RULES FOR THE SURVEY AND CONSTRUCTION OF STEEL SHIPS

RULES

Part S Ships Carrying Dangerous Chemicals in Bulk

2006 AMENDMENT NO.1

Rule No.55 3rd October 2006

Resolved by Technical Committee on 6th July 2006

Approved by Board of Directors on 25th July 2006

Notice No.55 3rd October 2006
AMENDMENT TO THE GUIDANCE FOR THE SURVEY AND CONSTRUCTION OF STEEL SHIPS

"Guidance for the survey and construction of steel ships" has been partly amended as follows:

Part S SHIPS CARRYING DANGEROUS CHEMICALS IN BULK

Amendment 1-1

Chapter 1 GENERAL

1.1 General

1.1.1 Application

Sub-paragraph-3 has been amended as follows:

3 Hull, machinery and equipment of a ship intended to carry dangerous chemicals are to comply with the followings in addition to those of this Part.

(1) For ships having double hull structure and length of 150*m* or above intended for the carrying a cargo or part cargo of oil in bulk : **Part CSR-T**
In this case, "length of ship" means the distance, in *metres*, measured on the summer load waterline, from the forward side of the stem to the after side of the rudder post, or to the centre of the rudder stock where there is no rudder post. This length is to be less than 96% and need not exceed 97% of the extreme length on the summer load waterline.

(2) For ships intended for the carriage of liquid cargoes in tanks integrated to their hull structures, except ships defined in **(1)** : **Chapter 29**, **Part C**

(3) For ships intended for the carriage of flammable liquid : **29.1.2** and **29.12.4**, **Part C** and **Chapter 14**, **Part D**

Sub-paragraph-6 has been deleted.

1.2 Definition of Hazards

Paragraph 1.2.2 has been amended as follows:

1.2.2 Health Hazard (with reference to *IBC Code* 1.2.2)

The "health hazard" means the hazards defined by the one of the following **(1)** to **(3)**.

(1) corrosive effects on the skin in the liquid state ;

(2) acute toxic effect, taking into account values of ;
LD 50 oral : a dose which is lethal to 50% of the test subjects when administered orally ;
LD 50 dermal : a dose which is lethal to 50% of the test subjects when administered to the skin ;
LC 50 inhalation : the concentration which is lethal by inhalation to 50% of the test subjects.

(3) other health effects such as carcinogenicity and sensitization.

Paragraphs 1.2.3 and 1.2.4 have been deleted.

Paragraphs 1.2.5 through 1.2.7 have been renumbered to 1.2.3 through 1.2.5.

Paragraphs 1.2.3 through 1.2.5 have been amended as follows:

1.2.3 Reactivity Hazard (with reference to *IBC Code* 1.2.3)

The "reactivity hazard" means the hazards defined by reactivity with the following.

(1) other products
(2) water
(3) air
(4) the product itself (including polymerization)

1.2.4 Fire Hazard (with reference to *IBC Code* 1.2.1)

The "fire hazard" means the hazard defined by flashpoint, explosive/flammability limits (range) and autoignition temperature of the chemical.

1.2.5 Marine Pollution Hazard (with reference to *IBC Code* 1.2.4)

The "marine pollution hazard" means the hazards defined by the one of the following **(1)** to **(6)**.

(1) bioaccumulation ;
(2) lack of ready biodegradibility ;
(3) acute toxicity to aquatic organisms ;
(4) chronic toxicity to aquatic organisms ;
(5) long term human health effects ;
(6) physical properties resulting in the product floating or sinking and so adversely affecting marine life.

1.3 Definitions

1.3.1 Definitions (with reference to *IBC Code* 1.3)

Sub-paragraphs (11) and (20) have been amended as follows:

(11) "Explosive/Flammability limits (range)" means the conditions defining the state of fuel-oxidant mixture at which application of an adequately strong external ignition source is only just capable of producing flammability in a given test apparatus.

(20) "Density" means the ratio of the mass to the volume of a product, expressed in terms of kilograms per cubic metre. This applies to liquids, gases and vapours.

Sub-paragraph (25) has been deleted.

Sub-paragraph (26) has been renumbered to (25), and has been amended as follows:

(26) "Noxious liquid substance" means any substance indicated in the Pollution Category column of **Chapter 17** or **18 of this part**, the current *MEPC.2/Circ.* or provisionally assessed under the provisions of regulation 6.3 of *MARPOL* Annex II as falling into categories *X, Y* or *Z*.

Sub-paragraphs (26) and (27) have been added as follows:

(26) "Machinery Spaces" means those spaces as defined **3.2.30, Part R**.

(27) "Service Spaces" means those spaces as defined **3.2.45, Part R**.

Chapter 3 SHIP ARRANGEMENTS

3.1 Cargo Segregation (*IBC Code* 3.1)

3.1.2 Segregation of Cargoes which React with other Cargoes

Main sentence of paragraph 3.1.2 has been amended as follows:

Cargoes, residues of cargoes or mixtures containing cargoes, which react in a hazardous manner with other cargoes, residues or mixtures, are to be in accordance with followings.

3.2 Accommodation, Service and Machinery Spaces and Control Stations (*IBC Code* 3.2)

3.2.1 Arrangement

In paragraph 3.2.1, the wording "4.5.1, Part R" has been amended to "4.5.1 and 4.5.2-1 through -4, Part R,".

Chapter 4 CARGO CONTAINMENT

4.2 Design and Construction

4.2.2 Gravity Tank

In sub-paragraph -2, the wording "Table C29.10" has been amended to "Table C29.20".

Chapter 6 has been amended as follows:

Chapter 6 MATERIALS OF CONSTRUCTION

6.1 General

6.1.1 Structual Materials used for Tank, Pipings and etc. (*IBC Code* 6.1)

Structural materials used for tank construction, together with associated piping, pumps valves, vents and their jointing materials, are to be suitable at the temperature and pressure for the cargo to be carried to the satisfaction of the Society. Steel is assumed to be the normal material of construction.

6.1.2 Considerations in Selecting the Material of Construction (*IBC Code* 6.2)

Where applicable the following is to be taken into account in selecting the material of construction :

(1) notch ductility at the operating temperature ;
(2) corrosive effect of the cargo ; and
(3) possibility of hazardous reactions between the cargo and the material of construction.

6.1.3 Information for Materials of Construction (*IBC Code* 6.2)

Compatibility information for materials of construction is to be indicated in the operation manual specified in **16.1.1** and available to the ship operator and/or master.

6.2 Operational Requirements

6.2.1 Application

The provisions in this section are not the conditions for maintenance of classification for which examinations are required but the conditions to be observed by the ship owner, ship master or other persons who may concern with the ship’s operation.

6.2.2 Provision of Cargo Information (*IBC Code* 6.4)

The shipper of the cargo is responsible for providing compatibility information to the ship operator and/or master. This must be done in a timely manner before transportation of the product. The cargo should be compatible with all materials of construction such that no damage to the integrity of the materials of construction is incurred and/or, no hazardous or potentially hazardous reaction is created.

Chapter 11 FIRE PROTECTION AND FIRE EXTINCTION

11.1 Application (with reference to *IBC Code* 11.1)

Paragraph 11.1.1 has been amended as follows:

11.1.1 Application

The requirements for tankers in **Part R** and corresponding requirements in **Part D** are to apply to ships covered by this Part, irrespective of tonnage including ships of less than 500 *gross tonnes*, except those specified in **(1)** to **(8)** below. Where alternative and supplementary arrangements are provided to the satisfaction of the Society, the requirements in **Part R** need not apply to ships covered by this Part. Where alternative arrangements for inert gas systems are provided to ships covered by this Part, the requirements in **4.5.5-1** of **Part R** need not apply to these ships, even if these ships carry crude oil and petroleum products having a flashpoint not exceeding 60℃ and other liquid products having a similar fire hazard.

(1) **1.1.1** (except **1.1.1-2**), **4.5.5**, **10.8**, **10.9** and **Chapter 21, Part R** and **14.4, Part D** are not to apply;
(2) **4.5.1-2, Part R** i.e. the requirements for location of the main cargo control station need not apply;
(3) **10.2**, **10.4** and **10.5** (except **10.5.5**), **Part R** are to apply, regarding the ships to be tankers of 2,000 *tons* gross tonnage and over;
(4) **11.2** is to apply in lieu of **10.9, Part R**;
(5) **11.3** is to apply in lieu of **10.8, Part R**;
(6) **4.5.10**, **Part R** is to apply to ships of 500 *tons* gross tonnage and over, replacing "hydrocarbon gases" by "flammable vapours" in **4.5.10**, **Part R**;
(7) **13.3.3** and **13.4.4**, **Part R** are to apply to ships of 500 *tons* gross tonnage and over; and
(8) **10.5.5**, **Part R** is to apply to ships of 2,000 *tons* gross tonnage and over.

11.1.2 Exemption from the Application of the Requirements

In paragraph 11.1.2, the wording "(except **10.2.1-4(4)** and **10.10.2-2**)" has been deleted.

11.3 Cargo Area (*IBC Code* 11.3)

Paragraph 11.3.15 has been amended as follows:

11.3.15 Exclusion of Sources of Ignition

Where flammable cargoes are to be carried, all sources of ignition are to be excluded from hazardous locations referred to in **4.2.3-2**, **-4** and **-5**, **Part H**.

Chapter 14 PERSONAL PROTECTION EQUIPMENT

14.2 Safety Equipment(*IBC Code* 14.2)

14.2.8 Respiratory for Emergency Escape Purpose etc.

In sub-paragraph 14.2.8, the wording “E” has been amended to “Yes”.

Chapter 15 SPECIAL REQUIREMENTS

Section 15.1 has been amended as follows:

15.1 General (*IBC Code* 15.1)

The provisions of this chapter are applicable where specific rrference is made in column "**o**" in the **Table S17.1**. These requirements are additional to the general requirements of this part.

Title of section 15.2 has been amended as follows:

15.2 Ammonium Nitrate Solution, 93% or Less

15.3 Carbon Disulphide

15.3.1 Carriage under Water Pad

In sub-paragraph -1, the wording "10.2.3" has been amended to "4.2.3.-2, -4 and -5, Part H".

15.5 Hydrogen Peroxide Solutions

Title of paragraph 15.5.1 has been amended as follows:

15.5.1 Hydrogen Peroxide Solutions over 60% but not over 70% by Mass

Sub-paragraph -11 has been deleted and -12 has been renumbered to -11.

Titles of sub-paragraphs -2 throught -11 have been amended as follows:

2 (*IBC Code* 15.5.1.2)

3 (with reference to *IBC Code* 15.5.1.3)

4 (*IBC Code* 15.5.1.4)

5 (*IBC Code* 15.5.1.5)

6 (*IBC Code* 15.5.1.6)

7 (*IBC Code* 15.5.1.7)

8 (with reference to *IBC Code* 15.5.1.8)

9 (*IBC Code* 15.5.1.9)

10 (*IBC Code* 15.5.1.10)

11 Protective equipment (*IBC Code* 15.5.1.12)

Title of paragraph 15.5.2 has been amended as follows:

15.5.2 Hydrogen Peroxide Solutions over 8% but not over 60% by Mass

Sub-paragraph -9 has been deleted and -10 and -11 have been renumbered to -9 and -10.

Titles of sub-paragraphs -1 throught -10 have been amended as follows:

1 (*IBC Code* 15.5.2.1)

2 (*IBC Code* 15.5.2.3)

3 (*IBC Code* 15.5.2.4)

4 (*IBC Code* 15.5.2.5)

5 (*IBC Code* 15.5.2.6)

6 (with reference to *IBC Code* 15.5.2.7)

7 (*IBC Code* 15.5.2.8)

8 (*IBC Code* 15.5.2.9)

9 Protective equipment (*IBC Code* 15.5.2.11)

10 (*IBC Code* 15.5.2.12)

Title of section 15.8 has been amended as follows:

15.8 Propylene Oxide or Ethylene Oxide/Propylene Oxide Mixtures with an Ethylene Oxide Content of not more than 30% by Mass

Title of paragraph 15.8.2 has been amended as follows:

15.8.2 Tanks for Propylene Oxide or Ethylene Oxide/Propylene Oxide Mixtures with an Ethylene Oxide Content of not more than 30% by Mass (with reference to *IBC Code* 15.8.2)

Title of section 15.9 has been amended as follows:

15.9 Sodium Chlorate Solution, 50% or Less by Mass (with reference to *IBC Code* 15.9)

Title of section 15.10 has been amended as follows:

15.10 Sulphur (molten) (*IBC Code* 15.10)

Paragraph 15.10.7 has been added as follows:

15.10.7 Electrical Equipment

Sulphur (molten) has a flashpoint above 60℃; however, electrical equipment is to be certified safe for gases evolved.

15.11 Acids

15.11.5 Electrical Arrangements

In sub-paragraph 15.11.5, the wording "**10.2.3(1)**, **10.2.3(2)**, **10.2.3(3)**, **10.2.3(4)**, **10.2.3(6)** and **10.2.3(7)**"has been amended to "10.1.4".

15.16 Cargo Contamination (*IBC Code* 15.16)

Paragraph 15.16.1 has been amended as follows:

15.16.1 "Deleted"

Title of section 15.20 has been amended as follows:

15.20 Alkyl (C_7-C_9) Nitrates, All Isomers (*IBC Code* 15.20)

15.22 Operational Requirements

Title of paragraph 15.22.2 has been amended as follows:

15.22.2 Ammonium Nitrate Solution, 93% or Less

Sub-paragraph -3 through -5 have been renumbered to -4 thorugh -6, and -3 has been added as follows:

3 (*IBC Code* 15.2.4)

The temperature of the heat-exchanging medium in the tank heating system should not exceed 160°C. The heating system should be provided with a control system to keep the cargo at a

bulk mean temperature of 140°C. High-temperature alarms at 145°C and 150°C and a low-temperature alarm at 125°C should be provided. Where the temperature of the heatexchanging medium exceeds 160°C, an alarm should also be given. Temperature alarms and controls should be located on the navigating bridge.

Title of paragraph 15.22.5 has been amended as follows:

15.22.4 Hydrogen Peroxide Over 60% but not Over 70% by Mass

Titles of sub-paragraphs -1 throught -3 have been amended as follows:

1 (*IBC Code* 15.5.1.3)

2 (*IBC Code* 15.5.1.8)

3 (with reference to *IBC Code* 15.5.1.11)

Title of paragraph 15.22.5 has been amended as follows:

15.22.5 Hydrogen Peroxide Over 8% but not Over 60% by Mass

Titles of sub-paragraphs -1 throught -4 have been amended as follows:

1 (*IBC Code* 15.5.2.2)

2 (*IBC Code* 15.5.2.7)

3 (with reference to *IBC Code* 15.5.2.10)

4 (with reference to *IBC Code* 15.5.2.12)

Title of paragraph 15.22.8 has been amended as follows:

15.22.8 Propylene Oxide or Ethylene Oxide/Propylene Oxide Mixtures with an Ethylene Oxide Content of not more than 30% by Mass

Sub-paragraphs -10, -11 and -12 throught -16 have been renumbered to -11, -12 and -14 throught -18, and -10 and -13 have been added as follows:

10 (*IBC Code* 15.8.22.2)
The refrigeration requirement for tanks with a design pressure less than 0.06 *MPa* gauge may be waived by the Administration for ships operating in restricted areas or on voyages of restricted duration, and account may be taken in such cases of any insulation of the tanks. The area and times of year for which such carriage would be permitted should be included in the conditions of carriage of the International Certificate of Fitness for the Carriage of Dangerous Chemicals in Bulk.

13 (with reference to *IBC Code* 15.8.25.2)
These products may be transported only in accordance with cargo-handling plans that have been approved by the Administration. Each intended loading arrangement should be shown on a separate cargo-handling plan. Cargo-handling plans should show the entire cargo piping system and the locations for installation of blank flanges needed to meet the above piping separation requirements. A copy of each approved cargo-handling plan should be maintained on board the ship. The International Certificate of Fitness for the Carriage of Dangerous Chemicals in Bulk should be endorsed to include reference to the approved cargo-handling plans.

Title of paragraph 15.22.8 has been amended as follows:

15.22.9 Sodium Chlorate Solution, 50% or Less by Mass (*IBC Code* 15.9)

15.22.11 Cargo Contamination

Sub-paragraph -1 has been deleted, and -2 has been renumbered to -1.

Paragraph 15.22.13 has been added as follows:

15.22.13 Procedures for inspection, cleaning, passivation and loading of tanks for the carriage of hydrogen peroxide solutions 8-60%, which have contained other cargoes, or for the carriage of other cargoes after the carriage of hydrogen peroxide

1 (*IBC Code* 15.5.3.1)
Tanks having contained cargoes other than hydrogen peroxide should be inspected, cleaned and passivated before re-use for the transport of hydrogen peroxide solutions. The procedures for inspection and cleaning, as given in **-2** to **-8** below, apply to both stainless steel and pure aluminium tanks (see **15.5.22.5-1**). Procedures for passivation are given in **-9** for stainless steel and **-10** for aluminium. Unless otherwise specified, all steps apply to the tanks and to all associated equipment having been in contact with the other cargo.

2 (*IBC Code* 15.5.3.2)
After unloading the previous cargo the tank should be rendered safe and inspected for any residues, scale and rust.

3 (*IBC Code* 15.5.3.3)
Tanks and associated equipment should be washed with clean filtered water. The water to be used should at least have the quality of potable water with a low chlorine content.

4 (*IBC Code* 15.5.3.4)
Trace residues and vapours of the previous cargo should be removed by steaming of tank and equipment.

5 (*IBC Code* 15.5.3.5)
Tank and equipment are washed again with clean water (quality as above) and dried, using filtered, oil-free air.

6 (*IBC Code* 15.5.3.6)
The atmosphere in the tank should be sampled and investigated for the presence of organic

vapours and oxygen concentration.

7 (*IBC Code* 15.5.3.7)

The tank should be checked again by visual inspection for residues of the previous cargo, scale and rust as well as for any smell of the previous cargo.

8 (*IBC Code* 15.5.3.8)

If inspection or measurements indicate the presence of residues of the previous cargo or its vapours, actions described in -3 to -5 should be repeated.

9 (*IBC Code* 15.5.3.9)

Tank and equipment made from stainless steel which have contained other cargoes than hydrogen peroxide or which have been under repair should be cleaned and passivated, regardless of any previous passivation, according to the following procedure:

(1) New welds and other repaired parts should be cleaned and finished using stainless steel wire brush, chisel, sandpaper or buff. Rough surfaces should be given a smooth finish. A final polishing is necessary.

(2) Fatty and oily residues should be removed by the use of appropriate organic solvents or detergent solutions in water. The use of chlorine-containing compounds should be avoided as they can seriously interfere with passivation.

(3) The residues of the degreasing agent should be removed, followed by a washing with water.

(4) In the next step, scale and rust should be removed by the application of acid (e.g. a mixture of nitric and hydrofluoric acids), followed again by a washing with clean water.

(5) All the metal surfaces which can come into contact with hydrogen peroxide should be passivated by the application of nitric acid of a concentration between 10 and 35% by mass. The nitric acid must be free from heavy metals, other oxidizing agents or hydrogen fluoride. The passivation process should continue for 8 to 24 *hours*, depending upon the concentration of acid, the ambient temperature and other factors. During this time a continuous contact between the surfaces to be passivated and the nitric acid should be ensured. In the case of large surfaces this may be achieved by recirculating the acid. Hydrogen gas may be evolved in the passivation process, leading to the presence of an explosive atmosphere in the tanks. Therefore, appropriate measures must be taken to avoid the build-up or the ignition of such an atmosphere.

(6) After passivation the surfaces should be thoroughly washed with clean filtered water. The washing process should be repeated until the effluent water has the same *pH* value as the incoming water.

(7) Surfaces treated according to the above steps may cause some decomposition when coming into contact with hydrogen peroxide for the first time. This decomposition will cease after a short time (usually within two or three days). Therefore an additional flushing with hydrogen peroxide for a period of at least two days is recommended.

(8) Only degreasing agents and acid cleaning agents which have been recommended for this purpose by the manufacturer of the hydrogen peroxide should be used in the process.

10 (*IBC Code* 15.5.3.10)

Tanks and equipment made from aluminium and which have contained cargoes other than hydrogen peroxide, or which have been under repair, should be cleaned and passivated. The following is an example of a recommended procedure:

(1) The tank should be washed with a solution of a sulphonated detergent in hot water, followed by a washing with water.

(2) The surface should then be treated for 15 to 20 *min* with a solution of sodium hydroxide of a concentration of 7% by mass or treated for a longer period with a less concentrated solution (e.g. for 12 h with 0.4 to 0.5% sodium hydroxide). To prevent excessive

corrosion at the bottom of the tank when treating with more concentrated solutions of sodium hydroxide, water should be added continuously to dilute the sodium hydroxide solution which collects there.

(3) The tank should be thoroughly washed with clean, filtered water. As soon as possible after washing, the surface should be passivated by the application of nitric acid of a concentration between 30 and 35% by mass. The passivation process should continue for 16 to 24 *hours*. During this time a continuous contact between the surfaces to be passivated and the nitric acid should be ensured.

(4) After passivation the surfaces should be thoroughly washed with clean, filtered water. The washing process should be repeated until the effluent water has the same *pH* value as the incoming water.

(5) A visual inspection should be made to ensure that all surfaces have been treated. It is recommended that an additional flushing is carried out for a minimum of 24 *hours* with dilute hydrogen peroxide solution of a concentration approximately 3% by mass.

11 (*IBC Code* 15.5.3.11)
The concentration and stability of the hydrogen peroxide solution to be loaded should be determined.

12 (*IBC Code* 15.5.3.12)
The hydrogen peroxide is loaded under intermittent visual supervision of the interior of the tank from an appropriate opening.

13 (*IBC Code* 15.5.3.13)
If substantial bubbling is observed which does not disappear within 15 *min* after the completion of loading, the contents of the tank should be unloaded and disposed of in an environmentally safe manner. The tank and equipment should then be repassivated as described above.

14 (*IBC Code* 15.5.3.14)
The concentration and stability of the hydrogen peroxide solution should be determined again. If the same values are obtained within the limits of error as in **-10**, the tank is considered to be properly passivated and the cargo ready for shipment.

15 (*IBC Code* 15.5.3.15)
Actions described in paragraphs **-2** to **-8** should be carried out under the supervision of the master or shipper. Actions described in paragraphs **-9** to **-14** should be carried out under the on-site supervision and responsibility of a representative of the hydrogen peroxide manufacturer or under supervision and responsibility of another person familiar with the safety-relevant properties of hydrogen peroxide.

16 (*IBC Code* 15.5.3.16)
The following procedure should be applied when tanks having contained hydrogen peroxide solution are to be used for other products (unless otherwise specified, all steps apply to the tanks and to all associated equipment having been in contact with hydrogen peroxide):

(1) Hydrogen peroxide cargo residue should be drained as completely as possible from tanks and equipment.

(2) Tanks and equipment should be rinsed with clean water, and subsequently thoroughly washed with clean water.

(3) The interior of the tank should be dried and inspected for any residues.

Steps (1) to (3), in this sub-paragraph, should be carried out under the supervision of the master or the shipper.

Step (3), in this sub-paragraph, should be carried out by a person familiar with the safety-relevant properties of the chemical to be transported and of hydrogen peroxide.

14 Special Cautions

(1) Hydrogen peroxide decomposition may enrich the atmosphere with oxygen and appropriate precautions should be observed.
(2) Hydrogen gas may be evolved in the passivation processes described in paragraphs **-9(5)**, **-10(2)** and **-10(4)**, leading to the presence of an explosive atmosphere in the tank. Therefore, appropriate measures must be taken to avoid the build-up or the ignition of such an atmosphere.

Chapter 16 OPERATIONAL REQUIREMENTS

16.2 Operational Requirements

16.2.3 Cargo Information (*IBC Code* 16.2)

Sub-paragraph -3(6) has been amended as follows:

(6) for those cargoes required to be stabilized or inhibited in accordance with **15.13.3**, the cargo should be refused if the certificate required by **15.13.3** is no supplied.

In sub-paragraph -6, the wording "25*mPa・s*" has been amended to "50*mPa・s*".

Sub-paragraphs -7 and -8 have been deleted, and sub-paragraph -9 has been renumbered to -7.

Paragraph 16.2.8 and sections 16.3 and 16.4 have been deleted.

Chapter 17 SUMMARY OF MINIMUM REQUIREMENTS(with reference to *IBC Code* Chapter 17)

17.1 General

17.1.1 Application

Sub-paragraphs (2) and (13) have been deleted.

Sub-paragraphs (3) through (12) have been renumbered to (2) through (11).

Sub-paragraphs (14) and (15) have been renumbered to (12) and (13).

Sub-paragraphs (2), (6), (8), (9) and (12) have been amended as follows:

(2) Pollution category (column **c**)
The letter ***X, Y*** or ***Z*** means the pollution category assigned to each product under Annex II of *MARPOL* 73/78.

(6) Tank vents (column **g**)
Open : open venting
Cont : controlled venting

(8) Electrical equipment
(column **i'**) temperature classes ***T1*** to ***T6***
"-" indicates no requirements.
Blank indicates no information.
(column **i''**) apparatus groups II***A***, II***B*** or II***C***
"-" indicates no requirements.
Blank indicates no information.
(column **i'''**)
Yes : flashpoint exceeding 60℃ (closed cup test)(*See* **10.1.6.**)
No : flashing point not exceeding 60℃ (closed cup test)(*See* **10.1.6**)
NF : none-flammable product (*See* **10.1.6**)

(9) Gauging (column **j**)
O : open gauging (**13.1.1(1)**)
R : restricted gauging (**13.1.1(2)**)
C : closed gauging (**13.1.1(3)**)

(12) Respiratory and eye protection (column **n**)
Yes :*See* **14.2.8**
No :no special requirements under this part.

Table S17.1 has been amended as follows:

Table S17.1 Summary of Minimum Requirements

a	*c*	*d*	*e*	*f*	*g*	*h*	*i'*	*i''*	*i'''*	*j*	*k*	*l*	*n*	*o*
Product Name	*Pollution Category*	*Hazards*	*Ship Type*	*Tank Type*	*Tank Vents*	*Tank Environmental Control*	*Electrical Equipment*			*Gauging*	*Vapour*	*Fire Extinguishing*	*Respiratory and Eye Protection*	*Special Requirements*
							Class	*Group*	*Flashpoint >60℃*					
Acetic acid	*Z*	*S/P*	3	2G	Cont	No	T1	IIA	No	R	F	A	Yes	15.11.2, 15.11.3, 15.11.4, 15.11.6, 15.11.7, 15.11.8, 15.19.6, 16.2.3-9. (16.2.9)
Acetic anhydride	*Z*	*S/P*	2	2G	Cont	No	T2	IIA	No	R	F-T	A	Yes	15.11.2, 15.11.3, 15.11.4, 15.11.6, 15.11.7, 15.11.8, 15.19.6
Acetone cyanohydrin	*Y*	*S/P*	2	2G	Cont	No	T1	IIA	Yes	C	T	A	Yes	15.13, 15.12, 15.17, 15.18, 15.19 & 15.22.12 (15.19), 16.2.7-1. (16.6.1), 16.2.7-2. (16.6.2), 16.2.7-3. (16.6.3)
Acetonitrile	*Z*	*S/P*	2	2G	Cont	No	T2	IIA	No	R	F-T	A	No	15.12, 15.19.6
Acrylic acid	*Y*	*S/P*	2	2G	Cont	No	T2	IIA	No	R	F-T	A	No	15.13, 15.19.6, 16.2.7-1. (16.6.1), 16.2.3-9. (16.2.9)
Acrylonitrile	*Y*	*S/P*	2	2G	Cont	No	T1	IIB	No	C	F-T	A	Yes	15.12, 15.13, 15.17, 15.19 & 15.22.12 (15.19)
Acrylonitrile-Styrene copolymer dispersion in polyether polyol	*Y*	*P*	3	2G	Open	No			Yes	O	No	AB	No	15.19.6, 16.2.3-6. (16.2.6)
Adiponitrile	*Z*	*S/P*	3	2G	Cont	No		IIB	Yes	R	T	A	No	16.2.3-9. (16.2.9)
Alachlor technical (90% or more)	*X*	*S/P*	2	2G	Open	No			Yes	O	No	AC	No	15.19.6, 16.2.3-9. (16.2.9)
Alcohol (C9-C11) poly (2.5-9) ethoxylate	*Y*	*P*	3	2G	Open	No			Yes	O	No	A	No	15.19.6, 16.2.3-9. (16.2.9)
Alcohol (C6-C17) (secondary) poly(3-6)ethoxylates	*Y*	*P*	2	2G	Open	No			Yes	O	No	A	No	15.19.6, 16.2.3-9. (16.2.9)

Table S17.1 Summary of Minimum Requirements

a	*c*	*d*	*e*	*f*	*g*	*h*	*i'*	*i''*	*i'''*	*j*	*k*	*l*	*n*	*o*
Product Name	*Pollution Category*	*Hazards*	*Ship Type*	*Tank Type*	*Tank Vents*	*Tank Environmental Control*	*Electrical Equipment*			*Gauging*	*Vapour*	*Fire Extinguishing*	*Respiratory and Eye Protection*	*Special Requirements*
							Class	*Group*	*Flashpoint >60℃*					
Alcohol (C6-C17) (secondary) poly(7-12)ethoxylates	*Y*	*P*	2	2G	Open	No			Yes	O	No	A	No	15.19.6, 16.2.3-6. (16.2.6), 16.2.3-9. (16.2.9)
Alcohol (C12-C16) poly(1-6)ethoxylates	*Y*	*P*	2	2G	Open	No			Yes	O	No	A	No	15.19.6, 16.2.3-9. (16.2.9)
Alcohol (C12-C16) poly(20+)ethoxylates	*Y*	*P*	3	2G	Open	No			Yes	O	No	A	No	16.2.3-9. (16.2.9)
Alcohol (C12-C16) poly(7-19)ethoxylates	*Y*	*P*	2	2G	Open	No			Yes	O	No	A	No	15.19.6, 16.2.3-9. (16.2.9)
Alcohols (C13+)	*Y*	*P*	2	2G	Open	No			Yes	O	No	AB	No	15.19.6, 16.2.3-9. (16.2.9)
Alkanes (C6-C9)	*X*	*P*	2	2G	Cont	No			No	R	F	A	No	15.19.6
Iso-and cyclo-alkanes (C10-C11)	*Z*	*P*	3	2G	Cont	No			No	R	F	A	No	
Iso-and cyclo-alkanes (C12+)	*Z*	*P*	3	2G	Cont	No			No	R	F	A	No	
n-Alkanes (C10+)	*Z*	*P*	3	2G	Cont	No			No	R	F	AB	No	
Alkenyl (C16-C20) succinic anhydride	*Z*	*S/P*	3	2G	Cont	No			Yes	C	T	No	Yes	15.12, 15.17, 15.19 & 15.22.12 (15.19)
Alkylaryl phosphate mixtures (more than 40% Diphenyl tolyl phosphate, less than 0.02% ortho-isomers)	*X*	*S/P*	1	2G	Cont	No	T1	IIA	Yes	C	T	AB C	No	15.12, 15.17, 15.19 & 15.22.12 (15.19)
Alkylated (C4-C9) hindered phenols	*Y*	*S/P*	2	2G	Open	No	-	-	Yes	O	No	BD	No	15.19.6, 16.2.3-6. (16.2.6), 16.2.3-9. (16.2.9)
Alkylbenzene, alkylindane, alkylindene mixture (each C12-C17)	*Z*	*P*	3	2G	Open	No			Yes	O	No	A	No	15.19.6
Alkyl (C5-C8) benzenes	*X*	*P*	2	2G	Open	No			Yes	O	No	A	No	15.19.6
Alkyl(C9+)benzenes	*Z*	*P*	3	2G	Open	No			Yes	O	No	AB	No	
Alkyl (C12+) dimethylamine	*X*	*S/P*	1	2G	Cont	No	-	-	Yes	C	T	BC D	Yes	15.12, 15.17, 15.19 & 15.22.12 (15.19)
Alkyl dithiocarbamate (C19-C35)	*Y*	*P*	3	2G	Open	No			Yes	O	No	AB	No	15.19.6, 16.2.3-6. (16.2.6), 16.2.3-9. (16.2.9)

Table S17.1 Summary of Minimum Requirements

a	*c*	*d*	*e*	*f*	*g*	*h*	*i'*	*i''*	*i'''*	*j*	*k*	*l*	*n*	*o*
Product Name	*Pollution Category*	*Hazards*	*Ship Type*	*Tank Type*	*Tank Vents*	*Tank Environmental Control*	*Electrical Equipment*			*Gauging*	*Vapour*	*Fire Extinguishing*	*Respiratory and Eye Protection*	*Special Requirements*
							Class	*Group*	*Flashpoint >60℃*					
Alkyldithiothiadiazole (C6-C24)	*Z*	*P*	3	2G	Open	No			Yes	O	No	AB	No	
Alkyl ester copolymer (C4-C20)	*Y*	*P*	2	2G	Open	No			Yes	O	No	AB	No	15.19.6, 16.2.3-6. (16.2.6), 16.2.3-9. (16.2.9)
Alkyl (C8-C10)/(C12-C14):(40% or less/60% or more) polyglucoside solution (55% or less)	*Y*	*P*	3	2G	Open	No			Yes	O	No	No	No	15.19.6, 16.2.3-6. (16.2.6), 16.2.3-9. (16.2.9)
Alkyl (C8-C10)/(C12-C14):(60% or more/40% or less) polyglucoside solution(55% or less)	*Y*	*P*	3	2G	Open	No			Yes	O	No	No	No	16.2.3-6. (16.2.6), 16.2.3-9. (16.2.9)
Alkyl (C8-C40) phenol sulphide	*Z*	*P*	3	2G	Open	No			Yes	O	No	AB	No	
Alkyl (C8-C9) phenylamine in aromatic solvents	*Y*	*P*	2	2G	Cont	No			No	R	F	A	No	15.19.6
Alkyl (C9-C15) phenyl propoxylate	*Z*	*P*	3	2G	Open	No			Yes	O	No	AB	No	
Alkyl (C8-C10)/(C12-C14):(50%/50%) polyglucoside solution (55% or less)	*Y*	*P*	3	2G	Open	No			Yes	O	No	No	No	16.2.3-6. (16.2.6), 16.2.3-9. (16.2.9)
Alkyl (C12-C14) polyglucoside solution (55% or less)	*Y*	*P*	3	2G	Open	No			Yes	O	No	No	No	15.19.6, 16.2.3-9. (16.2.9)
Alkyl (C8-C10) polyglucoside solution (65% or less)	*Y*	*P*	3	2G	Open	No			Yes	O	No	No	No	16.2.3-6. (16.2.6)
Alkyl(C10-C20, saturated and unsaturated) phosphite	*Y*	*P*	2	2G	Open	No			Yes	O	No	A	No	16.2.3-9. (16.2.9)
Alkyl sulphonic acid ester of phenol	*Y*	*P*	3	2G	Open	No			Yes	O	No	AB	No	15.19.6, 16.2.3-6. (16.2.6)

Table S17.1 Summary of Minimum Requirements

a	*c*	*d*	*e*	*f*	*g*	*h*	*i'*	*i''*	*i'''*	*j*	*k*	*l*	*n*	*o*
Product Name	*Pollution Category*	*Hazards*	*Ship Type*	*Tank Type*	*Tank Vents*	*Tank Environmental Control*	*Electrical Equipment*			*Gauging*	*Vapour*	*Fire Extinguishing*	*Respiratory and Eye Protection*	*Special Requirements*
							Class	*Group*	*Flashpoint >60℃*					
Allyl alcohol	*Y*	*S/P*	2	2G	Cont	No	T2	IIB	No	C	F-T	A	Yes	15.12, 15.17, 15.19 & 15.22.12 (15.19)
Allyl chloride	*Y*	*S/P*	2	2G	Cont	No	T2	IIA	No	C	F-T	A	Yes	15.12, 15.17, 15.19 & 15.22.12 (15.19)
Aluminium sulphate solution	*Y*	*P*	2	2G	Open	No			Yes	O	No	A	No	15.19.6
Aminoethyl ethanolamine	*Z*	*S/P*	3	2G	Open	No	T2	IIA	Yes	O	No	A	No	
2-Amino-2-methyl-1-propanol	*Z*	*P*	3	2G	Open	No			Yes	O	No	A	No	
Ammonia aqueous (28% or less)	*Y*	*S/P*	2	2G	Cont	No			NF	R	T	AB C	Yes	
Ammonium hydrogen phosphate solution	*Z*	*P*	3	2G	Open	No			Yes	O	No	A	No	
Ammonium nitrate solution (93% or less)	*Z*	*S/P*	2	1G	Open	No			NF	O	No	No	No	15.2 & 15.22.2 (15.2), 15.11.4, 15.11.6, 15.18, 15.19.6, 16.2.3-9. (16.2.9)
Ammonium polyphosphate solution	*Z*	*P*	3	2G	Open	No			Yes	O	No	A	No	
Ammonium sulphate solution	*Z*	*P*	3	2G	Open	No			Yes	O	No	A	No	
Ammonium sulphide solution (45% or less)	*Y*	*S/P*	2	2G	Cont	No			No	C	F-T	A	Yes	15.12, 15.17, 15.19 & 15.22.12 (15.19), 16.2.7-1. (16.6.1), 16.2.7-2. (16.6.2), 16.2.7-3. (16.6.3)
Amyl acetate (all isomers)	*Y*	*P*	3	2G	Cont	No			No	R	F	A	No	15.19.6
n-Amyl alcohol	*Z*	*P*	3	2G	Cont	No			No	R	F	AB	No	
Amyl alcohol, primary	*Z*	*P*	3	2G	Cont	No			No	R	F	AB	No	
sec-Amyl alcohol	*Z*	*P*	3	2G	Cont	No			No	R	F	AB	No	
tert-Amyl alcohol	*Z*	*P*	3	2G	Cont	No			No	R	F	A	No	
tert-Amyl methyl ether	*X*	*P*	2	2G	Cont	No	T3		No	R	F	A	No	15.19.6
Aniline	*Y*	*S/P*	2	2G	Cont	No	T1	IIA	Yes	C	T	A	No	15.12, 15.17, 15.19 & 15.22.12 (15.19)

Table S17.1 Summary of Minimum Requirements

a	*c*	*d*	*e*	*f*	*g*	*h*	*i'*	*i''*	*i'''*	*j*	*k*	*l*	*n*	*o*
Product Name	*Pollution Category*	*Hazards*	*Ship Type*	*Tank Type*	*Tank Vents*	*Tank Environmental Control*	*Electrical Equipment*			*Gauging*	*Vapour*	*Fire Extinguishing*	*Respiratory and Eye Protection*	*Special Requirements*
							Class	*Group*	*Flashpoint >60℃*					
Aryl polyolefins (C11-C50)	*Y*	*P*	2	2G	Open	No			Yes	O	No	AB	No	15.19.6, 16.2.3-6. (16.2.6), 16.2.3-9. (16.2.9)
Aviation alkylates (C8 paraffins and iso-paraffins BPT 95 - 120°C)	*X*	*P*	2	2G	Cont	No			No	R	F	B	No	15.19.6
Barium long chain (C11-C50) alkaryl sulphonate	*Y*	*S/P*	2	2G	Open	No			Yes	O	No	AD	No	15.12.3, 15.19 & 15.22.12 (15.19), 16.2.3-6. (16.2.6), 16.2.3-9. (16.2.9)
Benzene and mixtures having 10% benzene or more (i)	*Y*	*S/P*	3	2G	Cont	No	T1	IIA	No	C	F-T	AB	No	15.12.1, 15.17, 15.19.6, 16.2.3-9. (16.2.9)
Benzenetricarboxylic acid, trioctyl ester	*Y*	*P*	2	2G	Open	No			Yes	O	No	AB	No	15.19.6, 16.2.3-6. (16.2.6)
Benzyl acetate	*Y*	*P*	2	2G	Open	No			Yes	O	No	A	No	
Benzyl alcohol	*Y*	*P*	3	2G	Open	No			Yes	O	No	A	No	
Bromochloromethane	*Z*	*S/P*	3	2G	Cont	No			NF	R	T	No	No	
Butyl acetate (all isomers)	*Y*	*P*	3	2G	Cont	No			No	R	F	A	No	15.19.6
Butyl acrylate (all isomers)	*Y*	*S/P*	2	2G	Cont	No	T2	IIB	No	R	F-T	A	No	15.13, 15.19.6, 16.2.7-1. (16.6.1), 16.2.7-2. (16.6.2)
tert-Butyl alcohol	*Z*	*P*	3	2G	Cont	No			No	R	F	A	No	
Butylamine (all isomers)	*Y*	*S/P*	2	2G	Cont	No			No	R	F-T	A	Yes	15.12, 15.17, 15.19.6
Butylbenzene (all isomers)	*X*	*P*	2	2G	Cont	No			No	R	F	A	No	15.19.6
Butyl benzyl phthalate	*X*	*P*	2	2G	Open	No			Yes	O	No	A	No	15.19.6
Butyl butyrate (all isomers)	*Y*	*P*	3	2G	Cont	No			No	R	F	A	No	15.19.6
Butyl/Decyl/Cetyl/Eicosyl methacrylate mixture	*Y*	*S/P*	2	2G	Cont	No			Yes	R	No	AD	No	15.13, 15.19.6, 16.2.7-1. (16.6.1), 16.2.7-2. (16.6.2)

Table S17.1 Summary of Minimum Requirements

a	*c*	*d*	*e*	*f*	*g*	*h*	*i'*	*i''*	*i'''*	*j*	*k*	*l*	*n*	*o*
Product Name	*Pollution Category*	*Hazards*	*Ship Type*	*Tank Type*	*Tank Vents*	*Tank Environmental Control*	*Electrical Equipment*			*Gauging*	*Vapour*	*Fire Extinguishing*	*Respiratory and Eye Protection*	*Special Requirements*
							Class	*Group*	*Flashpoint >60℃*					
Butylene glycol	*Z*	*P*	3	2G	Open	No			Yes	O	No	A	No	
1,2-Butylene oxide	*Y*	*S/P*	3	2G	Cont	Inert	T2	IIB	No	R	F	AC	No	15.8.1～15.8.7 & 15.22.8-1. ～ 15.22.8-5. (15.8.1 ～ 15.8.7), 15.8.12, 15.8.13, 15.8.17 (15.8.16), 15.8.19(15.8.17), 15.8.20 &15.22.8-8. (15.8.18), 15.8.21 & 15.22.8-9 (15.8.19), 15.8.23 (15.8.21), 15.8.31～15.8.33& 15.22.8-12.～15.22.8-14. (15.8.25),15.8.35(15.8.27) 15.8.37&15.22.8-16 (15.8.29), 15.19.6
n-Butyl ether	*Y*	*S/P*	3	2G	Cont	Inert	T4	IIB	No	R	F-T	A	No	15.4.6, 15.12, 15.19.6
Butyl methacrylate	*Z*	*S/P*	3	2G	Cont	No		IIA	No	R	F-T	AD	No	15.13, 15.19.6, 16.2.7-1. (16.6.1), 16.2.7-2. (16.6.2)
n-Butyl propionate	*Y*	*P*	3	2G	Cont	No			No	R	F	A	No	15.19.6
Butyraldehyde (all isomers)	*Y*	*S/P*	3	2G	Cont	No	T3	IIA	No	R	F-T	A	No	15.19.6
Butyric acid	*Y*	*S/P*	3	2G	Cont	No			Yes	R	No	A	No	15.11.2, 15.11.3, 15.11.4, 15.11.6, 15.11.7, 15.11.8, 15.19.6
gamma-Butyrolactone	*Y*	*P*	3	2G	Open	No			Yes	O	No	AB	No	15.19.6
Calcium carbonate slurry	*Z*	*P*	3	2G	Open	No			Yes	O	No	AB	No	
Calcium hypochlorite solution (15% or less)	*Y*	*S/P*	2	2G	Cont	No			NF	R	No	No	No	15.19.6

Table S17.1 Summary of Minimum Requirements

a	*c*	*d*	*e*	*f*	*g*	*h*	*i'*	*i''*	*i'''*	*j*	*k*	*l*	*n*	*o*
Product Name	*Pollution Category*	*Hazards*	*Ship Type*	*Tank Type*	*Tank Vents*	*Tank Environmental Control*	*Electrical Equipment*			*Gauging*	*Vapour*	*Fire Extinguishing*	*Respiratory and Eye Protection*	*Special Requirements*
							Class	*Group*	*Flashpoint >60℃*					
Calcium hypochlorite solution (more than 15%)	*X*	*S/P*	1	2G	Cont	No			NF	R	No	No	No	15.19 & 15.22.12 (15.19), 16.2.3-9. (16.2.9)
Calcium long-chain alkyl(C5-C10) phenate	*Y*	*P*	3	2G	Open	No			Yes	O	No	A	No	
Calcium long-chain alkyl(C11-C40) phenate	*Z*	*P*	3	2G	Open	No			Yes	O	No	A	No	
Calcium long-chain alkyl phenate sulphide (C8-C40)	*Y*	*P*	2	2G	Open	No			Yes	O	No	AB	No	15.19.6, 16.2.3-6. (16.2.6), 16.2.3-9. (16.2.9)
epsilon-Caprolactam (molten or aqueous solutions)	*Z*	*P*	3	2G	Open	No			Yes	O	No	A	No	
Carbon disulphide	*Y*	*S/P*	2	1G	Cont	Pad+inert	T6	IIC	No	C	F-T	C	Yes	15.3 & 15.22.3 (15.3), 15.12, 15.19 & 15.22.12 (15.19)
Carbon tetrachloride	*Y*	*S/P*	2	2G	Cont	No			NF	C	T	No	Yes	15.12, 15.17, 15.19.6
Castor oil (containing less than 2% free fatty acids)	*Y*	*P*	2 (k)	2G	Open	No	-	-	Yes	Open	No	AB CD	No	15.19.6, 16.2.3-6. (16.2.6)
Cetyl/Eicosyl methacrylate mixture	*Y*	*S/P*	2	2G	Open	No			Yes	O	No	AD	No	15.13, 16.2.7-1. (16.6.1), 16.2.7-2. (16.6.2), 15.19.6, 16.2.3-9. (16.2.9)
Chlorinated paraffins (C10-C13)	*X*	*P*	1	2G	Open	No			Yes	O	No	A	No	15.19 & 15.22.12 (15.19), 16.2.3-6. (16.2.6)
Chloroacetic acid (80% or less)	*Y*	*S/P*	2	2G	Cont	No			NF	C	No	No	No	15.11.2, 15.11.4, 15.11.6, 15.11.7, 15.11.8, 15.12.3, 15.19 & 15.22.12 (15.19), 16.2.3-9. (16.2.9)
Chlorobenzene	*Y*	*S/P*	2	2G	Cont	No	T1	IIA	No	R	F-T	AB	No	15.19.6
Chloroform	*Y*	*S/P*	3	2G	Cont	No			NF	R	T	No	Yes	15.12, 15.19.6
Chlorohydrins (crude)	*Y*	*S/P*	2	2G	Cont	No		IIA	No	C	F-T	A	No	15.12, 15.19 & 15.22.12 (15.19)
4-Chloro-2-methylphenoxyacetic acid, dimethylamine salt solution	*Y*	*P*	2	2G	Open	No			NF	O	No	No	No	16.2.3-9. (16.2.9)

Table S17.1 Summary of Minimum Requirements

a	*c*	*d*	*e*	*f*	*g*	*h*	*i'*	*i''*	*i'''*	*j*	*k*	*l*	*n*	*o*
Product Name	*Pollution Category*	*Hazards*	*Ship Type*	*Tank Type*	*Tank Vents*	*Tank Environmental Control*	*Electrical Equipment*			*Gauging*	*Vapour*	*Fire Extinguishing*	*Respiratory and Eye Protection*	*Special Requirements*
							Class	*Group*	*Flashpoint >60℃*					
1-(4-Chlorophenyl)-4,4-dimethyl-pentan-3-one	*Y*	*P*	2	2G	Open	No			Yes	O	No	AB D	No	15.19.6, 16.2.3-6. (16.2.6), 16.2.3-9. (16.2.9)
2-or 3-Chloropropionic acid	*Z*	*S/P*	3	2G	Open	No			Yes	O	No	A	No	15.11.2, 15.11.3, 15.11.4, 15.11.6, 15.11.7, 15.11.8, 16.2.3-9. (16.2.9)
Chlorosulphonic acid	*Y*	*S/P*	1	2G	Cont	No			NF	C	T	No	Yes	15.11.2, 15.11.3, 15.11.4, 15.11.5, 15.11.6, 15.11.7, 15.11.8, 15.12, 15.16.2 & 15.22.11 (15.16.2), 15.19 & 15.22.12 (15.19)
m-Chlorotoluene	*Y*	*S/P*	2	2G	Cont	No			No	R	F-T	AB	No	15.19.6
o-Chlorotoluene	*Y*	*S/P*	2	2G	Cont	No			No	R	F-T	AB	No	15.19.6
p-Chlorotoluene	*Y*	*S/P*	2	2G	Cont	No			No	R	F-T	AB	No	15.19.6, 16.2.3-9. (16.2.9)
Chlorotoluenes (mixed isomers)	*Y*	*S/P*	2	2G	Cont	No			No	R	F-T	AB	No	15.19.6
Choline chloride solutions	*Z*	*P*	3	2G	Open	No			Yes	O	No	A	No	
Citric acid (70% or less)	*Z*	*P*	3	2G	Open	No			Yes	O	No	A	No	
Coconut oil (containing less than 5% free fatty acids)	*Y*	*P*	2 (k)	2G	Open	No	-	-	Yes	Open	No	AB CD	No	15.19.6, 16.2.3-6. (16.2.6), 16.2.3-9. (16.2.9)
Corn Oil (containing less than 10% free fatty acids)	*Y*	*P*	2 (k)	2G	Open	No	-	-	Yes	Open	No	AB CD	No	15.19.6, 16.2.3-6. (16.2.6)
Cotton seed oil (containing less than 12% free fatty acids)	*Y*	*P*	2 (k)	2G	Open	No	-	-	Yes	Open	No	AB CD	No	15.19.6, 16.2.3-6. (16.2.6), 16.2.3-9. (16.2.9)
Cresols (all isomers)	*Y*	*S/P*	2	2G	Open	No	T1	IIA	Yes	O	No	AB	No	15.19.6, 16.2.3-9. (16.2.9)
Cresylic acid, dephenolized	*Y*	*S/P*	2	2G	Open	No			Yes	O	No	AB	No	15.19.6
Crotonaldehyde	*Y*	*S/P*	2	2G	Cont	No	T3	IIB	No	R	F-T	A	Yes	15.12, 15.17, 15.19.6
1,5,9-Cyclododecatriene	*X*	*S/P*	1	2G	Cont	No			Yes	R	T	A	No	15.13, 15.19 & 15.22.12 (15.19), 16.2.7-1. (16.6.1), 16.2.7-2. (16.6.2)
Cycloheptane	*X*	*P*	2	2G	Cont	No			No	R	F	A	No	15.19.6

Table S17.1 Summary of Minimum Requirements

a	*c*	*d*	*e*	*f*	*g*	*h*	*i'*	*i''*	*i'''*	*j*	*k*	*l*	*n*	*o*
Product Name	*Pollution Category*	*Hazards*	*Ship Type*	*Tank Type*	*Tank Vents*	*Tank Environmental Control*	*Electrical Equipment*			*Gauging*	*Vapour*	*Fire Extinguishing*	*Respiratory and Eye Protection*	*Special Requirements*
							Class	*Group*	*Flashpoint >60℃*					
Cyclohexane	*Y*	*P*	2	2G	Cont	No			No	R	F	A	No	15.19.6, 16.2.3-9. (16.2.9)
Cyclohexanol	*Y*	*P*	2	2G	Open	No			Yes	O	No	AB	No	15.19.6, 16.2.3-9. (16.2.9)
Cyclohexanone	*Z*	*S/P*	3	2G	Cont	No	T2	IIA	No	R	F-T	A	No	15.19.6
Cyclohexanone, Cyclohexanol mixture	*Y*	*S/P*	3	2G	Cont	No			Yes	R	F-T	A	No	
Cyclohexyl acetate	*Y*	*P*	3	2G	Cont	No			No	R	F	A	No	15.19.6
Cyclohexylamine	*Y*	*S/P*	3	2G	Cont	No	T3	IIA	No	R	F-T	AC	No	15.19.6
1,3-Cyclopentadiene dimer (molten)	*Y*	*P*	2	2G	Cont	No			No	R	F	A	No	15.19.6, 16.2.3-6. (16.2.6), 16.2.3-9. (16.2.9)
Cyclopentane	*Y*	*P*	2	2G	Cont	No			No	R	F	A	No	15.19.6
Cyclopentene	*Y*	*P*	2	2G	Cont	No			No	R	F	A	No	15.19.6
p-Cymene	*Y*	*P*	2	2G	Cont	No			No	R	F	A	No	15.19.6
Decahydronaphthalene	*Y*	*P*	2	2G	Cont	No			No	R	F	AB	No	15.19.6
Decanoic acid	*X*	*P*	2	2G	Open	No			Yes	O	No	A	No	16.2.3-9. (16.2.9)
Decyl acrylate	*X*	*S/P*	1	2G	Open	No	T3	IIA	Yes	O	No	ACD	No	15.13, 15.19 & 15.22.12 (15.19), 16.2.7-1. (16.6.1), 16.2.7-2. (16.6.2)
Decyl alcohol (all isomers)	*Y*	*P*	2	2G	Open	No			Yes	O	No	A	No	15.19.6, 16.2.3-9. (16.2.9) (e)
Diacetone alcohol	*Z*	*P*	3	2G	Cont	No			No	R	F	A	No	
Dialkyl (C8-C9) diphenylamines	*Z*	*P*	3	2G	Open	No			Yes	O	No	AB	No	
Dialkyl (C7-C13) phthalates	*X*	*P*	2	2G	Open	No			Yes	O	No	AB	No	15.19.6, 16.2.3-6. (16.2.6)
Dibromomethane	*Y*	*S/P*	2	2G	Cont	No			NF	R	T	No	No	15.12.3, 15.19 & 15.22.12 (15.19)
Dibutylamine	*Y*	*S/P*	3	2G	Cont	No	T2	IIA	No	R	F-T	ACD	No	15.19.6
Dibutyl hydrogen phosphonate	*Y*	*P*	3	2G	Open	No			Yes	O	No	A	No	15.19.6, 16.2.3-9. (16.2.9)
Dibutyl phthalate	*X*	*P*	2	2G	Open	No			Yes	O	No	A	No	15.19.6
Dichlorobenzene (all isomers)	*X*	*S/P*	2	2G	Cont	No	T1	IIA	Yes	R	T	ABD	No	15.19.6
3,4-Dichloro-1-butene	*Y*	*S/P*	2	2G	Cont	No			No	C	F-T	AB	Yes	15.12.3, 15.17, 15.19.6

Table S17.1 Summary of Minimum Requirements

a	*c*	*d*	*e*	*f*	*g*	*h*	*i'*	*i''*	*i'''*	*j*	*k*	*l*	*n*	*o*
Product Name	*Pollution Category*	*Hazards*	*Ship Type*	*Tank Type*	*Tank Vents*	*Tank Environmental Control*	*Electrical Equipment*			*Gauging*	*Vapour*	*Fire Extinguishing*	*Respiratory and Eye Protection*	*Special Requirements*
							Class	*Group*	*Flashpoint >60℃*					
												C		
Dichloroethyl ether	*Y*	*S/P*	2	2G	Cont	No	T2	IIA	No	R	F-T	A	No	15.19.6
2,2-Dichloroisopropyl ether	*Y*	*S/P*	2	2G	Cont	No			Yes	R	T	AC D	No	15.12, 15.17, 15.19 & 15.22.12 (15.19)
2,4-Dichlorophenol	*Y*	*S/P*	2	2G	Cont	Dry			Yes	R	T	A	No	15.19.6, 16.2.3-6. (16.2.6), 16.2.3-9. (16.2.9)
1,1-Dichloropropane	*Y*	*S/P*	2	2G	Cont	No			No	R	F-T	AB	No	15.12, 15.19.6
1,2-Dichloropropane	*Y*	*S/P*	2	2G	Cont	No	T1	IIA	No	R	F-T	AB	No	15.12, 15.19.6
1,3-Dichloropropene	*X*	*S/P*	2	2G	Cont	No	T2	IIA	No	C	F-T	AB	Yes	15.12, 15.17, 15.18, 15.19 & 15.22.12 (15.19)
Dichloropropene/Dichloropropane mixtures	*X*	*S/P*	2	2G	Cont	No			No	C	F-T	AB D	Yes	15.12, 15.17, 15.18, 15.19 & 15.22.12 (15.19)
Diethanolamine	*Y*	*S/P*	3	2G	Open	No	T1	IIA	Yes	O	No	A	No	16.2.3-6. (16.2.6), 16.2.3-9. (16.2.9)
Diethylamine	*Y*	*S/P*	3	2G	Cont	No	T2	IIA	No	R	F-T	A	Yes	15.12, 15.19.6
Diethylaminoethanol	*Y*	*S/P*	2	2G	Cont	No	T2	IIA	No	R	F-T	AC	No	15.19.6
Diethylbenzene	*Y*	*P*	2	2G	Cont	No			No	R	F	A	No	15.19.6
Diethylenetriamine	*Y*	*S/P*	3	2G	Open	No	T2	IIA	Yes	O	No	A	No	
Diethyl ether	*Z*	*S/P*	2	1G	Cont	Inert	T4	IIB	No	C	F-T	A	Yes	15.4, 15.14 & 15.22.10 (15.14), 15.19 & 15.22.12 (15.19)
Di-(2-ethylhexyl) adipate	*Y*	*P*	2	2G	Open	No			Yes	O	No	AB	No	15.19.6
Diethyl phthalate	*Y*	*P*	2	2G	Open	No			Yes	O	No	A	No	
Diethyl sulphate	*Y*	*S/P*	2	2G	Cont	No			Yes	C	T	A	No	15.19.6
Diheptyl phthalate	*Y*	*P*	2	2G	Open	No			Yes	O	No	AB	No	15.19.6
Di-n-hexyl adipate	*X*	*P*	1	2G	Open	No			Yes	O	No	A	No	15.19 & 15.22.12 (15.19)
Dihexyl phthalate	*Y*	*P*	2	2G	Open	No			Yes	O	No	AB	No	15.19.6
Diisobutylamine	*Y*	*S/P*	2	2G	Cont	No			No	R	F-T	AC D	No	15.12.3, 15.19.6
Diisobutylene	*Y*	*P*	2	2G	Cont	No			No	R	F	A	No	15.19.6
Diisobutyl ketone	*Y*	*P*	3	2G	Cont	No			No	R	F	A	No	15.19.6

Table S17.1 Summary of Minimum Requirements

a	*c*	*d*	*e*	*f*	*g*	*h*	*i'*	*i''*	*i'''*	*j*	*k*	*l*	*n*	*o*
Product Name	*Pollution Category*	*Hazards*	*Ship Type*	*Tank Type*	*Tank Vents*	*Tank Environmental Control*	*Electrical Equipment*			*Gauging*	*Vapour*	*Fire Extinguishing*	*Respiratory and Eye Protection*	*Special Requirements*
							Class	*Group*	*Flashpoint >60℃*					
Diisobutyl phthalate	*X*	*P*	2	2G	Open	No			Yes	O	No	A	No	15.19.6
Diisooctyl phthalate	*Y*	*P*	2	2G	Open	No			Yes	O	No	AB	No	15.19.6, 16.2.3-6. (16.2.6)
Diisopropanolamine	*Z*	*S/P*	3	2G	Open	No	T2	IIA	Yes	O	No	A	No	16.2.3-9. (16.2.9)
Diisopropylamine	*Y*	*S/P*	2	2G	Cont	No	T2	IIA	No	C	F-T	A	Yes	15.12, 15.19 & 15.22.12 (15.19)
Diisopropylbenzene (all isomers)	*X*	*P*	2	2G	Open	No			Yes	O	No	A	No	15.19.6
N,N-Dimethylacetamide	*Z*	*S/P*	3	2G	Cont	No	-	-	Yes	C	T	AC D	No	15.12, 15.17
N,N-Dimethylacetamide solution (40% or less)	*Z*	*S/P*	3	2G	Cont	No			Yes	R	T	B	No	15.12.1, 15.17
Dimethyl adipate	*X*	*P*	2	2G	Open	No			Yes	O	No	A	No	15.19.6, 16.2.3-9. (16.2.9)
Dimethylamine solution (45% or less)	*Y*	*S/P*	3	2G	Cont	No	T2	IIA	No	R	F-T	AC D	No	15.12, 15.19.6
Dimethylamine solution (greater than 45% but not greater than 55%)	*Y*	*S/P*	2	2G	Cont	No			No	C	F-T	AC D	Yes	15.12, 15.17, 15.19 & 15.22.12 (15.19)
Dimethylamine solution (greater than 55% but not greater than 65%)	*Y*	*S/P*	2	2G	Cont	No			No	C	F-T	AC D	Yes	15.12, 15.14 & 15.22.10 (15.14), 15.17, 15.19 & 15.22.12 (15.19)
N,N-Dimethylcyclohexylamine	*Y*	*S/P*	2	2G	Cont	No			No	R	F-T	AC	No	15.12, 15.17, 15.19.6
Dimethyl disulphide	*Y*	*S/P*	2	2G	Cont	No	T3	IIA	No	R	F-T	B	No	15.12.3, 15.12.4, 15.19.6
N,N-Dimethyldodecylamine	*X*	*S/P*	1	2G	Open	No			Yes	O	No	B	No	15.19 & 15.22.12 (15.19)
Dimethylethanolamine	*Y*	*S/P*	3	2G	Cont	No	T3	IIA	No	R	F-T	AD	No	15.19.6
Dimethylformamide	*Y*	*S/P*	3	2G	Cont	No	T2	IIA	No	R	F-T	AD	No	15.19.6
Dimethyl glutarate	*Y*	*P*	3	2G	Open	No			Yes	O	No	A	No	
Dimethyl hydrogen phosphite	*Y*	*S/P*	3	2G	Cont	No			Yes	R	T	AD	No	15.12.1, 15.19.6
Dimethyl octanoic acid	*Y*	*P*	2	2G	Open	No			Yes	O	No	A	No	16.2.3-6. (16.2.6), 16.2.3-9. (16.2.9)
Dimethyl phthalate	*Y*	*P*	3	2G	Open	No			Yes	O	No	A	No	16.2.3-9. (16.2.9)
Dimethylpolysiloxane	*Y*	*P*	3	2G	Open	No			Yes	O	No	AB	No	15.19.6
2,2-Dimethylpropane-1,3-diol (molten or	*Z*	*P*	3	2G	Open	No			Yes	O	No	AB	No	

Table S17.1 Summary of Minimum Requirements

a	*c*	*d*	*e*	*f*	*g*	*h*	*i'*	*i''*	*i'''*	*j*	*k*	*l*	*n*	*o*
Product Name	*Pollution Category*	*Hazards*	*Ship Type*	*Tank Type*	*Tank Vents*	*Tank Environmental Control*	*Electrical Equipment*			*Gauging*	*Vapour*	*Fire Extinguishing*	*Respiratory and Eye Protection*	*Special Requirements*
							Class	*Group*	*Flashpoint >60℃*					
solution)														
Dimethyl succinate	*Y*	*P*	3	2G	Open	No			Yes	O	No	A	No	16.2.3-9. (16.2.9)
Dinitrotoluene (molten)	*X*	*S/P*	2	2G	Cont	No			Yes	C	T	A	No	15.12, 15.17, 15.19 & 15.22.12 (15.19), 15.21, 16.2.3-6. (16.2.6), 16.2.3-9. (16.2.9), 16.2.7-4. (16.6.4)
Dioctyl phthalate	*X*	*P*	2	2G	Open	No			Yes	O	No	AB	No	15.19.6
1,4-Dioxane	*Y*	*S/P*	2	2G	Cont	No	T2	IIB	No	C	F-T	A	No	15.12, 15.19 & 15.22.12 (15.19), 16.2.3-9. (16.2.9)
Dipentene	*Y*	*P*	3	2G	Cont	No			No	R	F	A	No	15.19.6
Diphenyl	*X*	*P*	2	2G	Open	No			Yes	O	No	B	No	15.19.6, 16.2.3-6. (16.2.6), 16.2.3-9. (16.2.9)
Diphenyl/Diphenyl ether mixtures	*X*	*P*	2	2G	Open	No			Yes	O	No	B	No	15.19.6, 16.2.3-9. (16.2.9)
Diphenyl ether	*X*	*P*	2	2G	Open	No			Yes	O	No	A	No	15.19.6, 16.2.3-9. (16.2.9)
Diphenyl ether/Diphenyl phenyl ether mixture	*X*	*P*	2	2G	Open	No			Yes	O	No	A	No	15.19.6, 16.2.3-9. (16.2.9)
Diphenylol propane-epichlorohydrin resins	*X*	*P*	2	2G	Open	No			Yes	O	No	A	No	15.19.6, 16.2.3-6. (16.2.6), 16.2.3-9. (16.2.9)
Di-n-propylamine	*Y*	*S/P*	2	2G	Cont	No			No	R	F-T	A	No	15.12.3, 15.19.6
Dipropylene glycol	*Z*	*P*	3	2G	Open	No			Yes	O	No	A	No	
Dithiocarbamate ester (C7-C35)	*X*	*P*	2	2G	Open	No			Yes	O	No	AD	No	15.19.6, 16.2.3-9. (16.2.9)
Diundecyl phthalate	*Y*	*P*	2	2G	Open	No			Yes	O	No	AB	No	15.19.6, 16.2.3-6. (16.2.6), 16.2.3-9. (16.2.9)
Dodecane (all isomers)	*Y*	*P*	2	2G	Cont	No			No	R	F	AB	No	15.19.6
tert-Dodecanethiol	*X*	*S/P*	1	2G	Cont	No	-	-	Yes	C	T	AB D	Yes	15.12, 15.17, 15.19 & 15.22.12 (15.19)

Table S17.1 Summary of Minimum Requirements

a	*c*	*d*	*e*	*f*	*g*	*h*	*i'*	*i''*	*i'''*	*j*	*k*	*l*	*n*	*o*
Product Name	*Pollution Category*	*Hazards*	*Ship Type*	*Tank Type*	*Tank Vents*	*Tank Environmental Control*	*Electrical Equipment*			*Gauging*	*Vapour*	*Fire Extinguishing*	*Respiratory and Eye Protection*	*Special Requirements*
							Class	*Group*	*Flashpoint >60℃*					
Dodecene (all isomers)	*X*	*P*	2	2G	Open	No			Yes	O	No	A	No	15.19.6
Dodecyl alcohol	*Y*	*P*	2	2G	Open	No			Yes	O	No	A	No	15.19.6, 16.2.3-9. (16.2.9)
Dodecylbenzene	*Z*	*P*	3	2G	Open	No			Yes	O	No	AB	No	
Dodecyl hydroxypropyl sulphide	*X*	*P*	2	2G	Open	No			Yes	O	No	A	No	15.19.6
Dodecyl methacrylate	*Z*	*S/P*	3	2G	Open	No			Yes	O	No	A	No	15.13
Dodecyl/Octadecyl methacrylate (mixture)	*Z*	*S/P*	3	2G	Open	No			Yes	R	No	AD	No	15.13, 16.2.7-1. (16.6.1), 16.2.7-2. (16.6.2)
Dodecyl/Pentadecyl methacrylate mixture	*Y*	*S/P*	2	2G	Open	No			Yes	O	No	AD	No	15.13, 16.2.7-1. (16.6.1), 16.2.7-2. (16.6.2), 15.19.6
Dodecyl phenol	*X*	*P*	2	2G	Open	No			Yes	O	No	A	No	15.19.6, 16.2.3-6. (16.2.6)
Dodecyl Xylene	*Y*	*P*	2	2G	Open	No			Yes	O	No	AB	No	15.19.6, 16.2.3-6. (16.2.6)
Drilling brines (containing zinc salts)	*X*	*P*	2	2G	Open	No			Yes	O	No	No	No	15.19.6
Drilling brines, including:calcium bromide solution, calcium chloride solution and sodium chloride solution	*Z*	*P*	3	2G	Open	No			Yes	O	No	A	No	
Epichlorohydrin	*Y*	*S/P*	2	2G	Cont	No		IIB	No	C	F-T	A	Yes	15.12, 15.17, 15.19 & 15.22.12 (15.19)
Ethanolamine	*Y*	*S/P*	3	2G	Open	No	T2	IIA	Yes	O	F-T	A	No	16.2.3-9. (16.2.9)
2-Ethoxyethyl acetate	*Y*	*P*	3	2G	Cont	No			No	R	F	A	No	15.19.6
Ethoxylated long chain (C16+) alkyloxyalkylamine	*Z*	*P*	3	2G	Open	No			Yes	O	No	AB	No	
Ethyl acetate	*Z*	*P*	3	2G	Cont	No			No	R	F	AB	No	
Ethyl acetoacetate	*Z*	*P*	3	2G	Open	No			Yes	O	No	A	No	
Ethyl acrylate	*Y*	*S/P*	2	2G	Cont	No	T2	IIB	No	R	F-T	A	Yes	15.13, 15.19.6, 16.2.7-1. (16.6.1), 16.2.7-2. (16.6.2)
Ethylamine	*Y*	*S/P*	2	1G	Cont	No	T2	IIA	No	C	F-T	CD	Yes	15.12, 15.14 & 15.22.10 (15.14), 15.19.6
Ethylamine solutions (72% or less)	*Y*	*S/P*	2	2G	Cont	No			No	C	F-T	AC	Yes	15.12, 15.14 & 15.22.10 (15.14), 15.17, 15.19 & 15.22.12 (15.19)

Table S17.1 Summary of Minimum Requirements

a	*c*	*d*	*e*	*f*	*g*	*h*	*i'*	*i''*	*i'''*	*j*	*k*	*l*	*n*	*o*
Product Name	*Pollution Category*	*Hazards*	*Ship Type*	*Tank Type*	*Tank Vents*	*Tank Environmental Control*	*Electrical Equipment*			*Gauging*	*Vapour*	*Fire Extinguishing*	*Respiratory and Eye Protection*	*Special Requirements*
							Class	*Group*	*Flashpoint >60℃*					
Ethylbenzene	*Y*	*P*	2	2G	Cont	No			No	R	F	A	No	15.19.6
Ethyl tert-butyl ether	*Y*	*P*	3	2G	Cont	No			No	R	F	A	No	15.19.6
Ethylcyclohexane	*Y*	*P*	2	2G	Cont	No			No	R	F	A	No	15.19.6
N-Ethylcyclohexylamine	*Y*	*S/P*	2	2G	Cont	No			No	R	F-T	A	No	15.19.6
S-Ethyl dipropylthiocarbamate	*Y*	*P*	2	2G	Open	No			Yes	O	No	A	No	16.2.3-9. (16.2.9)
Ethylene chlorohydrin	*Y*	*S/P*	2	2G	Cont	No	T2	IIA	No	C	F-T	AD	Yes	15.12, 15.17, 15.19 & 15.22.12 (15.19)
Ethylene cyanohydrin	*Y*	*S/P*	3	2G	Open	No		IIB	Yes	O	No	A	No	
Ethylenediamine	*Y*	*S/P*	2	2G	Cont	No	T2	IIA	No	R	F-T	A	No	15.19.6, 16.2.3-9. (16.2.9)
Ethylene dibromide	*Y*	*S/P*	2	2G	Cont	No			NF	C	T	No	Yes	15.12, 15.19.6, 16.2.3-9. (16.2.9)
Ethylene dichloride	*Y*	*S/P*	2	2G	Cont	No	T2	IIA	No	R	F-T	AB	No	15.19 & 15.22.12 (15.19)
Ethylene glycol	*Y*	*P*	3	2G	Open	No			Yes	O	No	A	No	15.19.6
Ethylene glycol butyl ether acetate	*Y*	*P*	3	2G	Open	No			Yes	O	No	A	No	
Ethylene glycol diacetate	*Y*	*P*	3	2G	Open	No			Yes	O	No	A	No	
Ethylene glycol monoalkyl ethers	*Y*	*S/P*	3	2G	Cont	No			No	R	F	A	No	15.19.6, 16.2.3-9. (16.2.9)
Ethylene oxide/Propylene oxide mixture with an ethylene oxide content of not more than 30% by mass	*Y*	*S/P*	2	1G	Cont	Inert	T2	IIB	No	C	F-T	AC	No	15.8 & 15.22.8 (15.8), 15.12, 15.14 & 15.22.10 (15.14), 15.19 & 15.22.12 (15.19)
Ethyl-3-ethoxypropionate	*Y*	*P*	3	2G	Cont	No			No	R	No	A	No	15.19.6
2-Ethylhexanoic acid	*Y*	*P*	3	2G	Open	No			Yes	O	No	AB	No	15.19.6
2-Ethylhexyl acrylate	*Y*	*S/P*	3	2G	Open	No	T3	IIB	Yes	O	No	A	No	15.13, 15.19.6, 16.2.7-1. (16.6.1), 16.2.7-2. (16.6.2)
2-Ethylhexylamine	*Y*	*S/P*	2	2G	Cont	No			No	R	F-T	A	No	15.12, 15.19.6
2-Ethyl-2-(hydroxymethyl) propane-1,3-diol, C8-C10 ester	*Y*	*P*	2	2G	Open	No			Yes	O	No	AB	No	15.19.6, 16.2.3-6. (16.2.6), 16.2.3-9. (16.2.9)
Ethylidene norbornene	*Y*	*S/P*	2	2G	Cont	No			No	R	F-T	AD	No	15.12.1, 15.19.6
Ethyl methacrylate	*Y*	*S/P*	3	2G	Cont	No	T2	IIA	No	R	F-T	AD	No	15.13, 15.19.6, 16.2.7-1. (16.6.1), 16.2.7-2. (16.6.2)
N-Ethylmethylallylamine	*Y*	*S/P*	2	2G	Cont	No	T2	IIB	No	C	F	AC	Yes	15.12.3, 15.17,

Table S17.1 Summary of Minimum Requirements

a	*c*	*d*	*e*	*f*	*g*	*h*	*i'*	*i''*	*i'''*	*j*	*k*	*l*	*n*	*o*
Product Name	*Pollution Category*	*Hazards*	*Ship Type*	*Tank Type*	*Tank Vents*	*Tank Environmental Control*	*Electrical Equipment*			*Gauging*	*Vapour*	*Fire Extinguishing*	*Respiratory and Eye Protection*	*Special Requirements*
							Class	*Group*	*Flashpoint >60℃*					
														15.19 & 15.22.12 (15.19)
2-Ethyl-3-propylacrolein	*Y*	*S/P*	3	2G	Cont	No		IIA	No	R	F-T	A	No	15.19.6, 16.2.3-9. (16.2.9)
Ethyl toluene	*Y*	*P*	2	2G	Cont	No			No	R	F	A	No	15.19.6
Fatty acid (saturated C13+)	*Y*	*P*	2	2G	Open	No			Yes	O	No	AB	No	15.19.6, 16.2.3-9. (16.2.9)
Fatty acids, essentially linear,C6-C18, 2-ethylhexyl ester.	*Y*	*P*	2	2G	Open	No			Yes	O	No	AB	No	15.19.6
Ferric chloride solutions	*Y*	*S/P*	3	2G	Open	No			NF	O	No	No	No	15.11, 15.19.6, 16.2.3-9. (16.2.9)
Ferric nitrate/Nitric acid solution	*Y*	*S/P*	2	2G	Cont	No			NF	R	T	No	Yes	15.11, 15.19 & 15.22.12 (15.19)
Fish oil (containing less than 4% free fatty acids)	*Y*	*P*	2 (k)	2G	Open	No	-	-	Yes	Open	No	AB CD	NO	15.19.6, 16.2.3-6. (16.2.6), 16.2.3-9. (16.2.9)
Formaldehyde solutions (45% or less)	*Y*	*S/P*	3	2G	Cont	No	T2	IIB	No	R	F-T	A	Yes	15.19.6, 16.2.3-9. (16.2.9)
Formamide	*Y*	*P*	3	2G	Open	No			Yes	O	No	A	No	15.19.6, 16.2.3-9. (16.2.9)
Formic acid	*Y*	*S/P*	3	2G	Cont	No	T1	IIA	No	R	T(g)	A	Yes	15.11.2, 15.11.3, 15.11.4, 15.11.6, 15.11.7, 15.11.8, 15.19.6, 16.2.3-9. (16.2.9)
Furfural	*Y*	*S/P*	3	2G	Cont	No	T2	IIB	No	R	F-T	A	No	15.19.6
Furfuryl alcohol	*Y*	*P*	3	2G	Open	No			Yes	O	No	A	No	
Glutaraldehyde solutions (50% or less)	*Y*	*S/P*	3	2G	Open	No			NF	O	No	No	No	15.19.6
Glyceryl triacetate	*Z*	*P*	3	2G	Open	No			Yes	O	No	AB	No	
Glycidyl ester of C10 trialkylacetic acid	*Y*	*P*	2	2G	Open	No			Yes	O	No	A	No	15.19.6
Glycine, sodium salt solution	*Z*	*P*	3	2G	Open	No			Yes	O	No	A	No	
Glycolic acid solution (70% or less)	*Z*	*S/P*	3	2G	Open	No	-	-	NF	O	No	No	No	15.19.6, 16.2.3-9. (16.2.9)
Glyoxal solution (40% or less)	*Y*	*P*	3	2G	Open	No			Yes	O	No	A	No	15.19.6, 16.2.3-9. (16.2.9)
Glyphosate solution (not containing surfactant)	*Y*	*P*	2	2G	Open	No			Yes	O	No	A	No	15.19.6, 16.2.3-9. (16.2.9)
Groundnut oil (containing less than 4% free fatty acids)	*Y*	*P*	2 (k)	2G	Open	No	-	-	Yes	Open	No	AB CD	No	15.19.6, 16.2.3-6. (16.2.6), 16.2.3-9. (16.2.9)
Heptane (all isomers)	*X*	*P*	2	2G	Cont	No			No	R	F	A	No	15.19.6, 16.2.3-9. (16.2.9)

Table S17.1 Summary of Minimum Requirements

a	*c*	*d*	*e*	*f*	*g*	*h*	*i'*	*i''*	*i'''*	*j*	*k*	*l*	*n*	*o*
Product Name	*Pollution Category*	*Hazards*	*Ship Type*	*Tank Type*	*Tank Vents*	*Tank Environmental Control*	*Electrical Equipment*			*Gauging*	*Vapour*	*Fire Extinguishing*	*Respiratory and Eye Protection*	*Special Requirements*
							Class	*Group*	*Flashpoint >60℃*					
n-Heptanoic acid	*Z*	*P*	3	2G	Open	No			Yes	O	No	AB	No	
Heptanol (all isomers) (d)	*Y*	*P*	3	2G	Cont	No			No	R	F	A	No	15.19.6
Heptene (all isomers)	*Y*	*P*	3	2G	Cont	No			No	R	F	A	No	15.19.6
Heptyl acetate	*Y*	*P*	2	2G	Open	No			Yes	O	No	A	No	15.19.6
1-Hexadecylnaphthalene / 1,4-bis(hexadecyl)naphthalene mixture	*Y*	*P*	2	2G	Open	No			Yes	O	No	AB	No	15.19.6, 16.2.3-6. (16.2.6)
Hexamethylenediamine adipate (50% in water)	*Z*	*P*	3	2G	Open	No			Yes	O	No	A	No	
Hexamethylenediamine (molten)	*Y*	*S/P*	2	2G	Cont	No			Yes	C	T	C	Yes	15.12, 15.17, 15.18, 15.19.6, 16.2.3-9. (16.2.9)
Hexamethylenediamine solution	*Y*	*S/P*	3	2G	Cont	No			Yes	R	T	A	No	15.19.6
Hexamethylene diisocyanate	*Y*	*S/P*	2	1G	Cont	Dry	T1	IIB	Yes	C	T	AC (b) D	Yes	15.12, 15.17, 15.16.2 & 15.22.11 (15.16.2), 15.18, 15.19 & 15.22.12 (15.19)
Hexamethylene glycol	*Z*	*P*	3	2G	Open	No			Yes	O	No	A	No	
Hexamethyleneimine	*Y*	*S/P*	2	2G	Cont	No			No	R	F-T	AC	No	15.19.6
Hexane (all isomers)	*Y*	*P*	2	2G	Cont	No			No	R	F	A	No	15.19.6
1,6-Hexanediol, distillation overheads	*Y*	*S/P*	3	2G	Cont	No	-	-	Yes	R	T	AB CD	No	15.12.3, 15.12.4, 15.19.6, 16.2.3-9. (16.2.9)
Hexanoic acid	*Y*	*P*	3	2G	Open	No			Yes	O	No	AB	No	15.19.6
Hexanol	*Y*	*P*	3	2G	Open	No			Yes	O	No	AB	No	15.19.6
Hexene (all isomers)	*Y*	*P*	3	2G	Cont	No			No	R	F	A	No	15.19.6
Hexyl acetate	*Y*	*P*	2	2G	Cont	No			No	R	F	A	No	15.19.6
Hydrochloric acid	*Z*	*S/P*	3	1G	Cont	No			NF	R	T	No	Yes	15.11
Hydrogen peroxide solutions (over 60% but not over 70% by mass)	*Y*	*S/P*	2	2G	Cont	No			NF	C	No	No	No	15.5.1 & 15.22.4 (15.5.1), 15.19.6
2-Hydroxyethyl acrylate	*Y*	*S/P*	2	2G	Cont	No			Yes	C	T	A	No	15.12, 15.13, 15.19.6, 16.2.7-1. (16.6.1),

Table S17.1 Summary of Minimum Requirements

a	*c*	*d*	*e*	*f*	*g*	*h*	*i'*	*i''*	*i'''*	*j*	*k*	*l*	*n*	*o*
Product Name	*Pollution Category*	*Hazards*	*Ship Type*	*Tank Type*	*Tank Vents*	*Tank Environmental Control*	*Electrical Equipment*			*Gauging*	*Vapour*	*Fire Extinguishing*	*Respiratory and Eye Protection*	*Special Requirements*
							Class	*Group*	*Flashpoint >60℃*					
														16.2.7-2. (16.6.2)
N-(Hydroxyethyl)ethylenediaminetriaceti c acid, trisodium salt solution	*Y*	*P*	3	2G	Open	No			Yes	O	No	A	No	15.19.6
2-Hydroxy-4-(methylthio)butanoic acid	*Z*	*P*	3	2G	Open	No			Yes	O	No	A	No	
Isoamyl alcohol	*Z*	*P*	3	2G	Cont	No			No	R	F	AB	No	
Isobutyl alcohol	*Z*	*P*	3	2G	Cont	No			No	R	F	AB	No	
Isobutyl formate	*Z*	*P*	3	2G	Cont	No			No	R	F	AB	No	
Isobutyl methacrylate	*Z*	*S/P*	3	2G	Cont	No		IIA	No	C	F-T	BD	Yes	15.12, 15.13, 15.17, 15.19 & 15.22.12 (15.19), 16.2.7-1. (16.6.1), 16.2.7-2. (16.6.2)
Isophorone	*Y*	*S/P*	3	2G	Cont	No			Yes	R	No	A	No	
Isophoronediamine	*Y*	*S/P*	3	2G	Cont	No			Yes	R	T	A	No	16.2.3-9. (16.2.9)
Isophorone diisocyanate	*X*	*S/P*	2	2G	Cont	Dry			Yes	C	T	AB D	No	15.12, 15.16.2 & 15.22.11 (15.16.2), 15.17, 15.19.6
Isoprene	*Y*	*S/P*	3	2G	Cont	No	T3	IIB	No	R	F	B	No	15.13, 15.14 & 15.22.10 (15.14), 15.19.6, 16.2.7-1. (16.6.1), 16.2.7-2. (16.6.2)
Isopropanolamine	*Y*	*S/P*	3	2G	Open	No	T2	IIA	Yes	O	F-T	A	No	16.2.3-9. (16.2.9), 15.19.6, 16.2.3-6. (16.2.6)
Isopropyl acetate	*Z*	*P*	3	2G	Cont	No			No	R	F	AB	No	
Isopropylamine	*Y*	*S/P*	2	2G	Cont	No	T2	IIA	No	C	F-T	CD	Yes	15.12, 15.14 & 15.22.10 (15.14), 15.19 & 15.22.12 (15.19)
Isopropylcyclohexane	*Y*	*P*	2	2G	Cont	No			No	R	F	A	No	15.19.6, 16.2.3-9. (16.2.9)
Isopropyl ether	*Y*	*S/P*	3	2G	Cont	Inert			No	R	F	A	No	15.4.6, 15.13.3, 15.19.6
Lactic acid	*Z*	*P*	3	2G	Open	No			Yes	O	No	A	No	
Lactonitrile solution (80% or less)	*Y*	*S/P*	2	1G	Cont	No			Yes	C	T	AC D	Yes	15.1, 15.12, 15.17, 15.18, 15.19 & 15.22.12 (15.19),

Table S17.1 Summary of Minimum Requirements

a	*c*	*d*	*e*	*f*	*g*	*h*	*i'*	*i''*	*i'''*	*j*	*k*	*l*	*n*	*o*
Product Name	*Pollution Category*	*Hazards*	*Ship Type*	*Tank Type*	*Tank Vents*	*Tank Environmental Control*	*Electrical Equipment*			*Gauging*	*Vapour*	*Fire Extinguishing*	*Respiratory and Eye Protection*	*Special Requirements*
							Class	*Group*	*Flashpoint >60℃*					
														16.2.7-1. (16.6.1), 16.2.3-2. (16.2.2), 16.2.7-3. (16.6.3)
Lard (containing less than 1% free fatty acids)	*Y*	*P*	2 (k)	2G	Open	No	-	-	Yes	Open	No	AB CD	No	15.19.6, 16.2.3-6. (16.2.6), 16.2.3-9. (16.2.9)
Lauric acid	*X*	*P*	2	2G	Open	No			Yes	O	No	A	No	15.19.6, 16.2.3-6. (16.2.6), 16.2.3-9. (16.2.9)
Linseed oil (containing less than 2% free fatty acids)	*Y*	*P*	2 (k)	2G	Open	No	-	-	Yes	Open	No	AB CD	No	15.19.6, 16.2.3-6. (16.2.6)
Liquid chemical wastes	*X*	*S/P*	2	2G	Cont	No			No	C	F-T	A	Yes	15.12, 15.19.6, 20.5.1
Long-chain alkaryl polyether (C11-C20)	*Y*	*P*	2	2G	Open	No			Yes	O	No	AB	No	16.2.3-6. (16.2.6), 16.2.3-9. (16.2.9)
L-Lysine solution (60% or less)	*Z*	*P*	3	2G	Open	No			Yes	O	No	A	No	
Magnesium chloride solution	*Z*	*P*	3	2G	Open	No			Yes	O	No	A	No	
Maleic anhydride	*Y*	*S/P*	3	2G	Cont	No			Yes	R	No	AC (f)	No	16.2.3-9. (16.2.9)
Mercaptobenzothiazol, sodium salt solution	*X*	*S/P*	2	2G	Open	No			NF	O	No	No	No	15.19.6, 16.2.3-9. (16.2.9)
Mesityl oxide	*Z*	*S/P*	3	2G	Cont	No	T2	IIB	No	R	F-T	A	No	15.19.6
Metam sodium solution	*X*	*S/P*	1	2G	Open	No			NF	O	No	No	No	15.19 & 15.22.12 (15.19), 16.2.3-9. (16.2.9)
Methacrylic acid	*Y*	*S/P*	3	2G	Cont	No			Yes	R	T	A	No	15.13, 16.2.7-1. (16.6.1), 15.19.6, 16.2.3-9. (16.2.9)
Methacrylic resin in Ethylene dichloride	*Y*	*S/P*	2	2G	Cont	No	T2	IIA	No	R	F-T	AB	No	15.19 & 15.22.12 (15.19), 16.2.3-9. (16.2.9)
Methacrylonitrile	*Y*	*S/P*	2	2G	Cont	No			No	C	F-T	A	Yes	15.12, 15.13, 15.17, 15.19 & 15.22.12 (15.19)
3-Methoxy-1-butanol	*Z*	*P*	3	2G	Cont	No			No	R	F	A	No	
3-Methoxybutyl acetate	*Y*	*P*	3	2G	Open	No			Yes	O	No	AB	No	15.19.6
N-(2-Methoxy-1-methyl ethyl)-2-ethyl-6-methyl chloroacetanilide	*X*	*P*	1	2G	Open	No			Yes	O	No	A	No	15.19 & 15.22.12 (15.19), 16.2.3-6. (16.2.6)

Table S17.1 Summary of Minimum Requirements

a	*c*	*d*	*e*	*f*	*g*	*h*	*i'*	*i''*	*i'''*	*j*	*k*	*l*	*n*	*o*
Product Name	*Pollution Category*	*Hazards*	*Ship Type*	*Tank Type*	*Tank Vents*	*Tank Environmental Control*	*Electrical Equipment*			*Gauging*	*Vapour*	*Fire Extinguishing*	*Respiratory and Eye Protection*	*Special Requirements*
							Class	*Group*	*Flashpoint >60℃*					
Methyl acetate	*Z*	*P*	3	2G	Cont	No			No	R	F	A	No	
Methyl acetoacetate	*Z*	*P*	3	2G	Open	No			Yes	O	No	A	No	
Methyl acrylate	*Y*	*S/P*	2	2G	Cont	No	T1	IIB	No	R	F-T	A	Yes	15.13, 15.19.6, 16.2.7-1. (16.6.1), 16.2.7-2. (16.6.2)
Methyl alcohol	*Y*	*P*	3	2G	Cont	No			No	R	F	A	No	15.19.6
Methylamine solutions (42% or less)	*Y*	*S/P*	2	2G	Cont	No			No	C	F-T	AC D	Yes	15.12, 15.17, 15.19 & 15.22.12 (15.19)
Methylamyl acetate	*Y*	*P*	2	2G	Cont	No			No	R	F	A	No	15.19.6
Methylamyl alcohol	*Z*	*P*	3	2G	Cont	No			No	R	F	A	No	15.19.6
Methyl amyl ketone	*Z*	*P*	3	2G	Cont	No			No	R	F	A	No	15.19.6
Methylbutenol	*Y*	*P*	3	2G	Cont	No			No	R	F	A	No	15.19.6, 16.2.3-9. (16.2.9)
Methyl tert-butyl ether	*Z*	*P*	3	2G	Cont	No			No	R	F	AB	No	
Methyl butyl ketone	*Y*	*P*	3	2G	Cont	No			No	R	F	AB	No	15.19.6
Methylbutynol	*Z*	*P*	3	2G	Cont	No			No	R	F	A	No	
Methyl butyrate	*Y*	*P*	3	2G	Cont	No			No	R	F	A	No	15.19.6
Methylcyclohexane	*Y*	*P*	2	2G	Cont	No			No	R	F	A	No	15.19.6
Methylcyclopentadiene dimer	*Y*	*P*	2	2G	Cont	No			No	R	F	B	No	15.19.6
Methylcyclopentadienyl manganese tricarbonyl	*X*	*S/P*	1	1G	Cont	No	-	-	Yes	C	T	AB CD	Yes	15.12, 15.18, 15.19 & 15.22.12 (15.19), 16.2.3-9. (16.2.9)
Methyl diethanolamine	*Y*	*S/P*	3	2G	Open	No			Yes	O	No	A	No	16.2.3-6. (16.2.6)
2-Methyl-6-ethyl aniline	*Y*	*S/P*	3	2G	Open	No			Yes	O	No	AD	No	
Methyl ethyl ketone	*Z*	*P*	3	2G	Cont	No			No	R	F	A	No	
2-Methyl-5-ethyl pyridine	*Y*	*S/P*	3	2G	Open	No		IIA	Yes	O	No	AD	No	15.19.6
Methyl formate	*Z*	*S/P*	2	2G	Cont	No			No	R	F-T	A	Yes	15.12, 15.14 & 15.22.10 (15.14), 15.19 & 15.22.12 (15.19)
2-Methyl-2-hydroxy-3-butyne	*Z*	*S/P*	3	2G	Cont	No		IIA	No	R	F-T	AB D	No	15.19.6, 16.2.3-9. (16.2.9)
Methyl isobutyl ketone	*Z*	*P*	3	2G	Cont	No			No	R	F	AB	No	

Table S17.1 Summary of Minimum Requirements

a	*c*	*d*	*e*	*f*	*g*	*h*	*i'*	*i''*	*i'''*	*j*	*k*	*l*	*n*	*o*
Product Name	*Pollution Category*	*Hazards*	*Ship Type*	*Tank Type*	*Tank Vents*	*Tank Environmental Control*	*Electrical Equipment*			*Gauging*	*Vapour*	*Fire Extinguishing*	*Respiratory and Eye Protection*	*Special Requirements*
							Class	*Group*	*Flashpoint >60℃*					
Methyl methacrylate	*Y*	*S/P*	2	2G	Cont	No	T2	IIA	No	R	F-T	A	No	15.13, 15.19.6, 16.2.7-1. (16.6.1), 16.2.7-2. (16.6.2)
3-Methyl-3-methoxybutanol	*Z*	*P*	3	2G	Open	No			Yes	O	No	A	No	
Methyl naphthalene (molten)	*X*	*S/P*	2	2G	Cont	No			Yes	R	No	AD	No	15.19.6
2-Methylpyridine	*Z*	*S/P*	2	2G	Cont	No			No	C	F	A	No	15.12.3, 15.19.6
3-Methylpyridine	*Z*	*S/P*	2	2G	Cont	No			No	C	F	AC	No	15.12.3, 15.19 & 15.22.12 (15.19)
4-Methylpyridine	*Z*	*S/P*	2	2G	Cont	No			No	C	F-T	A	No	15.12.3, 15.19 & 15.22.12 (15.19), 16.2.3-9. (16.2.9)
N-Methyl-2-pyrrolidone	*Y*	*P*	3	2G	Open	No			Yes	O	No	A	No	15.19.6
Methyl salicylate	*Y*	*P*	3	2G	Open	No			Yes	O	No	A	No	15.19.6
alpha-Methylstyrene	*Y*	*S/P*	2	2G	Cont	No	T1	IIB	No	R	F-T	AD (j)	No	15.13, 15.19.6, 16.2.7-1. (16.6.1), 16.2.7-2. (16.6.2)
3-(methylthio)propionaldehyde	*Y*	*S/P*	2	2G	Cont	No	T3	IIA	Yes	C	T	BC	Yes	15.12, 15.17, 15.19 & 15.22.12 (15.19)
Morpholine	*Y*	*S/P*	3	2G	Cont	No	T2	IIA	No	R	F	A	No	15.19.6
Motor fuel anti-knock compounds (containing lead alkyls)	*X*	*S/P*	1	1G	Cont	No	T4	IIA	No	C	F-T	AC	Yes	15.6 & 15.22.6 (15.6), 15.12, 15.18, 15.19 & 15.22.12 (15.19)
Naphthalene (molten)	*X*	*S/P*	2	2G	Cont	No	T1	IIA	Yes	R	No	AD	No	15.19.6, 16.2.3-9. (16.2.9)
Neodecanoic acid	*Y*	*P*	2	2G	Open	No			Yes	O	No	A	No	
Nitrating acid (mixture of sulphuric and nitric acids)	*Y*	*S/P*	2	2G	Cont	No			NF	C	T	No	Yes	15.11, 15.16.2 & 15.22.11 (15.16.2), 15.17, 15.19 & 15.22.12 (15.19)
Nitric acid (70% and over)	*Y*	*S/P*	2	2G	Cont	No			NF	C	T	No	Yes	15.11, 15.19 & 15.22.12 (15.19)
Nitric acid (less than 70%)	*Y*	*S/P*	2	2G	Cont	No			NF	R	T	No	Yes	15.11, 15.19 & 15.22.12 (15.19)
Nitrilotriacetic acid, trisodium salt solution	*Y*	*P*	3	2G	Open	No			Yes	O	No	A	No	15.19.6

Table S17.1 Summary of Minimum Requirements

a	*c*	*d*	*e*	*f*	*g*	*h*	*i'*	*i''*	*i'''*	*j*	*k*	*l*	*n*	*o*
Product Name	*Pollution Category*	*Hazards*	*Ship Type*	*Tank Type*	*Tank Vents*	*Tank Environmental Control*	*Electrical Equipment*			*Gauging*	*Vapour*	*Fire Extinguishing*	*Respiratory and Eye Protection*	*Special Requirements*
							Class	*Group*	*Flashpoint >60℃*					
Nitrobenzene	*Y*	*S/P*	2	2G	Cont	No	T1	IIA	Yes	C	T	AD	No	15.12, 15.17, 15.18, 15.19 & 15.22.12 (15.19), 16.2.3-9. (16.2.9)
Nitroethane	*Y*	*S/P*	3	2G	Cont	No		IIB	No	R	F-T	A(f)	No	15.19.6, 16.2.7-1. (16.6.1), 16.2.7-2. (16.6.2), 16.2.7-4. (16.6.4)
Nitroethane(80%)/Nitropropane(20%)	*Y*	*S/P*	3	2G	Cont	No		IIB	No	R	F-T	A(f)	No	15.19.6, 16.2.7-1. (16.6.1), 16.2.7-2. (16.6.2), 16.2.7-3. (16.6.3)
o-Nitrophenol (molten)	*Y*	*S/P*	2	2G	Cont	No			Yes	C	T	AD	No	15.12, 15.19.6, 16.2.3-6. (16.2.6), 16.2.3-9. (16.2.9)
1-or 2-Nitropropane	*Y*	*S/P*	3	2G	Cont	No	T2	IIB	No	R	F-T	A	No	15.19.6
Nitropropane (60%)/Nitroethane (40%) mixture	*Y*	*S/P*	3	2G	Cont	No			No	R	F-T	A(f)	No	15.19.6
Nonane (all isomers)	*X*	*P*	2	2G	Cont	No			No	R	F	BC	No	15.19.6
Nonanoic acid (all isomers)	*Y*	*P*	3	2G	Open	No			Yes	O	No	AB	No	15.19.6, 16.2.3-9. (16.2.9)
Nonene (all isomers)	*Y*	*P*	2	2G	Cont	No			No	R	F	A	No	15.19.6
Nonyl alcohol (all isomers)	*Y*	*P*	2	2G	Open	No			Yes	O	No	A	No	15.19.6
Nonyl methacrylate monomer	*Y*	*P*	2	2G	Open	No			Yes	O	No	AB	No	15.19.6, 16.2.3-9. (16.2.9)
Nonylphenol	*X*	*P*	1	2G	Open	No			Yes	O	No	A	No	15.19 & 15.22.12 (15.19), 16.2.3-6. (16.2.6), 16.2.3-9. (16.2.9)
Noxious liquid, NF, (1) n.o.s. (trade name ...., contains ....) ST1, Cat. X	*X*	*P*	1	2G	Open	No	-	-	Yes	O	No	A	No	15.19 & 15.22.12 (15.19), 16.2.3-6. (16.2.6)
Noxious liquid, F, (2) n.o.s. (trade name ...., contains ....) ST1, Cat. X	*X*	*P*	1	2G	Cont	No	T3	IIA	No	R	No	A	No	15.19 & 15.22.12 (15.19), 16.2.3-6. (16.2.6)
Noxious liquid, NF, (3) n.o.s. (trade name ...., contains ....) ST2, Cat. X	*X*	*P*	2	2G	Open	No	-		Yes	O	No	A	No	15.19 & 15.22.12 (15.19), 16.2.3-6. (16.2.6)
Noxious liquid, F, (4) n.o.s. (trade name ...., contains ....) ST2, Cat. X	*X*	*P*	2	2G	Cont	No	T3	IIA	No	R	No	A	No	15.19 & 15.22.12 (15.19), 16.2.3-6. (16.2.6)

Table S17.1 Summary of Minimum Requirements

a	*c*	*d*	*e*	*f*	*g*	*h*	*i'*	*i''*	*i'''*	*j*	*k*	*l*	*n*	*o*
Product Name	*Pollution Category*	*Hazards*	*Ship Type*	*Tank Type*	*Tank Vents*	*Tank Environmental Control*	*Electrical Equipment*			*Gauging*	*Vapour*	*Fire Extinguishing*	*Respiratory and Eye Protection*	*Special Requirements*
							Class	*Group*	*Flashpoint >60℃*					
Noxious liquid, NF, (5) n.o.s. (trade name ...., contains ....) ST2, Cat. Y	*Y*	*P*	2	2G	Open	No	-		Yes	O	No	A	No	15.19 & 15.22.12 (15.19), 16.2.3-6. (16.2.6), 16.2.3-9. (16.2.9)(l)
Noxious liquid, F, (6) n.o.s. (trade name ...., contains ....) ST2, Cat. Y	*Y*	*P*	2	2G	Cont	No	T3	IIA	No	R	No	A	No	15.19 & 15.22.12 (15.19), 16.2.3-6. (16.2.6), 16.2.3-9. (16.2.9)(l)
Noxious liquid, NF, (7) n.o.s. (trade name ...., contains ....) ST3, Cat. Y	*Y*	*P*	3	2G	Open	No	-	-	Yes	O	No	A	No	15.19 & 15.22.12 (15.19), 16.2.3-6. (16.2.6), 16.2.3-9. (16.2.9)(l)
Noxious liquid, F, (8) n.o.s. (trade name ...., contains ....) ST3, Cat. Y	*Y*	*P*	3	2G	Cont	No	T3	IIA	No	R	No	A	No	15.19 & 15.22.12 (15.19), 16.2.3-6. (16.2.6), 16.2.3-9. (16.2.9)(l)
Noxious liquid, NF, (9) n.o.s. (trade name ...., contains ....) ST3, Cat. Z	*Z*	*P*	3	2G	Open	No	-		Yes	O	No	A	No	
Noxious liquid, F, (10) n.o.s. (trade name ...., contains ....) ST3, Cat. Z	*Z*	*P*	3	2G	Cont	No	T3	IIA	No	R	No	A	No	
Octane (all isomers)	*X*	*P*	2	2G	Cont	No			No	R	F	A	No	15.19.6
Octanoic acid (all isomers)	*Z*	*P*	3	2G	Open	No			Yes	O	No	AB	No	
Octanol (all isomers)	*Y*	*P*	2	2G	Open	No			Yes	O	No	A	No	
Octene (all isomers)	*Y*	*P*	2	2G	Cont	No			No	R	F	A	No	15.19.6
Octyl aldehydes	*Y*	*P*	2	2G	Cont	No			No	R	F	A	No	15.19.6, 16.2.3-9. (16.2.9)
Olefin-Alkyl ester copolymer (molecular weight 2000+)	*Y*	*P*	2	2G	Open	No			Yes	O	No	AB	No	15.19.6, 16.2.3-6. (16.2.6), 16.2.3-9. (16.2.9)
Olefins (C13+, all isomers)	*Y*	*P*	2	2G	Open	No			Yes	O	No	AB	No	15.19.6, 16.2.3-9. (16.2.9)
Oleic acid	*Y*	*P*	2	2G	Open	No			Yes	O	No	AB	No	15.19.6, 16.2.3-9. (16.2.9)
Oleum	*Y*	*S/P*	2	2G	Cont	No			NF	C	T	No	Yes	15.11.2～15.11.8, 15.12.1, 15.16.2 & 15.22.11 (15.16.2), 15.17, 15.19 & 15.22.12 (15.19),

Table S17.1 Summary of Minimum Requirements

a	*c*	*d*	*e*	*f*	*g*	*h*	*i'*	*i''*	*i'''*	*j*	*k*	*l*	*n*	*o*
Product Name	*Pollution Category*	*Hazards*	*Ship Type*	*Tank Type*	*Tank Vents*	*Tank Environmental Control*	*Electrical Equipment*			*Gauging*	*Vapour*	*Fire Extinguishing*	*Respiratory and Eye Protection*	*Special Requirements*
							Class	*Group*	*Flashpoint >60℃*					
														16.2.3-6. (16.2.6)
Olive oil (containing less than 3.3% free fatty acids)	*Y*	*P*	2 (k)	2G	Open	No	-	-	Yes	Open	No	AB CD	No	15.19.6, 16.2.3-6. (16.2.6), 16.2.3-9. (16.2.9)
Palm kernel oil (containing less than 5% free fatty acids)	*Y*	*P*	2 (k)	2G	Open	No	T3	IIB	Yes	Open	No	AB	No	15.19.6, 16.2.3-6. (16.2.6), 16.2.3-9. (16.2.9)
Palm oil (containing less than 5% free fatty acids)	*Y*	*P*	2 (k)	2G	Open	No	-	-	Yes	Open	No	AB CD	No	15.19.6, 16.2.3-6. (16.2.6), 16.2.3-9. (16.2.9)
Palm olein (containing less than 5% free fatty acids)	*Y*	*P*	2 (k)	2G	Open	No	-	-	Yes	Open	No	AB CD	No	15.19.6, 16.2.3-6. (16.2.6), 16.2.3-9. (16.2.9)
Palm stearin (containing less than 5% free fatty acids)	*Y*	*P*	2 (k)	2G	Open	No	-	-	Yes	Open	No	AB CD	No	15.19.6, 16.2.3-6. (16.2.6), 16.2.3-9. (16.2.9)
Paraffin wax	*Y*	*P*	2	2G	Open	No			Yes	O	No	AB	No	15.19.6, 16.2.3-6. (16.2.6), 16.2.3-9. (16.2.9)
Paraldehyde	*Z*	*S/P*	3	2G	Cont	No	T3	IIB	No	R	F	A	No	15.19.6, 16.2.3-9. (16.2.9)
Paraldehyde-ammonia reaction product	*Y*	*S/P*	2	2G	Cont	No			No	C	F-T	A	No	15.12.3, 15.19 & 15.22.12 (15.19)
Pentachloroethane	*Y*	*S/P*	2	2G	Cont	No			NF	R	T	No	No	15.12, 15.17, 15.19.6
1,3-Pentadiene	*Y*	*S/P*	3	2G	Cont	No			No	R	F-T	AB	No	15.13, 15.19.6, 16.2.7-1. (16.6.1), 16.2.7-2. (16.6.2), 16.2.7-3. (16.6.3)
Pentane (all isomers)	*Y*	*P*	3	2G	Cont	No			No	R	F	A	No	15.14 & 15.22.10 (15.14), 15.19.6
Pentanoic acid	*Y*	*P*	3	2G	Open	No			Yes	O	No	AB	No	15.19.6
n-Pentanoic acid (64%)/2-Methyl butyric acid (36%) mixture	*Y*	*S/P*	2	2G	Open	No	T2		Yes	C	No	AD	No	15.11.2, 15.11.3, 15.11.4, 15.11.6, 15.11.7, 15.11.8, 15.12.3, 15.19 & 15.22.12 (15.19)
Pentene (all isomers)	*Y*	*P*	3	2G	Cont	No			No	R	F	A	No	15.14 & 15.22.10 (15.14), 15.19.6
n-Pentyl propionate	*Y*	*P*	3	2G	Cont	No			No	R	F	A	No	15.19.6

Table S17.1 Summary of Minimum Requirements

a	*c*	*d*	*e*	*f*	*g*	*h*	*i'*	*i''*	*i'''*	*j*	*k*	*l*	*n*	*o*
Product Name	*Pollution Category*	*Hazards*	*Ship Type*	*Tank Type*	*Tank Vents*	*Tank Environmental Control*	*Electrical Equipment*			*Gauging*	*Vapour*	*Fire Extinguishing*	*Respiratory and Eye Protection*	*Special Requirements*
							Class	*Group*	*Flashpoint >60℃*					
Perchloroethylene	*Y*	*S/P*	2	2G	Cont	No			NF	R	T	No	No	15.12.1, 15.12.2, 15.19.6
Petrolatum	*Z*	*P*	3	2G	Open	No			Yes	O	No	AB	No	16.2.3-6. (16.2.6), 16.2.3-9. (16.2.9)
Phenol	*Y*	*S/P*	2	2G	Cont	No	T1	IIA	Yes	C	T	A	No	15.12, 15.19 & 15.22.12 (15.19), 16.2.3-9. (16.2.9)
1-Phenyl-1-xylyl ethane	*Y*	*P*	3	2G	Open	No			Yes	O	No	AB	No	
Phosphoric acid	*Z*	*S/P*	3	2G	Open	No			NF	O	No	No	No	15.11.1, 15.11.2, 15.11.3, 15.11.4, 15.11.6, 15.11.7, 15.11.8, 16.2.3-9. (16.2.9)
Phosphorous, yellow or white	*X*	*S/P*	1	1G	Cont	Pad+(vent or inert)			No(c)	C	No	C	Yes	15.7 & 15.22.7 (15.7), 15.19 & 15.22.12 (15.19), 16.2.3-9. (16.2.9)
Phthalic anhydride (molten)	*Y*	*S/P*	2	2G	Cont	No	T1	IIA	Yes	R	No	AD	No	16.2.3-9. (16.2.9), 15.19.6, 16.2.3-6. (16.2.6)
alpha-Pinene	*X*	*P*	2	2G	Cont	No			No	R	F	A	No	15.19.6
beta-Pinene	*X*	*P*	2	2G	Cont	No			No	R	F	A	No	15.19.6
Pine oil	*X*	*P*	2	2G	Open	No			Yes	O	No	A	No	16.2.3-6. (16.2.6), 16.2.3-9. (16.2.9)
Polyalkyl (C18-C22) acrylate in Xylene	*Y*	*P*	3	2G	Cont	No			No	R	F	A	No	15.19.6, 16.2.3-6. (16.2.6), 16.2.3-9. (16.2.9)
Polyalkyl (C10-C20) methacrylate	*Y*	*P*	2	2G	Open	No			Yes	O	No	AB	No	15.19.6, 16.2.3-6. (16.2.6), 16.2.3-9. (16.2.9)
Polyalkyl (C10-C18) methacrylate/ethylene-propylene copolymer mixture	*Y*	*P*	2	2G	Open	No			Yes	O	No	AB	No	15.19.6, 16.2.3-6. (16.2.6), 16.2.3-9. (16.2.9)
Poly(2+)cyclic aromatics	*X*	*P*	1	2G	Cont	No			Yes	R	No	AD	No	15.19 & 15.22.12 (15.19), 16.2.3-6. (16.2.6), 16.2.3-9. (16.2.9)
Polyethylene glycol	*Z*	*P*	3	2G	Open	No			Yes	O	No	A	No	
Polyethylene glycol dimethyl ether	*Z*	*P*	3	2G	Open	No			Yes	O	No	A	No	

Table S17.1 Summary of Minimum Requirements

a	*c*	*d*	*e*	*f*	*g*	*h*	*i'*	*i''*	*i'''*	*j*	*k*	*l*	*n*	*o*
Product Name	*Pollution Category*	*Hazards*	*Ship Type*	*Tank Type*	*Tank Vents*	*Tank Environmental Control*	*Electrical Equipment*			*Gauging*	*Vapour*	*Fire Extinguishing*	*Respiratory and Eye Protection*	*Special Requirements*
							Class	*Group*	*Flashpoint >60℃*					
Polyferric sulphate solution	*Y*	*S/P*	3	2G	Open	No			NF	O	No	No	No	
Polyisobutenamine in aliphatic (C10-C14) solvent	*Y*	*P*	3	2G	Open	No	T3	IIA	Yes	O	No	A	No	
Polyisobutenyl anhydride adduct	*Z*	*P*	3	2G	Open	No			Yes	O	No	AB	No	
Poly(4+)isobutylene	*Y*	*P*	2	2G	Open	No			Yes	O	No	AB	No	15.19.6, 16.2.3-9. (16.2.9)
Polyolefin amide alkeneamine (C17+)	*Y*	*P*	2	2G	Open	No			Yes	O	No	AB	No	15.19.6, 16.2.3-6. (16.2.6)
Polyolefin amide alkeneamine borate (C28-C250)	*Y*	*P*	2	2G	Open	No			Yes	O	No	AB	No	15.19.6, 16.2.3-6. (16.2.6), 16.2.3-9. (16.2.9)
Polyolefinamine (C28-C250)	*Y*	*P*	2	2G	Open	No			Yes	O	No	A	No	16.2.3-9. (16.2.9)
Polyolefinamine in alkyl (C2-C4) benzenes	*Y*	*P*	2	2G	Cont	No			No	R	F	A	No	15.19.6, 16.2.3-6. (16.2.6), 16.2.3-9. (16.2.9)
Polyolefinamine in aromatic solvent	*Y*	*P*	2	2G	Cont	No			No	R	F	A	No	15.19.6, 16.2.3-6. (16.2.6), 16.2.3-9. (16.2.9)
Polyolefin anhydride	*Y*	*P*	2	2G	Open	No			Yes	O	No	AB	No	15.19.6, 16.2.3-6. (16.2.6), 16.2.3-9. (16.2.9)
Polyolefin ester (C28-C250)	*Y*	*P*	2	2G	Open	No			Yes	O	No	AB	No	15.19.6, 16.2.3-6. (16.2.6), 16.2.3-9. (16.2.9)
Polyolefin phenolic amine (C28-C250)	*Y*	*P*	2	2G	Open	No			Yes	O	No	AB	No	15.19.6, 16.2.3-6. (16.2.6), 16.2.3-9. (16.2.9)
Polyolefin phosphorosulphide, barium derivative (C28-C250)	*Y*	*P*	2	2G	Open	No			Yes	O	No	AB	No	16.2.3-6. (16.2.6), 16.2.3-9. (16.2.9)
Poly(20)oxyethylene sorbitan monooleate	*Y*	*P*	2	2G	Open	No			Yes	O	No	A	No	15.19.6, 16.2.3-6. (16.2.6), 16.2.3-9. (16.2.9)
Polypropylene glycol	*Z*	*P*	3	2G	Open	No			Yes	O	No	A	No	
Polysiloxane	*Y*	*P*	3	2G	Cont	No			No	R	F	AB	No	15.19.6, 16.2.3-9. (16.2.9)
Potassium hydroxide solution	*Y*	*S/P*	3	2G	Open	No			NF	O	No	No	No	15.19.6

Table S17.1 Summary of Minimum Requirements

a	*c*	*d*	*e*	*f*	*g*	*h*	*i'*	*i''*	*i'''*	*j*	*k*	*l*	*n*	*o*
Product Name	*Pollution Category*	*Hazards*	*Ship Type*	*Tank Type*	*Tank Vents*	*Tank Environmental Control*	*Electrical Equipment*			*Gauging*	*Vapour*	*Fire Extinguishing*	*Respiratory and Eye Protection*	*Special Requirements*
							Class	*Group*	*Flashpoint >60℃*					
Potassium oleate	*Y*	*P*	2	2G	Open	No			Yes	O	No	A	No	15.19.6, 16.2.3-6. (16.2.6), 16.2.3-9. (16.2.9)
Potassium thiosulphate (50% or less)	*Y*	*P*	3	2G	Open	No			NF	O	No	No	No	16.2.3-9. (16.2.9)
n-Propanolamine	*Y*	*S/P*	3	2G	Open	No			Yes	O	No	AD	No	16.2.3-9. (16.2.9), 15.19.6
beta-Propiolactone	*Y*	*S/P*	2	2G	Cont	No		IIA	Yes	R	T	A	No	
Propionaldehyde	*Y*	*S/P*	3	2G	Cont	No			No	R	F-T	A	Yes	15.17, 15.19.6
Propionic acid	*Y*	*S/P*	3	2G	Cont	No	T1	IIA	No	R	F	A	Yes	15.11.2, 15.11.3, 15.11.4, 15.11.6, 15.11.7, 15.11.8, 15.19.6
Propionic anhydride	*Y*	*S/P*	3	2G	Cont	No	T2	IIA	Yes	R	T	A	No	
Propionitrile	*Y*	*S/P*	2	1G	Cont	No	T1	IIB	No	C	F-T	AD	Yes	15.12, 15.17, 15.18, 15.19 & 15.22.12 (15.19)
n-Propyl acetate	*Y*	*P*	3	2G	Cont	No			No	R	F	AB	No	15.19.6
n-propyl alcohol	*Y*	*P*	3	2G	Cont	No			No	R	F	A	No	15.19.6
n-Propylamine	*Z*	*S/P*	2	2G	Cont	Inert	T2	IIA	No	C	F-T	AD	Yes	15.12, 15.19 & 15.22.12 (15.19)
Propylbenzene (all isomers)	*Y*	*P*	3	2G	Cont	No			No	R	F	A	No	15.19.6
Propylene glycol methyl ether acetate	*Z*	*P*	3	2G	Cont	No			No	R	F	A	No	
Propylene glycol monoalkyl ether	*Z*	*P*	3	2G	Cont	No			No	R	F	AB	No	
Propylene glycol phenyl ether	*Z*	*P*	3	2G	Open	No			Yes	O	No	AB	No	
Propylene oxide	*Y*	*S/P*	2	2G	Cont	Inert	T2	IIB	No	C	F-T	AC	No	15.8 & 15.22.8 (15.8), 15.12.1, 15.14 & 15.22.10 (15.14), 15.19 & 15.22.12 (15.19)
Propylene tetramer	*X*	*P*	2	2G	Cont	No			No	R	F	A	No	15.19.6
Propylene trimer	*Y*	*P*	2	2G	Cont	No			No	R	F	A	No	15.19.6
Pyridine	*Y*	*S/P*	2	2G	Cont	No	T1	IIA	No	R	F	A	No	15.19.6
Rapeseed oil (low erucic acid, containing less than 4% free fatty acids)	*Y*	*P*	2 (k)	2G	Open	No	-	-	Yes	Open	No	AB CD	No	15.19.6, 16.2.3-6. (16.2.6), 16.2.3-9. (16.2.9)

Table S17.1 Summary of Minimum Requirements

a	*c*	*d*	*e*	*f*	*g*	*h*	*i'*	*i''*	*i'''*	*j*	*k*	*l*	*n*	*o*
Product Name	*Pollution Category*	*Hazards*	*Ship Type*	*Tank Type*	*Tank Vents*	*Tank Environmental Control*	*Electrical Equipment*			*Gauging*	*Vapour*	*Fire Extinguishing*	*Respiratory and Eye Protection*	*Special Requirements*
							Class	*Group*	*Flashpoint >60℃*					
Rosin	*Y*	*P*	2	2G	Open	No			Yes	O	No	A	No	15.19.6, 16.2.3-6. (16.2.6), 16.2.3-9. (16.2.9)
Sodium aluminosilicate slurry	*Z*	*P*	3	2G	Open	No			Yes	O	No	AB	No	
Sodium benzoate	*Z*	*P*	3	2G	Open	No			Yes	O	No	A	No	
Sodium borohydride (15% or less)/Sodium hydroxide solution	*Y*	*S/P*	3	2G	Open	No			NF	O	No	No	No	15.19.6, 16.2.3-6. (16.2.6), 16.2.3-9. (16.2.9)
Sodium carbonate solution	*Z*	*P*	3	2G	Open	No			Yes	O	No	A	No	
Sodium chlorate solution (50% or less)	*Z*	*S/P*	3	2G	Open	No			NF	O	No	No	No	15.9 & 15.22.9 (15.9), 15.19.6, 16.2.3-9. (16.2.9)
Sodium dichromate solution (70% or less)	*Y*	*S/P*	2	2G	Open	No			NF	C	No	No	No	15.12.3, 15.19 & 15.22.12 (15.19)
Sodium hydrogen sulphide (6% or less)/Sodium carbonate (3% or less) solution	*Z*	*P*	3	2G	Open	No			NF	O	No	No	No	15.19.6, 16.2.3-9. (16.2.9)
Sodium hydrogen sulphite solution (45% or less)	*Z*	*S/P*	3	2G	Open	No			NF	O	No	No	No	16.2.3-9. (16.2.9)
Sodium hydrosulphide/Ammonium sulphide solution	*Y*	*S/P*	2	2G	Cont	No			No	C	F-T	A	Yes	15.12, 15.14 & 15.22.10 (15.14), 15.17, 15.19 & 15.22.12 (15.19), 16.2.7-1. (16.6.1),16.2.7-2. (16.6.2), 16.2.7-3. (16.6.3)
Sodium hydrosulphide solution (45% or less)	*Z*	*S/P*	3	2G	Cont	Vent or pad (gas)			NF	R	T	No	No	15.19.6, 16.2.3-9. (16.2.9)
Sodium hydroxide solution	*Y*	*S/P*	3	2G	Open	No			NF	O	No	No	No	16.2.3-6. (16.2.6), 16.2.3-9. (16.2.9)
Sodium hypochlorite solution (15% or less)	*Y*	*S/P*	2	2G	Cont	No	-	-	-	R	No	No	No	15.19.6
Sodium nitrite solution	*Y*	*S/P*	2	2G	Open	No			NF	O	No	No	No	15.12.3.1, 15.12.3.2, 15.19 & 15.22.12 (15.19), 16.2.3-9. (16.2.9)

Table S17.1 Summary of Minimum Requirements

a	*c*	*d*	*e*	*f*	*g*	*h*	*i'*	*i''*	*i'''*	*j*	*k*	*l*	*n*	*o*
Product Name	*Pollution Category*	*Hazards*	*Ship Type*	*Tank Type*	*Tank Vents*	*Tank Environmental Control*	*Electrical Equipment*			*Gauging*	*Vapour*	*Fire Extinguishing*	*Respiratory and Eye Protection*	*Special Requirements*
							Class	*Group*	*Flashpoint >60℃*					
Sodium silicate solution	*Y*	*P*	3	2G	Open	No			NF	O	No	No	No	16.2.3-9. (16.2.9)
Sodium sulphide solution (15% or less)	*Y*	*S/P*	3	2G	Cont	No			NF	C	T	No	No	15.19.6, 16.2.3-9. (16.2.9)
Sodium sulphite solution (25% or less)	*Y*	*P*	3	2G	Open	No			NF	O	No	No	No	15.19.6, 16.2.3-9. (16.2.9)
Sodium thiocyanate solution (56% or less)	*Y*	*P*	3	2G	Open	No			Yes	O	No	No	No	15.19.6, 16.2.3-9. (16.2.9)
Soyabean oil (containing less than 0.5% free fatty acids)	*Y*	*P*	2 (k)	2G	Open	No	-	-	Yes	Open	No	AB CD	No	15.19.6, 16.2.3-6. (16.2.6)
Sulpholane	*Y*	*P*	3	2G	Open	No			Yes	O	No	A	No	15.19.6, 16.2.3-9. (16.2.9)
Sulphonated polyacrylate solution	*Z*	*P*	3	2G	Cont	No			No	R	F	A	No	
Sulphur (molten)	*Z*	*S*	3	1G	Open	Vent or pad (gas)	T3		Yes	O	F-T	No	No	15.10, 16.2.3-9. (16.2.9)
Sulphuric acid	*Y*	*S/P*	3	2G	Open	No			NF	O	No	No	No	15.11, 15.16.2 & 15.22.11 (15.16.2), 15.19.6
Sulphuric acid, spent	*Y*	*S/P*	3	2G	Open	No			NF	O	No	No	No	15.11, 15.16.2 & 15.22.11 (15.16.2), 15.19.6
Sulphurized fat (C14-C20)	*Z*	*P*	3	2G	Open	No			Yes	O	No	AB	No	
Sunflower seed oil (containing less than 7% free fatty acids)	*Y*	*P*	2 (k)	2G	Open	No	-	-	Yes	Open	No	AB CD	No	15.19.6, 16.2.3-6. (16.2.6)
Tallow (containing less than 15% free fatty acids)	*Y*	*P*	2 (k)	2G	Open	No	-	-	Yes	Open	No	AB CD	No	15.19.6, 16.2.3-6. (16.2.6), 16.2.3-9. (16.2.9)
Tetrachloroethane	*Y*	*S/P*	2	2G	Cont	No			NF	R	T	No	No	15.12, 15.17, 15.19.6
Tetraethylene glycol	*Z*	*P*	3	2G	Open	No			Yes	O	No	A	No	
Tetraethylene pentamine	*Y*	*S/P*	2	2G	Open	No			Yes	O	No	A	No	
Tetrahydrofuran	*Z*	*S*	3	2G	Cont	No	T3	IIB	No	R	F-T	A	No	15.19.6
Tetrahydronaphthalene	*Y*	*P*	2	2G	Open	No			Yes	O	No	A	No	
Tetramethylbenzene (all isomers)	*X*	*P*	2	2G	Open	No			Yes	O	No	A	No	16.2.3-9. (16.2.9)
Titanium dioxide slurry	*Z*	*P*	3	2G	Open	No			Yes	O	No	AB	No	
Toluene	*Y*	*P*	3	2G	Cont	No			No	R	F	A	No	15.19.6
Toluenediamine	*Y*	*S/P*	2	2G	Cont	No			Yes	C	T	AD	Yes	15.12, 15.17, 15.19 & 15.22.12 (15.19),

Table S17.1 Summary of Minimum Requirements

a	*c*	*d*	*e*	*f*	*g*	*h*	*i'*	*i''*	*i'''*	*j*	*k*	*l*	*n*	*o*
Product Name	*Pollution Category*	*Hazards*	*Ship Type*	*Tank Type*	*Tank Vents*	*Tank Environmental Control*	*Electrical Equipment*			*Gauging*	*Vapour*	*Fire Extinguishing*	*Respiratory and Eye Protection*	*Special Requirements*
							Class	*Group*	*Flashpoint >60℃*					
														16.2.3-9. (16.2.9), 16.2.3-6. (16.2.6)
Toluene diisocyanate	*Y*	*S/P*	2	2G	Cont	Dry	T1	IIA	Yes	C	F-T	AC (b) D	Yes	15.12, 15.16.2 & 15.22.11 (15.16.2), 15.17, 15.19 & 15.22.12 (15.19), 16.2.3-9. (16.2.9)
o-Toluidine	*Y*	*S/P*	2	2G	Cont	No			Yes	C	T	A	No	15.12, 15.17, 15.19 & 15.22.12 (15.19)
Tributyl phosphate	*Y*	*P*	3	2G	Open	No			Yes	O	No	A	No	15.19.6
1,2,3-Trichlorobenzene (molten)	*X*	*S/P*	1	2G	Cont	No			Yes	C	T	AC D	Yes	15.12.1, 15,17, 15.19 & 15.22.12 (15.19), 16.2.3-9. (16.2.9), 16.2.3-6. (16.2.6)
1,2,4-Trichlorobenzene	*X*	*S/P*	1	2G	Cont	No			Yes	R	T	AB	No	15.19 & 15.22.12 (15.19), 16.2.3-9. (16.2.9)
1,1,1-Trichloroethane	*Y*	*P*	3	2G	Open	No			Yes	O	No	A	No	
1,1,2-Trichloroethane	*Y*	*S/P*	3	2G	Cont	No			NF	R	T	No	No	15.12.1, 15.19.6
Trichloroethylene	*Y*	*S/P*	2	2G	Cont	No	T2	IIA	Yes	R	T	No	No	15.12, 15.17, 15.19.6
1,2,3-Trichloropropane	*Y*	*S/P*	2	2G	Cont	No			Yes	C	T	AB D	No	15.12, 15.17, 15.19 & 15.22.12 (15.19)
1,1,2-Trichloro-1,2,2-Trifluoroethane	*Y*	*P*	2	2G	Open	No			NF	O	No	No	No	
Tricresyl phosphate (containing 1% or more ortho-isomer)	*Y*	*S/P*	1	2G	Cont	No	T2	IIA	Yes	C	No	AB	No	15.12.3, 15.19 & 15.22.12 (15.19), 16.2.3-6. (16.2.6)
Tridecane	*Y*	*P*	2	2G	Open	No			Yes	O	No	AB	No	15.19.6
Tridecanoic acid	*Y*	*P*	2	2G	Open	No			Yes	O	No	A	No	15.19.6, 16.2.3-6. (16.2.6), 16.2.3-9. (16.2.9)
Tridecyl acetate	*Z*	*P*	3	2G	Open	No			Yes	O	No	AB	No	
Triethanolamine	*Z*	*S/P*	3	2G	Open	No		IIA	Yes	O	No	A	No	16.2.3-9. (16.2.9)
Triethylamine	*Y*	*S/P*	2	2G	Cont	No	T2	IIA	No	R	F-T	AC	Yes	15.12, 15.19.6
Triethylbenzene	*X*	*P*	2	2G	Open	No			Yes	O	No	A	No	15.19.6
Triethylenetetramine	*Y*	*S/P*	2	2G	Open	No	T2	IIA	Yes	O	No	A	No	

Table S17.1 Summary of Minimum Requirements

a	*c*	*d*	*e*	*f*	*g*	*h*	*i'*	*i''*	*i'''*	*j*	*k*	*l*	*n*	*o*
Product Name	*Pollution Category*	*Hazards*	*Ship Type*	*Tank Type*	*Tank Vents*	*Tank Environmental Control*	*Electrical Equipment*			*Gauging*	*Vapour*	*Fire Extinguishing*	*Respiratory and Eye Protection*	*Special Requirements*
							Class	*Group*	*Flashpoint >60℃*					
Triethyl phosphate	*Z*	*P*	3	2G	Open	No			Yes	O	No	A	No	
Triethylphosphite	*Z*	*S/P*	3	2G	Cont	No			No	R	F-T	AB	No	15.12.1, 15.19.6, 16.2.3-9. (16.2.9)
Triisopropanolamine	*Z*	*P*	3	2G	Open	No			Yes	O	No	A	No	
Triisopropylated phenyl phosphates	*X*	*P*	2	2G	Open	No			Yes	O	No	A	No	15.19.6, 16.2.3-6. (16.2.6)
Trimethylacetic acid	*Y*	*S/P*	3	2G	Cont	No			Yes	R	No	A	No	15.11.2, 15.11.3, 15.11.4, 15.11.5, 15.11.6, 15.11.7, 15.11.8, 15.19.6, 16.2.3-6. (16.2.6), 16.2.3-9. (16.2.9)
Trimethylamine solution (30% or less)	*Z*	*S/P*	2	2G	Cont	No			No	C	F-T	AC	Yes	15.12, 15.14 & 15.22.10 (15.14), 15.19 & 15.22.12 (15.19), 16.2.3-9. (16.2.9)
Trimethylbenzene (all isomers)	*X*	*P*	2	2G	Cont	No			No	R	F	A	No	15.19.6
2,2,4-Trimethyl-1,3-pentanediol diisobutyrate	*Z*	*P*	3	2G	Open	No			Yes	O	No	AB	No	
2,2,4-Trimethyl-1,3-pentanediol-1-isobutyrate	*Y*	*P*	2	2G	Open	No			Yes	O	No	A	No	
1,3,5-Trioxane	*Y*	*S/P*	3	2G	Cont	No			No	R	F	AD	No	15.19.6, 16.2.3-9. (16.2.9)
Tripropylene glycol	*Z*	*P*	3	2G	Open	No			Yes	O	No	A	No	
Trixylyl phosphate	*X*	*P*	2	2G	Open	No			Yes	O	No	A	No	15.19.6, 16.2.3-6. (16.2.6)
Tung oil (containing less than 2.5% free fatty acids)	*Y*	*P*	2 (k)	2G	Open	No	-	-	Yes	Open	No	AB CD	No	15.19.6, 16.2.3-6. (16.2.6), 16.2.3-9. (16.2.9)
Turpentine	*X*	*P*	2	2G	Cont	No			No	R	F	A	No	15.19.6
Undecanoic acid	*Y*	*P*	2	2G	Open	No			Yes	O	No	A	No	16.2.3-6. (16.2.6), 16.2.3-9. (16.2.9)
1-Undecene	*X*	*P*	2	2G	Open	No			Yes	O	No	A	No	15.19.6
Undecyl alcohol	*X*	*P*	2	2G	Open	No			Yes	O	No	A	No	15.19.6, 16.2.3-9. (16.2.9)
Urea/Ammonium nitrate solution	*Z*	*P*	3	2G	Open	No			Yes	O	No	A	No	
Urea/Ammonium nitrate solution	*Z*	*S/P*	3	2G	Cont	No			NF	R	T	A	No	16.2.3-9. (16.2.9)

Table S17.1 Summary of Minimum Requirements

a	*c*	*d*	*e*	*f*	*g*	*h*	*i'*	*i''*	*i'''*	*j*	*k*	*l*	*n*	*o*
Product Name	*Pollution Category*	*Hazards*	*Ship Type*	*Tank Type*	*Tank Vents*	*Tank Environmental Control*	*Electrical Equipment*			*Gauging*	*Vapour*	*Fire Extinguishing*	*Respiratory and Eye Protection*	*Special Requirements*
							Class	*Group*	*Flashpoint >60℃*					
(containing aqua ammonia)														
Urea/Ammonium phosphate solution	*Y*	*P*	2	2G	Open	No			Yes	O	No	A	No	15.19.6
Urea solution	*Z*	*P*	3	2G	Open	No			Yes	O	No	A	No	
Valeraldehyde (all isomers)	*Y*	*S/P*	3	2G	Cont	Inert	T3	IIB	No	R	F-T	A	No	15.4.6, 15.19.6
Vegetable protein solution (hydrolysed)	*Z*	*P*	3	2G	Open	No			Yes	O	No	A	No	
Vinyl acetate	*Y*	*S/P*	3	2G	Cont	No	T2	IIA	No	R	F	A	No	15.13, 15.19.6, 16.2.7-1. (16.6.1), 16.2.7-2. (16.6.2)
Vinyl ethyl ether	*Z*	*S/P*	2	1G	Cont	Inert	T3	IIB	No	C	F-T	A	Yes	15.4, 15.13, 15.14 & 15.22.10 (15.14), 15.19 & 15.22.12 (15.19), 16.2.7-1. (16.6.1), 16.2.7-2. (16.6.2)
Vinylidene chloride	*Y*	*S/P*	2	2G	Cont	Inert	T2	IIA	No	R	F-T	B	Yes	15.13, 15.14 & 15.22.10 (15.14), 15.19.6, 16.2.7-1. (16.6.1), 16.2.7-2. (16.6.2)
Vinyl neodecanoate	*Y*	*S/P*	2	2G	Open	No			Yes	O	No	AB	No	15.13, 15.19.6, 16.2.7-1. (16.6.1), 16.2.7-2. (16.6.2)
Vinyltoluene	*Y*	*S/P*	2	2G	Cont	No		IIA	No	R	F	AB	No	15.13, 15.19.6, 16.2.7-1. (16.6.1), 16.2.7-2. (16.6.2)
Waxes	*Z*	*P*	3	2G	Open	No			Yes	O	No	AB	No	16.2.3-6. (16.2.6), 16.2.3-9. (16.2.9)
Xylenes	*Y*	*P*	2	2G	Cont	No			No	R	F	A	No	15.19.6, 16.2.3-9. (16.2.9) (h)
Xylenol	*Y*	*S/P*	3	2G	Open	No		IIA	Yes	O	No	AB	No	15.19.6, 16.2.3-9. (16.2.9)
Zinc alkaryl dithiophosphate (C7-C16)	*Y*	*P*	2	2G	Open	No			Yes	O	No	AB	No	16.2.3-6. (16.2.6), 16.2.3-9. (16.2.9)
Zinc alkenyl carboxamide	*Y*	*P*	2	2G	Open	No			Yes	O	No	AB	No	15.19.6, 16.2.3-6. (16.2.6)
Zinc alkyl dithiophosphate (C3-C14)	*Y*	*P*	2	2G	Open	No			Yes	O	No	AB	No	15.19.6, 16.2.3-6. (16.2.6)

(notes)

(a) :If the product to be carried contains flammable solvents such that the flashpoint does not exceed 60℃, then special electrical systems and a flammable-vapour detector are to be provided.

(b) :Although water is suitable for extinguishing open-air fires involving chemicals to which this footnote applies, water is not to be allowed to contaminate closed tanks containing these chemicals because of the risk of hazardous gas generation.

(c) :Phosphorus, yellow or white is carried above its autoignition temperature and therefore flashpoint is not appropriate. Electrical equipment requirements may be similar to those for substances with a flashpoint above 60℃.

(d) :Requirements are based on those isomers having a flashpoint of 60℃, or less; some isomers hve a flashpoint greater than 60℃, and therefore the requirements based on flammability would not apply to such isomers.

(e) :Applies to n-decyl alcohol only.

(f) :Dry chemical is not to be used as fire extinguishing media.

(g) :Confined spaces are to be tested for both formic acid vapours and carbon monoxide gas, a decomposition product.

(h) :Applies to p-xylene only.

(i) :For mixtures containing no other components with safety hazards and where the pollution category is Y or less.

(j) :Only certain alcohol-resistant foams are effective.

(k) :Requirements for Ship Type identified in column *e* might be subject to regulation 4.1.3 of *ANNEX* II of *MARPOL* 73/78.

(l) :Applicable when the melting point is equal to or greater than 0℃.

Chapter 18 LIST OF CHEMICALS TO WHICH THIS PART DOES NOT APPLY
(with reference to *IBC Code* Chapter 18)

18.1 General

18.1.1 Application

Paragraph 18.1.1 and Table S18.1 have been amended as follows:

1 Although the products listed in the **Table S18.1** fall outside the scope of this part, the attention of Society is drawn to the fact that some safety precautions may be needed for their safe transportation. Accordingly Society is to prescribe appropriate safety requirements.

(1) Product name (column **a**)
The product name is to be used in the shipping document for any cargo offered for bulk shipments. In some cases, the product names may not be identical with the names given in previous issues of the *IBC Code*.

(2) Pollution category (column **c**)
The letter *Z* means the pollution category assigned to each product under *Annex* II of *MARPOL* 73/78.
"*OS*" means the product was evaluated and found to fall outside the categories *X, Y* or *Z*.

Table S18.1 List of Chemicals to Which This Part does not Apply

Product name (**a**)	Pollution Category (**b**)
Acetone	*Z*
Alcoholic beverages, n.o.s.	*Z*
Apple juice	*OS*
n-Butyl alcohol	*Z*
sec-Butyl alcohol	*Z*
Clay slurry	*OS*
Coal slurry	*OS*
Diethylene glycol	*Z*
Ethyl alcohol	*Z*
Ethylene carbonate	*Z*
Glucose solution	*OS*
Glycerine	*Z*
Glycerol monooleate	*Z*
Hexamethylenetetramine solutions	*Z*
Hexylene glycol	*Z*
Isopropyl alcohol	*Z*
Kaolin slurry	*OS*
Magnesium hydroxide slurry	*Z*
N-Methylglucamine solution (70% or less)	*Z*
Methyl propyl ketone	*Z*
Molasses	*OS*
Noxious liquid, (11) n.o.s. (trade name …., contains ….) Cat. Z	*Z*
Non-noxious liquid, (12) n.o.s. (trade name …., contains ….) Cat. OS	*OS*
Polyaluminium chloride solution	*Z*
Potassium formate solutions	*Z*
Propylene carbonate	*Z*
Propylene glycol	*Z*
Sodium acetate solutions	*Z*
Sodium sulphate solutions	*Z*
Tetraethyl silicate monomer/oligomer (20% in ethanol)	*Z*
Triethylene glycol	*Z*
Water	*OS*

(notes)

(1) Some liquid substances are identified as falling into pollution category *Z* and, therefore, subject to certain requirements of *Annex* II of *MARPOL* 73/78.

(2) Liquid mixtures which are assessed or provisionally assessed under regulation 6.3 of *MARPOL Annex* II as falling into Pollution Category *Z* or *OS* , and which do not present safety lazards, may be carried under the appropriate entry in this Table for “Noxious or Non-Noxious Liquid Substances, not otherwise specified (n.o.s.)”.

Chapter 19 has been amended as follows:

Chapter 19 "Deleted"

Chapter 20 TRANSPORT OF LIQUID CHEMICAL WASTES

20.1 General

20.1.1 Application

Sub-paragraph -2(2) has been deleted, and -2(3) has been renumbered to -2(2).

20.3 Classification of Liquid Chemical Wastes

20.3.1 Classification of Liquid Chemical Wastes

In paragraph 20.3.1, "Category A noxious liquid substances" has been amended to "Category *X* noxious liquid substances"

EFFECTIVE DATE AND APPLICATION (Amendment 1-1)

1. The effective date of the amendments is 1 January 2007.

Amendment 1-2

Chapter 10 ELECTRICAL INSTALLATIONS

10.1 General

Paragraph 10.1.2 has been amended as follows.

10.1.2 Risk of Fire and Explosion from Flammable Product (*IBC Code* 10.1.2.1)
Electrical installations are to be such as to minimize the risk of fire and explosion from flammable products.

Paragraphs 10.1.4 through 10.1.6 have been amended as follows.

10.1.4 Restriction of Electrical Equipment in hazardous areas (*IBC Code* 10.1.4)
Electrical equipment and cables are not to be installed in the hazardous areas specified in **4.2.3-3**, **-4** and **-5**, **Part H**, unless it conforms to the requirements in **4.2.4**, **Part H**.

10.1.5 Certified Safe Type Equipment (*IBC Code* 10.1.5)
Where electrical equipment is installed in hazardous areas as provided in **10.1.4**, it is to be to the satisfaction of the Society, for operation in the flammable atmosphere concerned and to be approved one as the certified safe type.

10.1.6 Substances having a flashpoint exceeding 60℃ (*IBC Code* 10.1.6)
For guidance, indication is given in column "***i***" in the **Table S17.1** whether the flashpoint of substance is excess of 60℃. In case of carrying heated cargo, carriage conditions might need to be established and requirements of **4.4.1** and **4.5.1**, **Part H** are applied.

Sections 10.2 and 10.3 have been amended as follows.

10.2 Bonding (*IBC Code* 10.2)

10.2.1 Bonding
Independent cargo tanks are to be electrically bonded to the hull. All gasketed cargo pipe joints and hose connections are to be electrically bonded.

10.3 Electrical Requirements for Individual Products (*IBC Code* 10.3)

10.3.1 Electrical Requirements for Individual Products
Electrical requirements for individual products are to be in accordance with the requirement in column "***i***" in the **Table S17.1**.

Section 10.4 has been deleted.

EFFECTIVE DATE AND APPLICATION (Amendment 1-2)

1. The effective date of the amendments is 1 January 2007.

2. Notwithstanding the amendments to the Chapter 10, Part S of the Rules, the current requirements may apply to ships the keels of which were laid or which were at *a similar stage of construction* before the effective date.
(Note) The term "*a similar stage of construction*" means the stage at which the construction identifiable with a specific ship begins and the assembly of that ship has commenced comprising at least 50 *tonnes* or 1% of the estimated mass of all structural material, whichever is the less.

GUIDANCE FOR THE SURVEY AND CONSTRUCTION OF STEEL SHIPS

GUIDANCE

Part S Ships Carrying Dangerous Chemicals in Bulk

2006 AMENDMENT NO.1

Notice No.67 3rd October 2006

Resolved by Technical Committee on 6th July 2006

Notice No.67 3rd October 2006
AMENDMENT TO THE GUDIANCE FOR THE SURVEY AND CONSTRUCTION OF STEEL SHIPS

"Guidance for the survey and construction of steel ships" has been partly amended as follows:

Part S SHIPS CARRYING DANGEROUS CHEMICALS IN BULK

Amendment 1-1

S2 SHIP SURVIVAL CAPABILITY AND LOCATION OF CARGO TANKS

S2.6 Location of Cargo Tanks

S2.6.2 Suction Well Installed in Cargo Tanks

In paragraph S2.6.2, "Note" has been amended as follows:

Note : Regulation 12 in *Annex* II to *MARPOL* 73/78 is also to be taken into consideration.

S6 MATERIALS OF CONSTRUCTION

Section S6.1 has been added as follows:

S6.1 General

S6.1.3 Information for Materials of Construction

The "Compatibility information for materials of construction"referred to in **6.1.3, Part S of the Rules** is to be involved in information for all compatibility between intended loading cargo and materials of construction.

Section S6.2 has been deleted.

S11 FIRE PROTECTION AND FIRE EXTINCTION

S11.3 Cargo Area

S11.3.15 Exclusion of Sources of Ignition

In the main text, “10.2, Part S of the Rules” has been amended to “4.2.3-2, -4 and -5, Part H of the Rules”.

S17 SUMMARY OF MINIMUM REQUIREMENTS

S17.1 General

S17.1.1 General

Table S17.1.1-1 has been amended as follows:

Table S17.1.1-1 Summary of Minimum Requirements Proposed and Provisional Entries in Chapter 17

a	*c*	*d*	*e*	*f*	*g*	*h*	*i'*	*i''*	*i'''*	*j*	*k*	*l*	*n*	*o*
Product Name	*Pollution Category*	*Hazards*	*Ship Type*	*Tank Type*	*Tank Vents*	*Tank Environmental Control*	*Electrical Equipment*			*Gauging*	*Vapour*	*Fire Extinguishing*	*Respiratory and Eye Protection*	*Special Requirements*
							Class	*Group*	*Flashpoint >60℃*					
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

S18 LIST OF CHEMICALS TO WHICH THIS PART DOES NOT APPLY

S18.1 General

S18.1.1 Application

Table S18.1.1-1 has been amended as follows:

Table S18.1.1-1 List of Chemicals to Which This Part does not Apply, Proposed and Provisional Entries in Chapter 18

Product name (**a**)	Pollution Category (**b**)
-	-

EFFECTIVE DATE AND APPLICATION (Amendment 1-1)

1. The effective date of the amendments is 1 January 2007.

Amendment 1-2

S10 ELECTRICAL INSTALLATIONS

S10.1 General

Paragraph S10.1.3 has been deleted.

Paragraph S10.1.5 has been amended as follows.

10.1.5 Certified Safe Type Equipment

1 The wording "the satisfaction of the Society" in **10.1.5**, **Part S of the Rules** mean that the explosion-protected electrical equipment complying with the requirements in **2.16, Part H of the Rules** and grouped into appropriate Apparatus Group and Temperature Class according to the column "***i***" **of Table S17.1** or equivalent thereto for an environmental gas or vapours condition.

2 The wording "approved one as the certified safe type" in **10.1.5**, **Part S of the Rules** mean that the explosion-protected electrical equipment approved by the Society in accordance with the requirements in **1.2.1-4, Part H of the Rules** or the equipment of a type which may not cause ignition of gases or vapours of the cargoes.

Section S10.2 has been amended as follows.

S10.2 Bonding

S10.2.1 Bonding

For the purpose of the requirements in **10.2.1, Part S of the Rules**, electrical bondings are to be in accordance with the requirements in **N5.2.1-5** in practicable.

Fig. S10.2.3-1, Fig. S10.2.3-2 and Fig. S10.2.3-3 have been deleted.

Section S10.3 has been deleted.

EFFECTIVE DATE AND APPLICATION (Amendment 1-2)

1. The effective date of the amendments is 1 January 2007.

2. Notwithstanding the amendments to the Rules/Guidance, the current requirements may apply to ships the keels of which were laid or which were at *a similar stage of construction* before the effective date.
(Note) The term "*a similar stage of construction*" means the stage at which the construction identifiable with a specific ship begins and the assembly of that ship has commenced comprising at least 50 *tonnes* or 1% of the estimated mass of all structural material, whichever is the less.