is required in column (17) of Table C of 3.2.3.2, the pressure relief device shall be a high velocity vent valve and the vacuum valve has to be deflagration safe. The deflagration safety may also be ensured by a flame arrester</u></p> <p><u>The high velocity vent valve and the deflagration safe vacuum valve shall be chosen according to the explosion group/subgroup of the substances listed in the vessel substance list (see column (16) of Table in 3.2.3.2 C.)</u></p> <p><u>The maximum capacity is 30 m<sup>3</sup></u></p>	<p>editorial</p> <p>Aligning language versions</p> <p>ADN wording 2x</p> <p>superfluos</p>
<p><b>9.3.2.26.3</b> <b>9.3.3.26.3</b></p>	<p><del>The maximum capacity of a tank for residual products is 30 m<sup>3</sup>.</del></p> <p><b>Receptacles for residual products</b> shall be equipped with</p> <ul style="list-style-type: none"> <li>- a possibility of indicating the degree of filling;</li> <li>- connections with shut-off devices, for pipes and hose assemblies</li> <li>- a connection enabling gases released during filling to be evacuated safely</li> </ul> <p><del>Receptacles for residual products shall be connected to the venting piping of cargo tanks only for the time necessary to fill them in accordance with 7.2.4.15.2.</del></p> <p><del>Receptacles for residual products and receptacles for slops placed on the deck shall be located at a minimum distance from the hull equal to one quarter of the vessel's breadth.</del></p>	<p>Now in 9.3.x.26.2</p> <p>In ADN 2015</p> <p>9.3.x.26.4</p> <p>moved to 7.2.4.16.2</p> <p>moved to 9.3.x.26.1</p>
<p><b>9.3.2.26.4</b> <b>9.3.3.26.4</b></p>	<p><del>The tank for residual products shall be equipped with:</del></p> <ul style="list-style-type: none"> <li><del>— in the case of an open system:</del></li> <li><del>— a device for ensuring pressure equilibrium;</del></li> <li><del>— an ullage opening;</del></li> <li><del>— connections, with stop valves, for pipes and hose assemblies;</del></li> <li><del>— in the case of a protected system:</del></li> <li><del>— a device for ensuring pressure equilibrium, fitted with a flame arrester capable of withstanding steady burning;</del></li> <li><del>— an ullage opening;</del></li> </ul>	<p>Now in</p> <p>9.3.2.26.1, 9.3.3.26.1, 9.3.2.26.2, 9.3.3.26.2, 9.3.2.26.3, 9.3.3.26.3</p>

Paragraphs	Modification	Reason / Explanation
	<p><del>—connections, with stop valves, for pipes and hose assemblies;</del></p> <p><del>—in the case of a closed system:</del></p> <p><del>—a vacuum valve and a high velocity vent valve.</del></p> <p>The high velocity vent valve shall be so regulated that it does not open during carriage. This condition is met when the opening pressure of the valve meets the conditions required in column (10) of Table C of Chapter 3.2 for the substance to be carried. When anti-explosion protection is required in column (17) of Table C of Chapter 3.2, the vacuum valve shall be capable of withstanding deflagrations and the high velocity vent valve steady burning;</p> <p><del>—a device for measuring the degree of filling;</del></p> <p><del>—connections, with stop valves, for pipes and hose assemblies.</del></p> <p>Receptacles for residual products shall be equipped with:</p> <p><del>—a connection enabling gases released during filling to be evacuated safely;</del></p> <p><del>—a possibility of indicating the degree of filling;</del></p> <p><del>—connections with shut-off devices, for pipes and hose assemblies.</del></p> <p>Receptacles for residual products shall be connected to the venting piping of cargo tanks only for the time necessary to fill them in accordance with 7.2.4.15.2.</p> <p>Receptacles for residual products and receptacles for slops placed on the deck shall be located at a minimum distance from the hull equal to one quarter of the vessel's breadth.</p> <p><i>(Deleted)</i></p>	
9.3.1.28	<p><b>Water-spray system</b></p> <p>When water-spraying is required in column (9) of Table C of Chapter 3.2 in 3.2.3.2 a water-spray system shall be installed in the cargo area on deck for the purpose of reducing gases given off by the cargo by spraying water.</p> <p>The system shall be fitted with a connection device for supply from the shore. The spray nozzles shall be so installed that released gases are precipitated safely. The system shall be capable of being put into operation from the wheelhouse and from the deck. The capacity of the water-spray system shall be such that when all the spray nozzles are in operation, the outflow is of 50 litres per square metre of cargo deck area and per hour.</p>	Clarification
9.3.2.28	<p><b>Water-spray system</b></p> <p>When water-spraying is required in column (9) of Table C of Chapter 3.2 in 3.2.3.2, a water-spray system shall be installed in the cargo area on deck to enable gas emissions from loading to be precipitated and to cool the tops of cargo tanks by spraying water over the whole surface to avoid safely the activation of the <u>pressure relief device</u> / high-velocity vent valve at 50 kPa (0.5 bar).</p>	Clarification

Paragraphs	Modification	Reason / Explanation
	<p>The spray nozzles shall be so installed that the entire cargo deck area is covered and the gases released are precipitated safely.</p> <p>The system shall be capable of being put into operation from the wheelhouse and from the deck. Its capacity shall be such that when all the spray nozzles are in operation, the outflow is not less than 50 litres per square metre of deck area and per hour.</p>	
<b>9.3.3.28</b>	<p><b><i>Water-spray system</i></b></p> <p>When water-spraying is required in column (9) of Table C of Chapter 3.2.3.2, a water-spray system shall be installed in the cargo area on deck for the purpose of cooling the tops of cargo tanks by spraying water over the whole surface so as to avoid safely the activation of the <u>pressure relief device / high-velocity vent valve</u> at 10 kPa or as regulated.</p> <p>The spray nozzles shall be so installed that the entire cargo deck area is covered and the gases released are precipitated safely.</p> <p>The system shall be capable of being put into operation from the wheelhouse and from the deck. Its capacity shall be such that when all the spray nozzles are in operation, the outflow is not less than 50 litres per square metre of deck area and per hour.</p>	Clarification
<b>9.3.1.31.3</b> <b>9.3.2.31.3</b> <b>9.3.3.31.3</b>	<p><del>Sparking shall not be possible within the cargo area</del></p> <p><i>(Deleted)</i></p>	New zone concept
<b>9.3.1.31.4</b> <b>9.3.2.31.4</b> <b>9.3.3.31.4</b>	<p><del>The surface temperature of the outer parts of engines used during loading or unloading operations, as well as that of their air inlets and exhaust ducts shall not exceed the allowable temperature according to the temperature class of the substances carried. This provision does not apply to engines installed in service spaces provided the provisions of 9.3.1.52.3 are fully complied with.</del></p> <p><i>(Deleted)</i></p>	Superfluous
<b>9.3.3.43 –</b> <b>9.3.3.49 50</b>	<i>(Reserved)</i>	
<b>9.3.1.50</b> <b>9.3.2.50</b> <b>9.3.3.50</b>	<del>Documents which have to be available on board</del>	Now in 8.1.2.3
<b>9.3.1.51 new</b> <b>9.3.2.51 new</b> <b>9.3.3.51 new</b>	<p><b>Replace 9.3.x.51, 9.3.x.51.1, 9.3.x.51.2, 9.3.x.51.3 by</b></p> <p><u>Surface temperatures of installations and equipment</u></p> <p>(a) <u>surface temperatures of electrical and non-electrical installations and equipment shall not exceed 200°C</u></p> <p>(b) <u>surface temperatures of the outer parts of engines and their inlets and exhaust ducts shall not exceed</u></p>	Basic safety concept

Paragraphs	Modification	Reason / Explanation
	<p><u>200°C</u></p> <p>(c) <u>When the vessel substance list according to 1.16.1.2.5 will contain substances for which in column (15) of Table C of 3.2.3.2, T4, T5 or T6 is indicated the allowed respective surface temperatures within the zones displayed on board the vessel shall not exceed 135°C (T4), 100°C (T5) 85°C (T6)</u></p> <p>(d) <u>(a) and (b) does not apply if the following requirements are fulfilled (see also 7.2.3.51.4):</u></p> <ul style="list-style-type: none"> <li>- <u>Equipment and installations, which generate surface temperatures higher than mentioned in (a) and (b) shall have the possibility to be switched off. Such installations and equipment shall be marked in red.</u></li> <li><u>Or</u></li> <li>- <u>Accommodation, wheelhouse and service spaces where surface temperatures higher than mentioned in a) b) occur are equipped with a ventilation system according to 9.3.x.12.4</u></li> </ul>	ADN wording
<p><b>9.3.1.52</b> <b>9.3.2.52</b> <b>9.3.3.52</b></p>	<p><b><i>Type and location of electrical installations and equipment</i></b></p> <p>Replace the existing text in 9.3.x.52.1 to 9.3.x.52.6 by</p>	Basic safety concept
<p><b>9.3.1.52.1</b> <b>9.3.2.52.1</b> <b>9.3.3.52.1</b></p>	<p>Electrical installations and equipment shall be at least of the "limited explosion risk" type.</p> <p><u>This provision does not apply to:</u></p> <p><u>(i) lighting installations in the accommodation and in the wheelhouse, except for switches near to the entrances;</u></p> <p><u>(ii) mobile phones, fixed telephone installations and loading instruments in the accommodation or the wheelhouse;</u></p> <p><u>(iii) electrical installations or equipment which during a stay near to or within a shore-side assigned zone</u></p> <ul style="list-style-type: none"> <li>a) <u>are switched off or</u></li> <li>b) <u>are installed in spaces which are equipped with a ventilation system according to 9.3.x.12.4</u></li> </ul> <p><u>(iv) Radiotelephone installations and inland AIS (automatic identification systems) stations in the accommodation and in the wheelhouse if no part of an aerial for electronic apparatus or AIS stations is situated above or within 2 m from the cargo area.</u></p>	<p>Basic safety concept</p> <p>9.3.x.52.3 of ADN 2015</p> <p>Content of 9.3.x.52.1 in ADN 2015 now in 9.3.x.53.1</p>
<p><b>9.3.1.52.2</b> <b>9.3.2.52.2</b> <b>9.3.3.52.2</b></p>	<p><u>In the cofferdams, double-hull spaces, double bottoms and hold spaces only hermetically sealed echo sounding devices are allowed, the cables of which are led through thick-walled steel tubes with gastight connections up to the main deck;</u></p>	<p>9.3.x.52.1 of ADN 2015</p> <p>9.3.x.52.2 of ADN 2015 now in 9.3.x.52.9</p>
<p><b>9.3.1.52.3</b> <b>9.3.2.52.3</b> <b>9.3.3.52.3</b></p>	<p><u>The electrical installations and equipment which does not meet the requirements set out in 9.3.x.51 a), 9.3.x.51 b) and 9.1.x.52.1 together with its switches shall be marked in red. The disconnection of such equipment shall be operated from a centralised location on board.</u></p>	<p>9.3.x.52.4 of ADN 2015 9.3.x.52.3 of ADN 2015 now in 9.3.x.12.4</p>

<i>Paragraphs</i>	<i>Modification</i>	<i>Reason / Explanation</i>
		Reference adjusted
<b>9.3.1.52.4</b> <b>9.3.2.52.4</b> <b>9.3.3.52.4</b>	<u>Every insulated distribution network shall be fitted with an automatic device with a visual and audible alarm for checking the insulation level.</u>	9.3.x.51.2 of ADN 2015 9.3.x.52.4 of ADN 2015 now in 9.3.x.52.3
<b>9.3.1.52.5</b> <b>9.3.2.52.5</b> <b>9.3.3.52.5</b>	<u>Only distribution systems without return connection to the hull are permitted:</u> <u>This provision does not apply to:</u> – active cathodic corrosion protection; – local installations outside the cargo area (e.g. connections of starters of diesel engines); – the device for checking the insulation level referred to in 9.3.x.52.4.	9.3.x.51.1 of ADN 2015 Reference adjusted  9.3.x.52.4 of ADN 2015 moved to 9.3.x.52.2
<b>9.3.1.52.6</b> <b>9.3.2.52.6</b> <b>9.3.3.52.6</b>	<u>For movable electrical cables intended for signal lights and gangway lighting, only sheathed cables of type H 07 RN-F in accordance with standard IEC 60 245-4:2011 or electrical cables of at least equivalent design having conductors with a cross-section of not less than 1.5 mm<sup>2</sup> shall be used.</u> <u>These electrical cables shall be as short as possible and installed so that mechanical damage is not likely to occur.</u>	Basic safety concept  9.3.x.56.5 of ADN 2015 9.3.x.52.6 of ADN 2015 now in 9.3.x.52.9
<b>9.3.1.52.7</b> <b>9.3.2.52.7</b> <b>9.3.3.52.7</b>	<u>The failure of the power supply for the safety and control equipment shall be immediately indicated by visual and audible signals in the wheelhouse and on deck. The alarm has to be lead to the accommodation automatically if not cleared.</u>	Clarification
<b>9.3.1.52.8 new</b> <b>9.3.2.52.8 new</b> <b>9.3.3.52.8 new</b>	<u>Switches, cables and sockets on deck shall be protected against mechanical damage.</u>	9.3.x.52.6 of ADN 2015
<b>9.3.1.52.9 new</b> <b>9.3.2.52.9 new</b> <b>9.3.3.52.9 new</b>	<u>Sockets for the connection of signal lights and gangway lighting shall be permanently fitted to the vessel close to the signal mast or the gangway. Connecting and disconnecting shall not be possible except when the sockets are not live.</u>	9.3.x.52.6 of ADN 2015
<b>9.3.1.52.10 new</b> <b>9.3.2.52.10 new</b> <b>9.3.3.52.10 new</b>	<u>Accumulators shall be located outside the cargo area.</u>	9.3.x.52.2 of ADN 2015

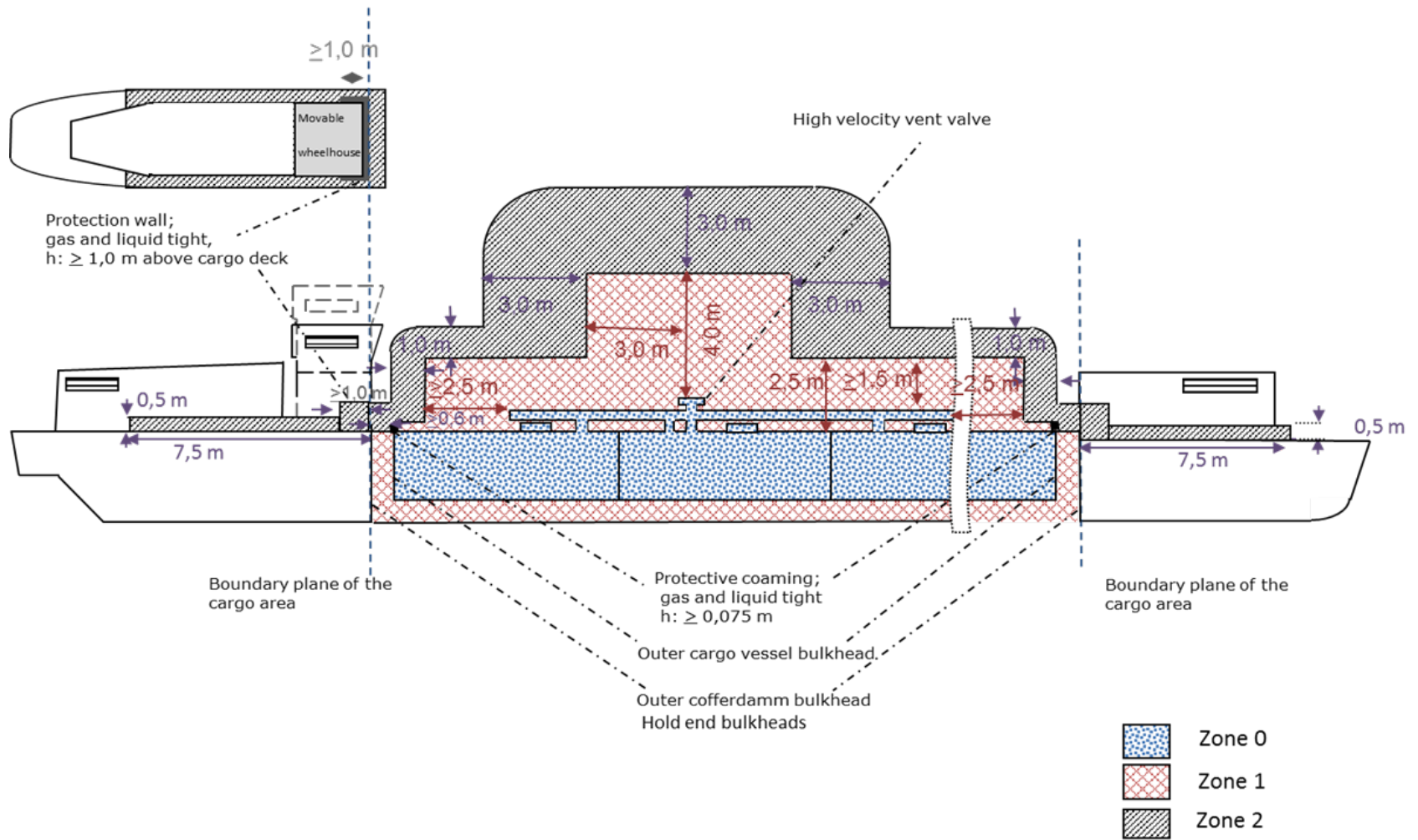
Paragraphs	Modification	Reason / Explanation
<b>new</b>		
<b>9.3.3.52.11</b> <b>new</b>	<u>The provisions of 9.3.3.52.1 to 9.3.3.52.10 shall not apply to oil separator or supply vessels</u>	
<b>9.3.1.53</b> <b>9.3.2.53</b> <b>9.3.3.53</b>	<u>Text in 9.3.x.53, 9.3.x.53.1, 9.3.x.53.3, 9.2.x.53.3 to be replaced by</u> <b><u>Type and location of electrical and non-electrical installations and equipment intended to be used in explosion hazardous areas</u></b>	New zone concept 9.3.x.53 of ADN 2015 now in 9.3.x.54
<b>9.3.1.53.1</b> <b>9.3.2.53.1</b> <b>9.3.3.53.1</b>	<u>Electrical and non-electrical installations and equipment intended to be used in explosion hazardous areas according to the definition in 1.2.1 shall fulfil at least the requirements for being used in the respective zone.</u> <u>They have to be chosen according to the explosion group and temperature class of the substances listed in the vessel substance list (see column (15) and (16) of Table C in 3.2.3.2.)</u> <u>When the vessel substance list according to 1.16.1.2.5 will contain substances for which in column (15) of Table C of 3.2.3.2, T4, T5 or T6 is indicated the allowed respective surface temperatures have to be not more than 135°C (T4), 100°C (T5), 85°C (T6)</u> <u>When the vessel substance list according to 1.16.1.2.5 will contain substances for which in column (15) of Table C in 3.2.3.2, T1 and T2 is indicated the allowed respective surface temperatures within the assigned zones shall not exceed 200°C.</u>	New zone concept Basic safety concept ADN wording 3x
<b>9.3.1.53.2</b> <b>9.3.2.53.2</b> <b>9.3.3.53.2</b>	<u>Electrical cables have to be reinforced or protected by a metallic shield or mounted using cable conduit, except optical fibers</u> <u>Electrical cables for the active cathodic protection of the shell plating shall be led in protective steel tubes with gastight connections up to the main deck;</u>	Clarification In ADN 2015 9.3.x.56.1 Sentence incomplete
<b>9.3.1.53.3</b> <b>9.3.2.53.3</b>	<u>Movable electrical cables are prohibited, except for intrinsically safe electric circuits or for the supply of signal lights and gangway lighting.</u>	In ADN 2015 9.3.x.56.3 9.3.x.53.3 of ADN 2015 now in 9.3.x.54.3
<b>9.3.3.53.3</b>	<u>Movable electrical cables are prohibited, except for intrinsically safe electric circuits or for the supply of signal lights, gangway lighting and submerged pumps on board oil separator vessels.</u>	In ADN 2015 9.3.3.56.3 9.3.3.53.3 of ADN 2015 now in 9.3.3.54.3

<i>Paragraphs</i>	<i>Modification</i>	<i>Reason / Explanation</i>
<b>9.3.1.53.4</b> <b>9.3.2.53.4</b> <b>9.3.3.53.4</b>	<u>Electrical cables of intrinsically safe circuits shall only be used for such circuits and shall be separated from other cables not intended for being used in such circuits (e.g. they shall not be installed together in the same string of cables and they shall not be fixed by the same cable clamps).</u>	In ADN 2015 9.3.x.56.4  9.3.x.53.4  of ADN 2015 now in 9.3.x.54.4
<del><b>9.3.2.54</b></del> <del><b>9.3.2.55</b></del>	<i>(Reserved)</i>	
<b>9.3.1.54 new</b> <b>9.3.2.54 new</b> <b>9.3.3.54 new</b>	<b><u>Earthing</u></b>	In ADN 2015  9.3.x.53
<b>9.3.1.54.1 new</b> <b>9.3.2.54.1 new</b> <b>9.3.3.54.1 new</b>	<u>The metal parts of electrical appliances in the cargo area which are not live as well as protective metal tubes or metal sheaths of cables in normal service shall be earthed, unless they are so arranged that they are automatically earthed by bonding to the metal structure of the vessel.</u>	
<b>9.3.1.54.2 new</b> <b>9.3.2.54.2 new</b> <b>9.3.3.54.2 new</b>	<u>The provisions of 9.3.x.54.1 above apply also to equipment having service voltages of less than 50 V.</u>	
<b>9.3.1.54.3 new</b> <b>9.3.2.54.3 new</b> <b>9.3.3.54.3 new</b>	<u>Independent cargo tanks, metal intermediate bulk containers and tank-containers shall be earthed.</u>	
<b>9.3.1.54.4 new</b> <b>9.3.2.54.4 new</b> <b>9.3.3.54.4 new</b>	<u>Receptacles for residual products shall be capable of being earthed.</u>	
<b>9.3.1.56</b> <b>9.3.2.56</b> <b>9.3.3.56</b>	No longer necessary	
<b>9.3.1.56.1</b> <b>9.3.2.56.1</b> <b>9.3.3.56.1</b> of ADN 2015	moved to 9.3.1.53.2 moved to 9.3.2.53.2 moved to 9.3.3.53.2	

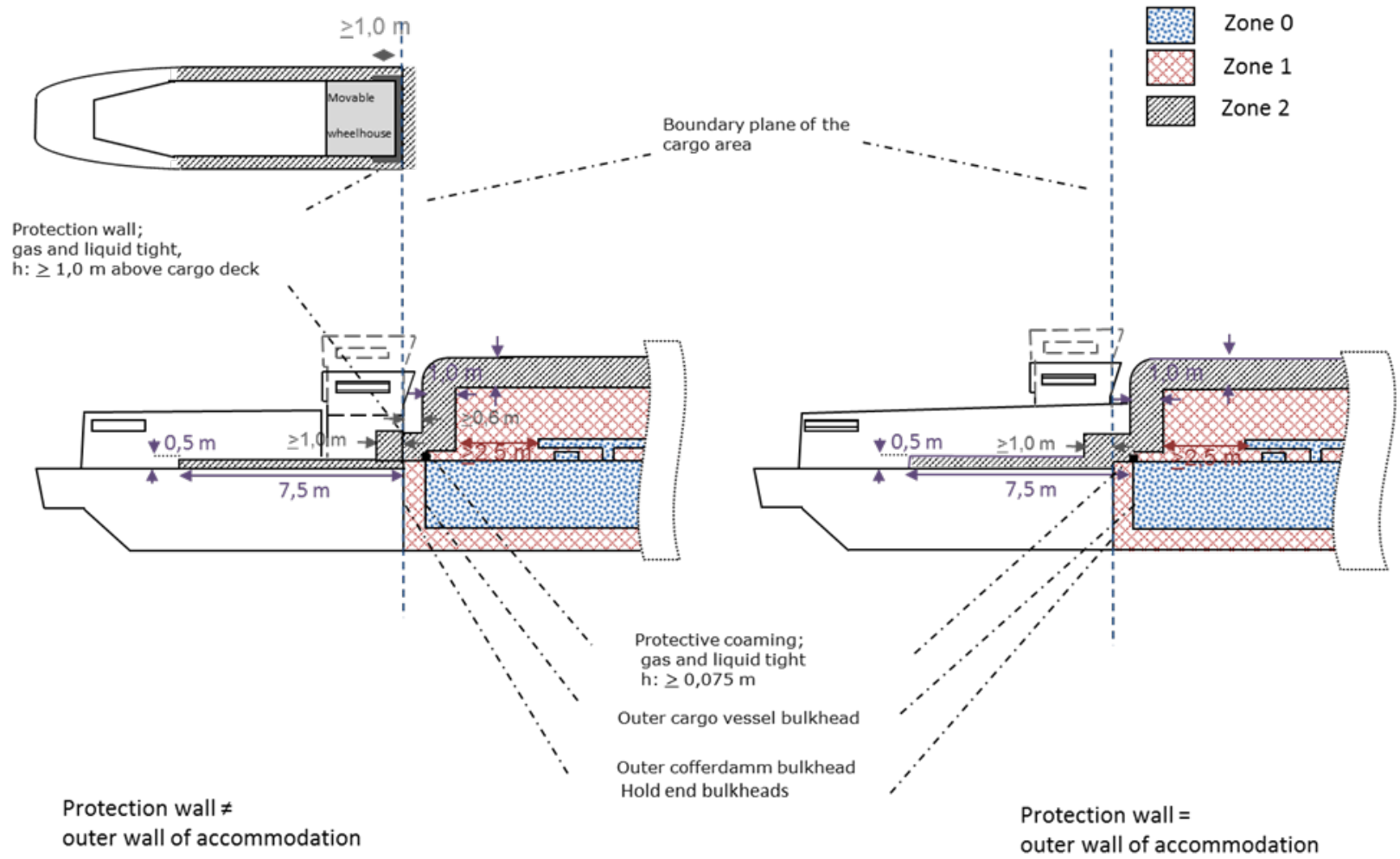
<i>Paragraphs</i>	<i>Modification</i>	<i>Reason / Explanation</i>
<b>9.3.1.56.2</b> <b>9.3.2.56.2</b> <b>9.3.3.56.2</b> of ADN 2015	moved to 9.3.1.52.6 and 9.3.1.53.4 moved to 9.3.2.52.6 and 9.3.2.53.4 moved to 9.3.3.52.6 and 9.3.3.53.4	
<b>9.3.1.56.3</b> <b>9.3.2.56.3</b> <b>9.3.3.56.3</b> of ADN 2015	moved to 9.3.1.53.3 moved to 9.3.2.53.3 moved to 9.3.3.53.3	
<b>9.3.1.56.4</b> <b>9.3.2.56.4</b> <b>9.3.3.56.4</b> of ADN 2015	moved to 9.3.1. 53.5 moved to 9.3.2. 53.5 moved to 9.3.3. 53.5	
<b>9.3.1.56.5</b> <b>9.3.2.56.5</b> <b>9.3.3.56.5</b> of ADN 2015	moved to 9.3.1.52.4 moved to 9.3.2.52.4 moved to 9.3.3.52.4	
<b>9.3.1.56.6</b> <b>9.3.2.56.6</b> <b>9.3.3.56.6</b>	No longer necessary; Covered by 9.3.x.53.1	
<b>9.3.2.57</b> <u>5</u> - <b>9.3.2.59</b> _____	<i>(Reserved)</i>	



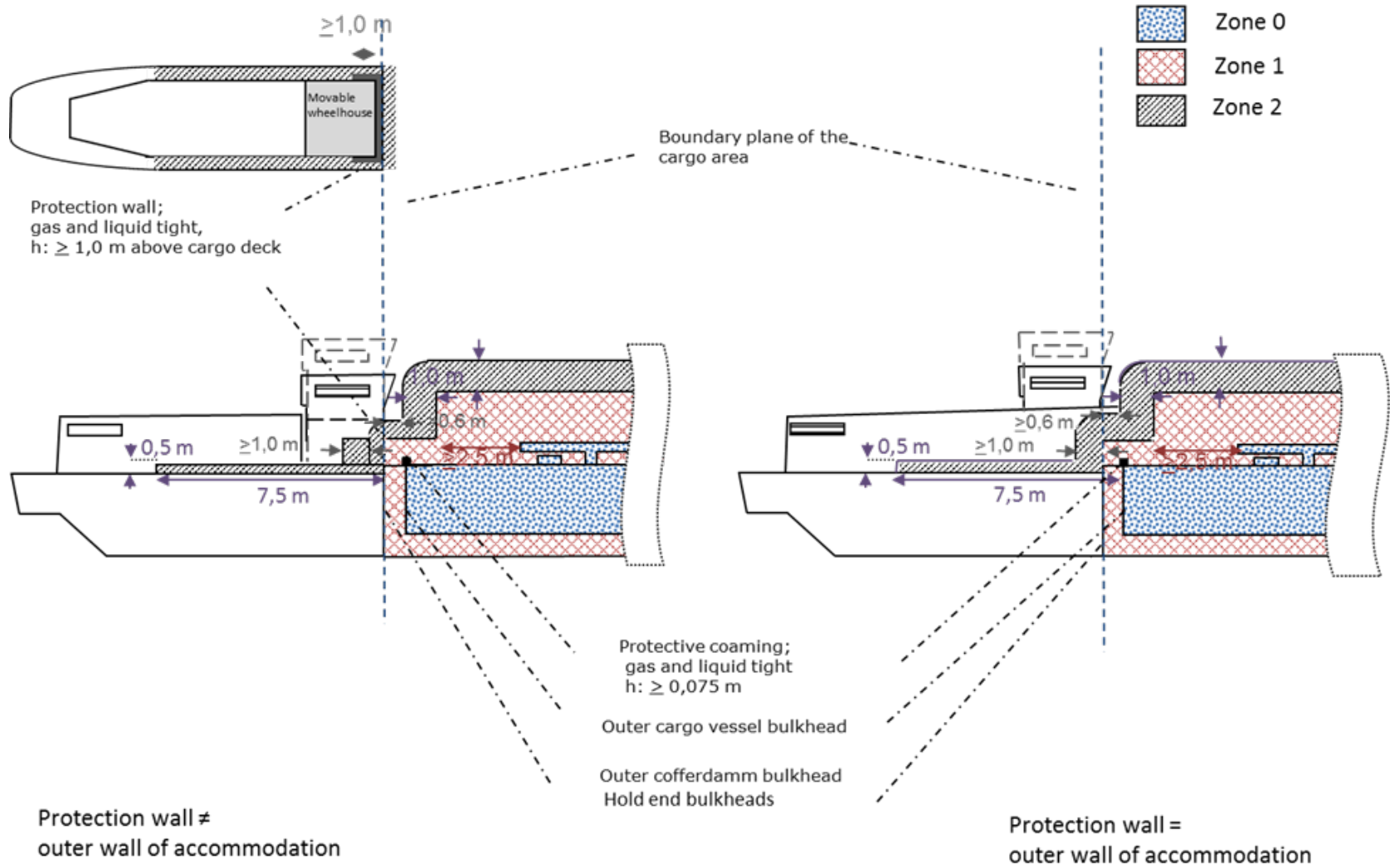
# Zoning on Tank Vessels



### No service space within cofferdam



# Tank vessel with hold end bulkheads / service space within cofferdam



## Annex 2

### Editorial proposals

<i>en, fr, de, ru</i>	<i>Paragraphs</i>	<i>Reason / Explanation</i>
<p><i>Receptacle for residual products</i> <i>Grands recipients pour vrac</i> <i>Restebehälter:</i> <i>Емкость для остаточных продуктов</i></p>	<p><b><i>Receptacle for residual products</i></b> means an <del>tank</del> intermediate bulk container (IBC) or tank-container or portable tank intended to collect residual cargo, washing water, cargo residues or slops which are suitable for pumping. <u>The receptacles shall be certified according ADR, RID or IMDG Code and permissible for the respective products</u> <u>The maximum permissible capacity of a tank-container or portable tank is 12 m<sup>3</sup>;</u></p>	<p>Clarification</p> <p>Movable parts; therefore no longer in 9.</p> <p>Adapted to max. volume of IBC</p>
<p><i>Receptacle for slops</i> <i>Citernes à résidus</i> <i>Slopbehälter.</i> <i>Сосуд для отстоев</i></p>	<p><b><i>Receptacle for slops</i></b> means a <u>fire resistant steel drum</u> <del>recipient</del> capable of being closed with lids intended to collect slops which are unsuitable for pumping. <u>The recipient has to fulfil the requirements for packaging according to ADN, RID or IMDG-code and suitable for the respective substance. The maximum permissible capacity is 450 l; They have to be easy to handle and marked with ‘SLOP’ (font size 10 cm);</u></p>	<p>Movable parts</p> <p>Clarification</p>
<p><b>7.2.4.1.1</b></p>	<p>The carriage of packages in the cargo area is prohibited. This prohibition does not apply to:</p> <ul style="list-style-type: none"> <li>– 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 <del>maximum individual</del> <u>overall</u>-capacity of not more than <u>12 m<sup>3</sup></u>. These receptacles for residual products shall meet the requirements of international regulations applicable to the substance concerned. <u>The receptacles for residual products and the receptacles for slops shall be properly secured in the cargo area, located not less than one quarter of the vessels breadth from the outer shell and comply with the provisions of 9.3.2.26.4-3 or 9.3.3.26.4-3 concerning them;</u></li> <li>– to cargo samples, up to a maximum of 30, of substances accepted for carriage in the tank vessel, where the maximum contents are 500 ml per receptacle. Receptacles shall meet the packing requirements referred to in Part 4 of ADR and shall be placed on board, at a specific point in the cargo area, such that under normal conditions of carriage they cannot break or be punctured and their contents cannot spill in the hold space. Fragile receptacles shall be suitably padded.</li> </ul>	<p>Now in definition</p>
<p><b>7.2.4.15</b></p>	<p><b><i>Measures to be taken after unloading (stripping system)</i></b></p>	

<p><b>7.2.4.15.2</b></p>	<p>During the filling of the <u>residual tanks</u> and receptacle for residual products, released gases shall be safely evacuated.</p> <p><u>During filling, means for collecting any leakage shall be placed under the filling connections</u></p> <p><u>Residual tanks and receptacles for residual products shall be connected to the venting piping of cargo tanks only for the time necessary to fill them.</u></p>	<p>Clarification</p>
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