

澳門特別行政區

REGIÃO ADMINISTRATIVA ESPECIAL
DE MACAU

行政長官辦公室

GABINETE DO CHEFE DO EXECUTIVO

第 41/2017 號行政長官公告

Aviso do Chefe do Executivo n.º 41/2017

中華人民共和國是國際海事組織的成員國及《經1978年議定書修訂的〈1973年國際防止船舶造成污染公約〉》（廣泛稱為“73/78防污公約”）的締約國；

國際海事組織海上環境保護委員會於一九八五年十二月五日在第二十二屆會議上，透過第MEPC.20(22)號決議通過了《散裝運輸危險化學品船舶構造與設備規則》（《散化規則》），該規則於一九九九年十二月二十日對澳門特別行政區生效；

根據《73/78防污公約》附側II第11條規定，一九八六年七月一日前建造的液貨船須滿足《散化規則》的要求；

海上環境保護委員會多年來分別透過一九八九年三月十七日第MEPC.33(27)號、一九九零年三月十六日第MEPC.41(29)號、一九九二年十月三十日第MEPC.56(33)號、一九九六年七月十日第MEPC.70(38)號、一九九九年七月一日第MEPC.80(43)號、二零零零年十月五日第MEPC.91(45)號、二零零六年三月二十四日第MEPC.144(54)號、二零一四年四月四日第MEPC.249(66)號決議，通過了對《散化規則》的修正案。該等修正案於一九九九年十二月二十日至二零一六年一月一日期間已對澳門特別行政區生效；

《散化規則》及其修正案至今未公佈於《澳門特別行政區公報》；

基於此，行政長官根據第3/1999號法律《法規的公佈與格式》第六條第一款的規定，命令公佈：

——包含《散裝運輸危險化學品船舶構造與設備規則》（《散化規則》）的上指海上環境保護委員會第MEPC.20(22)號決議的英文正式文本；

——包含《散化規則》修正案並於一九九九年十二月二十日至二零零七年八月一日期間生效的上指海上環境保護委員會第MEPC.33(27)號、第MEPC.41(29)號、第MEPC.56(33)號、第MEPC.70(38)號、第MEPC.80(43)號、第MEPC.91(45)號及第MEPC.144(54)號的英文正式文本；

Considerando que a República Popular da China é um Estado Membro da Organização Marítima Internacional e um Estado Contratante da Convenção Internacional para a Prevenção da Poluição por Navios, 1973, tal como modificada pelo seu Protocolo de 1978, vulgarmente denominada pelo seu acrónimo «MARPOL 73/78»;

Considerando igualmente que, em 5 de Dezembro de 1985, na sua 22.ª sessão, o Comité de Protecção do Meio Marinho da Organização Marítima Internacional (Comité de Protecção do Meio Marinho (MEPC)), através da sua resolução MEPC.20(22), adoptou o Código para a Construção e Equipamento de Navios que Transportam Substâncias Químicas Perigosas a Granel (Código BCH), o qual entrou em vigor em relação à Região Administrativa Especial de Macau em 20 de Dezembro de 1999;

Mais considerando que nos termos da Regra 11 do Anexo II da MARPOL 73/78 os navios-tanque construídos antes de 1 de Julho de 1986 devem satisfazer os requisitos do Código BCH;

Considerando ainda que o Comité de Protecção do Meio Marinho tem vindo ao longo dos anos a adoptar emendas ao Código BCH através das suas resoluções MEPC.33(27), de 17 de Março de 1989, MEPC.41(29), de 16 de Março de 1990, MEPC.56(33), de 30 de Outubro de 1992, MEPC.70(38), de 10 de Julho de 1996, MEPC.80(43), de 1 de Julho de 1999, MEPC.91(45), de 5 de Outubro de 2000, MEPC.144(54), de 24 de Março de 2006 e MEPC.249(66), de 4 de Abril de 2014, as quais entraram em vigor na Região Administrativa Especial de Macau entre 20 de Dezembro de 1999 e 1 de Janeiro de 2016;

Mais considerando que o Código BCH assim como as suas emendas não foram até ao momento publicados no *Boletim Oficial da Região Administrativa Especial de Macau*;

O Chefe do Executivo manda publicar, nos termos do n.º 1 do artigo 6.º da Lei n.º 3/1999 (Publicação e formulário dos diplomas):

— a *supra* referida resolução do Comité de Protecção do Meio Marinho MEPC.20(22), que contém o Código para a Construção e Equipamento de Navios que Transportam Substâncias Químicas Perigosas a Granel (Código BCH), no seu texto autêntico em língua inglesa;

— as *supra* referidas resoluções do Comité de Protecção do Meio Marinho MEPC.33(27), MEPC.41(29), MEPC.56(33), MEPC.70(38), MEPC.80(43), MEPC.91(45) e MEPC.144(54), que contém emendas ao Código BCH, nos seus textos autênticos em língua inglesa, as quais entraram em vigor entre 20 de Dezembro de 1999 e 1 de Agosto de 2007;

——包含《散化規則》修正案的上指海上環境保護委員會第MEPC.249(66)號決議的中文及英文正式文本。該決議於二零一六年一月一日在國際法律秩序生效，包括對中華人民共和國及澳門特別行政區生效；

——中央人民政府提供的《散化規則》中文綜合文本，其中包含一九八九年第MEPC.33(27)號決議至二零零六年第MEPC.144(54)號決議通過的修正案。

為了法律效力，所公佈的中文綜合文本不影響對有關規定的正式文本的查閱。

二零一七年七月二十四日發佈。

行政長官 崔世安

— a *supra* referida resolução do Comité de Protecção do Meio Marinho MEPC.249(66), que contém emendas ao Código BCH, nos seus textos autênticos em línguas chinesa e inglesa, a qual entrou em vigor na ordem internacional, incluindo a República Popular da China e a sua Região Administrativa Especial de Macau, em 1 de Janeiro de 2016;

— a versão consolidada em língua chinesa do Código BCH, facultada pelo Governo Popular Central, que incorpora as emendas adoptadas desde 1989 (MEPC.33(27)) até 2006 (MEPC.144(54)).

Para efeitos legais, a versão consolidada em língua chinesa ora publicada não prejudica a consulta dos textos autênticos das disposições em causa.

Promulgado em 24 de Julho de 2017.

O Chefe do Executivo, *Chui Sai On*.

Resolution MEPC 20(22)

ADOPTION OF THE CODE FOR THE CONSTRUCTION AND EQUIPMENT
OF SHIPS CARRYING DANGEROUS CHEMICALS IN BULK (BCH CODE)

adopted on 5 December 1985

THE MARINE ENVIRONMENT PROTECTION COMMITTEE,

RECALLING Article 38 of the Convention on the International Maritime Organization concerning the functions of the Committee,

NOTING resolution MEPC 16(22) by which it adopted amendments to the Annex of the Protocol of 1978 relating to the International Convention for the Prevention of Pollution from Ships, 1973, (the 1978 Protocol), to make the provisions of the International Code for the Construction and Equipment of Ships Carrying Dangerous Chemicals in Bulk (IBC Code) and the Code for the Construction and Equipment of Ships Carrying Dangerous Chemicals in Bulk (BCH Code) mandatory under the International Convention for the Prevention of Pollution from Ships, 1973 as modified by the 1978 Protocol (MARPOL 73/78),

NOTING ALSO that the BCH Code was adopted by the Assembly by resolution A.212(VII) and subsequently incorporated ten sets of amendments adopted by the Maritime Safety Committee,

HAVING CONSIDERED the proposed text of the BCH Code which incorporates amendments from the marine pollution point of view developed by the Committee in pursuance of resolution 15 of the International Conference on marine Pollution, 1973,

1. ADOPTS the BCH Code, the text of which is given in the Annex to the present resolution, for the purposes of Annex II of MARPOL 73/78;
2. REQUESTS the Secretary-General to transmit a copy of the present resolution together with the text of the BCH Code to all Members of the Organization and to all Parties to MARPOL 73/78 which are not Members of the Organization.

ANNEX

THE CODE FOR THE CONSTRUCTION AND EQUIPMENT OF
SHIPS CARRYING DANGEROUS CHEMICALS IN BULK

(The BCH Code to be annexed to the MEPC resolution
will incorporate the amendments listed below)

Preamble

Paragraph 1

In the existing text, after the word "dangerous", the words "and
noxious" are inserted.

Paragraph 7

Existing paragraph 7 is replaced by the following:

"7 In response to resolution 15 of the International Conference on Marine Pollution, 1973, the Marine Environment Protection Committee at its twenty-second session adopted with resolution MEPC ...(22) the BCH Code extended to cover the marine pollution prevention aspects for the implementation of Annex II to the International Convention for the Prevention of Pollution from Ships, 1973, as modified by the Protocol of 1978 relating thereto (MARPOL 73/78)."

Paragraph 8

In the existing text, after the word "dangerous", the words "and
noxious" are inserted.

1.1 Purpose

In the existing text, the words "or noxious" are inserted between the words
"dangerous" and "chemical".

In the existing text the words "the neighbourhood" are replaced by the words "to the environment".

The following sentence is added to the existing text:

"For the purposes of MARPOL 73/78, the Code applies only to chemical tankers as defined in regulation 1(1) of Annex II thereof, which are engaged in the carriage of noxious liquid substances falling into Category A, B or C and identified as such by an entry of "A, B or C" in column b"."

1.2 Scope

1.2.1 In the existing text of the first sentence, the words "and noxious" are inserted between the words "dangerous" and "chemical" and the words "(c) products which may present a hazard to the environment, if accidentally released." are added.

1.3 Hazards

The existing text of 1.3 is designated as 1.3.1 and in the first line the words "relating to human life" are inserted between the words "substances" and "considered".

New paragraph 1.3.2 is added to the existing text as follows:

"1.3.2 Hazards of chemicals and other substances relating to the marine environment considered by this Code are:

- .1 bioaccumulation with attendant risk to aquatic life or human health or cause tainting to seafood;
- .2 damage to living resources;
- .3 hazard to human health; and
- .4 reduction of amenities."

1.4 Definitions

In the existing text of paragraph 1.4.15 after the words "propylene oxide" the words "and ethylene oxide/propylene oxide mixtures with an ethylene oxide content of not more than 30 per cent by weight" are added.

The following definitions are added to the existing text:

"1.4.16A Noxious liquid substance means any substance designated in appendix II to Annex II of the International Convention for the Prevention of Pollution from Ships, 1973, as modified by the Protocol of 1978 relating thereto (MARPOL 73/78) or provisionally assessed under the provisions of regulation 3(4) of that Annex as falling into category A, B, C or D."

"1.4.16B Standards for Procedures and Arrangements means the Standards for the Procedures and Arrangements for the Discharge of Noxious Liquid Substances, called for by Annex II of MARPOL 73/78, adopted by the Marine Environment Protection Committee at its twenty-second session by resolution MEPC 18(22) and as may be amended by the Organization."

1.5 Equivalentents

1.5.2 In the existing text the words "other Parties to MARPOL 73/78 and" are inserted after the words "circulate the same to".

1.6 Certification

1.6.3.1 In the existing text the words "to a chemical tanker" the words "engaged in international voyages" are added.

1.7 Effective date

1.7.2 The following sentence is added to the existing text of paragraph 1.7.2

"This conversion provision does not apply to the modification of a ship referred to in regulation 1(12) of Annex II of MARPOL 73/78."

1.8 New products

In the first line of the existing text between the words "chemicals" and "which" the following words are added:

"and noxious liquid substances of category A, B or C, either of".

2.2 Ship types

The following sentence is added to the existing texts of subparagraphs 2.2.4(a)(iii) and 2.2.4(b)(iii)

"This requirement does not apply to the tanks for diluted slops arising from the tank washing."

2.6 Cargo segregation

2.6.2 The first line of the existing text is amended to read:

"Cargoes, residues of cargoes or mixtures containing cargoes which react in a hazardous manner with other cargoes, residues or mixtures, should:"

Chapter IV - Special requirements

The existing text of section 4.7 is replaced by the following:

"4.7 Propylene oxide and mixtures of ethylene oxide/propylene oxide with an ethylene oxide content of not more than 30 per cent by weight.

4.7.1 Products transported under the provisions of this section should be acetylene free.

4.7.2 (a) Unless cargo tanks are properly cleaned, these products should not be carried in tanks which have contained as one of the three previous cargoes any products known to catalyse polymerization, such as:

- (i) mineral acids (e.g. sulphuric, hydrochloric, nitric);
 - (ii) carboxylic acids and anhydrides (e.g. formic, acetic);
 - (iii) halogenated carboxylic acids (e.g. chloracetic);
 - (iv) sulphonic acids (e.g. benzene sulphonic);
 - (v) caustic alkalis (e.g. sodium hydroxide, potassium hydroxide);
 - (vi) ammonia and ammonia solutions;
 - (vii) amines and amine solutions;
 - (viii) oxidizing substances.
- (b) Before loading, tanks should be thoroughly and effectively cleaned, to remove all traces of previous cargoes from tanks and associated pipework, except where the immediately prior cargo has been propylene oxide or ethylene oxide/propylene oxide mixtures. Particular care should be taken in the case of ammonia in tanks made of steel other than stainless steel.
- (c) In all cases, the effectiveness of cleaning procedures for tanks and associated pipework should be checked by suitable testing or inspection, to ascertain that no traces of acidic or alkaline materials remain that might create a hazardous situation in the presence of these products.
- (d) Tanks should be entered and inspected prior to each initial loading of these products to ensure freedom from contamination, heavy rust deposits and visible structural defects. When cargo tanks are in continuous service for these products, such inspections should be performed at intervals of not more than two years.

- (e) Tanks for the carriage of these products should be of steel or stainless steel construction.
 - (f) Tanks for the carriage of these products may be used for other cargoes after thorough cleaning of tanks and associated pipework systems by washing or purging.
- 4.7.3 (a) All valves, flanges, fittings and accessory equipment should be of a type suitable for use with the products and should be constructed of steel or stainless steel or other material acceptable to the Administration. The chemical composition of all material used should be submitted to the Administration for approval prior to fabrication. Discs or disc faces, seats and other wearing parts of valves should be made of stainless steel containing not less than 11 per cent chromium.
- (b) Gaskets should be constructed of materials which do not react with, dissolve in, or lower the auto-ignition temperature of, these products, and which are fire resistant and possess adequate mechanical behaviour. The surface presented to the cargo should be polytetrafluorethylene (PTFE), or materials giving a similar degree of safety by their inertness. Spirally-wound stainless steel, with a filler of PTFE or similar fluorinated polymer, may be accepted by the Administration.
 - (c) Insulation and packing, if used, should be of a material which does not react with, dissolve in, or lower the auto-ignition temperature of, these products.
 - (d) The following materials are generally found unsatisfactory for gaskets, packing and similar uses in containment systems for these products and would require testing before being approved by the Administration:
 - (i) Neoprene or natural rubber, if it comes into contact with the products.

(ii) Asbestos, or binders used with asbestos.

(iii) Materials containing oxides of magnesium, such as mineral wools.

4.7.4 Threaded joints should not be permitted in the cargo liquid and vapour lines.

4.7.5 Filling and discharge piping should extend to within 100 mm of the bottom of the tank or any sump pit.

4.7.6 (a) The containment system for a tank containing these products should have a valved vapour return connection.

(b) The products should be loaded and discharged in such a manner that venting of the tanks to atmosphere does not occur. If vapour return to shore is used during tank loading, the vapour return system connected to a containment system for the product should be independent of all other containment systems.

(c) During discharging operations, the pressure in the cargo tank must be maintained above 0.07 kp/cm^2 gauge.

4.7.7 The cargo may be discharged only by deepwell pumps, hydraulically operated submerged pumps, or inert gas displacement. Each cargo pump should be arranged to ensure that the product does not heat significantly if the discharge line from the pump is shut off or otherwise blocked.

4.7.8 Tanks carrying these products should be vented independently of tanks carrying other products. Facilities should be provided for sampling the tank contents without opening the tank to atmosphere.

4.7.9 Cargo hoses used for transfer of these products should be marked "FOR ALKYLENE OXIDE TRANSFER ONLY".

4.7.10 Cargo tanks, void spaces and other enclosed spaces, adjacent to an integral gravity cargo tank carrying propylene oxide, should either contain a compatible cargo (those cargoes specified in 4.7.2 are examples of substances considered incompatible) or be inerted by injection of a suitable inert gas. Any hold space in which an independent cargo tank is located should be inerted. Such inerted spaces and tanks should be monitored for these products and oxygen. The oxygen content of these spaces should be maintained below 2 per cent. Portable sampling equipment is satisfactory.

4.7.11 In no case should air be allowed to enter the cargo pump or piping system while these products are contained within the system.

4.7.12 Prior to disconnecting shore-lines, the pressure in liquid and vapour lines should be relieved through suitable valves installed at the loading header. Liquid and vapour from these lines should not be discharged to atmosphere.

4.7.13 Propylene oxide may be carried in pressure tanks or in independent or integral gravity tanks. Ethylene oxide/propylene oxide mixtures should be carried in independent gravity tanks or pressure tanks. Tanks should be designed for the maximum pressure expected to be encountered during loading, conveying and discharging cargo.

4.7.14 (a) Tanks for the carriage of propylene oxide with a design pressure less than 0.6 kp/cm^2 gauge and tanks for the carriage of ethylene oxide/propylene oxide mixtures with a design pressure less than 1.2 kp/cm^2 gauge should have a cooling system to maintain the cargo below the reference temperature.*

(b) The refrigeration requirement for tanks with a design pressure less than 0.6 kp/cm^2 gauge may be waived by the Administration for ships operating in restricted areas or on voyages of

* See 1.4.15.

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 the Certificate of Fitness.

- 4.7.15 (a) Any cooling system should maintain the liquid temperature below the boiling temperature at the containment pressure. At least two complete cooling plants automatically regulated by variations within the tanks should be provided. Each cooling plant should be complete with the necessary auxiliaries for proper operation. The control system should also be capable of being manually operated. An alarm should be provided to indicate malfunctioning of the temperature controls. The capacity of each cooling system should be sufficient to maintain the temperature of the liquid cargo below the reference temperature* of the system.
- (b) An alternative arrangement may consist of three cooling plants, any two of which should be sufficient to maintain the liquid temperatures below the reference temperature*.
- (c) Cooling media which are separated from the products by a single wall only should be non-reactive with the products.
- (d) Cooling systems requiring compression of the products should not be used.

4.7.16 Pressure relief valve settings should not be less than 0.2 kp/cm^2 gauge and for pressure tanks not greater than 7.0 kp/cm^2 gauge for the carriage of propylene oxide and not greater than 5.3 kp/cm^2 gauge for carriage of propylene oxide/ethylene oxide mixtures.

* See 1.4.15.

4.7.17 (a) The piping system for tanks to be loaded with these products should be separated (as defined in 1.4.13) from piping systems for all other tanks, including empty tanks. If the piping system for the tanks to be loaded is not independent (as defined in 1.4.14), the required piping separation should be accomplished by the removal of spool pieces, valves, or other pipe sections, and the installation of blank flanges at these locations. The required separation applies to all liquid and vapour piping, liquid and vapour vent lines and any other possible connections, such as common inert gas supply lines.

(b) 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 Certificate of Fitness for the Carriage of Dangerous Chemicals in Bulk should be endorsed to include reference to the approved cargo handling plans.

(c) Before each initial loading of these products and before every subsequent return to such service, certification verifying that the required piping separation has been achieved should be obtained from a responsible person acceptable to the Port Administration and carried on board the ship. Each connection between a blank flange and a pipeline flange should be fitted with a wire and seal by the responsible person to ensure that inadvertent removal of the blank flange is impossible.

4.7.18 (a) No cargo tanks should be more than 98 per cent liquid full at the reference temperature.*

* See 4.7.14(a).

(b) The maximum volume to which a cargo tank should be loaded is:

$$V_L = 0.98 V \frac{d_R}{d_L}$$

where V_L = maximum volume to which the tank may be loaded

V = volume of the tank

d_R = relative density of cargo at the reference temperature*

d_L = relative density of cargo at the loading temperature and pressure

(c) The maximum allowable tank filling limits for each cargo tank should be indicated for each loading temperature which may be applied, and for the applicable maximum reference temperature, on a list to be approved by the Administration. A copy of the list should be permanently kept on board by the master.

4.7.19 The cargo should be carried under a suitable protective padding of nitrogen gas. An automatic nitrogen make-up system should be installed to prevent the tank pressure falling below 0.07 kp/cm² gauge in the event of product temperature fall due to ambient conditions or maloperation of refrigeration systems. Sufficient nitrogen should be available on board to satisfy the demand of the automatic pressure control. Nitrogen of commercially pure quality (99.9 per cent by volume) should be used for padding. A battery of nitrogen bottles connected to the cargo tanks through a pressure reduction valve satisfies the intention of the expression "automatic" in this context.

* See 1.4.15.

4.7.20 The cargo tank vapour space should be tested prior to and after loading to ensure that the oxygen content is 2 per cent by volume or less.

4.7.21 A water spray system of sufficient capacity should be provided to blanket effectively the area surrounding the loading manifold, the exposed deck piping associated with product handling, and the tank domes. The arrangement of piping and nozzles should be such as to give a uniform distribution rate of $10 \text{ l/m}^2/\text{min}$. The water spray system should be capable of both local and remote manual operation, and the arrangement should ensure that any spilled cargo is washed away. Additionally, a water hose with pressure to the nozzle, when atmospheric temperatures permit, should be connected ready for immediate use during loading and unloading operations.

4.7.22 A remotely operated, controlled closing-rate, shut-off valve should be provided at each cargo hose connection used during cargo transfer."

4.20 Hydrogen peroxide solutions over 60% but not over 70%

The existing title is amended to read "Hydrogen peroxide solutions" and a subtitle without a number is inserted to read "Hydrogen peroxide solutions over 60% but not over 70%."

4.20.1 In the existing text the words "solutions over 60% but not over 70%" are inserted between the words "peroxide" and "should".

4.20.14 The following text is added after the existing paragraph 4.20.13.

"hydrogen peroxide solutions over 8 per cent but not over 60 per cent by weight.

4.20.15 The ship's shell plating should not form any boundaries of tanks containing this product.

4.20.16 Hydrogen peroxide should be carried in tanks thoroughly and effectively cleaned of all traces of previous cargoes and their vapours or ballast. Procedures for inspection, cleaning, passivation and loading of

tanks should be in accordance with MSC/Circ.394. A certificate should be on board the vessel indicating that the procedures in the Circular have been followed. The passivation requirement may be waived by an Administration for domestic shipments of short duration. Particular care in this respect is essential to ensure the safe carriage of hydrogen peroxide.

- .1 When hydrogen peroxide is carried no other cargoes should be simultaneously carried.
- .2 Tanks which have contained hydrogen peroxide may be used for other cargoes after cleaning in accordance with the procedures outlined in MSC/Circ.394.
- .3 Consideration in design should provide minimum internal tank structure, free draining, no entrapment and ease of visual inspection.

4.20.17 Cargo tanks and associated equipment should be either pure aluminium (99.5%) or solid stainless steel of types suitable for use with hydrogen peroxide (e.g. 304, 304L, 316, 316L, 316Ti). Aluminium should not be used for piping on deck. All non-metallic materials of construction for the containment system should neither be attacked by hydrogen peroxide nor contribute to its decomposition.

4.20.18 Cargo tanks should be separated by a cofferdam from fuel oil tanks or any other space containing materials incompatible with hydrogen peroxide.

4.20.19 Temperature sensors should be installed at the top and bottom of the tank. Remote temperature readouts and continuous monitoring should be located on the navigating bridge. If the temperature in the tank rises above 35°C, visible and audible alarms should activate on the navigating bridge.

4.20.20 Fixed oxygen monitors (or gas sampling lines) should be provided in void spaces adjacent to tanks to detect leakage of the cargo into these spaces. The enhancement of flammability by oxygen enrichment should be recognized. Remote readouts, continuous monitoring (if gas sampling lines are

used, intermittent sampling is satisfactory) and visible and audible alarms similar to those for the temperature sensors should also be located on the navigating bridge. The visible and audible alarms should activate if the oxygen concentrations in these void spaces exceed 30% by volume. Two portable oxygen monitors should also be available as back-up systems.

4.20.21 As a safeguard against uncontrolled decomposition, a cargo jettisoning system should be installed to discharge the cargo overboard. The cargo should be jettisoned if the temperature rise of the cargo exceeds a rate of 2°C per hour over a five hour period or when the temperature in the tank exceeds 40°C.

4.20.22 Cargo tank venting systems with filtration should have pressure vacuum relief valves for normal controlled venting, and a device for emergency venting, should tank pressure rise rapidly as a result of an uncontrolled decomposition rate, as stipulated in 4.20.20. These venting systems should be designed in such a manner that there is no introduction of sea water into the cargo tank even under heavy sea conditions. Emergency venting should be sized on the basis of tank design pressure and tank size.

4.20.23 A fixed water spray system should be provided for diluting and washing away any concentrated solution spilled on deck. The areas covered by the waterspray should include the manifold/hose connections and the tank tops of those tanks designated for the carriage of hydrogen peroxide solutions. The minimum application rate should satisfy the following criteria:

- .1 The product should be diluted from the original concentration to 35 per cent by weight within five minutes of the spill.
- .2 The rate and estimated size of the spill should be based upon maximum anticipated loading and discharge rates, the time required to stop flow of cargo in the event of tank overflow or a piping/hose failure, and the time necessary to begin application of dilution water with actuation at the cargo control location or on the navigating bridge.

4.20.24 Hydrogen peroxide should be stabilized to prevent decomposition. A certificate of stabilization should be provided by the manufacturer specifying:

- .1 name and amount of stabilizer added;
- .2 date stabilizer was added and duration of effectiveness;
- .3 any temperature limitations qualifying the stabilizer's effective lifetime;
- .4 the action to be taken should the product become unstable during the voyage.

4.20.25 Only those hydrogen peroxide solutions which have a maximum decomposition rate of 1.0 per cent per year at 25°C should be carried. Certification from the shipper that the product meets this standard should be presented to the Master and kept on board. A technical representative of the manufacturer should be on board to monitor the transfer operations and have the capability to test the stability of the hydrogen peroxide. He should certify to the Master that the cargo has been loaded in a stable condition.

4.20.26 Protective clothing that is resistant to hydrogen peroxide should be provided for each crew member involved in cargo transfer operations. Protective clothing should include coveralls that are non-flammable, suitable gloves, boots and eye protection.

4.20.27 During transfer of hydrogen peroxide the related piping system should be separate from all other systems. Cargo hoses used for transfer of hydrogen peroxide should be marked "for hydrogen peroxide transfer only".

5.2 Cargo information

The following paragraphs 5.2.5, 5.2.6, 5.2.7 and 5.2.9 and a footnote for paragraph 5.2.7 are added to the existing text:

5.2.5 Where column "k" in the table of chapter VI refers to this paragraph, the cargo's viscosity at 20°C should be specified on a shipping document and

if the cargo's viscosity exceeds 25 mPa.s at 20°C, the temperature at which the cargo has a viscosity of 25 mPa.s should be specified in the shipping document.

5.2.6 Where column "k" in the table of chapter VI refers to this paragraph, the cargo's viscosity at 20°C should be specified on a shipping document and if the cargo's viscosity exceeds 60 mPa.s at 20°C, the temperature at which the cargo has a viscosity of 60 mPa.s should be specified in the shipping document.

5.2.7 Where column "k" in the table of chapter VI refers to this paragraph and the possibility exists that it will be unloaded within Special Areas*, the cargo's viscosity at 20°C should be specified on a shipping document and if the cargo's viscosity exceeds 25 mPa.s at 20°C, the temperature at which the cargo has a viscosity of 25 mPa.s should be specified in the shipping document.

5.2.8 Where column "k" in the table of chapter VI refers to this paragraph, the cargo's melting point should be indicated in the shipping document.

VA New Chapter VA is added to the existing text as follows:

**"CHAPTER VA - ADDITIONAL MEASURES FOR THE PROTECTION
OF THE MARINE ENVIRONMENT**

5A.1 GENERAL

5A.1.1 The requirements of this chapter apply to ships carrying products noted as category A, B or C noxious liquid substances in chapter VI.

5A.2 CONDITION OF CARRIAGE

5A.2.1 The condition of carriage for products listed in the Certificate of Fitness for the Carriage of Dangerous Chemicals in Bulk should reflect the requirements of regulation 5A of Annex II of MARPOL 73/78.

* Special areas are defined in regulation 1(7) of Annex II to MARPOL 73/78".

5A.2.2 A category B substance with a melting point equal to or greater than 15°C should not be carried in a cargo tank any boundary of which is formed by the ship's shell plating and should only be carried in a cargo tank fitted with a cargo heating system.

5A.3 PROCEDURES AND ARRANGEMENTS MANUAL

5A.3.1 Each ship should be provided with a Procedures and Arrangements Manual developed for the ship in accordance with the provisions of the Standards for the Procedures and Arrangements and approved by the Administration.

5A.3.2 Each ship should be fitted with equipment and arrangements identified in its Procedures and Arrangements Manual.

CHAPTER VI - SUMMARY OF MINIMUM REQUIREMENTS

Existing text of chapter VI is replaced by the following:

"EXPLANATORY NOTES

Product name (column a)*	The product names are not always identical with the names given in previous issues of the Code, or the IBC Code for explanation see index of chemicals.
UN number (column b)	This is the number relating to each product shown in the recommendations proposed by the United Nations Committee of Experts on the Transport of Dangerous Goods (the "Orange Book"), New York, 1977, ST/SG/AC.10/1/Rev.1. UN numbers are given for information only.
Pollution category (column c)	The letter A, B, C or D means the pollution category assigned to each product under Annex II of MARPOL 73/78. "III" means the product was evaluated and found to fall outside the categories A, B, C or D.
Hazards (column d)	S means that the product is included in the Code because of its safety hazards; P means that the product is included in the Code because of its pollution hazards; and S/P means that the product is included in the Code because of both its safety and pollution hazards.
Ship type (column e)	1, 2 or 3 indicates ship types I, II, or III respectively as discussed in chapter II, part A - Physical Protection.
Tank type (column f)	1: Independent tank G: Gravity tank 2: Integral tank P: Pressure tank

* Note by the Secretariat:

References to columns a through m in other chapters of the Code will be amended according to the column designations shown here.

Tank vents (column g)	Open: open venting Cont: controlled venting SR: safety relief valve
Tank environmental control (column h)	Inert: Inerting (see 2.19.2(a)) Pad: Liquid or gas (2.12.2(b)) Dry: Drying (see 2.19.2(c)) Vent: Natural or forced (2.19.2(d))
Electrical requirements (column i)	St: Standard electrical systems (products having a flashpoint exceeding 60°C (closed cup test)). SP: Special requirements (products having a flashpoint not exceeding 60°C (closed cup test)).
Gauging (column j)	O: Open R: Restricted C: Closed
Vapour detection (column k)	F: Flammable vapours T: Toxic vapours
Fire protection (column l)	A: Alcohol resistant foam B: Regular foam. Encompasses all non-alcohol resistant type foams including fluoroprotein and aqueous film forming foam (AFFF) C: Water-spray D: Dry chemical No: No special requirements under this Code.

Fire-extinguishing media considered to be suitable for certain products are listed for information in column (i) of the summary of minimum requirements.

"No" indicates nil requirement.

3357V

a	b	c	d	e	f	g	h	i	j	k	l	m
Product name	UN number	Pollution category	Hazards	Ship type	Tank type	Tank vents	Tank environment control	Electrical requirements	Gauging	Vapour detection	Fire protection	Special requirement
Acetic acid	2789	C	S/P	3	2G	Cont.	No	SP	R	F	A	4.8.2 to 4.8.4, 4.8.6 to 4.8.8, 4.12.6, 4.17, 5.2.8
Acetic anhydride	1715	C	S/P	2	2G	Cont.	No	SP	R	F-T	A	4.8.2 to 4.8.4, 4.8.6 to 4.8.8, 4.12.6, 4.17
Acetone cyanohydrin	1541	A	S/P	2	2G	Cont.	No	St	C	T	A	4.4, 4.9, 4.12.6, 4.13, 4.14, 4.17, 4.18
Acetonitrile	1648	III	S	2	2G	Cont.	No	SP	R	F-T	A	4.9
Acrylamide solution (50% or less)	2074	D	S	2	2G	Open	No	ST	C	No	No	4.9.3, 4.10, 4.14.1, 4.15.1, 4.18.1
Acrylic acid	2218	D	S	3	2G	Cont.	No	SP	R	F-T	A	4.10, 4.12.6, 4.18.1
Acrylonitrile	1093	B	S/P	2	2G	Cont.	No	SP	C	F-T	A	4.9, 4.10, 4.12.3, 4.13.1, 4.14, 4.17
Adiponitrile	2205	D	S	3	2G	Cont.	No	St	R	T	A	-
Alkyl acrylate - vinyl pyridine copolymer in toluene		(C)	P	3	2G	Cont.	No	SP	R	F	B	4.14.1

a	b	c	d	e	f	g	h	i	j	k	l	m
Alkyl benzene sulphonic acid	2584 2586	C	S/P	3	2G	Open	No	St	O	No	B	-
Allyl alcohol	1098	B	S/P	2	2G	Cont	No	SP	C	F-T	A	4.9, 4.13.1, 4.14, 4.17
Allyl chloride	1100	B	S/P	2	2G	Cont	No	SP	C	F-T	A	4.9, 4.13.1, 4.14, 4.17
2 (2-Aminoethoxy) ethanol	3055	D	S	3	2G	Open	No	St	O	No	A,C,D	4.12.2, 4.14.1
Aminoethyl ethanolamine		(D)	S	3	2G	Open	No	St	O	No	A	4.12.1
N-Aminoethyl piperazine	2815	D	S	3	2G	Cont	No	St	R	T	A,C,D	4.12.2, 4.14.1
Ammonia aqueous, (28% or less)	2672 (O)	C	S/P	3	2G	Cont	No	SP	R	T	C	4.12.4, 4.12.9, 4.17 ^a
Ammonium nitrate solution, (93% or less)	2426	D	S	2	1G	Open	No	St	O	No	No	4.8.4, 4.8.6, 4.12.10, 4.13.2, 4.14.1, 4.19
Ammonium sulphide solution (45% or less)	2683	B	S/P	2	2G	No	No	SP	C	F-T	A,C	4.9, 4.11, 4.12.1, 4.13.1, 4.14, 4.15.1, 4.17, 4.18

a	b	c	d	e	f	g	h	i	j	k	l	m
n-Amyl acetate	1104	C	P	3	2G	Cont	No	SP	R	F	A	4.14.1
sec-Amyl acetate	1104	C	P	3	2G	Cont	No	SP	R	F	A	4.14.1
Amyl acetate, commercial	1104	C	P	3	2G	Cont	No	SP	R	F	A	4.14.1
Aniline	1547	C	S/P	2	2G	Cont	No	St	C	T	A	4.9, 4.13.1, 4.14,
Benzene and mixtures having 10% benzene content or more	1114 (t)	C	S/P	3	2G	Cont	No	SP	R	F-T	B	4.9.1, 4.13.1, 5.2.8
Benzenesulphonyl chloride	2225	D	S	3	2G	Cont	No	St	R	T	B,D	4.12.1, 4.14.1
Benzyl alcohol		C	P	3	2G	Open	No	St	O	No	A	
Benzyl chloride	1738	B	S/P	2	2G	Cont	No	St	C	T	B	4.9, 4.10, 4.13.1, 4.14, 4.17
n-Butyl acetate	1123	C	P	3	2G	Cont	No	SP	R	F	B	4.14.1

a	b	c	d	e	f	g	h	i	j	k	l	m
n-Butyl acrylate	2348	D	S	2	2G	Cont	No	SP	R	F-T	A	4.10, 4.18.1, 4.18.2
Butylamine (all isomers)	1125 1214	C	S/P	2	2G	Cont	No	SP	R	F-T	A	4.9, 4.12.1, 4.12.2, 4.13.1, 4.14.1, 4.17
Butyl benzyl phthalate		A	P	2	2G	Open	No	St	O	No	B	4.14.1
Butyl/Decyl/Cetyl/Eicosyl methacrylate mixture		D	S	3	2G	Cont	No	St	R	No	A,C,D	4.10, 4.18.1, 4.18.2
n-Butyl ether	1149	C	S/P	3	2G	Cont	Inert	SP	R	F-T	A,D	4.2.7, 4.9
Butyl methacrylate		D	S	3	2G	Cont	No	SP	R	F-T	A,D	4.10, 4.18.1, 4.18.2
n-Butyraldehyde	1129	B	S/P	3	2G	Cont	No	SP	O	F-T	A	4.15.1
Butyric acid	2820	B	S/P	3	2G	Cont	No	St	R	No	A	4.8.2, 4.8.3, 4.8.4, 4.8.6, 4.8.7, 4.8.8, 4.12.6

a	b	c	d	e	f	g	h	i	j	k	l	m
Calcium hypochlorite solution		B	SP	3	2G	Cont	No	St	R	No	No	4.15.1
Calcium naphthenate in mineral oil		A	P	3	2G	Open	No	St	O	No	B	
Camphor oil	1130	B	S/P	2	2G	Cont	No	SP	O	F	B	4.14.1
Carbolic oil		A	S/P	2	2G	Cont	No	SP	C	F-T	A	4.9, 4.14
Carbon disulphide	1131	A	S/P	2	1G	Cont	Inert	Use None	C	F-T	C	4.1, 4.9, 4.14, 4.17
Carbon tetrachloride	1846	B	S/P	3	2G	Cont	No	St	C	T	No	4.9, 4.13.1, 4.14.1, 4.17
Cashew nut shell oil (untreated)		D	S	3	2G	Cont	No	St	R	T	B	
Cetyl/Eicosyl methacrylate mixture		III	S	3	2G	Open	No	St	O	No	A,C,D	4.10, 4.18.1, 4.18.2
Chloroacetic acid (80% or less)	1750	C	S/P	2	2G	Cont	No	St	C	No	No	4.8.2, 4.8.4, 4.8.6, 4.8.7, 4.8.8, 4.9.3, 4.12.6 (aluminium not permitted), 4.14, 5.2.8
Chlorobenzene	1134	B	S/P	2	2G	Cont	No	SP	R	F-T	B	4.14.1

a	b	c	d	e	f	g	h	i	j	k	l	m
Chloroform	1888	B	S/P	3	2G	Cont	No	St	R	T	No	4.9, 4.17
Chlorohydrins, crude		(D)	S	2	2G	Cont	No	SP	C	F-T	A	4.9, 4.14
2- or 3-Chloropropionic acid	2511 (k)	(C)	S/P	3	2G	Open	No	St	O	No	A	4.8.2 to 4.8.4, 4.8.6 to 4.8.8, 4.12.6
Chlorosulphonic acid	1754	C	S/P	1	2G	Cont	No	St	C	T	No	4.8.2 to 4.8.8, 4.9, 4.14, 4.15.2, 4.17
m-Chlorotoluene	2238	B	S/P	3	2G	Cont	No	SP	R	F-T	B,C	
o-Chlorotoluene	2238	A	S/P	3	2G	Cont	No	SP	R	F-T	B,C	
p-Chlorotoluene	2238	B	S/P	2	2G	Cont	No	SP	R	F-T	B,C	4.14.1, 5.2.8
Chlorotoluenes (mixed isomers)	2238	A	S/P	2	2G	Cont	No	SP	R	F-T	B,C	4.14.1

a	b	c	d	e	f	g	h	i	j	k	l	m
Coal tar naphtha solvent		B	S	3	2G	Cont	No	SP	R	F-T	A,D	
Creosote (coal tar)		(C)	S/P	3	2G	Open	No	St	O	No	B,D	
Creosote (wood)		A	S/P	2	2G	Open	No	St	O	No	B,D	4.14.1
Cresols (mixed isomers)	2076	A	S/P	2	2G	Open	No	St	O	No	B	4.14.1
Crotonaldehyde	1143	B	S/P	2	2G	Cont	No	SP	R	F-T	A	4.9, 4.13.1, 4.15.1, 4.17
Cyclohexane	1145	C	P	3	2G	Cont	No	SP	R	F	B	4.14.1, 5.2.8
Cyclohexanol		C	P	3	2G	Open	No	St	O	No	A	5.2.6, 5.2.8
Cyclohexanone	1915	D	S	3	2G	Cont	No	SP	R	F-T	A	4.12.5
Cyclohexylamine	2357	C	S/P	3	2G	Cont	No	SP	R	F-T	A,D	4.12.1, 4.12.2
p-Cymene	2046	C	P	3	2G	Cont	No	SP	R	F	B	4.14.1
Decene		B	P	3	2G	Cont	No	SP	R	F	B	4.14.1

a	b	c	d	e	f	g	h	i	j	k	l	m
Decyl acrylate		A	S/P	2	2G	Open	No	St	O	No	D,A,C	4.10, 4.12.2, 4.14.1, 4.18.1, 4.18.2
Decyl alcohol (all isomers)		B	P	3	2G	Open	No	St	O	No	B	5.2.8 (p)
Dibutylamine		C	S/P	3	2G	Cont	No	SP	R	F-T	B,D	4.12.4
Dibutyl phthalate		A	P	2	2G	Open	No	St	O	No	B	4.14.1
o-Dichlorobenzene	1591	B	S/P	2	2G	Cont	No	St	R	T	B,D	4.12.5, 4.14.1
1,1-Dichloroethane	2362	B	S/P	3	2G	Cont	No	SP	R	F-T	B	4.17
Dichloroethyl ether	1916	B	S/P	2	2G	Cont	No	SP	R	F-T	A	4.12.5
2,2-Dichloroisopropyl ether	2490	C	S/P	2	2G	Cont	No	St	R	T	B,C,D	4.9, 4.12.5, 4.13.1, 4.14
2,4-Dichlorophenol	2021	A	S/P	2	2G	Cont	Dry	St	R	T	B,C,D	4.12.1, 4.14.1

a	b	c	d	e	f	g	h	i	j	k	l	m
2,4-Dichlorophenoxyacetic acid, diethanolamine salt solution		(A)	S/P	3	2G	Open	No	St	O	No	No	14.12.1
2,4-Dichlorophenoxyacetic acid, dimethylamine salt (70% or less) solution		(A)	S/P	3	2G	Open	No	St	O	No	No	14.12.1
2,4-Dichlorophenoxyacetic acid, triisopropanolamine salt, solution		(A)	S/P	3	2G	Open	No	St	O	No	No	14.12.1
1,2-Dichloropropane	1279	B	S/P	2	2G	Cont	No	SP	R	F-T	B	4.9
1,3-Dichloropropane		B	S/P	2	2G	Cont	No	SP	R	F-T	B	4.9
1,3-Trichloropropene	2047	P	S/P	2	2G	Cont	No	SP	C	F-T	B	4.9, 4.13, 4.14, 4.17
Dichloropropene/ Dichloropropene mixtures		B	S/P	2	2C	Cont	No	CP	C	F-T	B, C, D	4.9, 4.13, 4.14, 4.17
2,2-Dichloropropionic acid		D	S	3	2G	Cont	Dry	St	R	No	A	4.8.2, 4.8.4, 4.8.6 to 4.8.8, 4.12.6 (aluminium not permitted)
Diethanolamine		III	S	3	2G	Open	No	St	O	No	A	4.12.2

a	b	c	d	e	f	g	h	i	j	k	l	m
Diethylamine	1154	C	S/P	3	2G	Cont	No	SP	R	F-T	A	4.12.1, 4.9, 4.17
Diethylaminoethanol	2686	C	S/P	3	2G	Cont	No	SP	R	F-T	A,D	4.12.1, 4.12.2
Diethylbenzene	2049	C	P	3	2G	Cont	No	SP	R	F	B	4.14.1
Diethylene glycol methyl ether		C	P	3	2G	Open	No	St	O	No	A	
Diethylenetriamine	2079	(D)	S	3	2G	Open	No	St	O	No	A	4.12.2
Diethyl ether	1155	III	S	2	IG	Cont	Inert	SP	C	F-T	A	4.2, 4.11, 4.12.9, 4.14, 4.17
Di-(2-ethylhexyl) phosphoric acid	1902	C	S/P	3	2G	Open	No	St	O	No	B,C,D	4.12.2
Diethyl phthalate		C	P	3	2G	Open	No	St	O	No	B	
Diethyl sulphate	1594	(B)	S/P	2	2G	Cont	No	St	C	T	A,D	4.12.3, 4.14.1
Diglycidyl ether of Bisphenol A		B	P	3	2G	Open	No	St	O	No	B	
Diisobutylamine	2361	(C)	S/P	2	2G	Cont	No	SP	R	F-T	B,D	4.9.3, 4.12.1, 4.14.1

a	b	c	d	e	f	g	h	i	j	k	l	m
Diisobutylene	2050	B	P	3	2G	Cont	No	SP	R	F	B	4.14.1
Diisobutyl phthalate		B	P	3	2G	Open	No	St	O	No	B	5.2.5
Diisopropanolamine		C	S/P	3	2G	Open	No	St	O	No	A	4.12.2, 5.2.6, 5.2.8
Diisopropylamine	1158	C	S/P	2	2G	Cont	No	SP	C	F-T	A	4.9, 4.12.2, 4.14, 4.17
Diisopropylbenzene (all isomers)		A	P	2	2G	Open	No	St	O	No	B	4.14.1
Dimethylamine solution (45% or less)	1160	C	S/P	3	2G	Cont	No	SP	R	F-T	C,D	4.9, 4.12.1, 4.17
Dimethylamine solution (greater than 45% but not greater than 55%)	1160	C	S/P	2	2G	Cont	No	SP	C	F-T	A,C,D	4.9, 4.12.1, 4.13.1, 4.14, 4.17
Dimethylamine solution (greater than 55% but not greater than 65%)	1160	C	S/P	2	2G	Cont	No	SP	C	F-T	A,C,D	4.9, 4.11, 4.12.1, 4.13.1, 4.14, 4.17
N,N-Dimethylcyclohexyl- amine	2264	C	S/P	2	2G	Cont	No	SP	R	F-T	A,C	4.9, 4.12.1, 4.13.1, 4.14.1
Dimethylethanolamine	2051	D	S	3	2G	Cont	No	SP	R	F-T	A,D	4.12.2

a	b	c	d	e	f	g	h	i	j	k	l	m
Dimethylformamide	2265	D	S	3	2G	Cont	No	SP	R	F-T	A,D	
Dimethyl hydrogen phosphite			S	3	2G	Cont	No	St	R	T	A,D	4.9.1
Dimethyl phthalate		C	P	3	2G	Open	No	St	O	No	B	
Dinitrotoluene (molten)		B	S/P	2	2G (1)	Cont	No	St	C	T	B	4.9, 4.13.1, 4.14*, 5.2.5, 5.2.8, 5A.2.2 (m)
1,4-Dioxane	1165	D	S	2	2G	Cont	No	SP	C	F-T	A	4.9, 4.14
Dipentene	2052	C	P	3	2G	Cont	No	SP	R	F	B	4.14.1
Diphenyl ether		A	P	3	2G	Open	No	St	O	No	B	
Diphenylmethane diisocyanate	2489	(B)	S/P	2	2G	Cont	Dry	St ^b	C	T ^b	C ^c D	4.9, 4.12.5, 4.13.1, 4.14.1, 4.15.2, 5.2.7, 5.2.8, 5A.2.2
Diphenyl oxide/Diphenyl phenyl ether mixture		A	P	3	2G	Open	No	St	O	No	B	
Di-n-propylamine	2383	C	S/P	3	2G	Cont	No	SP	R	F-T	A	4.9.3, 4.12.2, 4.14.1

a	b	c	d	e	f	g	h	i	j	k	l	m
Dodecene, all isomers		B	P	3	2G	Open	No	St	O	No	B	
Dodecyl alcohol		B	P	3	2G	Open	No	St	O	No	B	5.2.5, 5.2.8 5A.2.2
Dodecylbenzene		C	P	3	2G	Open	No	St	O	No	B	5.2.8
Dodecyl diphenyl oxide disulphonate solution		B	S/P	3	2G	Open	No	St	O	No		5.2.5, 5.2.8
Dodecyl methacrylate		III	S	3	2G	Open	No	St	O	No	A,C	4.10
Dodecyl/Pentadecyl methacrylate mixture		III	S	3	2G	Open	No	St	O	No	A,C,D	4.10, 4.18.1, 4.18.2
Dodecyl phenol		A	P	1	2G	Open	No	St	O	No	B	4.14
Epichlorohydrin	2023	C	S/P	2	2G	Cont	No	SP	C	F-T	A	4.9, 4.13.1, 4.14, 4.17
Ethanolamine	2491	D	S	3	2G	Open	No	St	O	F-T	A	4.12.2
2-Ethoxyethyl acetate	1172	C	P	3	2G	Cont	No	SP	R	F	A	4.14.1
Ethyl acrylate	1917	B	S/P	2	2G	Cont	No	SP	R	F-T	A	4.10, 4.17, 4.18.1, 4.18.2

a	b	c	d	e	f	g	h	i	j	k	l	m
Ethylamine		C	S/P	2	1G	Cont	No	SP	C	F-T	C,D	4.9, 4.11, 4.12.2, 4.17
Ethylamine solutions, (72% or less)	2270	C	S/P	2	2G	Cont	No	SP	C	F-T	A,C	4.9, 4.11, 4.12.1, 4.13.1, 4.14, 4.17
Ethyl benzene	1175	C	P	3	2G	Cont	No	SP	R	F	B	4.14.1
N-Ethylbutylamine		(C)	S/P	3	2G	Cont	No	SP	R	F-T	A	4.9.3, 4.12.1, 4.14.1
N-Ethylcyclohexylamine		D	S	3	2G	Cont	No	SP	R	F-T	A,C	4.12.1, 4.14.1
Ethylene chlorohydrin	1135	C	S/P	2	2G	Cont	No	SP	C	F-T	D	4.9, 4.13.1, 4.14, 4.17
Ethylene cyanohydrin		(D)	S	3	2G	Open	No	St	O	No	A	
Ethylenediamine	1604	C	S/P	2	2G	Cont	No	SP	R	F-T	A	4.12.2, 5.2.8
Ethylene dibromide	1605	B	S/P	2	2G	Cont	No	St	C	T	No	4.9, 4.14.1, 4.17, 5.2.8
Ethylene dichloride	1184	B	S/P	2	2G	Cont	No	SP	R	F-T	B	4.12.4, 4.14.2
Ethylene oxide/Propylene oxide mixture with an ethylene content of not more than 30% by weight	2983	D	S	2	1G	Cont	Inert	SP	C	F-T	A,C	4.7, 4.9, 4.11, 4.14

a	b	c	d	e	f	g	h	i	j	k	l	m
2-Ethylhexyl acrylate		D	S	3	2G	Open	No	St	O	No	A	4.10, 4.18.1, 4.18.2
2-Ethylhexylamine	2276	B	S/P	2	2G	Cont	No	SP	R	F-T	A	4.9, 4.12.2
Ethylidene norbornene		B	S/P	3	2G	Cont	No	SP	R	F-T	B,C D	4.9.1, 4.12.4, 4.14.1, 4.15.1
Ethyl methacrylate	2277	(D)	S	3	2G	Cont	No	SP	R	F-T	B,D	4.10, 4.18.1, 4.18.2
2-Ethyl-3-propylacrolein		B	S/P	3	2G	Cont	No	SP	R	F-T	A	15.2.8
Ethyltoluene		(B)	P	3	2G	Cont	No	SP	R	F	A	4.14.1
Fatty alcohols(C ₁₂ -C ₂₀)		B	P	3	2G	Open	No	St	O	No	B	5.2.5, 5.2.6
Formaldehyde solutions (45% or less)	1198 ^d	C	S/P	3	2G	Cont	No	SP	R	F-T	A	4.15.1, 4.17 ^e
Formic acid	1779	D	S	3	2G	Cont	No	SP	R	T	A	4.8.2 to 4.8.4, 4.8.6 to 4.8.8, 4.12.7, 4.17
Fumaric adduct of rosin, water dispersion		B	P	3	2G	Open	No	St	O	No	No	

a	b	c	d	e	f	g	h	i	j	k	l	m
Furfural	1199	C	S/P	3	2G	Cont	No	SP	R	F-T	A	4.15.1
Furfuryl alcohol	2874	C	P	3	2G	Open	No	St	O	No	A	
Glutaraldehyde solutions (50% or less)		D	S	3	2G	Open	No	St	O	No	No	4.15.1
Glycidyl ester of tridecylacetic acid		B	P	3	2G	Open	No	St	O	No	B	
Heptanol (all isomers) (q)		(C)	P	3	2G	Cont	No	SP	R	F	A	4.14.1
Heptene (mixed isomers)		C	P	3	2G	Cont	No	SP	R	F	B	4.14.1
Heptyl acetate		(B)	P	3	2G	Open	No	St	O	No	B	
Hexamethylenediamine solution	1783	C	S/P	3	2G	Cont	No	St	R	T	A	4.12.2, 4.14.1, 5.2.8
Hexamethyleneimine	2493	C	S/P	2	2G	Cont	No	SP	R	F-T	A,C	4.12.1, 4.12.2
1-Hexene	2370	C	P	3	2G	Cont	No	SP	R	F	B	4.14.1
Hexyl acetate	1233	B	P	3	2G	Cont	No	SP	R	F	B	4.14.1

a	b	c	d	e	f	g	h	i	j	k	l	m
Hydrochloric acid	1789	D	S	3	1G	Cont	No	St	R	T	No	4.8, 4.17 ^f
Hydrogen peroxide solutions (over 60% but not over 70%)	2015	C	S/P	2	2G	Cont	No	St	C	No	No	4.14.1, 4.20.1 to 4.20.14
Hydrogen peroxide solutions (over 8% but not over 60%)	2014 2984	C	S/P	3	2G	Cont	No	St	C	No	No	4.13.2, 4.14.1, 4.20.15, 4.20.27
2-Hydroxyethyl acrylate		B	S/P	2	2G	Cont	No	St	C	T	A	4.9, 4.10, 4.14.1, 4.18.1, 4.18.2
Isoamyl acetate	1104	C	P	3	2G	Cont	No	SP	R	F	A	4.14.1
Isobutyl acetate	1213	C	P	3	2G	Cont	No	SP	R	F	B	4.14.1
Isobutyl acrylate	2527	D	S	2	2G	Cont	No	SP	R	F-T	A	4.10, 4.18.1, 4.18.2
Isobutyraldehyde	2045	C	S/P	3	2G	Cont	No	SP	O	F-T	A	4.15.1
Isophorone diamine	2289	D	S	3	2G	Cont	No	St	R	T	A	4.12.2
Isophorone diisocyanate	2290	B	S/P	2	2G	Cont	Dry	St	C	T	C ^c D	4.9, 4.12.5, 4.13.1, 4.14.1, 4.15.2

a	b	c	d	e	f	g	h	i	j	k	l	m
Isoprene	1218	C	S/P	3	2G	Cont	No	SP	R	F	B	4.10, 4.11, 4.18.1 4.18.2
Isopropanolamine		C	S/P	3	2G	Open	No	SP	O	F-T	A	4.12.2
Isopropylamine	1221	C	S/P	2	2G	Cont	No	SP	C	F-T	C,D	4.9, 4.11, 4.12.2, 4.14, 4.17
Isopropylbenzene	1918	B	P	3	2G	Cont	No	SP	R	F	B	4.14.1
Isopropyl ether	1159	D	S	3	2G	Cont	Inert	SP	R	F	A	4.2.7, 4.10.3, 4.14.1
Isovaleraldehyde	2058	C	S/P	3	2G	Cont	Inert	SP	R	F-T	A	4.2.7, 4.15.1
Maleic anhydride	2215	D	S	3	2G	Cont	No	St	R	No	A ^g C	
Mercaptobenzothiazol, sodium salt, solution		(B)	S/P	3	2G	Open	No	St	O	No	No	4.12.1, 5.2.8
Mesityl oxide	1229	D	S	3	2G	Cont	No	SP	R	F-T	A	4.14.1
Methacrylic acid	2531	D	S	3	2G	Cont	No	St	R	T	A	4.10, 4.12.6, 4.18.1
Methacrylonitrile		(B)	S/P	2	2G	Cont	No	SP	C	F-T	A	4.9, 4.10, 4.12.4, 4.13.1, 4.14, 4.17

a	b	c	d	e	f	g	h	i	j	k	l	m
Methyl acrylate	1919	C	S/P	2	2G	Cont	No	SP	R	F-T	B	4.10, 4.17, 4.18.1, 4.18.2
Methylamine solutions, (42% or less)	1235	C	S/P	2	2G	Cont	No	SP	C	F-T	A,C,D	4.9, 4.12.1, 4.13.1, 4.14, 4.17
Methylamyl acetate	1233	(C)	P	3	2G	Cont	No	SP	R	F	B	4.14.1
Methylamyl alcohol	2053	(C)	P	3	2G	Cont	No	SP	R	F	A	4.14.1
Methyl amyl ketone	1110	(C)	P	3	2G	Cont	No	SP	R	F	A	4.14.1
Methylene chloride	1593	D	S	3	2G	Cont	No	St	R	T	No	
2-Methyl-6-ethyl- aniline		C	S/P	3	2G	Open	No	St	O	No	B,C,D	
2-Methyl-5-ethyl- pyridine	2300	(B)	S/P	3	2G	Open	No	St	O	No	D	4.12.4
Methyl formate	1243	D	S	2	2G	Cont	No	SP	R	F-T	A	4.9, 4.11, 4.14, 4.17
2-Methyl-2-hydroxy- 3-butyne		III	S	3	2G	Cont	No	SP	R	F-T	A,C,D	4.12.8, 4.14.1

a	b	c	d	e	f	g	h	i	j	k	l	m
Methyl methacrylate	1247	D	S	2	2G	Cont	No	SP	R	F-T	B	4.10, 4.18.1, 4.18.2
2-Methyl-1-pentene	2288	C	P	3	2G	Cont	No	SP	R	F	B	4.14.1
2-Methylpyridine	2313	B	S/P	2	2G	Cont	No	SP	C	F	A,C	4.9.3, 4.12.4, 4.14 5.2.8
4-Methylpyridine	2313	B	S/P	2	2G	Cont	No	SP	C	F-T	A,C,D	4.9.3, 4.12.4, 4.14 5.2.8
N-Methyl-2-pyrrolidone		B	P	3	2G	Open	No	St	O	No	A	
Methyl salicylate		(B)	P	3	2G	Open	No	St	O	No	B	
alpha-Methylstyrene	2303	A	S/P	2	2G	Cont	No	SP	R	F-T	D	4.10, 4.14.1, 4.18.1 4.18.2
Morpholine	2054	D	S	3	2G	Cont	No	SP	R	F	A	4.12.2
Motor fuel anti-knock compounds	1649	A	S/P	2	1G	Cont	No	SP	C	F-T	C,B	4.6, 4.9, 4.13.2, 4.14 4.17
Naphthalene (molten)	2304	A	S/P	2	2G	Cont	No	SP	R	No	A,D	4.14.1
Neodecanoic acid		(B)	P	3	2G	Open	No	St	O	No	B	

a	b	c	d	e	f	g	h	i	j	k	l	m
Nitrating acid (mixture of sulphuric and nitric acid)	1796	(C)	S/P	2	2G	Cont	No	St	C	T	No	4.8, 4.13.1, 4.14, 4.15.2, 4.17
Nitric acid (70% and over)	2031 ^h 2032	C	S/P	2	2G	Cont	No	St	C	T	No	4.8, 4.14, 4.17
Nitric acid (less than 70%)	2031	C	S/P	2	2G	Cont	No	St	R	T	No	4.8, 4.14, 4.17
Nitrobenzene	1662	B	S/P	2	2G	Cont	No	St	C	T	D	4.9, 4.13, 4.14, 5.2.8
o-Nitrochlorobenzene	1578	B	S/P	2	2G	Cont	No	St	C	T	B, C, D	4.9, 4.13, 4.14, 5.2.5, 5.2.8, 5A.2.2
o-Nitrophenol (molten)	1663	B	S/P	2	2G	Cont	No	St	C	T	A, C, D	4.9, 4.14.1, 5.2.5, 5.2.8, 5A.2.2
1- or 2-Nitropropane	2608	D	S	3	2G	Cont	No	SP	R	F-T	A	
Nitropropane (60%)/ Nitroethane (40%) mixture	1993	D	S	3	2G	Cont	No	SP	R	F-T	A, C (n)	4.12.4
(o- and p-) Nitro-toluenes	1664	C	S/P	2	2G	Cont	No	St	C	T	B	4.9, 4.13.1, 4.14, 5.2.8

a	b	c	d	e	f	g	h	i	j	k	l	m
Nonene		B	P	3	2G	Cont	No	SP	R	F	B	4.14.1
Nonyl alcohol		C	P	3	2G	Open	No	St	O	No	B	
Nonylphenol		A	P	2	2G	Open	No	St	O	No	A	4.14.1
Octanol (all isomers)		C	P	3	2G	Open	No	St	O	No	B	
Octene (all isomers)		B	P	3	2G	Cont.	No	SP	R	F	B	4.14.1
Olefins, straight chain mixtures		B	P	3	2G	Cont.	No	SP	R	F	B	4.14.1, 5.2.5, 5.2.8
alpha-Olefins (C ₆ -C ₁₈ mixtures)		B	P	3	2G	Cont.	No	SP	R	F	B	4.14.1, 5.2.5, 5.2.8
Oleum	1831	C	S/P	2	2G	Cont.	No	St	C	T	No	4.8.2 to 4.8.8, 4.9.1, 4.13.1, 4.14, 4.15.2, 4.17, 5.2.6
Paraldehyde	1264	C	S/P	3	2G	Cont.	No	SP	R	F	A	5.2.8
Pentachloroethane	1669	B	S/P	2	2G	Cont.	No	St	R	T	No	4.9, 4.13.1, 4.14.1
1,3-Pentadiene		C	S/P	3	2G	Cont.	No	SP	R	F-T	B	4.10, 4.18

a	b	c	d	e	f	g	h	i	j	k	l	m
n-Pentane	1265	C	P	3	2G	Cont	No	SP	R	F	B	4.14.1
Pentene, all isomers		C	P	3	2G	Cont	No	SP	R	F	B	4.14.1
Perchloroethylene	1897	B	S/P	3	2G	Cont	No	St	R	T	No	4.9.1, 4.9.2
Phenol	2312	B	S/P	2	2G	Cont	No	St	C	T	A	4.9, 4.14, 5.2.5 5.2.8, 5A.2.2
1-Phenyl-1-xylyl ethane		C	P	3	2G	Open	No	St	O	No	B	
Phosphoric acid	1805	D	S	3	2G	Open	No	St	O	No	No	4.8.1 to 4.8.4, 4.8.6 to 4.8.8
Phosphorus, yellow or white	2447	A	S/P	1	1G	Cont	Pad + (vent or inert.)	St	C	No	No	4.5, 4.14, 4.17
Phthalic anhydride	2214	C	S/P	3	2G	Cont	No	St	R	No	D	5.2.8
Pinene	2368	A	P	3	2G	Cont	No	SP	R	F	B	4.14.1
Polyethylene polyamines	2734 ⁱ 2735	C	S/P	3	2G	Open	No	St	O	No	A	4.12.2, 5.2.8
Polyethylene polyphenyl isocyanate	2206 ⁱ 2207	D	S	2	2G	Cont	Dry	St	C	T ^b	C ^c D	4.9, 4.12.5, 4.14.1, 4.15.2

a	b	c	d	e	f	g	h	i	j	k	l	m
Potassium hydroxide solution	1814	C	S/P	3	2G	Open	No	St	O	No	No	4.12.1 Copper, brass and bronze may be used, 5.2.8
n-Propanolamine		C	S/P	3	2G	Open	No	St	O	No	A,D	4.12.2, 5.2.8
beta-Propiolactone		D	S	2	2G	Cont	No	St	R	T	A	
Propionaldehyde	1275	D	S	3	2G	Cont	No	SP	R	F-T	A	4.13.1, 4.15.1, 4.17
Propionic acid	1848	D	S	3	2G	Cont	No	SP	R	F	A	4.8.2 to 4.8.4, 4.8.6 to 4.8.8, 4.12.6, 4.17
Propionic anhydride	2496	C	S/P	3	2G	Cont	No	St	R	T	A	4.12.6
Propionitrile	2404	C	S/P	2	1G	Cont	No	SP	C	F-T	A,D	4.9, 4.13, 4.14, 4.17
n-Propylamine	1277	C	S/P	2	2G	Cont	Inert	SP	C	F-T	C,D	4.9, 4.12.2, 4.14, 4.17
Propylene dimer		(C)	P	3	2G	Cont	No	SP	R	F	B	4.14.1
Propylene oxide	1280	D	S	2	2G	Cont	Inert	SP	C	F-T	A,C	4.7, 4.9.1, 4.11, 4.14
Propylene trimer		B	P	3	2G	Cont	No	SP	R	F	B	4.14.1

a	b	c	d	e	f	g	h	i	j	k	l	m
Pyridine	1282	B	S/P	3	2G	Cont	No	SP	R	F	A	4.12.4
Rosin		A	P	3	2G	Open	No	St	O	No	B	
Rosin soap (disproportionated solution)		B	P	3	2G	Open	No	St	O	No	A	
Sodium borohydride, (15% or less)/Sodium hydroxide solution		C	S/P	3	2G	Open	No	St	O	No	No	4.12.1, 5.2.6
Sodium chlorate solution, (50% or less)		III	S	3	2G	Open	No	St	O	No	No	4.14.1, 4.15.1, 4.21
Sodium dichromate solution, (70% or less)		B	S/P	2	2G	Open	No	St	C	No	No	4.9.3, 4.12.2, 4.14
Sodium hydrosulphide solution, (45% or less)	2949	B	S/P	3	2G	Cont	Vent or pad (gas)	St	R	T	No	4.15.1, 5.2.8
Sodium hydrosulphide Ammonium sulphide solution		B	S/P	2	2G	Cont	No	SP	C	F-I	A,C	4.9, 4.11, 4.12.1, 4.13.1, 4.14, 4.15.1, 4.17, 4.18,

a	b	c	d	e	f	g	h	i	j	k	l	m
Sodium hydroxide solution	1824	D	S	3	2G	Open	No	St	O	No	No	4.12.1, Copper, brass and bronze may be used
Sodium hypochlorite solution, (15% or less)		B	S/P	3	2G	Cont	No	St	R	No	No	4.12.5, 4.15.1
Styrene monomer	2055	B	S/P	3	2G	Cont	No	SP	O	F	B	4.10, 4.12.4, 4.18.1, 4.18.2
Sulphur (molten)	2448	III	S	3	1G	Open	Vent or pad (gas)	SP	O	F-T	No	4.3
Sulphuric acid	1830	C	S/P	3	2G	Open	No	St	O	No	No	4.8, 4.15.2, 5.2.7, 5.2.8
Sulphuric acid, spent	1832	C	S/P	3	2G	Open	No	St	O	No	No	4.8, 4.15.2, 5.2.7, 5.2.8
Tall oil, crude and distilled		A	P	3	2G	Open	No	St	O	No	B	
Tall oil fatty acid (resin acids less than 20%)		(C)	P	3	2G	Open	No	St	O	No	B	
Tall oil soap (disproportionated solution)		B	P	3	2G	Open	No	St	O	No	A	

a	b	c	d	e	f	g	h	i	j	k	l	m
Tetrachloroethane	1702	B	S/P	3	2G	Cont	No	St	R	T	No	4.9, 4.13.1
Tetraethylenepentamine	2320	D	S	3	2G	Open	No	St	O	No	A	4.12.1
Tetrahydrofuran	2056	D	S	3	2G	Cont	No	SP	R	F-T	A,D	
Tetrahydronaphthalene		C	P	3	2G	Open	No	St	O	No	B	
Toluene	1294	C	P	3	2G	Cont	No	SP	R	F	B	4.14.1
Toluenediamine	1709	C	S/P	2	2G	Cont	No	St	C	T	B,C,D	4.9, 4.12.1, 4.13.1, 4.14, 4.17
Toluene diisocyanate	2078	C	S/P	2	2G	Cont	Dry	St	C	F-T	C ^C D	4.9, 4.12.4, 4.13.1, 4.14, 4.15.2, 4.17, 5.2.8
o-Toluidine	1708	C	S/P	2	2G	Cont	No	St	C	T	A,C	4.9, 4.13.1, 4.14
Tributyl phosphate		B	P	3	2G	Open	No	St	O	No	B	

a	b	c	d	e	f	g	h	i	j	k	l	m
1,2,4-Trichlorobenzene	2321	B	S/P	2	2G	Cont	No	St	R	T	C	4.14.1, 5.2.8, 5A.2.2
1,1,1-Trichloroethane	2831	B	P	3	2G	Open	No	St	O	No	B	
1,1,2-Trichloroethane		B	S/P	3	2G	Cont	No	St	R	T	No	4.9.1
Trichloroethylene	1710	B	S/P	3	2G	Cont	No	St	R	T	No	4.9, 4.13.1, 4.15.1
1,2,3-Trichloropropane		B	S/P	2	2G	Cont	No	St	C	T	B,C,D	4.9, 4.13.1, 4.14
1,1,2-Trichloro-1,2,2-trifluoroethane		C	P	3	2G	Open	No	St	O	No	No	
Triethanolamine		D	S	3	2G	Open	No	St	O	No	A	4.12.1
Triethylamine	1296	C	S/P	2	2G	Cont	No	SP	R	F-T	B	4.9, 4.12.2, 4.17
Triethylbenzene		A	P	2	2G	Open	No	St	O	No	B	4.14.1
Triethylene tetramine	2259	D	S	3	2G	Open	No	St	O	No	A	4.12.1
Triethyl phosphite	2323		S	3	2G	Cont	No	SP	R	F-T	A,D	4.9.1

a	b	c	d	e	f	g	h	i	j	k	l	m
Trimethylacetic acid		D	S	3	2G	Cont	No	St	R	No	A,C	4.8.2 to 4.8.8, 4.12.6
1,2,4-Trimethylbenzene		B	P	3	2G	Cont	No	SP	R	F	B	4.14.1
Trimethylhexamethylene diamine (2,2,4- and 2,4,4-isomers)	2327	(D)	S	3	2G	Open	No	St	O	No	A,C	4.12.1, 4.14.1
Trimethylhexamethylene diisocyanate (2,2,4- and 2,4,4-isomers)	2328	B	S/P	2	2G	Cont	Dry	St	C	T	A,C ^c	4.9, 4.13.1, 4.14.1, 4.15.2
2,2,4-Trimethyl-1,3-Pentamediol-1-isobutyrate		C	P	3	2G	Open	No	St	O	No	B	
Trimethyl phosphite	2329		S	3	2G	Cont	No	SP	R	F-I	A,D	4.9.1, 4.14.1, 4.15.2
Trityl phosphate (containing less than 1% ortho-isomer)		A	P	2	2G	Open	No	St	O	No	B	4.14.1
Trityl phosphate, (containing 1% or more ortho-isomer)	2574 ^j	A	S/P	1	2G	Cont	No	St	C	No	B	4.9.3, 4.14
Trisyl phosphate		A	P	1	2G	Open	No	St	O	No	B	4.14

a	b	c	d	e	f	g	h	i	j	k	l	m
Turpentine	1299	B	P	3	2G	Cont	No	SP	R	F	B	4.14.1
1-Undecene		B	P	3	2G	Open	No	St	O	No	B	
Undecyl alcohol		B	P	3	2G	Open	No	St	O	No	B	5.2.5, 5.2.8, 5A.2.2r
Urea, ammonium nitrate solution, (containing aqua ammonia)		C	S/P	3	2G	Cont	No	SP	R	T	A	4.12.4, 4.12.9
n-Valeraldehyde	2058	D	S	3	2G	Cont	Inert	SP	R	F-T	A	4.2.7, 4.15.1
Vinyl acetate	1301	C	S/P	3	2G	Cont	No	SP	O	F	A	4.10, 4.18.1, 4.18.2
Vinyl ethyl ether	1302	C	S/P	2	1G	Cont	Inert	SP	C	F-T	A	4.2, 4.10, 4.11, 4.12.8, 4.14, 4.17, 4.18.1, 4.18.2
Vinylidene chloride	1303	B	S/P	2	2G	Cont	Inert	SP	R	F-T	B	4.10, 4.11, 4.12.5 4.17, 4.18.1, 4.18.2
Vinyl neodecanoate		C	S/P	3	2G	Open	No	St	O	No	B	4.10, 4.15.1, 4.18.1, 4.18.2
Vinyl toluene	2618	A	S/P	3	2G	Cont	No	SP	R	F	D	4.10, 4.12.1, 4.14.1, 4.18.1, 4.18.2

a	b	c	d	e	f	g	h	i	j	k	l	m
White spirit, low (15-20%) aromatic	1300	(B)	P	2	2G	Cont	No	SP	R	F	B	4.14.1
Xylene	1307	C	P	3	2G	Cont	No	SP	R	F	B	4.14.1, 5.2.8
Xylenol	2261	B	S/P	3	2G	Open	No	St	O	No	B	5.2.5, 5.2.8, 5A.2.2

- a Provision 4.17 applies to ammonia aqueous, 28% or less but not below 10%.
- b If the product carried contains flammable solvents such that the flashpoint is not exceeding 60°C, then special electrical systems and a flammable vapour detector are to be provided.
- c Although water is suitable for extinguishing open air fires involving chemicals to which this footnote applies, water should not be allowed to contaminate closed tanks containing these chemicals because of the risk of hazardous gas generation.
- d UN number 1198 only applies if flashpoint is below 60°C c.c.
- e Provision 4.17 applies to formaldehyde solutions 45% or less, but not below 5%.
- f Provision 4.17 applies to hydrochloric acid not below 10%.
- g Dry chemical cannot be used because of the possibility of an explosion.
- h UN number 2032 assigned to red fuming nitric acid.
- i UN number depends on boiling point of substance.
- j UN number assigned to this substance containing more than 3% of ortho-isomer.
- k UN number only applies to 2-chloropropionic acid
- l Dinitrotoluene should not be carried in deck tanks.

- m Temperature sensors should be used to monitor the cargo pump temperature to detect overheating due to pump failures.
- n Dry chemical should not be used as a fire-fighting medium
- o UN number 2672 refers to 20-35%.
- p Applies to n-Decyl alcohol only.
- q Requirements are based on those isomers having a flashpoint of 60°C or less, some isomers have a flashpoint greater than 60°C, and therefore the requirements based on flammability would not apply to such isomers.
- r Provision 5A.2.2 applies to 1-undecyl alcohol only.

CHAPTER VII - LIST OF CHEMICALS TO WHICH
THE CODE DOES NOT APPLY*

The existing text of chapter VII is replaced by the following:

1 The following are products which are not considered to come within the scope of the Code. This list may be used as a guide in considering bulk carriage of products whose hazards have not yet been evaluated.

2 Although the products listed in this chapter fall outside the scope of the Code, the attention of Administrations is drawn to the fact that some safety precautions may be needed for their safe transportation. Accordingly Administrations should prescribe appropriate safety requirements.

Chapter VII	UN number
Acetone	1090
Alcohols (C ₁₃ and above)	-
Alkyl (C ₉ -C ₁₇) benzenes	-
Aluminium sulphate solution	
Aminoethyl diethanolamine/ Aminoethyl ethanolamine, water solution	
n-Amyl alcohol	1105
sec-Amyl alcohol	1105
tert-Amyl alcohol	1105
Amyl alcohol, primary	1105
Butene Oligomer	
sec-Butyl acetate	1123
n-Butyl alcohol	1120
sec-Butyl alcohol	1120
tert-Butyl alcohol	1120

* The product names are not always identical with the names given in the various editions of the Bulk Chemical Code (resolution A.212(VII)) or the International Bulk Chemical Code (resolution MSC.4(48)).

Chapter VII	UN number
Butylene glycol	-
γ -Butyrolactone	-
Butyl stearate	-
Calcium alkyl salicylate	-
Calcium bromide solution	-
Calcium chloride solution	-
Caprolactam (molten or aqueous solutions)	-
Choline chloride solutions	-
Coconut oil fatty acid methyl ester	-
Dextrose solution	-
Diacetone alcohol	1148
Dialkyl (C ₇ -C ₁₃) phthalates	-
Dicyclopentadiene	2048
Diethylene glycol	-
Diethylene glycol butyl ether	-
Diethylene glycol butyl ether acetate	-
Diethylene glycol dibutyl ether	-
Diethylene glycol diethyl ether	-
Diethylene glycol ethyl ether	-
Diethylene glycol ethyl ether acetate	-
Diethylene glycol methyl ether acetate	-
Diethylenetriamine pentaacetic acid pentasodium salt solution	-
Di-(2-ethyl hexyl) adipate	-
Di-(2-ethyl hexyl) phthalate	-
Dineptyl phthalate	-
Dihexyl phthalate	-

Chapter VII	UN number
Diisobutyl ketone	1157
Diisodecyl phthalate	-
Diisononyl adipate	-
Dinonyl phthalate (all isomers)	-
Diisooctyl phthalate	-
Diisopropyl naphthalene	-
2,2-Dimethyloctanoic acid	-
Dioctyl phthalate	-
Dipropylene glycol	-
Dipropylene glycol methyl ether	-
Diundecyl phthalate	-
Dodecane (all isomers)	-
2-Ethoxyethanol	1171
Ethyl acetate	1173
Ethyl acetoacetate	-
Ethyl alcohol	1170
Ethylcyclohexane	-
Ethylene carbonate	-
Ethylenediamine tetraacetic acid tetrasodium salt solution	-
Ethylene glycol	-
Ethylene glycol butyl ether	2369
Ethylene glycol butyl ether acetate	-
Ethylene glycol methyl butyl ether	-
Ethylene glycol methyl ether	1188
Ethylene glycol methyl ether acetate	1189
Ethylene glycol phenyl ether	-

Chapter VII	UN number
Ethylene glycol tert-butyl ether	-
Ethylene glycol phenyl ether/ Diethylene glycol phenyl ether mixture	-
2-Ethylhexanoic acid	-
Formamide	-
Ethylene/Vinyl acetate copolymer (emulsion)	-
Glycerin	-
Glycine, sodium salt, solution	-
Ground nut oil	-
n-Heptane	1206
Hexamethylene diamine adipate, (50% in water)	-
n-Hexane	1208
1-Hexanol	2282
Hexylene glycol	-
N-(Hydroxyethyl) ethylenediamine triacetic acid, trisodium salt, solution	-
Isoamyl alcohol	1105
Isobutyl alcohol	1212
Isobutyl formate	2393
Isododecane	-
Isopentane	1265
Isopentene	2371
Isophorone	-
Isopropyl acetate	1220
Isopropyl alcohol	1219
Lactic acid	-

Chapter VII	UN number
Latex:	
Styrene butadiene rubber latex	-
Carboxylated styrene-butadiene copolymer	
Lignin sulphonic acid, salt (low COD)	-
Magnesium chloride solution	-
Magnesium hydroxide slurry	-
3-Methoxy-1-butanol	-
3-Methoxyl butyl acetate	-
Methyl acetate	1231
Methyl alcohol	1230
Methyl tert-butyl ether	2398
Methyl ethyl ketone	1193
Methyl isobutyl ketone	1245
3-Methyl-3-methoxy butanol	-
3-Methyl-3-methoxy butyl acetate	-
Molasses	-
Nonane	1920
Oleic acid	-
Octane	1262
Olefins (C ₁₃ and above, all isomers)	-
alpha-Olefins (C ₁₆ -C ₁₈)	-
n-Paraffins (C ₁₀ -C ₂₀)	-
Paraffin wax	-
Petrolatum	-
Petroleum naphtha	1255
Polyaluminium chloride solution	-
Polybutene	-
Polyethylene glycol	-

Chapter VII	UN number
Polyethylene glycol dimethyl ether	--
Polypropylene glycol	--
Polypropylene glycol methyl ether	--
Polysiloxane	--
n-Propyl acetate	1276
n-Propyl alcohol	1274
Propylene glycol	--
Propylene glycol ethyl ether	--
Propylene glycol methyl ether	--
Propylene tetramer	2580
Sodium aluminosilicate slurry	--
Sulpholane	--
Tridecanol	--
Triethylene glycol	--
Triethylene glycol butyl ether	--
Triisopropanolamine	--
Trimethylol propane polyethoxylate	--
Tripropylene glycol	--
Tripropylene glycol monomethyl ether	--
Urea solution	--
Urea, ammonium nitrate solution	--
Urea, ammonium phosphate solution	--
Urea resin solution	--
Vegetable oil (those not otherwise listed)	--
Vegetable protein hydrolized solution	--
Wine	--
1772E	

APPENDIX

MODEL FORM OF CERTIFICATE OF FITNESS FOR THE
CARRIAGE OF DANGEROUS CHEMICALS IN BULK

Existing form of the Certificate is replaced by the following:

CERTIFICATE OF FITNESS FOR THE CARRIAGE OF
DANGEROUS CHEMICALS IN BULK

(Official seal)

Issued in pursuance of the
IMO CODE FOR THE CONSTRUCTION AND EQUIPMENT
OF SHIPS CARRYING DANGEROUS CHEMICALS IN BULK

(resolution MEPC 20(22))1/

under the authority of the Government of

.....

(full official designation of country)

by

(full official designation of the competent
person or organization recognized by the
Administration)

Name of ship	Distinctive number or letters	Port of registry	Gross tonnage	Ship type (Code paragraph 2.2.4) ² /

Date on which keel was laid or on which the ship was at a similar stage of construction, or (in the case of a converted ship) date on which conversion to chemical tanker was commenced:

Date on which the building contract was placed:

The Certificate should be drawn up in the official language of the issuing country. If the language used is neither English nor French, the text should include a translation into one of these languages.

THIS IS TO CERTIFY:

- 1 (i) That the ship has been surveyed in accordance with the provisions of section 1.6 of the Code;
- (ii) that the survey showed that the construction and equipment of the ship:
- * (a) complied with the relevant provisions of the Code applicable to ships referred to in 1.7.2;
- * (b) complied with the provisions of the Code applicable to ships referred to in 1.7.3.
- 2 That the ship has been provided with a manual in accordance with the standards for procedures and arrangements as called for by Regulation 5, 5A and 8 of Annex II of MARPOL 73/78, and that the arrangements and equipment of the ship prescribed in the manual are in all respects satisfactory and comply with the applicable requirements of the said Standards;
- 3 That the ship is suitable for the carriage in bulk of the following products provided that all relevant operational provisions of the Code are observed

Products <u>3/4/</u>	Conditions of carriage <u>5/6/</u> (tank numbers etc.)
<p>* Continued on the annexed signed and dated sheet(s) numbered 1A</p> <p>* Tank numbers referred to in this list are identified on the annexed signed and dated tank plan numbered 2A</p>	

- 4 That, in accordance with 1.7.3/2.2.5* the provisions of the Code are modified in respect of the ship in the following manner:

- 5 That the ship must be loaded:
 - *(a) in accordance with the loading conditions provided in the approved loading manual, stamped and dated
and signed by a responsible officer of the Administration, or of an organization recognized by the Administration;
 - *(b) in accordance with the loading limitations appended to this Certificate.

Where it is required to load the ship other than in accordance with the above instruction, then the necessary calculations to justify the proposed loading conditions should be communicated to the certifying Administration who may authorize in writing the adoption of the proposed loading condition.**

- 6 This certificate is valid until
subject to surveys in accordance with 1.6 of the Code

Issued at 19..
(place of issue of Certificate)

The undersigned declares that he is duly authorized by the said Government to issue this Certificate.

.....
(signature of official issuing the certificate and/or seal of issuing authority)

Notes on completion of Certificate:

- 1/ The Certificate can be issued only to ships entitled to fly the flags of States which are Parties to MARPOL 73/78.
- 2/ Ship type: Any entry under this column must relate to all relevant recommendations, e.g. an entry "Type II" should mean Type II in all respects prescribed by the Code. This column would not usually apply in the case of an existing ship and in such a case should be noted "See paragraph 1(ii)(b)."

* Delete as appropriate.

** Instead of being incorporated in the Certificate, this text may be appended to the Certificate if duly signed and stamped.

- 3/ Products: Products listed in Chapter VI of the Code, or which have been evaluated by the Administration in accordance with 1.8 of the Code, should be listed. In respect of the latter "new" products, any special requirements provisionally prescribed should be noted.
- 4/ Products: The list of products the ship is suitable to carry should include the noxious liquid substances of Category D which are not covered by the Code and should be identified as "Chapter VII Category D".
- 5/ Conditions of carriage: The limitations on the carriage of Category B or Category C substances under 5A.2 of the Code should also be indicated.
- 6/ Conditions of carriage: If a Certificate is issued to a ship which is modified in accordance with the provision of Regulation 1(12) of Annex II to MARPOL 73/78 the Certificate should indicate in the top of the table of products and conditions of carriage the following statement: "This ship is certificated to carry only pollution hazard chemicals"

ENDORSEMENT FOR ANNUAL AND INTERMEDIATE SURVEYS

THIS IS TO CERTIFY that at a survey required by 1.6 of the Code for the Construction and Equipment of Ships carrying Dangerous Chemicals in Bulk, the ship was found to comply with the relevant provisions of the Code.

Annual survey: Signed:
(signature of duly authorized official)

Place:

Date:

(seal or stamp of the Authority, as appropriate)

Annual*/Intermediate* survey: Signed:
(signature of duly authorized official)

Place:

Date:

(seal or stamp of the Authority, as appropriate)

Annual*/Intermediate* survey: Signed:
(signature of duly authorized official)

Place:

Date:

(seal or stamp of the Authority, as appropriate)

Annual survey: Signed:
(signature of duly authorized official)

Place:

Date:

(seal or stamp of the Authority, as appropriate)

* Delete at appropriate

ATTACHMENT 1 TO THE INTERNATIONAL CERTIFICATE OF FITNESS FOR THE CARRIAGE OF DANGEROUS CHEMICALS IN BULK

Continued list of products to those specified in Section 3, and their conditions of carriage

Products	Conditions of carriage (tank numbers, etc.)

Date
(as for Certificate)

.....
(Signature of official issuing the Certificate and/or seal of issuing authority)

RESOLUTION MEPC.33(27)

adopted on 17 March 1989

ADOPTION OF AMENDMENTS TO THE CODE FOR THE CONSTRUCTION
AND EQUIPMENT OF SHIPS CARRYING DANGEROUS
CHEMICALS IN BULK (BCH CODE)

THE MARINE ENVIRONMENT PROTECTION COMMITTEE,

RECALLING article 38(a) of the Convention on the International Maritime Organization concerning the function of the Committee conferred upon it by International Conventions for the Prevention and Control of Marine Pollution,

NOTING article 16 of the International Convention for the Prevention of Pollution from Ships, 1973 (hereinafter referred to as the "1973 Convention") and article VI of the Protocol of 1978 relating to the International Convention for the Prevention of Pollution from Ships, 1973 (hereinafter referred to as the "1978 Protocol"), which together specify the amendment procedure of the 1978 Protocol and confers upon the appropriate body of the Organization the function of considering and adopting amendments to the 1973 Convention, as modified by the 1978 Protocol (MARPOL 73/78),

BEING DESIROUS of keeping the Code for the Construction and Equipment of Ships Carrying Dangerous Chemicals in Bulk (BCH Code) up-to-date, and compatible with the International Code for the Construction and Equipment of Ships Carrying Dangerous Chemicals in Bulk (IBC Code), as well as appendices II and III of Annex II of MARPOL 73/78,

NOTING FURTHER resolution MEPC 32(27) by which the Committee adopted amendments to the IBC Code,

RECOGNIZING the need to bring the corresponding amendments to the BCH Code into force on the date on which the amendments to the IBC Code enter into force,

HAVING CONSIDERED, at its twenty-seventh session, the amendments to the BCH Code proposed by the Sub-Committee on Bulk Chemicals at its eighteenth session and circulated in accordance with article 16(2)(a) of the 1973 Convention,

1. ADOPTS in accordance with article 16(2)(d) of the 1973 Convention amendments to the BCH Code, the text of which is set out in the Annex to the present resolution;
2. DETERMINES, in accordance with article 16(2)(f)(iii) of the 1973 Convention, that the amendments shall be deemed to have been accepted on the date on which the conditions for the entry into force of the amendments to the IBC Code adopted by the Committee by resolution MEPC 32(27) are met, unless prior to that date, not less than one third of the Parties or the Parties, the combined merchant fleets of which constitute not less than fifty per cent of the gross tonnage of the world's merchant fleet, have communicated to the Organization their objections to the amendments;
3. INVITES the Parties to note that in accordance with article 16(2)(g)(ii) of the 1973 Convention the amendments shall enter into force six months after their acceptance in accordance with paragraph 2 above;
4. REQUESTS the Secretary-General, in conformity with article 16(2)(e) of the 1973 Convention, to transmit to all Parties to the 1978 Protocol certified copies of the present resolution and the text of the amendments contained in the Annex;
5. REQUESTS FURTHER the Secretary-General to transmit to the Members of the Organization which are not Parties to the 1978 Protocol copies of the resolution and its Annex.

ANNEX

AMENDMENTS TO THE CODE FOR THE CONSTRUCTION
AND EQUIPMENT OF SHIPS CARRYING DANGEROUS
CHEMICALS IN BULK (BCH CODE)

1 Chapter III, Section E - FIRE PROTECTION: The introductory sentence is amended to read:

"Fire-extinguishing media determined to be effective for certain products are listed in column "1" in the table of chapter VI."

and the same sentence which appears in the Explanatory Notes to chapter VI under "Fire Protection" is deleted.

2 Regulation 3.14.2: The last sentence is amended to read: "Regular protein foams should not be used".

3 Regulation 4.4 Acetone cyanohydrin

.1 The words "and Lactonitrile solution (80% or less)" are added to the title.

.2 The first sentence is amended to read:

"Acetone cyanohydrin and Lactonitrile solution should ...".

4 New regulation 4.22 Octyl nitrates

New regulation 4.22 Octyl nitrates is added as follows:

"4.22 Octyl nitrates, all isomers

4.22.1

The carriage temperature of the cargo should be maintained below 100°C to prevent the occurrence of a self-sustaining, exothermic decomposition reaction.

4.22.2

The cargo may not be carried in independent pressure vessels permanently affixed to the vessel's deck unless:

- .1 the tanks are sufficiently insulated from fire; and
- .2 the vessel has a water deluge system for the tanks such that the cargo temperature is maintained below 100°C and the temperature rise in the tanks does not exceed 1.5°C/hour for a fire of 650°C (1200°F)."

5 Chapter VI - Explanatory note for fire protection:

- .1 a footnote is added to "D: dry chemical", as follows:

"Dry chemical powder systems when used may require an additional water system for boundary cooling. This is normally provided in sufficient quantities by the standard fire main system required by regulation II-2/4 of the 1974 SOLAS Convention as amended."

- .2 A new note is added as follows:

"Further information on the suitability of fire-fighting media listed in column "1" of chapter VI may be found in column "1" of chapter 17 in the IBC Code."

6 Chapter VI - The Table

The Table of Summary of Minimum Requirements are replaced by the following:

Product name	Ull number	Pollution category	Hazards	Ship type	Tank type	Tank vent	Tank environmental control	Electrical requirements	Gauging	Vapour detection	Fire protection	Special requirements
a	b	c	d	e	f	g	h	i	j	k	l	m
Acetic acid		D	S	3	2G	Cont.	No	SP	R	F	A	4.8.2 to 4.8.4, 4.8.6 to 4.8.8, 4.12.6, 4.17
Acetic anhydride	1715	D	S	2	2G	Cont.	No	SP	R	F-T	A	4.8.2 to 4.8.4, 4.8.6 to 4.8.8, 4.12.6, 4.17
Acetone cyanohydrin	1541	A	S/P	2	2G	Cont.	No	St	C	T	A	4.4, 4.9, 4.12.6, 4.13, 4.14, 4.17, 4.18
Acetonitrile	1648	III	S	2	2G	Cont.	No	SP	R	F-T	A	4.9
Acrylamide solution (50% or less)	2074	D	S	2	2G	Open	No	St	C	No	No	4.9.3, 4.10, 4.14.1, 4.15.1, 4.18.1
Acrylic acid	2218	D	S	3	2G	Cont.	No	SP	R	F-T	A	4.10, 4.12.6, 4.18.1
Acrylonitrile	1093	B	S/P	2	2G	Cont.	No	SP	C	F-T	A	4.9, 4.10, 4.12.3, 4.13.1, 4.14, 4.17
Adiponitrile	2205	D	S	3	2G	Cont.	No	St	R	T	A	
Alcohol (C12-C15) poly(1-3) ethoxylates		A	P	2	2G	Open	No	St	O	No	A	4.14.1
Alcohol (C12-C15) poly(3-11) ethoxylates		A	P	2	2G	Open	No	St	O	No	A	4.14.1
Alcohol (C6-C17)(secondary) poly(3-6) ethoxylates		A	P	2	2G	Open	No	St	O	No	A	4.14.1
Alcohol (C6-C17)(secondary) poly(7-12) ethoxylates		B	P	3	2G	Open	No	St	O	No	A	4.14.1, 5.2.5, 5.2.8
Alkyl acrylate-vinyl pyridine copolymer in toluene		C	P	3	2G	Cont.	No	SP	R	F	A	4.14.1
Alkyl benzene sulphononic acid	2584, 2586	C	S/P	3	2G	Open	No	St	O	No	B	5.2.6, 5.2.7
Alkyl benzene sulphononic acid, sodium salt solution		C	P	3	2G	Open	No	St	O	No	No	5.2.6 to 5.2.8
Allyl alcohol	1098	B	S/P	2	2G	Cont.	No	SP	C	F-T	A	4.9, 4.13.1, 4.14, 4.17
Allyl chloride	1100	B	S/P	2	2G	Cont.	No	SP	C	F-T	A	4.9, 4.13.1, 4.14, 4.17
Aluminium chloride (30% or less)/Hydrochloric acid (20% or less) solution		D	S	3	1G	Cont.	No	St	R	T	No	4.8, 4.17(f)
2-(2-Aminoethoxy) ethanol	3055	D	S	3	2G	Open	No	St	O	No	A,C,D	4.14.1, 4.12.2

a	b	c	d	e	f	g	h	i	j	k	l	m
Aminoethyl ethanalamine		(D) S	3	2G	Open	No		St	O No	A		4.12.1
N-Aminoethylpiperazine	2815	D S	3	2G	Cont.	No		St	R T	A,C,D		4.12.2, 4.14.1
2-Amino-2-methyl-1-propanol (90% or less)		D S	3	2G	Open	No		St	O No	A		4.12.1
Ammonia aqueous (28% or less)	2672(o)	C S/P	3	2G	Cont.	No		SP	R T	C		4.12.4, 4.12.9, 4.17(a)
Ammonium nitrate solution (93% or less)		D S	2	1G	Open	No		St	O No	No		4.8.4, 4.8.6, 4.12.10,
												4.13.2, 4.14.1, 4.19
Ammonium sulphide solution (45% or less)	2683	B S/P	2	2G	Cont.	No		SP	C F-T	A,C		4.9, 4.11, 4.12.1,
												4.13.1, 4.14, 4.15.1,
												4.17, 4.18
Ammonium thiocyanate (25% or less)/Ammonium thiosulphate (20% or less) solution		(C) P	3	2G	Open	No		St	O No	No		
Ammonium thiosulphate solution (60% or less)		(C) P	3	2G	Open	No		St	O No	No		5.2.8
n-Amyl acetate	1104	C P	3	2G	Cont.	No		SP	R F	A		4.14.1
sec-Amyl acetate	1104	C P	3	2G	Cont.	No		SP	R F	A		4.14.1
Amyl acetate, commercial	1104	C P	3	2G	Cont.	No		SP	R F	A		4.14.1
Aniline	1547	C S/P	2	2G	Cont.	No		St	C T	A		4.9, 4.13.1, 4.14
Aviation alkylates (CS paraffins and iso-paraffins BPT 95 - 120°C)		(C) P	3	2G	Cont.	No		SP	R F	B		4.14.1
Benzene and mixtures having 10% benzene or more	1114(s)	C S/P	3	2G	Cont.	No		SP	R F-T	B		4.9.1, 4.13.1, 5.2.8
Benzene sulphonyl chloride	2225	D S	3	2G	Cont.	No		St	R T	B,D		4.12.1, 4.14.1
Benzyl acetate		C P	3	2G	Open	No		St	O No	A		
Benzyl alcohol		C P	3	2G	Open	No		St	O No	A		
Benzyl chloride	1738	B S/P	2	2G	Cont.	No		St	C T	B		4.9, 4.10, 4.13.1, 4.14,
												4.17
Butene oligomer		B P	3	2G	Open	No		St	O No	A		4.14.1
n-Butyl acetate	1123	C P	3	2G	Cont.	No		SP	R F	A		4.14.1

a	b	c	d	e	f	g	h	i	j	k	l	m
n-Butyl acrylate	2348	B	S/P	2	2G	Cont.	No	SP	R	F-T	A	4.10, 4.14.1, 4.18.1, 4.18.2
Butylamine (all isomers)	1125, 1214	C	S/P	2	2G	Cont.	No	SP	R	F-T	A	4.9, 4.12.1, 4.12.2, 4.13.1, 4.14.1, 4.17
Butylbenzenes (all isomers)	2709	(A)	P	2	2G	Cont.	No	SP	R	F	A	4.14.1
Butyl benzyl phthalate		A	P	2	2G	Open	No	St	O	No	A	4.14.1
n-Butyl butyrate		(C)	P	3	2G	Cont.	No	SP	R	F	A	4.14.1
Butyl/Decyl/Cetyl/Eicosyl methacrylate mixture		D	S	3	2G	Cont.	No	St	R	No	A,C,D	4.10, 4.18.1, 4.18.2
1,2-Butylene oxide	3022	C	S/P	3	2G	Cont.	Inert	SP	R	F	A,C	4.7.1, 4.7.2, 4.7.4, 4.7.5, 4.7.8 to 4.7.11, 4.7.13, 4.7.17, 4.7.19, 4.7.21, 4.14.1
n-Butyl ether	1149	C	S/P	3	2G	Cont.	Inert	SP	R	F-T	A,D	4.2.7, 4.9
Butyl methacrylate		D	S	3	2G	Cont.	No	SP	R	F-T	A,D	4.10, 4.18.1, 4.18.2
n-Butyraldehyde	1129	B	S/P	3	2G	Cont.	No	SP	O	F-T	A	4.14.1, 4.15.1
Butyric acid	2820	D	S	3	2G	Cont.	No	St	R	No	A	4.8.2 to 4.8.4, 4.8.6 to 4.8.8, 4.12.6
Calcium alkyl salicylate		C	P	3	2G	Open	No	St	O	No	A	5.2.6, 5.2.7
Calcium hypochlorite solution (15% or less)		C	S/P	3	2G	Cont.	No	St	R	No	No	4.12.5, 4.15.1
Calcium hypochlorite solution (more than 15%)		B	S/P	3	2G	Cont.	No	St	R	No	No	4.12.5, 4.14.1, 4.15.1
Calcium naphthenate in mineral oil		A	P	3	2G	Open	No	St	O	No	A	4.14.1
Camphor oil	1130	B	S/P	2	2G	Cont.	No	SP	O	F	B	4.14.1
Carbolic oil		A	S/P	2	2G	Cont.	No	St	C	F-T	A	4.9, 4.14
Carbon disulphide	1131	B	S/P	2	1G	Cont.	Pad+Inert	use	C	F-T	C	4.1, 4.9, 4.14, 4.17
Carbon tetrachloride	1846	B	S/P	3	2G	Cont.	No	NONE	C	T	No	4.9, 4.13.1, 4.14.1, 4.17

a	b	c	d	e	f	g	h	i	j	k	l	m
Cashew nut shell oil (untreated)		D S 3	3	2G	Cont. No			St	R T	B		
Cetyl/Eicosyl methacrylate mixture		III S 3	3	2G	Open No			St	O No	A,C,D		4.10, 4.18.1, 4.18.2
Chlorinated paraffins (ClO-Cl3)		A P 1	2G	Open No				St	O No	A		4.14
Chloroacetic acid (80% or less)	1750	C S/P 2	2G	Cont. No				St	C No	No		4.8.2, 4.8.4, 4.8.6 to 4.8.8, 4.9.3, 4.12.6(z), 4.14, 5.2.8
Chlorobenzene	1134	B S/P 2	2G	Cont. No				SP	R F-T	B		4.14.1
Chloroform	1888	B S/P 3	2G	Cont. No				St	R T	No		4.9, 4.14.1, 4.17
Chlorohydrins (crude)		(D) S 2	2G	Cont. No				SP	C F-T	A		4.9, 4.14
o-Chloronitrobenzene	1578	B S/P 2	2G	Cont. No				St	C T	B,C,D		4.9, 4.13, 4.14, 5.2.5, 5.2.8, 5A.2.2
2- or 3-Chloropropionic acid	2511(k)	(C) S/P 3	2G	Open No				St	O No	A		4.8.2 to 4.8.4, 4.8.6 to 4.8.8, 4.12.6, 5.2.6 to 5.2.8
Chlorosulphonic acid	1754	C S/P 1	2G	Cont. No				St	C T	No		4.8.2 to 4.8.8, 4.9, 4.14, 4.15.2, 4.17
m-Chlorotoluene	2238	B S/P 3	2G	Cont. No				SP	R F-T	B,C		4.14.1
o-Chlorotoluene	2238	A S/P 3	2G	Cont. No				SP	R F-T	B,C		4.14.1
p-Chlorotoluene	2238	B S/P 2	2G	Cont. No				SP	R F-T	B,C		4.14.1, 5.2.8
Chlorotoluenes (mixed isomers)	2238	A S/P 2	2G	Cont. No				SP	R F-T	B,C		4.14.1
Coal tar		A S/P 2*	2G	Cont. No				St	R No	B,D		4.14.1
Coal tar naphtha solvent		B S/P 3	2G	Cont. No				SP	R F-T	A,D		4.14.1
Coal tar pitch (molten)		D S 3	1G	Cont. No				St	R No	B,D		4.14.1
Coconut oil fatty acid		C F 3	2G	Open No				St	O No	A		5.2.6 to 5.2.8
Creosote (coal tar)		A S/P 2	2G	Open No				St	O No	B,D		4.14.1
Creosote (wood)		A S/P 2	2G	Open No				St	O No	B,D		4.14.1

*For ships constructed before the date of entry into force of the present amendments which are engaged solely on voyages between ports or terminals within the State the flag of which the ship is entitled to fly, the ship-type requirement applies ten years after entry into force of the amendments.

For ships constructed before the date of entry into force of the present amendments, which are engaged on voyages from, to or between port terminals within States other than the State the flag of which the ship is entitled to fly, the ship-type requirement applies five years after the entry into force of the amendments, provided that the ship satisfies all the following conditions:

- 1 the ship has been regularly engaged in the trade of coal tar for at least five years before the date of entry into force of the present amendments;
- 2 the ship is solely engaged on restricted voyages as determined by the Administration;
- 3 the Certificate of Fitness is endorsed to the effect that the ship is solely engaged in such restricted voyages, with the expiry date of the period of grace; and
- 4 the five year period of grace is agreed among the Governments concerned.

a	b	c	d	e	f	g	h	i	j	k	l	m
Cresols (all isomers)	2076	A	S/P	2	2G	Open	No	St	O	No	B	4.14.1
Cresylic acid, sodium salt solution		A	S/P	2	2G	Open	No	St	O	No	No	4.12.1, 4.14.1
Crotonaldehyde	1143	B	S/P	2	2G	Cont.	No	SP	R	F-T	A	4.9, 4.13.1, 4.14.1, 4.15.1, 4.17
Cycloheptane	2241	(C)	P	3	2G	Cont.	No	SP	R	F	A	4.14.1
Cyclohexane	1145	C	P	3	2G	Cont.	No	SP	R	F	A	4.14.1, 5.2.8
Cyclohexanol		C	P	3	2G	Open	No	St	O	No	A	5.2.6, 5.2.8
Cyclohexanone	1915	D	S	3	2G	Cont.	No	SP	R	F-T	A	4.12.5
Cyclohexyl acetate	2243	(B)	P	3	2G	Cont.	No	SP	R	F	A	4.14.1
Cyclohexylamine	2357	C	S/P	3	2G	Cont.	No	SP	R	F-T	A, D	4.12.1, 4.12.2
1,3-Cyclopentadiene dimer (molten)		B	P	2	2G	Cont.	No	SP	R	F	A	4.14.1, 5.2.5, 5.2.8, 5A.2.2
Cyclopentane	1146	(C)	P	3	2G	Cont.	No	SP	R	F	A	4.14.1
Cyclopentene	2246	(B)	P	3	2G	Cont.	No	SP	R	F	A	4.14.1
p-Cymene	2046	C	P	3	2G	Cont.	No	SP	R	F	A	4.14.1
Decanoic acid		C	P	3	2G	Open	No	St	O	No	A	5.2.6 to 5.2.8
Decene		B	P	3	2G	Cont.	No	SP	R	F	A	4.14.1
Decyl acrylate		A	S/P	2	2G	Open	No	St	O	No	A, C, D	4.10, 4.12.2, 4.14.1, 4.18.1, 4.18.2
Decyl alcohol (all isomers)		B	P	3	2G	Open	No	St	O	No	A	4.14.1, 5.2.8(p)
Dibutylamine		C	S/P	3	2G	Cont.	No	SP	R	F-T	B, D	4.12.4
Dibutyl phthalate		A	P	2	2G	Open	No	St	O	No	A	4.14.1
Dichlorobenzenes (all isomers)		B	S/P	2	2G	Cont.	No	St	R	T	B, D	4.12.5, 4.14.1, 5.2.5(v), 5.2.8(w), 5A.2.2(x)
1,1-Dichloroethane	2362	B	S/P	3	2G	Cont.	No	SP	R	F-T	B	4.14.1, 4.17

a	b	c	d	e	f	g	h	i	j	k	l	m
Dichloroethyl ether	1916	B	S/P	2	2G	Cont.	No	SP	R	F-T	A	4.12.5, 4.14.1
2,2-Dichloroisopropyl ether	2490	C	S/P	2	2G	Cont.	No	St	R	T	B,C,D	4.9, 4.12.5, 4.13.1, 4.14
Dichloromethane	1593	D	S	3	2G	Cont.	No	St	R	T	No	
2,4-Dichlorophenol	2021	A	S/P	2	2G	Cont.	Dry	St	R	T	B,C,D	4.12.1, 4.14.1
2,4-Dichlorophenoxyacetic acid, diethanolamine salt solution		A	S/P	3	2G	Open	No	St	O	No	No	4.12.1, 4.14.1
2,4-Dichlorophenoxyacetic acid, dimethylamine salt solution (70% or less)		A	S/P	3	2G	Open	No	St	O	No	No	4.12.1, 4.14.1
2,4-Dichlorophenoxyacetic acid, triisopropanolamine salt solution		A	S/P	3	2G	Open	No	St	O	No	No	4.12.1, 4.14.1
1,2-Dichloropropane	1279	B	S/P	2	2G	Cont.	No	SP	R	F-T	B	4.9, 4.14.1
1,3-Dichloropropane		B	S/P	2	2G	Cont.	No	SP	R	F-T	B	4.9, 4.14.1
1,3-Dichloropropene	2047	B	S/P	2	2G	Cont.	No	SP	C	F-T	B	4.9, 4.13, 4.14, 4.17
Dichloropropene/Dichloropropane mixtures		B	S/P	2	2G	Cont.	No	SP	C	F-T	B,C,D	4.9, 4.13, 4.14, 4.17
2,2-Dichloropropionic acid		D	S	3	2G	Cont.	Dry	St	R	No	A	4.8.2, 4.8.4, 4.8.6 to 4.8.8, 4.12.6(z)
Diethanolamine		III	S	3	2G	Open	No	St	O	No	A	4.12.2
Diethylamine	1154	C	S/P	3	2G	Cont.	No	SP	R	F-T	A	4.9, 4.12.1, 4.17
Diethylaminoethanol	2686	C	S/P	3	2G	Cont.	No	SP	R	F-T	A,C	4.12.1, 4.12.2
Diethylbenzene	2049	C	P	3	2G	Cont.	No	SP	R	F	A	4.14.1
Diethylene glycol methyl ether		C	P	3	2G	Open	No	St	O	No	A	
Diethylenetriamine	2079	D	S	3	2G	Open	No	St	O	No	A	4.12.2
Diethyl ether	1155	III	S	2	1G	Cont.	Inert	SP	C	F-T	A	4.2, 4.11, 4.12.9, 4.14, 4.17
Di-(2-ethylhexyl) phosphoric acid	1902	C	S/P	3	2G	Open	No	St	O	No	B,C,D	4.12.2

a	b	c	d	e	f	g	h	i	j	k	l	m
Diethyl phthalate		C	P	3	2G	Open	No	St	O	No	A	
Diethyl sulphate	1594	(B)	S/P	2	2G	Cont.	No	St	O	T	A,D	4.12.3, 4.14.1
Diglycidyl ether of bisphenol A		B	P	3	2G	Open	No	St	O	No	A	4.14.1, 5.2.5
Diglycidyl ether of bisphenol F		B	P	3	2G	Open	No	St	O	No	A	4.14.1, 5.2.5
Di-n-hexyl adipate		B	P	3	2G	Open	No	St	O	No	A	4.14.1
Diisobutylamine	2361	(C)	S/P	2	2G	Cont.	No	SP	R	F-T	B,D	4.9.3, 4.12.1, 4.14.1
Diisobutylene	2050	B	P	3	2G	Cont.	No	SP	R	F	A	4.14.1
Diisobutyl phthalate		B	P	3	2G	Open	No	St	O	No	A	4.14.1, 5.2.5
Diisopropanolamine		C	S/P	3	2G	Open	No	St	O	No	A	4.12.2, 5.2.6 to 5.2.8
Diisopropylamine	1158	C	S/P	2	2G	Cont.	No	SP	C	F-T	A	4.9, 4.12.2, 4.14, 4.17
Diisopropylbenzene (all isomers)		A	P	2	2G	Open	No	St	O	No	A	4.14.1
N,N-Dimethylacetamide solution (40% or less)		D	S	3	2G	Cont.	No	St	R	T	B	4.9.1, 4.12.4, 4.13.1
Dimethyl adipate		B	P	3	2G	Open	No	St	O	No	A	4.14.1, 5.2.8
Dimethylamine solution (45% or less)	1160	C	S/P	3	2G	Cont.	No	SP	R	F-T	C,D	4.9, 4.12.1, 4.17
Dimethylamine solution (greater than 45% but not greater than 55%)	1160	C	S/P	2	2G	Cont.	No	SP	C	F-T	A,C,D	4.9, 4.12.1, 4.13.1, 4.14, 4.17
Dimethylamine solution (greater than 55% but not greater than 65%)	1160	C	S/P	2	2G	Cont.	No	SP	C	F-T	A,C,D	4.9, 4.11, 4.12.1, 4.13.1, 4.14, 4.17
N,N-Dimethylcyclohexylamine	2264	C	S/P	2	2G	Cont.	No	SP	R	F-T	A,C	4.9, 4.12.1, 4.13.1, 4.14.1
Dimethylethanolamine	2051	D	S	3	2G	Cont.	No	SP	R	F-T	A,D	4.12.2
Dimethylformamide	2265	D	S	3	2G	Cont.	No	SP	R	F-T	A,D	
Dimethyl glutarate		C	P	3	2G	Open	No	St	O	No	A	
Dimethyl hydrogen phosphite		S	S	3	2G	Cont.	No	St	R	T	A,D	4.9.1
Dimethyl octanoic acid		(C)	P	3	2G	Open	No	St	O	No	A	5.2.7, 5.2.8
Dimethyl phthalate		C	P	3	2G	Open	No	St	O	No	A	

a	b	c	d	e	f	g	h	i	j	k	l	m
Dimethyl succinate		C	P	3	2G	Open	No	St	O	No	A	5.2.8
Dinitrotoluene (molten)	1600	B	S/P	2	2G	Cont.	No	St	C	T	A	4.9, 4.13.1, 4.14, 5.2.5, 5.2.8, 5A.2.2(m)
1,4-Dioxane	1165	D	S	2	2G	Cont.	No	SP	C	F-T	A	4.9, 4.14
Dipentene	2052	C	P	3	2G	Cont.	No	SP	R	F	A	4.14.1
Diphenyl		A	P	1	2G	Open	No	St	O	No	B	4.14
Diphenyl/Diphenyl ether mixtures		A	P	1	2G	Open	No	St	O	No	B	4.14
Diphenyl ether		A	P	3	2G	Open	No	St	O	No	A	4.14.1
Diphenyl ether/Diphenyl phenyl ether mixture		A	P	3	2G	Open	No	St	O	No	A	4.14.1
Diphenylmethane diisocyanate	2489	(B)	S/P	2	2G	Cont.	Dry	St	C	T(b)	C(c),D	4.9, 4.12.5, 4.13.1, 4.14.1, 4.15.2, 5.2.5, 5.2.8, 5A.2.2
Diphenylol propane-epichlorohydrin resins		B	P	3	2G	Open	No	St	O	No	A	4.14.1, 5.2.5
Di-n-propylamine	2383	C	S/P	3	2G	Cont.	No	SP	R	F-T	A	4.9.3, 4.12.2, 4.14.1
Dodecene (all isomers)		(B)	P	3	2G	Open	No	St	O	No	A	4.14.1
Dodecyl alcohol		B	P	3	2G	Open	No	St	O	No	A	4.14.1, 5.2.5, 5.2.8, 5A.2.2
Dodecyl diphenyl ether disulphonate solution		B	S/P	3	2G	Open	No	St	O	No	No	4.14.1, 5.2.5, 5.2.8, 5A.2.2
Dodecyl methacrylate		III	S	3	2G	Open	No	St	O	No	A,C	4.10
Dodecyl/Pentadecyl methacrylate mixture		III	S	3	2G	Open	No	St	O	No	A,C,D	4.10, 4.18.1, 4.18.2
Dodecyl phenol		A	P	1	2G	Open	No	St	O	No	A	4.14
Drilling brines, containing Zinc salts		(A)	P	2	2G	Open	No	St	O	No	No	4.14.1
Epichlorohydrin	2023	C	S/P	2	2G	Cont.	No	SP	C	F-T	A	4.9, 4.13.1, 4.14, 4.17
Ethanolamine	2491	D	S	3	2G	Open	No	St	O	F-T	A	4.12.2
2-Ethoxyethyl acetate	1172	C	P	3	2G	Cont.	No	SP	R	F	A	4.14.1

a	b	c	d	e	f	g	h	i	j	k	l	m
Ethyl acrylate	1917	A	S/P 2	2G	Cont.	No		SP	R F-T	A		4.10, 4.14.1, 4.17, 4.18.1, 4.18.2
Ethylamine	1036	(C)	S/P 2	1G	Cont.	No		SP	C F-T	C,D		4.9, 4.11, 4.12.2, 4.17
Ethylamine solutions (72% or less)	2270	(C)	S/P 2	2G	Cont.	No		SP	C F-T	A,C		4.9, 4.11, 4.12.1, 4.13.1, 4.14, 4.17
Ethyl amyl ketone	2271	C	P 3	2G	Cont.	No		SP	R F	A		4.14.1
Ethylbenzene	1175	C	P 3	2G	Cont.	No		SP	R F	A		4.14.1
N-Ethylbutylamine		(C)	S/P 3	2G	Cont.	No		SP	R F-T	A		4.9.3, 4.12.1, 4.14.1
Ethyl butyrate	1180	C	P 3	2G	Cont.	No		SP	R F	A		4.14.1
Ethylcyclohexane		(C)	P 3	2G	Cont.	No		SP	R F	A		4.14.1
N-Ethylcyclohexylamine		D	S 3	2G	Cont.	No		SP	R F-T	A,C		4.12.1, 4.14.1
Ethylene chlorohydrin	1135	C	S/P 2	2G	Cont.	No		SP	C F-T	D		4.9, 4.13.1, 4.14, 4.17
Ethylene cyanohydrin		(D)	S 3	2G	Open	No		St	O No	A		
Ethylenediamine	1604	C	S/P 2	2G	Cont.	No		SP	R F-T	A		4.12.2, 5.2.8
Ethylene dibromide	1605	B	S/P 2	2G	Cont.	No		St	C T	No		4.9, 4.14.1, 4.17, 5.2.8
Ethylene dichloride	1184	B	S/P 2	2G	Cont.	No		SP	R F-T	B		4.12.4, 4.14
Ethylene glycol butyl ether acetate		(C)	P 3	2G	Open	No		St	O No	A		
Ethylene glycol diacetate		C	P 3	2G	Open	No		St	O No	A		
Ethylene oxide/Propylene oxide mixture with an weight	2983	D	S 2	1G	Cont.	Inert		SP	C F-T	A,C		4.7, 4.9, 4.11, 4.14
2-Ethylhexyl acrylate		B	S/P 3	2G	Open	No		St	O No	A		4.10, 4.14.1, 4.18.1, 4.18.2
2-Ethylhexylamine	2276	B	S/P 2	2G	Cont.	No		SP	R F-T	A		4.9, 4.12.2, 4.14.1
Ethylidene norbornene		B	S/P 3	2G	Cont.	No		SP	R F-T	B,C,D		4.9.1, 4.12.4, 4.14.1, 4.15.1

Ethylene oxide content of not more than 30% in weight

a	b	c	d	e	f	g	h	i	j	k	l	m
Ethyl methacrylate	2277	(D) S	3	2G	Cont.	No		SP	R F-T	B,D		4.10, 4.18.1, 4.18.2
o-Ethylphenol		(A) S/P	3	2G	Open	No		St	O No	B		4.14.1
2-Ethyl-3-propylacrolein		(B) S/P	3	2G	Cont.	No		SP	R F-T	A		4.14.1, 5.2.8
Ethyltoluene		(B) P	3	2G	Cont.	No		SP	R F	A		4.14.1
Ferric chloride solutions	2582	C S/P	3	2G	Open	No		St	O No	No		4.8, 4.14.1, 5.2.8
Ferric nitrate/Nitric acid solution		C S/P	2	2G	Cont.	No		St	R T	No		4.8, 4.14, 4.17
Formaldehyde solutions (45% or less)	1198(d) 2209	C S/P	3	2G	Cont.	No		SP	R F-T	A		4.15.1, 4.17(e), 5.2.8
Formic acid	1779	D S	3	2G	Cont.	No		SP	R T(t)	A		4.8.2 to 4.8.4, 4.8.6 to 4.8.8, 4.12.7, 4.17
Fumaric adduct of rosin, water dispersion		B P	3	2G	Open	No		St	O No	No		4.14.1, 5.2.5
Furfural	1199	C S/P	3	2G	Cont.	No		SP	R F-T	A		4.15.1
Furfuryl alcohol	2874	C P	3	2G	Open	No		St	O No	A		4.15.1
Glutaraldehyde solutions (50% or less)		D S	3	2G	Open	No		St	O No	No		4.15.1
Glycidyl ester of C10 trialkylacetic acid		B P	3	2G	Open	No		St	O No	A		4.14.1
Heptane (all isomers)	1206	(C) P	3	2G	Cont.	No		SP	R F	A		4.14.1
Heptanol (all isomers) (q)		C P	3	2G	Cont.	No		SP	R F	A		4.14.1
Heptene (all isomers)		C P	3	2G	Cont.	No		SP	R F	A		4.14.1
Heptyl acetate		(B) P	3	2G	Open	No		St	O No	A		4.14.1
Hexamethylenediamine solution	1783	C S/P	3	2G	Cont.	No		St	R T	A		4.12.2, 4.14.1, 5.2.8
Hexamethylenimine	2493	C S/P	2	2G	Cont.	No		SP	R F-T	A,C		4.12.1, 4.12.2
Hexane (all isomers)	1208	(C) P	3	2G	Cont.	No		SP	R F	A		4.14.1
Hexene (all isomers)		(C) P	3	2G	Cont.	No		SP	R F	A		4.14.1
Hexyl acetate	1233	B P	3	2G	Cont.	No		SP	R F	A		4.14.1
Hydrochloric acid	1789	D S	3	1G	Cont.	No		St	R T	No		4.8, 4.17(f)
Hydrogen peroxide solutions (over 8% but not over 60%)	2014, 2984	C S/P	3	2G	Cont.	No		St	C No	No		4.13.2, 4.14.1, 4.20.15 to 4.20.27

a	b	c	d	e	f	g	h	i	j	k	l	m
Hydrogen peroxide solutions (over 60% but not over 70%)	2015	C	S/P 2	2G	2G	Cont.	No	St	C	No	No	4.14.1, 4.20.1 to 4.20.14
2-Hydroxyethyl acrylate		B	S/P 2	2G	2G	Cont.	No	St	C	T	A	4.9, 4.10, 4.14.1, 4.18.1, 4.18.2
Isoamyl acetate	1104	C	P	3	2G	Cont.	No	SP	R	F	A	4.14.1
Isobutyl acetate	1213	C	P	3	2G	Cont.	No	SP	R	F	A	4.14.1
Isobutyl acrylate	2527	B	S/P 2	2G	2G	Cont.	No	SP	R	F-T	A	4.10, 4.14.1, 4.18.1, 4.18.2
Isobutyraldehyde	2045	C	S/P 3	2G	2G	Cont.	No	SP	O	F-T	A	4.15.1
Isophoronediamine	2289	D	S	3	2G	Cont.	No	St	R	T	A	4.12.2
Isophorone diisocyanate	2290	B	S/P 2	2G	2G	Cont.	Dry	St	C	T	C(c),D	4.9, 4.12.5, 4.13.1, 4.14.1, 4.15.2
Isoprene	1218	C	S/P 3	2G	2G	Cont.	No	SP	R	F	B	4.10, 4.11, 4.18.1, 4.18.2
Isopropanolamine	1221	C	S/P 3	2G	2G	Open	No	St	O	F-T	A	4.12.2, 5.2.7, 5.2.8
Isopropylamine		C	S/P 2	2G	2G	Cont.	No	SP	C	F-T	C,D	4.9, 4.11, 4.12.2, 4.14, 4.17
Isopropylbenzene	1918	B	P	3	2G	Cont.	No	SP	R	F	A	4.14.1
Isopropylcyclohexane		(C)	P	3	2G	Cont.	No	SP	R	F	A	4.14.1, 5.2.6, 5.2.7
Isopropyl ether	1159	D	S	3	2G	Cont.	Inert	SP	R	F	A	4.2.7, 4.10.3, 4.14.1
Isovaleraldehyde	2058	C	S/P 3	2G	2G	Cont.	Inert	SP	R	F-T	A	4.2.7, 4.15.1
Lactonitrile solution (80% or less)		B	S/P 2	1G	2G	Cont.	No	St	C	T	A,C,D	4.4, 4.9, 4.12.6, 4.13, 4.14, 4.17, 4.18, 5.2.5
Lauric acid		B	P	3	2G	Open	No	St	O	No	A	4.14.1, 5.2.5, 5.2.8, 5A.2.2
Maleic anhydride	2215	D	S	3	2G	Cont.	No	St	R	No	A(g),C	
Mercaptobenzothiazol, sodium salt solution		B	S/P 3	2G	2G	Open	No	St	O	No	No	4.12.1, 4.14.1, 5.2.8

a	b	c	d	e	f	g	h	i	j	k	l	m
Mesityl oxide	1229	D	S	3	2G	Cont.	No	SP	R	F-T	A	4.14.1
Metam sodium solution		A	S/P	3	2G	Open	No	St	O	No	No	4.12.1, 4.14.1
Methacrylic acid	2531	D	S	3	2G	Cont.	No	St	R	T	A	4.10, 4.12.6, 4.18.1
Methacrylonitrile	3079	(B)	S/P	2	2G	Cont.	No	SP	C	F-T	A	4.9, 4.10, 4.12.4, 4.13.1, 4.14, 4.17
Methyl acrylate	1919	B	S/P	2	2G	Cont.	No	SP	R	F-T	B	4.10, 4.14.1, 4.17, 4.18.1, 4.18.2
Methylamine solutions (42% or less)	1235	C	S/P	2	2G	Cont.	No	SP	C	F-T	A,C,D	4.9, 4.12.1, 4.13.1, 4.14, 4.17
Methylamyl acetate	1233	(C)	P	3	2G	Cont.	No	SP	R	F	A	4.14.1
Methylamyl alcohol	2053	(C)	P	3	2G	Cont.	No	SP	R	F	A	4.14.1
Methyl amyl ketone	1110	(C)	P	3	2G	Cont.	No	SP	R	F	A	4.14.1
Methyl butyrate	1237	(C)	P	3	2G	Cont.	No	SP	R	F	A	4.14.1
Methylcyclohexane	2296	(C)	P	3	2G	Cont.	No	SP	R	F	A	4.14.1
Methylcyclopentadiene dimer		(B)	P	3	2G	Cont.	No	SP	R	F	B	4.14.1
2-Methyl-6-ethyl aniline	2300	C	S/P	3	2G	Open	No	St	O	No	B,C,D	4.12.4, 4.14.1
2-Methyl-5-ethyl pyridine	1243	(B)	S/P	3	2G	Open	No	St	O	No	D	4.9, 4.11, 4.14, 4.17
Methyl formate		D	S	2	2G	Cont.	No	SP	R	F-T	A	4.14.1
Methyl heptyl ketone		B	P	3	2G	Cont.	No	SP	R	F	A	4.14.1
2-Methyl-2-hydroxy-3-butyne	1247	III	S	3	2G	Cont.	No	SP	R	F-T	A,C,D	4.12.8, 4.14.1
Methyl methacrylate	2288	D	S	2	2G	Cont.	No	SP	R	F-T	B	4.10, 4.18.1, 4.18.2
2-Methyl-1-pentene	2313	C	P	3	2G	Cont.	No	SP	R	F	A	4.14.1
2-Methylpyridine	2313	B	S/P	2	2G	Cont.	No	SP	C	F	A,C	4.9.3, 4.12.4, 4.14.1
4-Methylpyridine	2313	B	S/P	2	2G	Cont.	No	SP	C	F-T	A,C,D	4.9.3, 4.12.4, 4.14, 5.2.8
N-Methyl-2-pyrrolidone		B	P	3	2G	Open	No	St	O	No	A	4.14.1

a	b	c	d	e	f	g	h	i	j	k	l	m
Methyl salicylate	2303	(B) P	3	2G	Open	No	St	O No	A			4.14-1
alpha-Methylstyrene		A	S/P	3	2G	Cont.	No	SP	R F-T	D		4.10, 4.14.1, 4.18.1, 4.18-2
Morpholine	2054	D	S	3	2G	Cont.	No	SP	R F	A		4.12.2
Motor fuel anti-knock compounds	1649	A	S/P	2	1G	Cont.	No	SP	C F-T	B,C		4.6, 4.9, 4.13.2, 4.14, 4.17
Naphthalene (molten)	2304	A	S/P	2	2G	Cont.	No	SP	R No	A,D		4.14.1
Naphthenic acids		A	P	2	2G	Open	No	St	O No	A		4.14-1
Neodecanoic acid		C	P	3	2G	Open	No	St	O No	A		5.2.7
Nitrating acid (mixture of sulphuric and nitric acids)	1796	(C) S/P	2	2G	Cont.	No	St	C T	No			4.8, 4.13.1, 4.14, 4.15.2, 4.17
Nitric acid (less than 70%)	2031	C	S/P	2	2G	Cont.	No	St	R T	No		4.8, 4.14, 4.17
Nitric acid (70% and over)	2031, 2032(h)	C	S/P	2	2G	Cont.	No	St	C T	No		4.8, 4.14, 4.17
Nitrobenzene	1662	B	S/P	2	2G	Cont.	No	St	C T	D		4.9, 4.13, 4.14, 5.2.8
o-Nitrophenol (molten)	1663	B	S/P	2	2G	Cont.	No	St	C T	A,C,D		4.9, 4.14.1, 5.2.5, 5.2.8, 5A.2.2
l- or 2-Nitropropane	2608	D	S	3	2G	Cont.	No	SP	R F-T	A		4.12.4
Nitropropane (60%)/Nitroethane (40%) mixture		D	S	3	2G	Cont.	No	SP	R F-T	A,C(n)		4.12.4
o- or p-Nitrotoluenes	1664	C	S/P	2	2G	Cont.	No	St	C T	B		4.9, 4.13.1, 4.14, 5.2.8
Nonane (all isomers)	1920	(C) P	3	2G	Cont.	No	SP	R F	B,C			4.14.1
Nonene		B	P	3	2G	Cont.	No	SP	R F	A		4.14.1
Nonyl alcohol (all isomers)		C	P	3	2G	Open	No	St	O No	A		4.14.1
Nonylphenol		A	P	2	2G	Open	No	St	O No	A		4.14.1
Nonyl phenol poly(4-12) ethoxylates		B	P	3	2G	Open	No	St	O No	A		4.14.1, 5.2.5, 5.2.8, 5A.2.2(y)

a	b	c	d	e	f	g	h	i	j	k	l	m
Noxious liquid, N.F, (1) n.o.s. (trade name, contains ...) S.T.1, Cat.A*	A	P	1	2G	Open	No	St	O	No	A		4.14
Noxious liquid, F, (2) n.o.s. (trade name, contains ...) S.T.1, Cat.A*	A	P	1	2G	Cont.	No	SP	R	F	A		4.14
Noxious liquid, N.F, (3) n.o.s. (trade name, contains ...) S.T.2, Cat.A*	A	P	2	2G	Open	No	St	O	No	A		4.14.1
Noxious liquid, F, (4) n.o.s. (trade name, contains ...) S.T.2, Cat.A*	A	P	2	2G	Cont.	No	SP	R	F	A		4.14.1
Noxious liquid, N.F, (5) n.o.s. (trade name, contains ...) S.T.2, Cat.B*	B	P	2	2G	Open	No	St	O	No	A		4.14.1, [5.2.5, 5.2.8]**
Noxious liquid, N.F, (6) n.o.s. (trade name, contains ...) S.T.2, Cat.B*, mp 15°C+	B	P	2	2G	Open	No	St	O	No	A		4.14.1, [5.2.5]**, 5.2.8, 5A.2.2
Noxious liquid, F, (7) n.o.s. (trade name, contains ...) S.T.2, Cat.B*	B	P	2	2G	Cont.	No	SP	R	F	A		4.14.1, [5.2.5, 5.2.8]**
Noxious liquid, F, (8) n.o.s. (trade name, contains ...) S.T.2, Cat.B*, mp 15°C+	B	P	2	2G	Cont.	No	SP	R	F	A		4.14.1, [5.2.5]**, 5.2.8, 5A.2.2
Noxious liquid, N.F, (9) n.o.s. (trade name, contains ...) S.T.3, Cat.A*	A	P	3	2G	Open	No	St	O	No	A		4.14.1
Noxious liquid, F, (10) n.o.s. (trade name, contains ...) S.T.3, Cat.A*	A	P	3	2G	Cont.	No	SP	R	F	A		4.14.1
Noxious liquid, N.F, (11) n.o.s. (trade name, contains ...) S.T.3, Cat.B*	B	P	3	2G	Open	No	St	O	No	A		4.14.1, [5.2.5, 5.2.8]**
Noxious liquid, N.F, (12) n.o.s. (trade name, contains ...) S.T.3, Cat.B*, mp 15°C+	B	P	3	2G	Open	No	St	O	No	A		4.14.1, [5.2.5]**, 5.2.8, 5A.2.2
Noxious liquid, F, (13) n.o.s. (trade name, contains ...) S.T.3, Cat.B*	B	P	3	2G	Cont.	No	SP	R	F	A		4.14.1, [5.2.5, 5.2.8]**

* In case of a specific n.o.s. cargo assessed as falling within this n.o.s. group that is carried on a ship, this entry, including the cargo's trade name and one or two principle components, should be provided in the shipping document. Abbreviations used mean:

N.F: Flashpoint exceeding 60°C (closed cup test) S.T: Ship type
 F: Flashpoint not exceeding 60°C (closed cup test) Cat.: Pollution category
 n.o.s.: Not otherwise specified m.p.: Melting point

** For high viscosity or high melting point cargoes.

a	b	c	d	e	f	g	h	i	j	k	l	m
Noxious liquid, F, (14) n.o.s. (trade name contains ...) S.T.3, Cat.B*, mp 15°C+		B	P	3	2G	Cont.	No	SP	R	F	A	4.14.1, [5.2.5]**, 5.2.8, 5A.2.2
Noxious liquid, N.F, (15) n.o.s. (trade name contains ...) S.T.3, Cat.C*		C	P	3	2G	Open	No	St	O	No	A	[5.2.6 to 5.2.8]**
Noxious liquid, F, (16) n.o.s. (trade name contains ...) S.T.3, Cat.C*		C	P	3	2G	Cont.	No	SP	R	F	A	[5.2.6 to 5.2.8]**
Octane (all isomers)	1262	(C)	P	3	2G	Cont.	No	SP	R	F	A	4.14.1
Octanol (all isomers)		C	P	3	2G	Open	No	St	O	No	A	
Octene (all isomers)		B	P	3	2G	Cont.	No	SP	R	F	A	4.14.1
Octyl aldehydes	1191	(B)	P	3	2G	Cont.	No	SP	R	F	A	4.14.1, 5.2.8
Octyl nitrates (all isomers)		A	S/P	2	2G	Open	No	St	O	No	B	4.14.1, 4.18, 4.22
Olefin mixtures (C5-C7)		C	P	3	2G	Cont.	No	SP	R	F	A	4.14.1
Olefin mixtures (C5-Cl5)		B	P	3	2G	Cont.	No	SP	R	F	A	4.14.1
alpha-Olefins (C6-Cl8) mixtures		B	P	3	2G	Cont.	No	SP	R	F	A	4.14.1, 5.2.5, 5.2.8
Oleum	1831	C	S/P	2	2G	Cont.	No	St	C	T	No	4.8.2 to 4.8.8, 4.9.1, 4.13.1, 4.14, 4.15.2, 4.17, 5.2.6, 5.2.7
Palm nut oil fatty acid		(C)	P	3	2G	Open	No	St	O	No	B	5.2.6 to 5.2.8
Paraldehyde	1264	C	S/P	3	2G	Cont.	No	SP	R	F	A	5.2.8
Pentachloroethane	1669	B	S/P	2	2G	Cont.	No	SP	R	T	No	4.9, 4.13.1, 4.14.1
1,3-Pentadiene		C	S/P	3	2G	Cont.	No	SP	R	F-T	B	4.10, 4.18
Pentane (all isomers)	1265-	(C)	P	3	2G	Cont.	No	SP	R	F	A	4.14.1
Pentene (all isomers)		C	P	3	2G	Cont.	No	SP	R	F	A	4.14.1
Perchloroethylene	1897	B	S/P	3	2G	Cont.	No	St	R	T	No	4.9.1, 4.9.2, 4.14.1
Phenol	2312	B	S/P	2	2G	Cont.	No	St	C	T	A	4.9, 4.14, 5.2.5, 5.2.8, 5A.2.2

* See footnote on page 19.

** For high viscosity or high melting point cargoes.

a	b	c	d	e	f	g	h	i	j	k	l	m
1-Phenyl-1-xylyl ethane												
Phosphoric acid	1805	C D	P S	3 3	2G 2G	Open No Open No	No No	St St	O No O No	No No	B	4.8.1 to 4.8.4, 4.8.6 to 4.8.8 4.5, 4.14, 4.17
Phosphorus, yellow or white	1381, 2447	A	S/P	1	IG	Cont. Pad+(Vent or Inert)	No	St	C No	C		
Phthalic anhydride (molten)	2214	C	S/P	3	2G	Cont. No	No	St	R No	D		5.2.6 to 5.2.8
Pinene	2368	B	P	3	2G	Cont. No	No	SP	R F	A		4.14.1
Polyethylene polyamines	2734(i) 2735	(C)	S/P	3	2G	Open No	No	St	O No	A		4.12.2, 5.2.8
Polyferric sulphate solution	2206(i)	(C) D	S/P	3	2G	Open No	No	St	O No	A		4.12.10
Polymethylene polyphenyl isocyanate	2207	D	S	2	2G	Cont. Dry	Dry	St (b)	C T(b)	C(c),D		4.9, 4.12.5, 4.14.1, 4.15.2
Potassium hydroxide solution	1814	C	S/P	3	2G	Open No	No	St	O No	No		4.12.1(aa), 5.2.8
n-Propanolamine		C	S/P	3	2G	Open No	No	St	O No	A,D		4.12.2, 5.2.8
beta-Propiolactone		D	S	2	2G	Cont. No	No	St	R T	A		
Propionaldehyde	1275	D	S	3	2G	Cont. No	No	SP	R F-T	A		4.13.1, 4.15.1, 4.17
Propionic acid	1848	D	S	3	2G	Cont. No	No	SP	R F	A		4.8.2 to 4.8.4, 4.8.6 to 4.8.8, 4.12.6, 4.17
Propionic anhydride	2496	C	S/P	3	2G	Cont. No	No	St	R T	A		4.12.6
Propionitrile	2404	C	S/P	2	1G	Cont. No	No	SP	C F-T	A,D		4.9, 4.13, 4.14, 4.17
n-Propylamine	1277	C	S/P	2	2G	Cont. Inert	Inert	SP	C F-T	C,D		4.9, 4.12.2, 4.14, 4.17
n-Propylbenzene		(C)	P	3	2G	Cont. No	No	St	R F	A		4.14.1
Propylene dimer		(C)	P	3	2G	Cont. No	No	SP	R F	A		4.14.1
Propylene oxide	1280	D	S	2	2G	Cont. Inert	Inert	SP	C F-T	A,C		4.7, 4.9.1, 4.11, 4.14
Propylene tetramer	2850	B	P	3	2G	Cont. No	No	SP	R F	A		4.14.1
Propylene trimer	2057	B	P	3	2G	Cont. No	No	SP	R F	A		4.14.1

a	b	c	d	e	f	g	h	i	j	k	l	m
Pyridine	1282	D	S	3	2G	Cont.	No	SP	R	F	A	4.12.4, 4.14.1
Rosin		B	P	3	2G	Open	No	St	O	No	A	4.14.1, 5.2.5, 5.2.8, 5A-2.2
Rosin soap (Disproportionated) solution		B	P	3	2G	Open	No	St	O	No	A	4.14.1
Sodium borohydride (15% or less)/Sodium hydroxide solution		C	S/P	3	2G	Open	No	St	O	No	No	4.12.1, 5.2.6
Sodium chlorate solution (50% or less)	2428	III	S	3	2G	Open	No	St	O	No	No	4.14.1, 4.15.1, 4.21
Sodium dichromate solution (70% or less)		C	S/P	2	2G	Open	No	St	C	No	No	4.9.3, 4.12.2, 4.14
Sodium hydrogen sulphite solution (35% or less)	2693	D	S	3	2G	Open	No	St	O	No	No	
Sodium hydrosulphide solution (45% or less)	2949	B	S/P	3	2G	Cont.	Vent or Pad (gas)	St	R	T	No	4.14.1, 4.15.1, 5.2.8
Sodium hydrosulphide/Ammonium sulphide solution		B	S/P	2	2G	Cont.	No	SP	C	F-T	A,C	4.9, 4.11, 4.12.1, 4.13.1, 4.14, 4.15.1, 4.17, 4.18
Sodium hydroxide solution	1824	D	S	3	2G	Open	No	St	O	No	No	4.12.1(aa)
Sodium hypochlorite solution (15% or less)	1791	C	S/P	3	2G	Cont.	No	St	R	No	No	4.12.5, 4.15.1
Sodium nitrite solution	1500	B	S/P	2	2G	Open	No	St	O	No	No	4.9.3.(a), 4.9.3.(b), 4.14, 4.15.1
Sodium thiocyanate solution (56% or less)		(B)	P	3	2G	Open	No	St	O	No	No	4.14.1
Styrene monomer	2055	B	S/P	3	2G	Cont.	No	SP	O	F	B	4.10, 4.12.4, 4.14.1, 4.18.1, 4.18.2
Sulphur (molten)	2448	III	S	3	1G	Open	Vent or Pad (gas)	SP	O	F-T	No	4.3
Sulphuric acid	1830	C	S/P	3	2G	Open	No	St	O	No	No	4.8, 4.15.2, 5.2.7, 5.2.8
Sulphuric acid, spent	1832	C	S/P	3	2G	Open	No	St	O	No	No	4.8, 4.15.2, 5.2.7, 5.2.8

a	b	c	d	e	f	g	h	i	j	k	l	m
Tall oil (crude and distilled)		B	P	3	2G	Open	No	St	O	No	A	4.14.1, 5.2.5, 5.2.8, 5A.2.2
Tall oil fatty acid (resin acids less than 20%)		(C)	P	3	2G	Open	No	St	O	No	A	5.2.6 to 5.2.8
Tall oil soap (disproportionated) solution		B	P	3	2G	Open	No	St	O	No	A	4.14.1, 5.2.5, 5.2.8
Tetrachloroethane	1702	B	S/P	3	2G	Cont.	No	St	R	T	No	4.9, 4.13.1, 4.14.1
Tetraethylene pentamine	2320	D	S	3	2G	Open	No	St	O	No	A	4.12.1
Tetrahydrofuran	2056	D	S	3	2G	Cont.	No	SP	R	F-T	A, D	
Tetrahydronaphthalene		C	P	3	2G	Open	No	St	O	No	A	
1,2,3,5-Tetramethylbenzene		(C)	P	3	2G	Open	No	St	O	No	A	
Toluene	1294	C	P	3	2G	Cont.	No	SP	R	F	A	4.14.1
Toluenediamine	1709	C	S/P	2	2G	Cont.	No	St	C	T	B, C, D	4.9, 4.12.1, 4.13.1, 4.14, 4.17, 5.2.6, 5.2.8
Toluene diisocyanate	2078	C	S/P	2	2G	Cont.	Dry	St	C	F-T	C(c), D	4.9, 4.12.4, 4.13.1, 4.14, 4.15.2, 4.17, 5.2.8
o-Toluidine	1708	C	S/P	2	2G	Cont.	No	St	C	T	A, C	4.9, 4.13.1, 4.14
Tributyl phosphate		B	P	3	2G	Open	No	St	O	No	A	4.14.1
1,2,4-Trichlorobenzene	2321	B	S/P	2	2G	Cont.	No	St	R	T	C	4.14.1, 5.2.8, 5A.2.2
1,1,1-Trichloroethane	2831	B	P	3	2G	Open	No	St	O	No	A	4.14.1
1,1,2-Trichloroethane		B	S/P	3	2G	Cont.	No	St	R	T	No	4.9.1, 4.14.1
Trichloroethylene	1710	B	S/P	3	2G	Cont.	No	St	R	T	No	4.9, 4.13.1, 4.14.1, 4.15.1
1,2,3-Trichloropropane		B	S/P	2	2G	Cont.	No	St	C	T	B, C, D	4.9, 4.13.1, 4.14
1,1,2-Trichloro-1,2,2-Trifluoroethane		C	P	3	2G	Open	No	St	O	No	No	
Tricresyl phosphate (containing less than 1% ortho-isomer)		A	P	2	2G	Open	No	St	O	No	A	4.14.1

a	b	c	d	e	f	g	h	i	j	k	l	m
Tricresyl phosphate (containing 1% or more ortho-isomer)	2574(j)	A	S/P	1	2G	Cont.	No	St	C	No	B	4.9.3, 4.14
Triethanolamine		D	S	3	2G	Open	No	St	O	No	A	4.12.1
Triethylamine	1296	C	S/P	2	2G	Cont.	No	SP	R	F-T	B	4.9, 4.12.2, 4.17
Triethylbenzene		A	P	2	2G	Open	No	St	O	No	A	4.14.1
Triethylenetetramine	2259	D	S	3	2G	Open	No	St	O	No	A	4.12.1
Triethyl phosphate	2323	D	S	3	2G	Cont.	No	SP	R	F-T	A,D	4.9.1
Trimethylacetic acid		D	S	3	2G	Cont.	No	St	R	No	A,C	4.8.2 to 4.8.8, 4.12.6
Trimethyl benzenes (all isomers)		B	P	3	2G	Cont.	No	SP	R	F	A	4.14.1
Trimethylhexamethylenediamine (2,2,4- and 2,4,4-isomers)	2327	D	S	3	2G	Open	No	St	O	No	A,C	4.12.1, 4.14.1
Trimethylhexamethylene diisocyanate (2,2,4- and 2,4,4-isomers)	2328	B	S/P	2	2G	Cont.	Dry	St	C	T	A,C(c)	4.9, 4.13.1, 4.14.1, 4.15.2
2,2,4-trimethyl-1,3-pentanediol-1-isobutyrate		C	P	3	2G	Open	No	St	O	No	A	
Trimethyl phosphite	2329	A	P	1	2G	Open	No	SP	R	F-T	A,D	4.9.1, 4.14.1, 4.15.2
Trixylyl phosphate		B	P	3	2G	Cont.	No	St	O	No	A	4.14
Turpentine	1299	B	P	3	2G	Cont.	No	SP	R	F	A	4.14.1
Undecanoic acid		(C)	P	3	2G	Open	No	St	O	No	A	5.2.6 to 5.2.8
1-Undecene		B	P	3	2G	Open	No	St	O	No	A	4.14.1
Undecyl alcohol		B	P	3	2G	Open	No	St	O	No	A	4.14.1, 5.2.8, 5A.2.2(r)
Urea/Ammonium nitrate solution (containing aqua ammonia)		C	S/P	3	2G	Cont.	No	SP	R	T	A	4.12.4, 4.12.9
n-Valeraldehyde	2058	D	S	3	2G	Cont.	Inert	SP	R	F-T	A	4.2.7, 4.15.1
Vinyl acetate	1301	C	S/P	3	2G	Cont.	No	SP	O	F	A	4.10, 4.18.1, 4.18.2
Vinyl ethyl ether	1302	C	S/P	2	1G	Cont.	Inert	SP	C	F-T	A	4.2, 4.10, 4.11, 4.12.8, 4.14, 4.17, 4.18.1, 4.18.2

MEPC 27/16
ANNEX 4
Page 25

a	b	c	d	e	f	g	h	i	j	k	l	m
Vinylidene chloride	1303	B	S/P	2	2G	Cont.	Inert	SP	R	F-T	B	4.10, 4.11, 4.12.S, 4.14.1, 4.17, 4.18.1, 4.18.2
Vinyl neodecanoate	2618	B	S/P	3	2G	Open	No	St	O	No	B	4.10, 4.14.1, 4.15.1, 4.18.1, 4.18.2
Vinyltoluene	1300	A	S/P	3	2G	Cont.	No	SP	R	F	D	4.10, 4.12.1, 4.14.1, 4.18.1, 4.18.2
White spirit, low (15-20%) aromatic	1307	(B) C	P	2	2G	Cont.	No	SP	R	F	A	4.14.1
Xylenes	2261	B	S/P	3	2G	Cont.	No	SP	R	F	A	4.14.1, 5.2.8(u)
Xylenol		B	S/P	3	2G	Open	No	St	O	No	B	4.14.1, 5.2.8, 5A.2.2

7 Footnotes for the BCH Code:

- a Provision 4.17 applies to Ammonia aqueous, 28% or less but not below 10%.

Ammonia aqueous (28% or less)

- b If the product to be carried contains flammable solvents such that the flashpoint does not exceed 60°C c.c., then special electrical systems and a flammable vapour detector should be provided.

Diphenylmethane diisocyanate
Polymethylene polyphenyl isocyanate

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

Diphenylmethane diisocyanate
Isophorone diisocyanate
Polymethylene polyphenyl isocyanate
Toluene diisocyanate
Trimethylhexamethylene diisocyanate (2,2,4- & 2,4,4-isomers)

- d UN No.1198 only applies if flashpoint is below 60°C c.c.

Formaldehyde solution (45% or less)

- e Provision 4.17 applies to Formaldehyde solutions 45% or less, but not below 5%.

Formaldehyde solutions (45% or less)

- f Provision 4.17 applies to Hydrochloric acid not below 10%.

Aluminum chloride (30% or less)/Hydrochloric acid (20% or less) solution
Hydrochloric acid

- g Dry chemical cannot be used because of the possibility of an explosion.

Maleic anhydride

- h UN No.2032 assigned to Red fuming nitric acid.

Nitric acid (70% and over)

- i UN number depends on boiling point of substance.
Polyethylene polyamines
Polymethylene polyphenyl isocyanate
- j UN number assigned to this substance containing more than 3% of ortho-isomer.
Tricresyl phosphate (containing 1% or more ortho-isomer)
- k UN number only applies to 2-Chloropropionic acid.
2- or 3-Chloropropionic acid
- l Dinitrotoluene should not be carried in deck tanks.
Dinitrotoluene (molten)
- m Temperature sensors should be used to monitor the cargo pump temperature to detect overheating due to pump failures.
Dinitrotoluene (molten)
- n Dry chemical should not be used as a fire-fighting medium.
Nitropropane (60%)/Nitroethane (40%) mixture
- o UN No.2672 refers to 10-35% Ammonium solution.
Ammonia aqueous (28% or less)
- p Applies to n-Decyl alcohol only.
Decyl alcohol (all isomers)
- q Requirements are based on those isomers having a flashpoint of 60°C c.c., and therefore the requirements based on flammability would not apply to such isomers.
Heptanol (all isomers)
- r Provision 5A.2.2 applies to 1-Undecyl alcohol only.
Undecyl alcohol
- s UN No.1114 applies to Benzene.
Benzene and mixtures having 10% benzene or more
- t Confined space should be tested for both Formic acid vapours and Carbon monoxide gas, a decomposition product.
Formic acid

u Applies to p-Xylene only.

Xylenes

v Applies to p-isomer and mixtures containing p-isomer viscosity of which is 25 mPa.S at 20°C.

Dichlorobenzenes (all isomers)

w Applies to p-isomer and mixtures containing p-isomer melting point of which is 0°C and above.

Dichlorobenzenes (all isomers)

x Applies to p-isomer and mixtures containing p-isomer melting point of which is 15°C and above.

Dichlorobenzenes (all isomers)

y Applies only to products with melting point of 15°C and above.

Nonyl phenol poly(4-12)ethoxylates

z Aluminium not permitted.

Chloroacetic acid (80% or less)
2,2-Dichloropropionic acid

aa Copper, Brass and Bronze may be used.

Potassium hydroxide solution
Sodium hydroxide solution

8 Chapter VII of the BCH Code should be replaced by the following:

"CHAPTER VII - LIST OF CHEMICALS TO WHICH THE CODE DOES NOT APPLY

1 The following are products which are not considered to come within the scope of the Code. This list may be used as a guide in considering bulk carriage of products whose hazards have not yet been evaluated.

2 Although the products listed in this chapter fall outside the scope of the Code, the attention of Administrations is drawn to the fact that some safety precautions may be needed for their safe transportation. Accordingly, Administrations should prescribe appropriate safety requirements.

EXPLANATORY NOTES

Product name
(column a) In some cases, the product names may not be identical with the names given in previous issues of the BCH Code or the IBC Code (for explanation see index of chemicals).

UN number
(column b) The number relating to each product shown in the recommendations proposed by the United Nations Committee of Experts on the Transport of Dangerous Goods. UN numbers, where available, are given for information only.

Pollution category
(column c) The letter D means the pollution category assigned to each product under Annex II of MARPOL 73/78. "III" means the product was evaluated and found to fall outside the categories A, B, C or D.

Pollution category in brackets indicates that the product is provisionally categorized and that further data are necessary to complete the evaluation of their pollution hazards. Until the hazard evaluation is completed, the pollution category assigned is used.

a	b	c
Product name	UN number	Pollution Category for operational discharge (regulation 3 of Annex II)
Acetone	1090	III
Alcohols (C ₁₃ and above)	-	III
Alcoholic beverages, n.o.s.	3065	III
Alkyl (C ₉ -C ₁₇) benzenes	-	(D)
Aluminium sulphate solution	-	D
Aminoethyldiethanolamine/ Aminoethylethanolamine solution	-	III
2-Amino-2-hydroxymethyl- 1,3-propanediol solution (40% or less)	-	III
Ammonium sulphate solution	-	D
n-Amyl alcohol	1105	D
sec-Amyl alcohol	1105	D

a	b	c
tert-Amyl alcohol	1105	III
Amyl alcohol, primary	1105	D
Animal and fish oils, n.o.s. including: Cod liver oil Sperm oil	-	D
Apple juice	-	III
Behenyl alcohol		III
Benzene tricarboxylic acid, trioctyl ester	-	III
Brake fluid base mix: (Poly (2-8) alkylene (C ₂ -C ₃) glycols/ Polyalkylene (C ₂ -C ₁₀) glycols monoalkyl (C ₁ -C ₄) ethers and their borate esters) <u>1/</u>	-	D
sec-Butyl acetate	1123	D
n-Butyl alcohol	1120	III
sec-Butyl alcohol	1120	III
tert-Butyl alcohol	1120	III
Butylene glycol	-	D
Butyl stearate	-	III

1/ Use "Brake fluid base mix" as a proper name on the shipping document.

a	b	c
gamma-Butyrolactone	-	D
Calcium carbonate slurry	-	III
Calcium hydroxide slurry	-	D
Calcium nitrate/Magnesium nitrate/ Potassium chloride solution		III
epsilon-Caprolactam (molten or aqueous solutions)	-	D
Cetyl/Stearyl alcohol		III
Chlorinated paraffins (C ₁₄ -C ₁₇) (with 52% chlorine)		III
Choline chloride solutions	-	D
Clay slurry		III
Coal slurry		III
Coconut oil fatty acid methyl ester		D
Decahydronaphthalene	1147	(D)
Decylbenzene	-	D
Dextrose solution	-	III

a	b	c
Diacetone alcohol	1148	D
Dialkyl(C7-C13) phthalates	-	D
Diethylene glycol	-	III
Diethylene glycol butyl ether	-	III
Diethylene glycol butyl ether acetate	-	(D)
Diethylene glycol dibutyl ether	-	D
Diethylene glycol diethyl ether	-	III
Diethylene glycol ethyl ether	-	III
Diethylene glycol ethyl ether acetate	-	(D)
Diethylene glycol methyl ether acetate	-	(D)
Diethylenetriamine pentaacetic acid, pentasodium salt solution	-	III
Di-(2-ethylhexyl) adipate	-	D
Diheptyl phthalate	-	III

a	b	c
Dihexyl phthalate	-	III
1,4-Dihydro-9,10-dihydroxy anthracene, disodium salt solution	-	D
Diisobutyl ketone	1157	D
Diisodecyl phthalate	-	D
Diisononyl adipate	-	D
Diisooctyl phthalate	-	III
Diisopropyl naphthalene	-	D
2,2-Dimethylpropane-1,3-diol	-	(D)
Dinonyl phthalate	-	D
Diocetyl phthalate	-	III
Dipropylene glycol	-	III
Dipropylene glycol methyl ether	-	(D)
Ditridecyl phthalate	-	D
Diundecyl phthalate	-	D
Dodecane (all isomers)	-	III

a	b	c
Dodeceny succinic acid, dipotassium salt solution	-	(D)
Dodecyl benzene	-	III
Drilling brines: Calcium bromide solution Calcium chloride solution Sodium chloride solution	-	III
2-Ethoxyethanol	1171	D
Ethyl acetate	1173	D
Ethyl acetoacetate	-	(D)
Ethyl alcohol	1170	III
Ethylene carbonate	-	III
Ethylenediamine tetraacetic acid, tetrasodium salt solution	-	D
Ethylene glycol	-	D
Ethylene glycol acetate	-	(D)
Ethylene glycol butyl ether	2369	III
Ethylene glycol tert-butyl ether	-	III
Ethylene glycol isopropyl ether	-	D
Ethylene glycol methyl butyl ether	-	D

a	b	c
Ethylene glycol methyl ether	1188	D
Ethylene glycol methyl ether acetate	1189	D
Ethylene glycol phenyl ether	-	D
Ethylene glycol phenyl ether/ Diethylene glycol phenyl ether mixture	-	D
Ethylene-vinyl acetate copolymer (emulsion)	-	III
2-Ethylhexanoic acid	-	D
Ethyl propionate	1195	D
Fatty acid (saturated C ₁₃ and above)	-	III
Ferric hydroxyethylethylene diamine triacetic acid, trisodium salt solution	-	D
Formamide	-	D
Glucose solution	-	III
Glycerine	-	III
Glycerol polyalkoxylate	-	III

a	b	c
Glyceryl triacetate	-	(III)
Glycine, sodium salt solution	-	III
Glyoxal solution (40% or less)	-	D
n-Heptanoic acid	-	D
Hexamethylenediamine adipate (50% in water)	-	D
Hexamethylene glycol	-	III
Hexamethylenetetramine solutions	-	D
Hexanoic acid	-	D
Hexanol	2282	D
Hexylene glycol	-	III
N-(Hydroxyethyl) ethylenediamine triacetic acid, trisodium salt solution	-	D
Isoamyl alcohol	1105	D
Isobutyl alcohol	1212	III
Isobutyl formate	2393	D
Isophorone	-	D

a	b	c
Isopropyl acetate	1220	III
Isopropyl alcohol	1219	III
Kaolin slurry	-	III
Lactic acid	-	D
Lard	-	III
Latex:		
Carboxylated styrene-butadiene copolymer		
Styrene-Butadiene rubber	-	III
Lignin sulphonic acid, sodium salt solution	-	III
Magnesium chloride solution	-	III
Magnesium hydroxide slurry	-	III
3-Methoxy-1-butanol	-	III
3-Methoxybutyl acetate	-	D
Methyl acetate	1231	III
Methyl acetoacetate	-	D
Methyl alcohol	1230	III

a	b	c
Methyl butenol	-	(D)
Methyl tert-butyl ether	2398	D
Methyl butyl ketone	-	D
Methyl butynol	-	D
Methyl ethyl ketone	1193	III
Methyl isobutyl ketone	1245	D
3-Methyl-3-methoxy butanol	-	III
3-Methyl-3-methoxy butyl acetate	-	III
Molasses	-	III
Naphthalene sulphonic acid/ Formaldehyde copolymer, sodium salt solution	-	D
Nitrilotriacetic acid, trisodium salt solution	-	D
Nonanoic acid (all isomers)	-	D
Nonyl methacrylate monomer	-	(D)

a	b	c
Noxious liquid, n.o.s. (17) (trade name ..., contains ...) Cat. D ^{1/}	-	D
Non-noxious liquid, n.o.s. (18) (trade name ..., contains ...) Appendix III ^{1/}	-	III
Octanoic acid (all isomers)	-	D
n-Octyl acetate	1262	D
Octyl decyl adipate	-	III
Olefins (C ₁₃ and above, all isomers)	-	III
alpha-Olefins (C ₁₃ -C ₁₈)	-	III
Oleic acid	-	D
Palm oil fatty acid methyl ester	-	D
Palm stearin	-	D
n-Paraffins (C ₁₀ -C ₂₀)	-	III

^{1/} In case of a specific n.o.s. (not otherwise specified) cargo assessed as falling within this n.o.s. group that is carried on a ship, this entry, including the cargo's trade name and one or two principle components, should be provided in the shipping document.

a	b	c
Paraffin wax	-	III
Pentaethylenehexamine	-	D
Pentanoic acid	-	D
Petrolatum	-	(III)
Polyaluminium chloride solution	-	III
Polybutene	-	III
Polyethylene glycol	-	III
Polyethylene glycol dimethyl ether	-	III
Polypropylene glycol	-	D
Polypropylene glycol methyl ether	-	III
Polysiloxane	-	III
n-Propyl acetate	1276	D
n-Propyl alcohol	1274	III
Propylene/Butylene copolymer	-	III
Propylene glycol	-	III
Propylene glycol ethyl ether	-	(D)

a	b	c
Propylene glycol methyl ether	-	(D)
Propylene glycol monoalkyl ether	-	(D)
Sodium aluminosilicate slurry	-	III
Sodium carbonate solution	-	D
Sodium silicate solution	-	D
Sorbitol solution	-	III
Sulpholane	-	D
Tallow	-	D
Tallow fatty acid	-	(D)
Tetraethylene glycol	-	III
Tridecane	-	III
Tridecanoic acid	-	(III)
Triethylene glycol	-	III
Triethylene glycol butyl ether	-	III
Triethylene glycol ethyl ether	-	(D)
Triethylene glycol methyl ether	-	(D)

a	b	c
Triisopropanolamine	-	III
Trimethylol propane polyethoxylate	-	D
Tripropylene glycol	-	III
Tripropylene glycol methyl ether	-	(D)
Urea/Ammonium mono- and di-hydrogen phosphate/Potassium chloride solution	-	(D)
Urea/Ammonium nitrate solution	-	D
Urea/Ammonium phosphate solution	-	D
Urea formaldehyde resin solution	-	III
Urea solution	-	III
Vegetable oil, n.o.s. including: Castor oil, Coconut oil, Corn oil, Cotton seed oil, Groundnut oil, Linseed oil, Olive oil, Palm nut oil, Palm oil, Rape seed oil, Rice bran oil, Safflower oil, Sesame oil, Soya bean oil, Sunflower oil, Tung oil	-	D
Vegetable protein solution (hydrolysed)	-	III
Water	-	III

"

RESOLUTION MEPC.41(29)

ADOPTION OF AMENDMENTS TO THE CODE FOR THE CONSTRUCTION
AND EQUIPMENT OF SHIPS CARRYING DANGEROUS
CHEMICALS IN BULK (BCH CODE)

(Harmonized System of Survey and Certification)

adopted on 16 March 1990

THE MARINE ENVIRONMENT PROTECTION COMMITTEE,

RECALLING Article 38 of the Convention on the International Maritime Organization concerning the functions of the Committee,

RECALLING ALSO resolution MEPC.20(22) by which the Committee adopted the Code for the Construction and Equipment of Ships Carrying Dangerous Chemicals in Bulk (BCH Code),

NOTING article 16 of the International Convention for the Prevention of Pollution from Ships, 1973 (hereinafter referred to as the "1973 Convention"), and article VI of the Protocol of 1978 relating to the International Convention for the Prevention of Pollution from Ships, 1973 (hereinafter referred to as the "1978 Protocol"), which confer upon the appropriate body of the Organization the function of considering and adopting amendments to the 1973 Convention, as modified by the 1978 Protocol (MARPOL 73/78),

RECALLING resolution 10 of the International Conference on Tanker Safety and Pollution Prevention, 1978, and resolution 4 of the International Conference on the Harmonized System of Survey and Certification, 1988, which recommended that IMO take the necessary action to introduce the harmonized system of survey and certification into various conventions and codes,

NOTING FURTHER resolution MEPC.39(29) by which the Committee adopted amendments to the Annex of the 1978 Protocol, introducing the harmonized system of survey and certification thereto,

HAVING CONSIDERED, at its twenty-ninth session, amendments to the BCH Code proposed and circulated in accordance with article 16(2)(a) of the 1973 Convention,

1. ADOPTS, in accordance with article 16(2)(d) of the 1973 Convention, amendments to the IBC Code, the text of which is set out in the Annex to the present resolution;
2. REQUESTS the Secretary-General, in conformity with article 16(2)(e) of the 1973 Convention, to transmit to all Parties to the 1978 Protocol certified copies of the present resolution and the text of the amendments contained in the Annex;

3. DETERMINES, in accordance with article 16(2)(f)(iii) of the 1973 Convention, that the amendments shall be deemed to have been accepted on the same date on which the amendments to the Annex to the 1978 Protocol adopted by the Committee by resolution MEPC.39(29) are accepted, unless, prior to that date, objections are communicated to the Organization as provided for in article 16(2)(f)(iii);
4. INVITES the Parties to note that, in accordance with article 16(2)(g)(ii) of the 1973 Convention, the amendments shall enter into force six months after their acceptance in accordance with paragraph 3 above;
5. REQUESTS the Secretary-General to inform all Parties when the conditions for the entry into force of both the 1988 SOLAS Protocol and the 1988 Load Line Protocol are met and, in conformity with article 16(8) of the Convention, when the amendments to the BCH Code contained in the Annex to the present resolution will enter into force;
6. FURTHER REQUESTS the Secretary-General to transmit to the Members of the Organization which are not Parties to the 1978 Protocol copies of the resolution and its Annex, and to inform them when the amendments enter into force.

ANNEX

AMENDMENTS TO THE CODE FOR THE CONSTRUCTION AND EQUIPMENT OF
SHIPS CARRYING DANGEROUS CHEMICALS IN BULK (BCH CODE)

1.4 Definitions

A new definition should be added as follows:

"1.4.16.C "Anniversary date" means the day and the month of each year which will correspond to the date of expiry of the Certificate of Fitness for the Carriage of Dangerous Chemicals in Bulk".

1.6 Survey requirements

The existing title is replaced by the following:

"Survey and certification"

The existing text of section 1.6 should be replaced by the following:

"1.6.1 Survey procedure

1.6.1.1 The survey of ships, so far as regards the enforcement of the provisions of the regulations and granting of exemptions therefrom, should be carried out by officers of the Administration. The Administration may, however, entrust the surveys either to surveyors nominated for the purpose or to organizations recognized by it.

1.6.1.2 The Administration nominating surveyors or recognizing organizations to conduct surveys should, as a minimum, empower any nominated surveyor or recognized organization to:

- .1 require repairs to a ship; and
- .2 carry out surveys if requested by the appropriate authorities of a port State.

The Administration should notify the Organization of the specific responsibilities of the nominated surveyors or recognized organizations and of the conditions of the authority delegated to them for circulation to the Contracting Governments.

1.6.1.3 When a nominated surveyor or recognized organization determines that the condition of the ship or its equipment does not correspond substantially with the particulars of the Certificate of Fitness for the Carriage of Dangerous Chemicals in Bulk, or is such that the ship is not fit to proceed to sea without danger to the ship, or persons on board, or without presenting unreasonable threat of harm to the marine environment, such surveyor or organization should immediately ensure that corrective action is taken and should in due course notify the Administration. If such corrective action is not taken, the Certificate should be withdrawn and the Administration should be notified immediately; and, if the ship is in a port of another Contracting Government, the appropriate authorities of the port State should also be notified immediately. When an officer of the Administration, a nominated

surveyor or a recognized organization has notified the appropriate authorities of the port State, the Government of the port State concerned should give such officer, surveyor or organization any necessary assistance to carry out their obligations under this paragraph. When applicable, the Government of the port State concerned should take such steps as will ensure that the ship does not sail until it can proceed to sea or leave the port for the purpose of proceeding to the nearest appropriate repair yard available without danger to the ship or persons on board or without presenting an unreasonable threat of harm to the marine environment.

1.6.1.4 In every case, the Administration should guarantee the completeness and efficiency of the survey, and should undertake to ensure the necessary arrangements to satisfy this obligation.

1.6.2 Survey requirements

1.6.2.1 The structure, equipment, fittings, arrangements and material (other than items in respect of which a Cargo Ship Safety Construction Certificate, Cargo Ship Safety Equipment Certificate and Cargo Ship Safety Radio Certificate or Cargo Ship Safety Certificate are issued) of a chemical tanker should be subjected to the following surveys:

- .1 an initial survey before the ship is put in service or before the Certificate of Fitness for the Carriage of Dangerous Chemicals in Bulk is issued for the first time, which should include a complete examination of its structure, equipment, fittings, arrangements and material in so far as the ship is covered by the Code. This survey should be such as to ensure that the structure, equipment, fittings, arrangements and material fully comply with the applicable provisions of the Code;
- .2 a renewal survey at intervals specified by the Administration, but not exceeding 5 years, except where 1.6.6.2.2, 1.6.6.5, 1.6.6.6 or 1.6.6.7 is applicable. The renewal survey should be such as to ensure that the structure, equipment, fittings, arrangements and material fully comply with the applicable provisions of the Code;
- .3 an intermediate survey within 3 months before or after the second anniversary date or within 3 months before or after the third anniversary date of the Certificate which should take the place of one of the annual surveys specified in 1.6.2.1.4. The intermediate survey should be such as to ensure that the safety equipment and other equipment, and associated pump and piping systems fully comply with the applicable provisions of the Code and are in good working order. Such intermediate surveys should be endorsed on the Certificate issued under 1.6.4 or 1.6.5;
- .4 an annual survey within 3 months before or after each anniversary date of the Certificate, including a general inspection of the structure, equipment, fittings, arrangements and material referred to in 1.6.2.1.1 to ensure that they have been maintained in accordance with 1.6.3 and that they remain satisfactory for the service for which the ship is intended. Such annual surveys should be endorsed on the Certificate issued under 1.6.4 or 1.6.5;

- .5 an additional survey, either general or partial according to the circumstances, should be made when required after an investigation prescribed in 1.6.3.3, or whenever any important repairs or renewals are made. Such a survey should ensure that the necessary repairs or renewals have been effectively made, that the material and workmanship of such repairs or renewals are satisfactory; and that the ship is fit to proceed to sea without danger to the ship or persons on board or without presenting unreasonable threat of harm to the marine environment.

1.6.3 Maintenance of conditions after survey

1.6.3.1 The condition of the ship and its equipment should be maintained to conform with the provisions of the Code to ensure that the ship will remain fit to proceed to sea without danger to the ship or persons on board or without presenting an unreasonable threat of harm to the marine environment.

1.6.3.2 After any survey of the ship under 1.6.2 has been completed, no change should be made in the structure, equipment, fittings, arrangements and material covered by the survey, without the sanction of the Administration, except by direct replacement.

1.6.3.3 Whenever an accident occurs to a ship or a defect is discovered, either of which affects the safety of the ship or the efficiency or completeness of its life-saving appliances or other equipment covered by the Code, the master or owner of the ship should report at the earliest opportunity to the Administration, the nominated surveyor or recognized organization responsible for issuing the Certificate, who should cause investigations to be initiated to determine whether a survey, as required by 1.6.2.1.5, is necessary. If the ship is in a port of another Contracting Government, the master or owner should also report immediately to the appropriate authorities of the port State and the nominated surveyor or recognized organization should ascertain that such a report has been made.

1.6.4 Issue or endorsement of Certificate of Fitness.

1.6.4.1 A Certificate called a Certificate of Fitness for the Carriage of Dangerous Chemicals in Bulk, should be issued after an initial or renewal survey to a chemical tanker engaged in international voyages which complies with the relevant provisions of the Code.

1.6.4.2 The Certificate of Fitness for the Carriage of Dangerous Chemicals in Bulk should be drawn up in the form corresponding to the model given in the appendix. If the language is neither English nor French, the text should include the translation into one of these languages.

1.6.4.3 The Certificate issued under provisions of this section should be available on board for examination at all times.

1.6.4.4 Notwithstanding any other provisions of the amendments to this Code adopted by the Marine Environment Protection Committee (MEPC) by resolution MEPC.41(29) and the Maritime Safety Committee (MSC) by resolution MSC.18(58), any Certificate of Fitness for the Carriage of Dangerous Chemicals in Bulk, which is current when these amendments enter into force, should remain valid until it expires under the terms of this Code prior to the amendments entering into force.

1.6.5 Issue or endorsement of Certificate of Fitness by another Government

1.6.5.1 A Party to MARPOL 73/78 may, at the request of another Party, cause a ship entitled to fly the flag of the other State to be surveyed and, if satisfied that the provisions of the Code are complied with, issue or authorize the issue of the Certificate of Fitness for the Carriage of Dangerous Chemicals in Bulk to the ship, and, where appropriate, endorse or authorize the endorsement of the Certificate on board the ship in accordance with the Code. Any Certificate so issued should contain a statement to the effect that it has been issued at the request of the Government of the State whose flag the ship is entitled to fly.

1.6.6 Duration and validity of Certificate of Fitness

1.6.6.1 A Certificate of Fitness for the Carriage of Dangerous Chemicals in Bulk should be issued for a period specified by the Administration which should not exceed 5 years.

1.6.6.2.1 Notwithstanding the provisions of 1.6.6.1, when the renewal survey is completed within 3 months before the expiry date of the existing Certificate, the new Certificate should be valid from the date of completion of the renewal survey to a date not exceeding 5 years from the date of expiry of the existing Certificate.

1.6.6.2.2 When the renewal survey is completed after the expiry date of the existing Certificate, the new Certificate should be valid from the date of completion of the renewal survey to a date not exceeding 5 years from the date of expiry of the existing Certificate.

1.6.6.2.3 When the renewal survey is completed more than 3 months before the expiry date of the existing Certificate, the new Certificate should be valid from the date of completion of the renewal survey to a date not exceeding 5 years from the date of completion of the renewal survey.

1.6.6.3 If a Certificate is issued for a period of less than 5 years, the Administration may extend the validity of the Certificate beyond the expiry date to the maximum period specified in 1.6.6.1, provided that the surveys referred to in 1.6.2.1.3 and 1.6.2.1.4 applicable, when a Certificate is issued for a period of 5 years, are carried out as appropriate.

1.6.6.4 If a renewal survey has been completed and a new Certificate cannot be issued or placed on board the ship before the expiry date of the existing Certificate, the person or organization authorized by the Administration may endorse the existing Certificate and such a Certificate should be accepted as valid for a further period which should not exceed 5 months from the expiry date.

1.6.6.5 If a ship, at the time when a Certificate expires, is not in a port in which it is to be surveyed, the Administration may extend the period of validity of the Certificate but this extension should be granted only for the purpose of allowing the ship to complete its voyage to the port in which it is to be surveyed, and then only in cases where it appears proper and reasonable to do so. No Certificate should be extended for a period longer than 3 months, and a ship to which an extension is granted should not, on its arrival in the port in which it is to be surveyed, be entitled by virtue of

such extension to leave that port without having a new Certificate. When the renewal survey is completed, the new Certificate should be valid to a date not exceeding 5 years from the date of expiry of the existing Certificate before the extension was granted.

1.6.6.6 A Certificate issued to a ship engaged on short voyages which has not been extended under the foregoing provisions of this section may be extended by the Administration for a period of grace of up to one month from the date of expiry stated on it. When the renewal survey is completed, the new Certificate should be valid to a date not exceeding 5 years from the date of expiry of the existing Certificate before the extension was granted.

1.6.6.7 In special circumstances, as determined by the Administration, a new Certificate need not be dated from the date of expiry of the existing Certificate as required by 1.6.6.2.2, 1.6.6.5 or 1.6.6.6. In these special circumstances, the new Certificate should be valid to a date not exceeding 5 years from the date of completion of the renewal survey.

1.6.6.8 If an annual or intermediate survey is completed before the period specified in 1.6.2, then:

- .1 the anniversary date shown on the Certificate should be amended by endorsement to a date which should not be more than 3 months later than the date on which the survey was completed;
- .2 the subsequent annual or intermediate survey required by 1.6.2 should be completed at the intervals prescribed by that section using the new anniversary date;
- .3 the expiry date may remain unchanged provided one or more annual or intermediate surveys, as appropriate, are carried out so that the maximum intervals between the surveys prescribed by 1.6.2 are not exceeded.

1.6.6.9 A Certificate issued under 1.6.4 or 1.6.5 should cease to be valid in any of the following cases:

- .1 if the relevant surveys are not completed within the periods specified under 1.6.2;
- .2 if the Certificate is not endorsed in accordance with 1.6.2.1.3 or 1.6.2.1.4;
- .3 upon transfer of the ship to the flag of another State. A new Certificate should only be issued when the Government issuing the new Certificate is fully satisfied that the ship is in compliance with the requirements of 1.6.3.1 and 1.6.3.2. In the case of a transfer between Parties, if requested within 3 months after the transfer has taken place, the Government of the Party whose flag the ship was formerly entitled to fly should, as soon as possible, transmit to the Administration copies of the Certificate carried by the ship before the transfer and, if available, copies of the relevant survey reports.

Appendix

MODEL FORM OF CERTIFICATE OF FITNESS FOR THE CARRIAGE OF DANGEROUS CHEMICALS IN BULK

The existing Model Form of Certificate should be replaced by the following:

"CERTIFICATE OF FITNESS FOR THE CARRIAGE OF DANGEROUS CHEMICALS IN BULK

(Official seal)

Issued under the provisions of the

CODE FOR THE CONSTRUCTION AND EQUIPMENT OF SHIPS CARRYING DANGEROUS CHEMICALS IN BULK

(resolutions MEPC.20(22) and MSC.9(53), as amended by resolutions MEPC.41(29) and MSC.18(58))

under the authority of the Government of

..... (full designation of country)

by (full designation of the competent person or organization recognized by the Administration)

Particulars of ship 1/

- Name of ship
Distinctive number or letters
Port of registry
Gross tonnage
Ship type (Code paragraph 2.2.4)
IMO Number 2/

Date on which keel was laid or ship was at a similar stage of construction or, (in the case of a converted ship) date of which conversion to a chemical tanker was commenced

Date on which the building contract was placed

The ship also complies fully with the following amendments to the Code:

.....

The ship is exempted from compliance with the following provisions of the Code:

.....

THIS IS TO CERTIFY:

1 That the ship has been surveyed in accordance with the provisions of 1.6 of the Code.

2 That the survey showed that the construction and equipment of the ship and the condition thereof are in all respects satisfactory and that the ship complies with the relevant provisions of the Code applicable to:

.1 ships referred to in 1.7.2 3/;

.2 ships referred to in 1.7.3 3/.

3 That the ship has been provided with a Manual in accordance with the Standards for Procedures and Arrangements as called for by regulations 5, 5A and 8 of Annex II of MARPOL 73/78, and that the arrangements and equipment of the ship prescribed in the Manual are in all respects satisfactory and comply with the applicable requirements of the said Standards.

4 That the ship is suitable for the carriage in bulk of the following products, provided that all relevant operational provisions of the Code are observed.

Products	Conditions of carriage (tank numbers, etc.)
Continued on attachment 1. <u>3</u> /	
Tank numbers referred to in this list are identified on attachment 2.	

ENDORSEMENT FOR ANNUAL AND INTERMEDIATE SURVEYS

THIS IS TO CERTIFY that, at a survey required by 1.6.2 of the Code the ship was found to comply with the relevant provisions of the Code:

Annual survey: Signed (Signature of authorized official)
Place
Date
(Seal or stamp of the authority, as appropriate)

Annual/Intermediate₃/ survey: Signed (Signature of authorized official)
Place
Date
(Seal or stamp of the authority, as appropriate)

Annual/Intermediate₃/ survey: Signed (Signature of authorized official)
Place
Date
(Seal or stamp of the authority, as appropriate)

Annual survey: Signed (Signature of authorized official)
Place
Date
(Seal or stamp of the authority, as appropriate)

Annual/intermediate survey in accordance with 1.6.6.8.3

THIS IS TO CERTIFY that, at an annual/intermediate₃/ survey in accordance with 1.6.6.8.3 of the Code, the ship was found to comply with the relevant provisions of the Code.

Signed (Signature of authorized official)
Place
Date
(Seal or stamp of the authority, as appropriate)

Endorsement to extend the Certificate if valid for less than 5 years where 1.6.6.3 applies

The ship complies with the relevant provisions of the Code, and this Certificate should, in accordance with 1.6.6.3 of the Code, be accepted as valid until

Signed
(Signature of authorized official)

Place

Date

(Seal or stamp of the authority, as appropriate)

Endorsement where the renewal survey has been completed and 1.6.6.4 applies

The ship complies with the relevant provisions of the Code, and this Certificate should, in accordance with 1.6.6.4 of the Code, be accepted as valid until

Signed
(Signature of authorized official)

Place

Date

(Seal or stamp of the authority, as appropriate)

Endorsement to extend the validity of the Certificate until reaching the port of survey or for a period of grace where 1.6.6.5/1.6.6.6 applies

This Certificate should, in accordance with 1.6.6.5/1.6.6.6 3/ of the Code, be accepted as valid until

Signed
(Signature of authorized official)

Place

Date

(Seal or stamp of the authority, as appropriate)

Endorsement for advancement of anniversary date where 1.6.6.8 applies

In accordance with 1.6.6.8 of the Code, the new anniversary date is

Signed
(Signature of authorized official)

Place

Date

(Seal or stamp of the authority, as appropriate)

In accordance with 1.6.6.8 of the Code, the new anniversary date is

Signed
(Signature of authorized official)

Place

Date

(Seal or stamp of the authority, as appropriate)

-
- 1/ Alternatively, the particulars of the ship may be placed horizontally in boxes.
 - 2/ In accordance with resolution A.600(15) - IMO Ship Identification Number Scheme, this information may be included voluntarily.
 - 3/ Delete as appropriate.
 - 4/ Instead of being incorporated in the Certificate, this text may be appended to the Certificate if duly signed and stamped.
 - 5/ Insert the date of expiry as specified by the Administration in accordance with 1.6.6.1 of the Code. The day and the month of this date correspond to the anniversary date as defined in 1.4.16C of the Code, unless amended in accordance with 1.6.6.8 of the Code.

ATTACHMENT 1
TO THE
CERTIFICATE OF FITNESS FOR THE CARRIAGE OF
DANGEROUS CHEMICALS IN BULK

Continuation of the list of products specified in section 4, and conditions of their carriage

Products	Conditions of carriage (tank numbers, etc.)

Date.....
(as for Certificate)

.....
(Signature of official issuing the Certificate
and/or seal or stamp of issuing authority)

ATTACHMENT 2

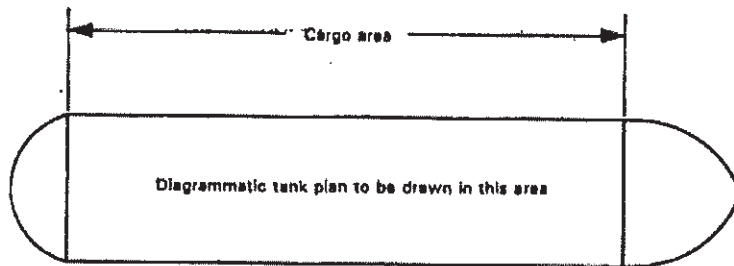
TO THE

**CERTIFICATE OF FITNESS FOR THE CARRIAGE OF
DANGEROUS CHEMICALS IN BULK**

TANK PLAN (specimen)

Name of ship:

Distinctive number or letters:



Date.....
(as for Certificate)

.....
(Signature of official issuing the Certificate
and/or seal or stamp of issuing authority)"

RESOLUTION MEPC.56(33)
(adopted on 30 October 1992)

ADOPTION OF AMENDMENTS TO THE CODE FOR THE CONSTRUCTION
AND EQUIPMENT OF SHIPS CARRYING DANGEROUS
CHEMICALS IN BULK (BCH CODE)

THE MARINE ENVIRONMENT PROTECTION COMMITTEE,

RECALLING Article 38(a) of the Convention on the International Maritime Organization concerning the functions of the Committee conferred upon it by international conventions for the prevention and control of marine pollution,

NOTING article 16 of the International Convention for the Prevention of Pollution from Ships, 1973 (hereinafter referred to as the "1973 Convention") and article VI of the Protocol of 1978 relating to the International Convention for the Prevention of Pollution from Ships, 1973 (hereinafter referred to as the "1978 Protocol"), which together specify the amendment procedure of the 1978 Protocol and confer upon the appropriate body of the Organization the function of considering and adopting amendments to the 1973 Convention, as modified by the 1978 Protocol (MARPOL 73/78),

NOTING FURTHER resolution MEPC.55(33) by which the Committee adopted amendments to the International Code for the Construction and Equipment of Ships Carrying Dangerous Chemicals in Bulk (IBC Code),

RECOGNIZING the need to bring the corresponding amendments to the BCH Code into force on the date on which the amendments to the IBC Code enter into force,

HAVING CONSIDERED, at its thirty-third session, the amendments to the BCH Code proposed by the Sub-Committee on Bulk Chemicals at its twenty-first session and circulated in accordance with article 16(2)(a) of the 1973 Convention,

1. ADOPTS in accordance with article 16(2)(d) of the 1973 Convention amendments to the BCH Code, the text of which is set out in the annex to the present resolution;
2. DETERMINES, in accordance with article 16(2)(f)(iii) of the 1973 Convention, that the amendments shall be deemed to have been accepted on the date on which the conditions for the entry into force of the amendments to the IBC Code adopted by the Committee by resolution MEPC.55(33) are met, unless, prior to that date, not less than one third of the Parties or the Parties, the combined merchant fleets of which constitute not less than fifty per cent of the gross tonnage of the world's merchant fleet, have communicated to the Organization their objections to the amendments;
3. INVITES the Parties to note that, in accordance with article 16(2)(g)(ii) of the 1973 Convention, the amendments shall enter into force six months after their acceptance in accordance with paragraph 2 above;
4. REQUESTS the Secretary-General, in conformity with article 16(2)(e) of the 1973 Convention, to transmit to all Parties to the 1978 Protocol certified copies of the present resolution and the text of the amendments contained in the annex;
5. REQUESTS FURTHER the Secretary-General to transmit to the Members of the Organization which are not Parties to the 1978 Protocol copies of the resolution and its annex.

ANNEX

AMENDMENTS TO THE BCH CODE

The existing text of the last sentence of 1.1 is amended by addition of the following words:

... of chapter 17 of the IBC Code.

The last two sentences of the existing text of 1.2.1 is amended to read as follows:

The Code is at present limited to the liquids shown in the summary of minimum requirements in chapter 17 of the IBC Code. Products that have been reviewed and determined not to present safety and pollution hazards to such an extent as to warrant application of the Code are found in chapter 18 of the IBC Code.

The existing text of 1.4.16A is replaced by the following:

Noxious liquid substance means any substance referred to in appendix II of Annex II of the International Convention for the Prevention of Pollution from Ships, 1973, as modified by the Protocol of 1978 relating thereto (MARPOL 73/78) or provisionally assessed under the provisions of regulation 3(4) of that Annex as falling into category A, B, C or D.

The following new 1.4.16C is added after the existing 1.4.16B:

The IBC Code means the International Code for the Construction and Equipment of Ships Carrying Dangerous Chemicals in Bulk adopted by the Maritime Safety Committee and the Marine Environment Protection Committee of the Organization by resolutions MSC.4(48) and MEPC.19(22) respectively, as amended.

The existing text of 3.16.10(a) is replaced by the following:

filter type respiratory protection is unacceptable;

The following words are inserted after the third sentence of the existing text of 4.7.21:

Remote manual operation should be arranged such that remote starting of pumps supplying the water spray system and remote operation of any normally closed valves in the system can be carried out from a suitable location outside the cargo area, adjacent to the accommodation spaces and readily accessible and operable in the event of fire in the areas protected.

The existing text of 4.10 is amended as follows:

4.10 Cargoes protected by additives

4.10.1 Certain cargoes with a reference in column 'm' in the table of chapter VI, by the nature of their chemical make-up, tend under certain conditions of temperature, exposure to air or contact with a catalyst, to undergo polymerization, decomposition, oxidation or other chemical changes. Mitigation of this tendency is carried out by introducing small amounts of chemical additives into the liquid cargo or by controlling the cargo tank environment.

4.10.2 No change.

4.10.3 Care should be taken to ensure that these cargoes are sufficiently protected to prevent deleterious chemical change at all times during the voyage. Ships carrying such cargoes should be provided with a certificate of protection from the manufacturer and kept during the voyage specifying:

- .1 the name and amount of additive present;
- .2 whether the additive is oxygen-dependent;
- .3 date additive was put in the product and duration of effectiveness;
- .4 any temperature limitations qualifying the additive's effective lifetime; and
- .5 the action to be taken should the length of voyage exceed the effective lifetime of the additive.

4.10.4 Ships using the exclusion of air as the method of preventing oxidation of the cargo should comply with 2.19.3.

4.10.5 A product containing an oxygen-dependent additive should be carried without inertion.

4.10.6 As existing 4.10.5.

4.10.7 As existing 4.10.6.

New 4.23 is added as follows:

4.23 Temperature sensors

Temperature sensors should be used to monitor the cargo pump temperature to detect overheating due to pump failures.

Chapter VI

The existing text of Chapter VI is replaced by the following:

CHAPTER VI - SUMMARY OF MINIMUM REQUIREMENTS

The summary of minimum requirements of the products covered by the Code is set out in chapter 17 of the IBC Code.

For the purpose of application of the minimum requirements under this Code, the cross references in the IBC Code shown in the left hand column of the following table should be taken to mean references to the BCH Code shown in the right hand column. Where a reference is made in the BCH Code to column "m" in the table of chapter VI it should be taken to mean any of the columns "m", "n" and "o" in the table of chapter 17 of the IBC Code.

IBC/BCH CODES CROSS REFERENCES TO THE REQUIREMENTS

<u>IBC Code chapter 17 items</u>	<u>IBC Code reference</u>	<u>BCH Code reference</u>
Ship type (column e)		
1 = ship type 1	(2.1.2)	(2.2.4(a))
2 = ship type 2	(2.1.2)	(2.2.4(b))
3 = ship type 3	(2.1.2)	(2.2.4(c))
Tank type (column f)		
1 = independent tank	(4.1.1)	(2.3.2)
2 = integral tank	(4.1.2)	(2.3.1)
G = gravity tank	(4.1.3)	(2.4)
P = pressure tank	(4.1.4)	-
Tank environmental control (column h)		
Inert: inerting	(9.1.2.1)	(2.19.2(a))
Pad: liquid or gas	(9.1.2.2)	(2.19.2(b))
Dry: drying	(9.1.2.3)	(2.19.2(c))
Vent: natural or forced	(9.1.2.4)	(2.19.2(d))

<u>IBC Code chapter 17 items</u>	<u>IBC Code reference</u>	<u>BCH Code reference</u>
Electrical equipment (column i)		
NF: non-flammable product	(10.1.6)	Standard electrical system
Yes: Flashpoint exceeding 60°C (closed cup)	(10.1.6)	Standard electrical system
No: Product having a flashpoint not exceeding 60°C (closed cup)	(10.1.6)	Special electrical systems
Gauging (column j)		
O: open gauging	(13.1.1.1)	Open device (3.9(a))
R: restricted gauging	(13.1.1.2)	Restricted device (3.9(b))
C: closed gauging	(13.1.1.3)	Closed device (3.9(c))
I: indirect gauging	(13.1.1.3)	Indirect device (3.9(d))
Materials and construction (column m)		
	N1	4.12.1
	N2	4.12.2
	N3	4.12.3
	N4	4.12.4
	N5	4.12.5
	N6	4.12.8
	N7	4.12.9
	N8	4.12.1, except copper and copper alloys may be used
	Z	-
	Y1	4.12.6
	Y2	4.12.7(a)
	Y3	4.12.7(b)
	Y4	4.12.10
	Y5	4.12.6 except aluminium is not permitted
Respiratory and eye protection (column n)	E: see 14.2.8	3.16.10

<u>IBC Code chapter 17 items</u>	<u>IBC Code reference</u>	<u>BCH Code reference</u>
Special requirements (column o)	15.1	4.4
	15.2	4.19
	15.3	4.1
	15.4	4.2
	15.5.1 - 13	4.20.1 - 14
	15.5.14 - 26	4.20.15 - 27
	15.6	4.6
	15.7	4.5
	15.8	4.7
	15.9	4.21
	15.10	4.3
	15.11	4.8
	15.12	4.9
	15.13	4.10
	15.14	4.11
	15.16	4.15
	15.17	4.13.1
	15.18	4.13.2
	15.19	4.14
	15.19.6	4.14.1
	15.20	4.22
	15.21	4.23
	16.2.6	5.2.5
	16.2.7	5.2.6
	16.2.8	5.2.7
	16.2.9	5.2.8
	16.6	4.18
16A.2.2	5A.2.2	

Chapter VII

The existing text of Chapter VII is replaced by the following:

CHAPTER VII - LIST OF CHEMICALS TO WHICH THE CODE DOES NOT APPLY

The list of chemicals which have been reviewed for their safety and pollution hazards and determined not to present hazards to such an extent as to warrant the application of the Code is set out in chapter 18 of the IBC Code.

New chapter VIII is added as follows:

CHAPTER VIII – TRANSPORT OF LIQUID CHEMICAL WASTES

8.1 Preamble

- 8.1.1 Maritime transport of liquid chemical wastes could present a threat to human health and to the environment.
- 8.1.2 Liquid chemical wastes should, therefore, be transported in accordance with relevant international conventions and recommendations and, in particular, in the case of maritime transport in bulk, with the requirements of this Code.

8.2 Definitions

For the purpose of this chapter:

- 8.2.1 "Liquid chemical wastes" are substances, solutions or mixtures, offered for shipment, containing or contaminated with one or more constituents which are subject to the requirements of this Code and for which no direct use is envisaged but which are carried for dumping, incineration or other methods of disposal other than at sea.
- 8.2.2 "Transboundary movement" means maritime transport of wastes from an area under the national jurisdiction of one country to or through an area under the national jurisdiction of another country, or to or through an area not under the national jurisdiction of any country, provided at least two countries are concerned by the movement.

8.3 Applicability

- 8.3.1 The requirements of this chapter are applicable to the transboundary movement of liquid chemical wastes in bulk by seagoing ships and should be considered in conjunction with all other requirements of this Code.
- 8.3.2 The requirements of this chapter do not apply to:
- .1 wastes derived from shipboard operations which are covered by the requirements of MARPOL 73/78;
 - .2 liquid chemical wastes carried by ships engaged in the incineration of such wastes at sea which are covered by chapter 19 of the IBC Code; and
 - .3 substances, solutions or mixtures containing or contaminated with radioactive materials which are subject to the applicable requirements for radioactive materials.

8.4 Permitted shipments

8.4.1 Transboundary movement of wastes is permitted to commence only when:

- .1 notification has been sent by the competent authority of the country of origin, or by the generator or exporter through the channel of the competent authority of the country of origin, to the country of final destination; and
- .2 the competent authority of the country of origin, having received the written consent of the country of final destination stating that the wastes will be safely incinerated or treated by other methods of disposal, has given authorization for the movement.

8.5 Documentation

8.5.1 In addition to the documentation specified in 5.2 of this Code ships engaged in transboundary movement of liquid chemical wastes should carry on board a waste movement document issued by the competent authority of the country of origin.

8.6 Classification of liquid chemical wastes

8.6.1 For the purpose of the protection of the marine environment all liquid chemical wastes transported in bulk should be treated as category A noxious liquid substances, irrespective of the actual evaluated category.

8.7 Carriage and handling of liquid chemical wastes

8.7.1 Liquid chemical wastes should be carried in ships and cargo tanks in accordance with the minimum requirements for liquid chemical wastes specified in chapter 17 of the IBC Code, unless there are clear grounds indicating that the hazards of the wastes would warrant:

- .1 carriage in accordance with the ship type 1 requirements; or
- .2 any additional requirements of this Code applicable to the substance or, in case of a mixture, its constituent presenting the predominant hazard.

RESOLUTION MEPC.70(38)
adopted on 10 July 1996

**AMENDMENTS TO THE CODE FOR THE CONSTRUCTION AND EQUIPMENT
OF SHIPS CARRYING DANGEROUS CHEMICALS IN BULK (BCH CODE)**

THE MARINE ENVIRONMENT PROTECTION COMMITTEE,

RECALLING Article 38(a) of the Convention on the International Maritime Organization concerning the function of the Committee conferred upon it by international conventions for the prevention and control of marine pollution,

NOTING article 16 of the International Convention for the Prevention of Pollution from Ships, 1973 (hereinafter referred to as the "1973 Convention") and article VI of the Protocol of 1978 relating to the 1973 Convention (hereinafter referred to as the "1978 Protocol") which together specify the amendment procedure of the 1978 Protocol and confers upon the appropriate body of the Organization the function of considering and adopting amendments to the 1973 Convention, as modified by the 1978 Protocol (MARPOL 73/78),

RECALLING ALSO resolution MEPC.20(22) by which it adopted the Code for the Construction and Equipment of Ships Carrying Dangerous Chemicals in Bulk (BCH Code),

NOTING FURTHER resolution MEPC.69(38), by which the Committee adopted amendments to the International Code for the Construction and Equipment of Ships Carrying Dangerous Chemicals in Bulk (IBC Code),

RECOGNIZING the need to bring the corresponding amendments into force on the date on which the amendments to the IBC Code enter into force,

HAVING CONSIDERED, at its thirty-eighth session, amendments to the BCH Code proposed and circulated in accordance with article 16(2)(a) of the MARPOL Convention,

1. ADOPTS, in accordance with article 16(2)(b) of the 1973 Convention, amendments to the BCH Code, the text of which is set out at Annex to the present resolution;
2. DETERMINES, in accordance with article 16(2)(f)(iii) of the 1973 Convention, that the amendments shall be deemed to have been accepted on 1 January 1998, unless prior to the date, not less than one-third of the Parties or the Parties, the combined merchant fleets of which constitute not less than fifty per cent of the gross tonnage of the world's merchant fleet, have communicated to the Organization their objections to the amendments;
3. INVITES the Parties to note that in accordance with article 16(2)(g)(ii) of the 1973 Convention the amendments shall enter into force on 1 July 1998 in accordance with paragraph 2 above;
4. REQUESTS the Secretary-General, in conformity with article 16(2)(e) of the 1973 Convention, to transmit to all Parties to the 1978 Protocol certified copies of the present resolution and the text of the amendments contained in the Annex; and
5. REQUESTS FURTHER the Secretary-General to transmit to the Members of the Organization which are not Parties to the 1978 Protocol copies of the resolution and its Annex.

ANNEX**AMENDMENTS TO THE BCH CODE**

1 New paragraph 4.18.4 is added to chapter IV as follows:

"4.18.4 In order to avoid elevated temperatures, this cargo should not be carried in deck tanks."

2 The cross reference between paragraphs 16.6 of the IBC Code and 4.18 of the BCH Code is replaced by the following:

IBC Code reference	BCH Code reference
16.6.1	4.18.1
16.6.2	4.18.2
16.6.3	4.18.3
16.6.4	4.18.4

RESOLUTION MEPC.80(43)**adopted on 1 July 1999****AMENDMENTS TO THE CODE FOR THE CONSTRUCTION AND EQUIPMENT
OF SHIPS CARRYING DANGEROUS CHEMICALS IN BULK (BCH CODE)**

THE MARINE ENVIRONMENT PROTECTION COMMITTEE,

RECALLING Article 38(a) of the Convention on the International Maritime Organization concerning the function of the Committee conferred upon it by international conventions for the prevention and control of marine pollution,

RECALLING ALSO resolution MEPC.20(22) by which it adopted the Code for the Construction and Equipment of Ships Carrying Dangerous Chemicals in Bulk (BCH Code),

NOTING article 16 of the International Convention for the Prevention of Pollution from Ships, 1973 (hereinafter referred to as the "1973 Convention") and article VI of the Protocol of 1978 relating to the International Convention for the Prevention of Pollution from Ships, 1973 (hereinafter referred to as the "1978 Protocol") which together specify the amendment procedure of the 1978 Protocol and confer upon the appropriate body of the Organization the function of considering and adopting amendments to the 1973 Convention, as modified by the 1978 Protocol (MARPOL 73/78).

NOTING that the Maritime Safety Committee, at its seventieth session, considered and approved the proposed amendments to the BCH Code,

NOTING FURTHER resolution MEPC.79(43), by which the Committee adopted relevant amendments to the International Code for the Construction and Equipment of Ships Carrying Dangerous Chemicals in Bulk (IBC Code),

RECOGNIZING the need to bring the amendments to the BCH Code into force on the date on which the relevant amendments to the IBC Code enter into force,

HAVING CONSIDERED the proposed amendments to the BCH Code circulated in accordance with article 16(2)(a) of the 1973 Convention,

1. ADOPTS, in accordance with article 16(2)(d) of the 1973 Convention, amendments to the BCH Code, the text of which is set out at Annex to the present resolution;
2. DETERMINES, in accordance with article 16(2)(f)(iii) of the 1973 Convention, that the amendments shall be deemed to have been accepted on 1 January 2002, unless prior to the date, not less than one-third of the Parties or the Parties, the combined merchant fleets of which constitute not less than 50 per cent of the gross tonnage of the world's merchant fleet, having communicated to the Organization their objections to the amendments;
3. INVITES the Parties to note that in accordance with article 16(2)(g)(ii) of the 1973 Convention the amendments shall enter into force on 1 July 2002 upon their acceptance in accordance with paragraph 2 above;
4. REQUESTS the Secretary-General, in conformity with article 16(2)(e) of the 1973 Convention, to transmit to all Parties to the 1978 Protocol certified copies of the present resolution and the text of the amendments contained in the Annex; and
5. REQUESTS FURTHER the Secretary-General to transmit to the Members of the Organization which are not Parties to the 1978 Protocol copies of the resolution and its Annex.

AMENDMENTS TO THE BCH CODE**Chapter II Cargo containment**

- 1 The following new paragraph 2.14.3 is added after the existing paragraph 2.14.2:

"2.14.3 The controlled tank venting systems as provided in paragraph 2.14.2 above should consist of a primary and a secondary means of allowing full flow relief of vapour to prevent over-pressure or under-pressure in the event of failure of one means. Alternatively, the secondary means may consist of pressure sensors fitted in each tank with a monitoring system in the ship's cargo control room or position from which cargo operations are normally carried out. Such monitoring equipment should also provide an alarm facility which is activated by detection of over-pressure or under-pressure conditions within a tank. Ships should comply with the requirements of this paragraph by the date of the first scheduled dry-docking after 1 July 2002, but not later than 1 July 2005. However, the Administration may approve relaxation of this paragraph for ships of less than 500 gross tonnage."
- 2 The existing paragraphs 2.14.3 and 2.14.4 are renumbered as paragraphs 2.14.4 and 2.14.5.

RESOLUTION MEPC.91(45)**adopted on 5 October 2000****AMENDMENTS TO THE CODE FOR THE CONSTRUCTION AND EQUIPMENT OF SHIPS CARRYING DANGEROUS CHEMICALS IN BULK (BCH CODE)**

THE MARINE ENVIRONMENT PROTECTION COMMITTEE,

RECALLING Article 38(a) of the Convention on the International Maritime Organization concerning the function of the Committee conferred upon it by international conventions for the prevention and control of marine pollution,

RECALLING ALSO resolution MEPC.20(22) by which it adopted the Code for the Construction and Equipment of Ships Carrying Dangerous Chemicals in Bulk (BCH Code),

NOTING article 16 of the International Convention for the Prevention of Pollution from Ships, 1973 (hereinafter referred to as the "1973 Convention") and article VI of the Protocol of 1978 relating to the International Convention for the Prevention of Pollution from Ships, 1973 (hereinafter referred to as the "1978 Protocol") which together specify the amendment procedure of the 1978 Protocol and confer upon the appropriate body of the Organization the function of considering and adopting amendments to the 1973 Convention, as modified by the 1978 Protocol (MARPOL 73/78),

NOTING that the Maritime Safety Committee, at its seventy-second session, considered and approved the proposed amendments to the BCH Code,

NOTING FURTHER resolution MEPC.90(45), by which the Committee adopted relevant amendments to the International Code for the Construction and Equipment of Ships Carrying Dangerous Chemicals in Bulk (IBC Code),

RECOGNIZING the need to bring the amendments to the BCH Code into force on the date on which the relevant amendments to the IBC Code enter into force,

HAVING CONSIDERED the proposed amendments to the BCH Code circulated in accordance with article 16(2)(a) of the 1973 Convention,

1. ADOPTS, in accordance with article 16(2)(d) of the 1973 Convention, amendments to the BCH Code, the text of which is set out at Annex to the present resolution;
2. DETERMINES, in accordance with article 16(2)(f)(iii) of the 1973 Convention, that the amendments shall be deemed to have been accepted on 1 January 2002, unless prior to the date, not less than one-third of the Parties or the Parties, the combined merchant fleets of which constitute not less than 50 per cent of the gross tonnage of the world's merchant fleet, having communicated to the Organization their objections to the amendments;
3. INVITES the Parties to note that, in accordance with article 16(2)(g)(ii) of the 1973 Convention, the amendments shall enter into force on 1 July 2002 upon their acceptance in accordance with paragraph 2 above;

4. REQUESTS the Secretary-General, in conformity with article 16(2)(e) of the 1973 Convention, to transmit to all Parties to the 1978 Protocol certified copies of the present resolution and the text of the amendments contained in the annex; and
5. REQUESTS FURTHER the Secretary-General to transmit to the Members of the Organization which are not Parties to the 1978 Protocol copies of the resolution and its Annex.

ANNEX

**AMENDMENTS TO THE CODE FOR THE CONSTRUCTION
AND EQUIPMENT OF SHIPS CARRYING DANGEROUS
CHEMICALS IN BULK (BCH CODE)****CHAPTER II - CARGO CONTAINMENT****2.12 Cargo hoses carried aboard the ship**

- 1 Existing section 2.12 is replaced by the following:

"2.12 Ship's cargo hoses

2.12.1 Paragraphs 2.12.2 to 2.12.4 apply to cargo hoses installed on board ships on or after 1 July 2002.

2.12.2 Liquid and vapour hoses used for cargo transfer should be compatible with the cargo carried and suitable for the cargo temperature.

2.12.3 Hoses subject to tank pressure or the discharge pressure of pumps should be designed for a bursting pressure not less than 5 times the maximum pressure the hose will be subject to during cargo transfer.

2.12.4 Each new type of cargo hose, complete with end-fittings, should be prototype-tested at a normal ambient temperature with 200 pressure cycles from zero to at least twice the specified maximum working pressure. After this cycle pressure test has been carried out, the prototype test should demonstrate a bursting pressure of at least 5 times its specified maximum working pressure at the extreme service temperature. Hoses used for prototype testing should not be used for cargo service. Thereafter, before being placed in service, each new length of cargo hose produced should be hydrostatically tested at ambient temperature to a pressure not less than 1.5 times its specified maximum working pressure but not more than two-fifths of its bursting pressure. The hose should be stencilled or otherwise marked with the date of testing, its specified maximum working pressure and, if used in services other than the ambient temperature services, its maximum and minimum service temperature, as applicable. The specified maximum working pressure should not be less than 10 bar gauge."

CHAPTER III - SAFETY EQUIPMENT AND RELATED CONSIDERATION

- 2 Existing paragraph 3.16.11 is replaced by the following:

"3.16.11 The ship should have on board medical first-aid equipment, including oxygen resuscitation equipment and antidotes for cargoes to be carried, based on the guidelines developed by the Organization."

CHAPTER IV - SPECIAL REQUIREMENTS

3 The existing text of section 4.1 is replaced by the following:

"4.1 Carbon disulphide

Carbon disulphide may be carried either under water pad or under suitable inert gas pad as specified in the following paragraphs.

Carriage under water pad

4.1.1 Provision should be made to maintain a water pad in the cargo tank during loading, unloading and transit. In addition, a suitable inert gas pad should be maintained in the ullage space during transit.

4.1.2 All openings should be in the top of the tank, above the deck.

4.1.3 Loading lines should terminate near the bottom of the tank.

4.1.4 A standard ullage opening should be provided for emergency sounding.

4.1.5 Cargo piping and vent lines should be independent of piping and vent lines used for other cargo.

4.1.6 Pumps may be used for discharging cargo, provided they are of the deepwell or hydraulically driven submersible types. The means of driving a deepwell pump should not present a source of ignition for carbon disulphide and should not employ equipment that may exceed a temperature of 80°C.

4.1.7 If a cargo discharge pump is used, it should be inserted through a cylindrical well extending from the tank top to a point near the tank bottom. A water pad should be formed in this well before attempting pump removal unless the tank has been certified as gas-free.

4.1.8 Water or inert gas displacement may be used for discharging cargo, provided the cargo system is designed for the expected pressure and temperature.

4.1.9 Safety relief valves should be of stainless steel construction.

4.1.10 Because of its low ignition temperature and close clearances required to arrest its flame propagation, only intrinsically safe systems and circuits should be permitted in the hazardous locations described in 10.2.3.

Carriage under suitable inert gas pad

4.1.11 Carbon disulphide should be carried in independent tanks with a design pressure of not less than 0.6 bar gauge.

4.1.12 All openings should be located on the top of the tank, above the deck.

4.1.13 Gaskets used in the containment system should be of a material which does not react with, or dissolve in, carbon disulphide.

4.1.14 Threaded joints should not be permitted in the cargo containment system, including the vapour lines.

4.1.15 Prior to loading, the tank(s) should be inerted with suitable inert gas until the oxygen level is 2% by volume or lower. Means should be provided to automatically maintain a positive pressure in the tank using suitable inert gas during loading, transport and discharge. The system should be able to maintain this positive pressure between 0.1 and 0.2 bar gauge, and should be remotely monitored and fitted with over/underpressure alarms.

4.1.16 Hold spaces surrounding an independent tank carrying carbon disulphide should be inerted by a suitable inert gas until the oxygen level is 2% or less. Means should be provided to monitor and maintain this condition throughout the voyage. Means should also be provided to sample these spaces for carbon disulphide vapour.

4.1.17 Carbon disulphide should be loaded, transported and discharged in such a manner that venting to the atmosphere does not occur. If carbon disulphide vapour is returned to shore during loading or to the ship during discharge, the vapour return system should be independent of all other containment systems.

4.1.18 Carbon disulphide should be discharged only by submerged deepwell pumps or by a suitable inert gas displacement. The submerged deepwell pumps should be operated in a way that prevents heat build-up in the pump. The pump should also be equipped with a temperature sensor in the pump housing with remote readout and alarm in the cargo control room. The alarm should be set at 80°C. The pump should also be fitted with an automatic shut-down device, if the tank pressure falls below atmospheric pressure during the discharge.

4.1.19 Air should not be allowed to enter the cargo tank, cargo pump or lines while carbon disulphide is contained in the system.

4.1.20 No other cargo handling, tank cleaning or deballasting should take place concurrent with loading or discharge of carbon disulphide.

4.1.21 A water spray system of sufficient capacity should be provided to blanket effectively the area surrounding the loading manifold, the exposed deck piping associated with product handling and the tank domes. The arrangement of piping and nozzles should be such as to give a uniform distribution rate of 10 l/m²/min. Remote manual operation should be arranged such that remote starting of pumps supplying the water-spray system and remote operation of any normally closed valves in the system can be carried out from a suitable location outside the cargo area adjacent to the accommodation spaces and readily accessible and operable in the event of fire in the areas protected. The water-spray system should be capable of both local and remote manual operation, and the arrangement should ensure that any spilled cargo is washed away. Additionally, a water hose with pressure to the nozzle when atmospheric temperature permits, should be connected ready for immediate use during loading and unloading operations.

4.1.22 No cargo tanks should be more than 98% liquid-full at the reference temperature (R).

4.1.23 The maximum volume (V_L) of cargo to be loaded in a tank should be:

$$V_L = 0.98 V \frac{\rho_R}{\rho_L}$$

where:

V	=	volume of the tank
ρ_R	=	relative density of cargo at the reference temperature (R)
ρ_L	=	relative density of cargo at the loading temperature
R	=	reference temperature, i.e. the temperature at which the vapour pressure of the cargo corresponds to the set pressure of the pressure-relief valve.

4.1.24 The maximum allowable tank filling limits for each cargo tank should be indicated for each loading temperature which may be applied, and for the applicable maximum reference temperature, on a list approved by the Administration. A copy of the list should be permanently kept on board by the master.

4.1.25 Zones on open deck, or semi-enclosed spaces on open deck within three metres of a tank outlet, gas or vapour outlet, cargo pipe flange or cargo valve of a tank certified to carry carbon disulphide, should comply with the electrical equipment requirements specified for carbon disulphide in column "i", chapter 17. Also, within the specified zone, no other heat sources, like steam piping with surface temperatures in excess of 80°C should be allowed.

4.1.26 Means should be provided to ullage and sample the cargo without opening the tank or disturbing the positive suitable inert gas blanket.

4.1.27 The product should be transported only in accordance with a cargo handling plan that has been approved by the Administration. Cargo handling plans should show the entire cargo piping system. A copy of the approved cargo-handling plan should be available on board. The Certificate of Fitness for the Carriage of Dangerous Chemicals in Bulk should be endorsed to include reference to the approved cargo handling plan."

CHAPTER V - OPERATIONAL REQUIREMENTS

4 Existing paragraph 5.3.3 is replaced by the following:

"5.3.3 Officers should be trained in emergency procedures to deal with conditions of leakage, spillage or fire involving the cargo, based on the guidelines developed by the Organization, and a sufficient number of them should be instructed and trained in essential first aid for cargoes carried."

RESOLUTION MEPC.144(54)
(adopted on 24 March 2006)

AMENDMENTS TO THE CODE FOR THE CONSTRUCTION AND EQUIPMENT OF SHIPS CARRYING DANGEROUS CHEMICALS IN BULK (BCH CODE)

THE MARINE ENVIRONMENT PROTECTION COMMITTEE,

RECALLING article 38(a) of the Convention on the International Maritime Organization concerning the functions of the Marine Environment Protection Committee (the Committee) conferred upon it by international conventions for the prevention and control of marine pollution,

RECALLING ALSO resolution MEPC.20(22) by which the Committee adopted the Code for the Construction and Equipment of Ships Carrying Dangerous Chemicals in Bulk (BCH Code),

NOTING article 16 of the International Convention for the Prevention of Pollution from Ships, 1973 (hereinafter referred to as the “1973 Convention”) and article VI of the Protocol of 1978 relating to the International Convention for the Prevention of Pollution from Ships, 1973 (hereinafter referred to as the “1978 Protocol”) which together specify the amendment procedure of the 1978 Protocol and confer upon the appropriate body of the Organization the function of considering and adopting amendments to the 1973 Convention, as modified by the 1978 Protocol (MARPOL 73/78),

CONSIDERING that it is highly desirable for the provisions of the BCH Code which are mandatory under MARPOL 73/78 and recommendatory from a safety standpoint, to remain identical, when adopted by the Marine Environment Protection Committee and the Maritime Safety Committee,

HAVING CONSIDERED the proposed amendments to the BCH Code,

1. ADOPTS, in accordance with article 16(2)(b), (c) and (d) of the 1973 Convention, the amendments to the BCH Code, the text of which is set out at the Annex to the present resolution;
2. DETERMINES, in accordance with article 16(2)(f)(iii) of the 1973 Convention, that the amendments to the BCH Code shall be deemed to have been accepted on 1 February 2007 unless, prior to that date, not less than one-third of the Parties or Parties, the combined merchant fleets of which constitute not less than 50 per cent of the gross tonnage of the world’s merchant fleet, have communicated to the Organization their objection to the amendments;
3. INVITES the Parties to note that, in accordance with article 16(2)(g)(ii) of the 1973 Convention, the amendments to the BCH Code shall enter into force on 1 August 2007 upon their acceptance in accordance with paragraph 2 above;
4. INVITES ALSO the Maritime Safety Committee to note this resolution and take action as appropriate;
5. REQUESTS the Secretary-General, in conformity with article 16(2)(e) of the 1973 Convention, to transmit to all Parties to MARPOL 73/78 certified copies of the present resolution and the text of the amendments to the BCH Code contained in the Annex; and
6. REQUESTS FURTHER the Secretary-General to transmit copies of the present resolution and its Annex to the Members of the Organization which are not Parties to MARPOL 73/78.

ANNEX

**AMENDMENTS TO THE CODE FOR THE CONSTRUCTION AND
EQUIPMENT OF SHIPS CARRYING DANGEROUS CHEMICALS
IN BULK (BCH CODE)**

The BCH Code is amended as follows:

Preamble

1 The following new paragraph is added:

“7 The Code has been revised to reflect the 2007 revision of MARPOL Annex II”

CHAPTER I

General

1.1 Purpose

2 In the second sentence, the words “as defined in regulation 1(1) of Annex II thereof” are deleted and the references to (Pollution Category) “A, B or C” are replaced by “X, Y or Z”.

1.4 Definitions

3 Paragraph 1.4.16A is replaced by the following:

“1.4.16A *Noxious Liquid Substance* means any substance indicated in the Pollution Category column of chapter 17 or 18 of the International Bulk Chemical Code, or the current MEPC.2/Circular or provisionally assessed under the provisions of regulation 6.3 of the amendments to the Annex of the Protocol of 1978 relative to the International Convention for the Prevention of Pollution from Ships, 1973, as falling into Category X, Y or Z.”

4 In paragraph 1.4.16B the existing text is deleted and the word “Deleted” is inserted.

5 The paragraph number of the definition of “anniversary date” which was adopted as “1.4.16C” by resolution MEPC.41(29) is amended to read “1.4.16D”.

1.7 Effective date

6 In the second sentence of paragraph 1.7.2, the reference to “regulation 1(12)” is replaced by “regulation 1.17”.

1.8 New products

7 In the first sentence of paragraph 1.8, the reference to (Pollution Category) “A, B or C” is replaced by “X, Y or Z”.

CHAPTER II Cargo Containment

G – MATERIALS OF CONSTRUCTION

2.17 General

8 The existing text is replaced by the following:

“2.17.1 Structural materials used for tank construction, together with associated piping, pumps, valves, vents and their jointing materials, should be suitable at the temperature and pressure for the cargo to be carried in accordance with recognized standards. Steel is assumed to be the normal material of construction.

2.17.2 Where applicable, the following should 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.

2.17.3 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 shall be compatible with all materials of construction such that:

- .1 no damage to the integrity of the materials of construction is incurred; and
- .2 no hazardous, or potentially hazardous reaction is created.

2.17.4 When a product is submitted to IMO for evaluation, and where compatibility of the product with materials referred to in paragraph 2.17 renders special requirements, the GESAMP/EHS Product Data Reporting Form shall provide information on the required materials of construction. These requirements shall be reflected in chapter IV and consequentially be referred to in *column o* of chapter 17 of the IBC Code. The reporting form shall also indicate if no special requirements are necessary. The producer of the product is responsible for providing the correct information.”

2.18 Additional requirements

9 In paragraph 2.18, the existing text is deleted and the word “Deleted” is inserted.

CHAPTER III**Safety equipment and related considerations****E – FIRE PROTECTION**

10 After the heading, the following words are inserted:

“(SOLAS regulations referred to in Part E mean, unless expressly provided otherwise, regulations in chapter II-2 of the International Convention for the Safety of Life at Sea, 1974 and its relevant amendments adopted before by resolution MSC.99(73)).”

3.13 Fire safety arrangements

11 In paragraph 3.13.3, the existing text is deleted and the word “Deleted” is inserted.

12 The following new paragraph 3.13.5 is added:

“3.13.5 The following requirements in SOLAS chapter II-2, as adopted by MSC.99(73), should apply:

- (a) regulations II-2/4.5.10.1.1 and 4.5.10.1.4 and a system for continuous monitoring of the concentration of flammable vapours shall be fitted on ships of 500 tons gross tonnage and over by the date of the first scheduled dry-docking after [the date of entry into force of the amendment], but not later than [3 years after the date of entry into force of the amendment]. Sampling points or detector heads should be located in suitable positions in order that potentially dangerous leakages are readily detected. When the flammable vapour concentration reaches a pre-set level which shall not be higher than 10% of the lower flammable limit, a continuous audible and visual alarm signal shall be automatically effected in the pump-room and cargo control room to alert personnel to the potential hazard. However, existing monitoring systems already fitted having a pre-set level not greater than 30% of the lower flammable limit may be accepted. Notwithstanding the above provisions, the Administration may exempt ships not engaged on international voyages from those requirements;
- (b) regulations 13.3.4.2 to 13.3.4.5 and 13.4.3 should apply to ships of 500 tons gross tonnage and over;
- (c) regulations in Part E of chapter II-2 of SOLAS Convention except regulations 16.3.2.2 and 16.3.2.3 thereof, should apply to ships, regardless of their sizes;
- (d) where deep-fat cooking equipment is newly installed, regulation 10.6.4 should apply; and
- (e) fire-extinguishing systems using Halon 1211, 1301, and 2402 and perfluorocarbons should not be newly installed as prohibited by regulation 10.4.1.3.”.

F – PERSONAL PROTECTION

- 13 After the heading, the following words are inserted:

“(SOLAS regulations referred to in Part F mean, unless expressly provided otherwise, regulations in chapter II-2 of the International Convention for the Safety of Life at Sea, 1974 and its relevant amendments adopted before by resolution MSC.99(73))”.

CHAPTER IV Special requirements

4.12 Materials of construction

- 14 In paragraph 4.12, the existing text is deleted and the word “Deleted” is inserted.

4.15 Cargo contamination

- 15 In paragraph 4.15.1, the existing text is deleted and the word “Deleted” is inserted.

CHAPTER V Operational requirements

5.2 Cargo information

- 16 In paragraph 5.2.5, the viscosity figure “25 mPa”, which appears twice, is replaced with “50 mPa”.

- 17 In paragraph 5.2.6, the existing text is deleted and the word “Deleted” is inserted.

- 18 In paragraph 5.2.7, the existing text is deleted and the word “Deleted” is inserted.

CHAPTER VA Additional measures for the protection of the marine environment

- 19 The existing text is deleted and the word “Deleted” is inserted.

CHAPTER VI Summary of minimum requirements

- 20 The IBC/BCH cross-references to the requirements under Materials of construction (column *m*) and the following cross-references under special requirements (column *o*) are deleted:

“IBC Code reference	BCH Code reference
15.16.1	4.15.1
16.2.7	5.2.6
16.2.8	5.2.7
16A.2.2	5A.2.2”

CHAPTER VIII

Transport of liquid chemical wastes

21 In paragraph 8.3.2.2 reference to “chapter 19” of the IBC Code is replaced by “chapter 20”.

APPENDIX

Model form of Certificate of Fitness for the
Carriage of Dangerous Chemicals in Bulk

22 The existing form is replaced by the following:

**“MODEL FORM OF CERTIFICATE OF FITNESS FOR THE CARRIAGE OF
DANGEROUS CHEMICALS IN BULK**

**CERTIFICATE OF FITNESS FOR
THE CARRIAGE OF DANGEROUS CHEMICALS IN BULK**

(Official seal)

Issued under the provisions of the

**CODE FOR THE CONSTRUCTION AND EQUIPMENT OF SHIPS CARRYING
DANGEROUS CHEMICALS IN BULK**
(resolutions MSC.9(53) and MEPC.20(22), as amended)

under the authority of the Government of

.....
(full official designation of country)

by.....
(full designation of the competent person or organization recognized by the Administration)

Particulars of ship¹

Name of ship
Distinctive number or letters
Port of registry
Gross tonnage
Ship Type (Code paragraph 2.2.4)
IMO Number²

Date on which keel was laid or on which the ship was at a
similar stage of construction or (in the case of a converted ship)
date on which conversion to chemical tanker was commenced

The ship also complies fully with the following amendments to the Code:
.....
.....

¹ Alternatively, the particulars of the ship may be placed horizontally in boxes.
² In accordance with IMO ship identification number scheme adopted by the Organization by resolution A.600(15).

The ship is exempted from compliance with the following provisions of the Code:

.....
.....

THIS IS TO CERTIFY:

- 1 That the ship has been surveyed in accordance with the provisions of section 1.6 of the Code;
- 2 That the survey showed that the construction and equipment of the ship and the condition thereof are in all respects satisfactory and that the ship:
 - .1 complies with the relevant provisions of the Code applicable to ships referred to in 1.7.2;
 - .2 complies with the relevant provisions of the Code applicable to ships referred to in 1.7.3;
- 3 That the ship has been provided with a manual in accordance with Appendix 4 of MARPOL Annex II as called for by regulation 14 of the Annex, and that the arrangements and equipment of the ship prescribed in the Manual are in all respects satisfactory;
- 4 That the ship meets the requirements for the carriage in bulk of the following products, provided that all relevant operational provisions of the Code and MARPOL Annex II are observed:

Product	Conditions of carriage (tank numbers, etc.)	Pollution Category
Continued on attachment 1, additional signed and dated sheets ³ Tank numbers referred to in this list are identified on attachment 2, signed and dated tank plan.		

- 5 That, in accordance with 1.7.3/2.2.5³, the provisions of the Code are modified in respect of the ship in the following manner:
 -
- 6 That the ship must be loaded:
 - .1 in accordance with the loading conditions provided in the approved loading manual, stamped and dated and signed by a responsible officer of the Administration, or of an organization recognized by the Administration³;

³ Delete as appropriate.

.2 in accordance with the loading limitations appended to this Certificate³.

Where it is required to load the ship other than in accordance with the above instruction, then the necessary calculations to justify the proposed loading conditions should be communicated to the certifying Administration who may authorize in writing the adoption of the proposed loading condition⁴.

This Certificate is valid until⁵
subject to surveys in accordance with 1.6 of the Code.

Completion date of the survey on which this certificate is based:
(dd/mm/yyyy)

Issued at
(Place of issue of certificate)

.....
(Date of issue)

.....
(Signature of authorized official
issuing the certificate)

(Seal or stamp of the authority, as appropriate)

Notes on completion of Certificate:

- 1 The Certificate can be issued only to ships entitled to fly the flags of States which are a Party to MARPOL 73/78.
- 2 Ship Type: Any entry under this column must relate to all relevant recommendations, e.g., an entry “Type 2” should mean Type 2 in all respects prescribed by the Code. This column would not usually apply in the cases of an existing ship and in such a case should be noted “see paragraph 2.2”.
- 3 Products: Products listed in chapter 17 of the Code, or which have been evaluated by the Administration in accordance with 1.8 of the Code, should be listed. In respect of the latter “new” products, any special requirements provisionally prescribed should be noted.
- 4 Products: The list of products the ship is suitable to carry should include the noxious liquid substances of Category Z which are not covered by the Code and should be identified as “chapter 18 Category Z”.
- 5 *deleted.*

³ Delete as appropriate.

⁴ Instead of being incorporated in the Certificate, this text may be appended to the Certificate if signed and stamped.

⁵ Insert the date of expiry as specified by the Administration in accordance with 1.6.6.1 of the Code. The day and the month of this day correspond to the anniversary date as defined in 1.4.16D of the Code, unless amended in accordance with 1.6.6.8 of the Code.

- 6 Conditions of carriage: If a Certificate is issued to a ship which is modified in accordance with the provision of regulation 1(12) of MARPOL Annex II the Certificate should indicate in the top of the table of products and conditions of carriage the following statement: “This ship is certificated to carry only pollution hazard chemicals”.

ENDORSEMENT FOR ANNUAL AND INTERMEDIATE SURVEYS

THIS IS TO CERTIFY that at a survey required by 1.6.2 of the Code the ship was found to comply with the relevant provisions of the Code.

Annual survey: Signed
(Signature of duly authorized official)
Place
Date (dd/mm/yyyy)

(Seal or stamp of the Authority, as appropriate)

Annual/Intermediate³ survey: Signed
(Signature of duly authorized official)
Place
Date (dd/mm/yyyy)

(Seal or stamp of the Authority, as appropriate)

Annual/Intermediate³ survey: Signed
(Signature of duly authorized official)
Place
Date (dd/mm/yyyy)

(Seal or stamp of the Authority, as appropriate)

Annual survey: Signed
(Signature of duly authorized official)
Place
Date (dd/mm/yyyy)

(Seal or stamp of the Authority, as appropriate)

³ Delete as appropriate.

ANNUAL/INTERMEDIATE SURVEY IN ACCORDANCE WITH PARAGRAPH 1.6.6.8.3

THIS IS TO CERTIFY that, at an annual/intermediate³ survey in accordance with paragraph 1.6.6.8.3 of the Code, the ship was found to comply with the relevant provisions of the Convention:

Signed

(Signature of duly authorized official)

Place

Date (dd/mm/yyyy)

(Seal or stamp of the Authority, as appropriate)

**ENDORSEMENT TO EXTEND THE CERTIFICATE IF VALID
FOR LESS THAN 5 YEARS WHERE PARAGRAPH 1.6.6.3 APPLIES**

The ship complies with the relevant provisions of the Convention, and this Certificate shall, in accordance with paragraph 1.6.6.3 of the Code, be accepted as valid until

Signed

(Signature of duly authorized official)

Place

Date (dd/mm/yyyy)

(Seal or stamp of the Authority, as appropriate)

**ENDORSEMENT WHERE THE RENEWAL SURVEY HAS BEEN
COMPLETED AND PARAGRAPH 1.6.6.4 APPLIES**

The ship complies with the relevant provisions of the Convention, and this Certificate shall, in accordance with paragraph 1.6.6.4 of the Code, be accepted as valid until

Annual survey:

Signed

(Signature of duly authorized official)

Place

Date (dd/mm/yyyy)

(Seal or stamp of the Authority, as appropriate)

³ Delete as appropriate.

**ENDORSEMENT TO EXTEND THE VALIDITY OF THE CERTIFICATE
UNTIL REACHING THE PORT OF SURVEY OR FOR A PERIOD
OF GRACE WHERE PARAGRAPH 1.6.6.5 OR 1.6.6.6 APPLIES**

This Certificate shall, in accordance with paragraph 1.6.6.5/1.6.6.6³ of the Code, be accepted as valid until

Signed
(Signature of duly authorized official)

Place

Date (dd/mm/yyyy)

(Seal or stamp of the Authority, as appropriate)

**ENDORSEMENT FOR ADVANCEMENT OF ANNIVERSARY DATE WHERE
PARAGRAPH 1.6.6.8 APPLIES**

In accordance with paragraph 1.6.6.8 of the Code, the new anniversary date is

Signed
(Signature of duly authorized official)

Place

Date (dd/mm/yyyy)

(Seal or stamp of the Authority, as appropriate)

In accordance with paragraph 1.6.6.8, the new anniversary date is

Signed
(Signature of duly authorized official)

Place

Date (dd/mm/yyyy)

(Seal or stamp of the Authority, as appropriate)

³ Delete as appropriate.

ATTACHMENT 1
TO THE
CERTIFICATE OF FITNESS FOR THE CARRIAGE OF DANGEROUS
CHEMICALS IN BULK

Continued list of products to those specified in section 3, and their conditions of carriage.

Products	Conditions of carriage (tank numbers, etc.)	Pollution Category

Date
(as for Certificate)

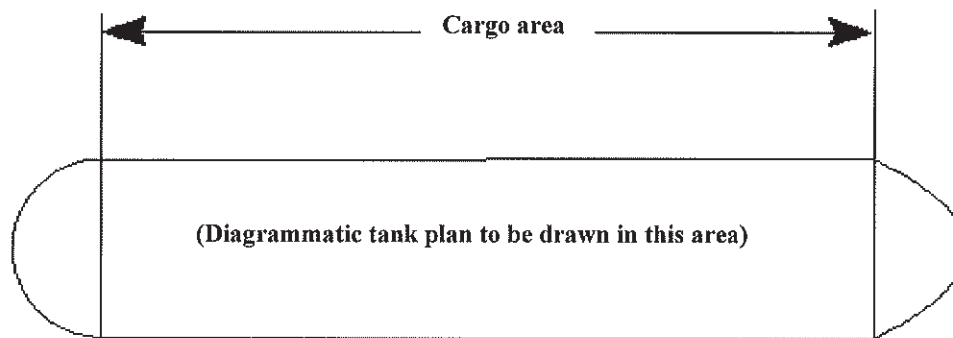
.....
*(Signature of official issuing the Certificate
and/or seal of issuing authority)*

**ATTACHMENT 2
TO THE
CERTIFICATE OF FITNESS FOR THE CARRIAGE OF DANGEROUS
CHEMICALS IN BULK**

TANK PLAN (specimen)

Name of ship:

Distinctive number or letters:



Date
(as for Certificate)

.....
(Signature of official issuing the Certificate
and/or seal of issuing authority)"

第MEPC.249（66）號決議

2014年4月4日通過

《散裝運輸危險化學品船舶構造與設備規則》

（《散化規則》）修正案

（貨物圍護系統和適裝證書格式）

海上環境保護委員會，

憶及《國際海事組織公約》第三十八條第（一）款關於防止和控制船舶造成海洋污染的國際公約賦予海上環境保護委員會（本委員會）的職能，

還憶及本委員會以第MEPC.20（22）號決議通過的《散裝運輸危險化學品船舶構造與設備規則》（《散化規則》），

注意到《1973年國際防止船舶造成污染公約》（以下稱《1973年公約》）第16條和《1973年國際防止船舶造成污染公約1978年議定書》（以下稱《1978年議定書》）第VI條共同規定了《1978年議定書》的修正程序並賦予本組織的相關機構審議和通過《經1978年議定書修訂的1973年公約》（《防污公約》）修正案的職能，

考慮到根據《防污公約》具有強制性而在安全角度上具有建議性的《散化規則》，在海上環境保護委員會和海上安全委員會通過時需保持高度一致，

審議了穩性、載重線和漁船安全分委員會在其第55次會議上制定的《散化規則》建議修正案，

1. 按照《1973年公約》第16(2)(b)、(c)和(d)條，通過《散化規則》修正案，其文本載於本決議附件；
2. 按照《1973年公約》第16(2)(f)(iii)條，決定該《散化規則》修正案將在2015年7月1日視為被接受，除非在此日期之前，有不少於三分之一的締約國或其合計商船隊佔世界商船隊總噸位不少於50%的締約國通知本組織其反對該修正案；
3. 請各締約國注意，按照《1973年公約》第16(2)(g)(ii)條，該《散化規則》修正案在按上述第2段被接受後，將於2016年1月1日生效；
4. 還請海上安全委員會注意本決議並酌情採取行動；
5. 要求秘書長遵照《1973年公約》第16(2)(e)條，將本決議及其附件中《散化規則》修正案文本的核證無誤副本分發給所有《防污公約》締約國；
6. 進一步要求秘書長將本決議及其附件的副本分發給非《防污公約》締約國的本組織會員國。

附件

《散裝運輸危險化學品船舶構造與設備規則》

（《散化規則》）修正案

第II章－貨物圍護系統

A部分－物理保護（液貨艙的位置；船舶穩性）

1 現有第2.2.1項由以下文字替代：

“2.2.1 通則：受本規則約束的船舶可按《1966年國際載重線公約》核定最小乾舷。但是，第2.2.4項的附加要求，考慮到任何液艙為空艙或部分裝載以及擬載運貨物的比重，應適用於任何實際裝載工況的許用營運吃水。

2.2.1.1 所有從事散裝化學品運輸的船舶均應備有裝載和穩性手冊，供船長獲得資料和指導。手冊應包含以下細節：液艙為滿艙和空艙或部分裝載的裝載工況，船上液艙的位置，載運的各零擔貨物的比重，以及關鍵裝載工況的任何壓載佈置。手冊應包含評估其他裝載工況的規定。

2.2.1.2 所有受本規則約束的船舶須在2016年1月1日或以後但不遲於2021年1月1日的初次計劃換證檢驗時，配備能進行完整和破損穩性要求的符合性驗證的、經主管機關參照本組織建議的性能標準認可的穩性儀：

- .1 儘管有上述要求，對於2016年1月1日以前建造的船舶上配備的穩性儀，如能進行完整和破損穩性的符合性驗證並令主管機關滿意，則不必替換；和
- .2 就根據《防污公約》附則II第16條的監督而言，主管機關應簽發一份穩性儀的認可文件。

2.2.1.3 主管機關可對下列船舶免除第2.2.1.2目的要求，但用於完整和破損穩性驗證的程序維持的安全程度應與按經批准工況進行裝載的安全程度相同。任何此類免除應在第1.6.3項所述的適裝證書上予以適當註明：

- .1 從事專門業務的船舶，若其裝載改變量有限，以至於所有預計的裝載工況已在按照第2.2.1.1目提供給船長的穩性資料中經過批准；
- .2 用主管機關認可的方法進行遠程穩性驗證的船舶；
- .3 在批准的裝載工況範圍內裝載的船舶；或
- .4 具有涵蓋一切適用的完整和破損穩性要求的經批准的限制性KG/GM曲線的船舶。

適裝證書

2 第6段由下列文字替代：

“6 船舶必須：

- .1* 僅按照被驗證為符合完整和破損穩性要求的裝載工況進行裝載，該驗證須使用按照本規則第2.2.1.2目配備

的經認可的穩性儀；

.2* 如給予本規則第2.2.1.3目允許的免除並且未配備本規則第2.2.1.2目要求的經認可的穩性儀，須按照以下一種或多種經認可方法進行裝載：

(i) 按照經認可的裝載手冊所述的裝載工況，蓋章並註明日期.....並由主管機關的負責人或主管機關認可的組織的負責人簽字；或

(ii) 按照使用經認可的方法.....遠程驗證的裝載工況；或

(iii) 按照上述(i)提及的經認可的裝載手冊中界定的經批准工況範圍內的裝載工況；或

(iv) 按照使用上述(i)提及的經認可的裝載手冊所界定的經批准的臨界KG/GM數據所驗證的裝載工況；

.3* 按照本證書所附的裝載限制。

如要求不按照上述指導裝載船舶，則須將能證明提議的裝載工況合理性的必要計算資料提交發證主管機關，主管機關可書面授權採用所提議的裝載工況。

* 酌情刪去。”

RESOLUTION MEPC.249(66)**(Adopted on 4 April 2014)****AMENDMENTS TO THE CODE FOR THE CONSTRUCTION AND EQUIPMENT OF SHIPS
CARRYING DANGEROUS CHEMICALS IN BULK (BCH CODE)****(Cargo containment and Form of Certificate of Fitness)**

THE MARINE ENVIRONMENT PROTECTION COMMITTEE,

RECALLING Article 38(a) of the Convention on the International Maritime Organization concerning the functions of the Marine Environment Protection Committee (the Committee) conferred upon it by international conventions for the prevention and control of marine pollution from ships,

RECALLING ALSO resolution MEPC.20(22) by which the Committee adopted the *Code for the Construction and Equipment of Ships Carrying Dangerous Chemicals in Bulk (BCH Code)*,

NOTING article 16 of the International Convention for the Prevention of Pollution from Ships, 1973 (hereinafter referred to as the "1973 Convention") and article VI of the Protocol of 1978 relating to the International Convention for the Prevention of Pollution from Ships, 1973 (hereinafter referred to as the "1978 Protocol") which together specify the amendment procedure of the 1978 Protocol and confer upon the appropriate body of the Organization the function of considering and adopting amendments to the 1973 Convention, as modified by the 1978 Protocol (MARPOL),

CONSIDERING that it is highly desirable for the provisions of the BCH Code which are mandatory under MARPOL and recommendatory from a safety standpoint, to remain identical, when adopted by the Marine Environment Protection Committee and the Maritime Safety Committee,

HAVING CONSIDERED proposed amendments to the BCH Code, developed by the Sub-Committee on Stability and Load Lines and on Fishing Vessels Safety, at its fifty-fifth session,

1 ADOPTS, in accordance with article 16(2)(b), (c) and (d) of the 1973 Convention, amendments to the BCH Code, the text of which is set out in the annex to the present resolution;

2 DETERMINES, in accordance with article 16(2)(f)(iii) of the 1973 Convention, that the amendments to the BCH Code shall be deemed to have been accepted on 1 July 2015 unless, prior to that date, not less than one third of the Parties or Parties, the combined merchant fleets of which constitute not less than 50% of the gross tonnage of the world's merchant fleet, have communicated to the Organization their objection to the amendments;

3 INVITES the Parties to note that, in accordance with article 16(2)(g)(ii) of the 1973 Convention, the amendments to the BCH Code shall enter into force on 1 January 2016 upon their acceptance in accordance with paragraph 2 above;

4 INVITES ALSO the Maritime Safety Committee to note this resolution and take action as appropriate;

5 REQUESTS the Secretary-General, in conformity with article 16(2)(e) of the 1973 Convention, to transmit to all Parties to MARPOL, certified copies of the present resolution and the text of the amendments to the BCH Code contained in the annex;

6 REQUESTS FURTHER the Secretary-General to transmit copies of the present resolution and its annex to the Members of the Organization which are not Parties to MARPOL.

ANNEX

**AMENDMENTS TO THE CODE FOR THE CONSTRUCTION AND EQUIPMENT
OF SHIPS CARRYING DANGEROUS CHEMICALS IN BULK (BCH CODE)****Chapter II – Cargo containment****Part A – Physical protection (Siting of cargo tanks; ship stability)**

1 Existing subparagraph 2.2.1 is replaced by the following:

"2.2.1 General: Ships subject to this Code may be assigned the minimum freeboard permitted by the International Convention on Load Lines, 1966. The additional requirements in paragraph 2.2.4, taking into account any empty or partially filled tank as well as the specific gravities of cargoes to be carried, however, should govern the allowed operating draught for any actual condition of loading.

2.2.1.1 All ships engaged in the transport of chemicals in bulk should be supplied with loading and stability manuals for the information and guidance of the master. These manuals should contain details concerning the loaded conditions of full and empty or partially empty tanks, the position of these tanks in the ship, the specific gravities of the various parcels of cargoes carried, and any ballast arrangements in critical conditions of loading. Provisions for evaluating other conditions of loading should be contained in the manuals.

2.2.1.2 All ships subject to the Code shall be fitted with a stability instrument capable of verifying compliance with intact and damage stability requirements approved by the Administration at the first scheduled renewal survey of the ship, on or after 1 January 2016, but not later than 1 January 2021, having regard to the performance standards recommended by the Organization:

- .1 notwithstanding the above, a stability instrument fitted on a ship constructed before 1 January 2016 need not be replaced provided it is capable of verifying compliance with intact and damage stability, to the satisfaction of the Administration; and
- .2 for the purposes of control under regulation 16 of MARPOL Annex II, the Administration shall issue a document of approval for the stability instrument.

2.2.1.3 The Administration may waive the requirements of paragraph 2.2.1.2 for the following ships provided the procedures employed for intact and damage stability verification maintain the same degree of safety as being loaded in accordance with the approved conditions. Any such waiver shall be duly noted on the Certificate of Fitness referred to in paragraph 1.6.3:

- .1 ships which are on a dedicated service, with a limited number of permutations of loading such that all anticipated conditions have been approved in the stability information provided to the master in accordance with the requirements of paragraph 2.2.1.1;
- .2 ships where stability verification is made remotely by a means approved by the Administration;

- .3 ships which are loaded within an approved range of loading conditions; or
- .4 ships provided with approved limiting KG/GM curves covering all applicable intact and damage stability requirements.

Certificate of Fitness

2 Paragraph 6 is replaced with the following:

"6 That the ship must be loaded:

- .1^{***} only in accordance with loading conditions verified compliant with intact and damage stability requirements using the approved stability instrument fitted in accordance with paragraph 2.2.1.2 of the Code;
- .2^{***} where a waiver permitted by paragraph 2.2.1.3 of the Code is granted and the approved stability instrument required by paragraph 2.2.1.2 of the Code is not fitted, loading shall be made in accordance with one or more of the following approved methods:
 - (i) in accordance with the loading conditions provided in the approved loading manual, stamped and dated and signed by a responsible officer of the Administration, or of an organization recognized by the Administration; or
 - (ii) in accordance with loading conditions verified remotely using an approved means; or
 - (iii) in accordance with a loading condition which lies within an approved range of conditions defined in the approved loading manual referred to in (i) above; or
 - (iv) in accordance with a loading condition verified using approved critical KG/GM data defined in the approved loading manual referred to in (i) above;
- .3^{***} in accordance with the loading limitations appended to this Certificate.

Where it is required to load the ship other than in accordance with the above instruction, then the necessary calculations to justify the proposed loading conditions shall be communicated to the certifying Administration who may authorize in writing the adoption of the proposed loading condition.

^{***} Delete as appropriate."

散裝運輸危險化學品船舶構造和設備規則

目錄

前言

第 I 章 總則

1.1 目的

1.2 適用範圍

1.3 危險性

1.4 定義

1.5 等效

1.6 檢驗要求

1.7 生效日期

1.8 新貨品

第 II 章 貨物圍護系統

A—實體保護（貨艙位置、浮性及破艙穩性）

2.1 通則

2.2 船型

B—液艙類型

2.3 安裝

2.4 設計和建造

2.5 對各種物質的要求

C – 船舶佈置

2.6 貨物分隔

2.7 起居處所

2.8 貨泵艙

2.9 進入液貨區域內空艙、液貨艙和其他處所的通道

D – 貨物駁運

2.10 管路佈置

2.11 貨物駁運控制系統

2.12 船用貨物軟管

E – 液艙透氣系統

2.13 一般要求

2.14 液艙透氣系統的類型

F – 貨物溫度控制

2.15 一般要求

2.16 附加要求

G – 構造材料

2.17 一般要求

2.18 附加要求

H—對液艙內的蒸氣空間以及液艙周圍的留空處所的環境控制

2.19 一般要求

2.20 對各種貨品的環境控制要求

2.21 壓載艙佈置

2.22 液貨區內處所的艙底水泵設置

2.23 泵和管路的識別

第 III 章 安全設備和相關措施

A—貨物裝卸處所的通風

3.1 裝卸貨作業期間經常進入的處所

3.2 不經常進入的處所

B—易燃貨物的電氣要求

3.3 一般要求

3.4 含有液貨艙或管路的處所的電器裝置

3.5 緊鄰液貨區域前部、後部或上部的圍閉處所內的電氣裝置

3.6 開敞甲板上的電氣裝置

3.7 連接

3.8 對各種貨品的電氣要求

C – 測量

3.9 一般要求

3.10 對各種貨品的測量

D – 蒸氣探測

3.11 一般要求

3.12 對各種貨品的要求

E – 消防

3.13 消防安全佈置

3.14 液貨艙區域的消防佈置

3.15 對 1980 年 5 月 20 日以前建造的船舶的防火保護

F – 人員保護

3.16 要求

G – 液艙充注

3.17 一般要求

第 IV 章 特殊要求

4.1 二硫化碳

4.2 二乙醚

4.3 硫（熔融的）

- 4.4 丙酮氰醇及乳腈溶液（80%或低於 80%）
- 4.5 磷（黃磷或白磷）
- 4.6 內燃機燃油（含有烷基鉛）的防爆化合物
- 4.7 環氧丙烷及環氧乙烷/環氧丙烷混合物，而環氧乙烷的含量不超過 30%（按重量）
- 4.8 酸類
- 4.9 有毒貨品
- 4.10 由添加劑保護的貨物
- 4.11 在 37.8°C 時蒸氣壓力超過 1.033 kPa/cm² 的貨物
- 4.12 構造材料
- 4.13 貨泵艙
- 4.14 溢流控制
- 4.15 貨物圍護系統
- 4.16 化學品貨物的樣品
- 4.17 呼吸防毒面具和眼睛防護設備
- 4.18 不得暴露於過熱狀態下的貨物
- 4.19 93%或以下的硝酸銨溶液
- 4.20 過氧化氫溶液
- 4.21 50%或 50%以下的氯酸鈉溶液

4.22 硝酸辛酯，所有異構物

4.23 溫度傳感器

第 V 章 操作要求

5.1 每個液貨艙的最大允許裝貨量

5.2 貨物資料

5.3 人員培訓

5.4 進入液貨艙

5.5 液貨艙的開口

5.6 貨艙的加熱盤管

5.7 附加操作要求

第 VA 章 保護海洋環境的附加措施

第 VI 章 最低要求一覽表

第 VII 章 不適用本規則的化學品清單

第 VIII 章 液體化學品廢棄物的運輸

8.1 前言

8.2 定義

8.3 適用範圍

8.4 允許的運輸

8.5 文件

8.6 液體化學品廢棄物的分類

8.7 液體化學品廢棄物的載運和裝卸

前言

1 《散裝運輸危險化學品船舶構造和設備規則》(BCH 規則)的目的是為安全散裝運輸危險及有毒化學品提供一個國際標準。在考慮到有關貨品性質的情況下，通過規定了此類運輸船舶(不論噸位大小)的建造標準，及其船上應配備的設備，以便使其對船舶、船員及環境所造成的危險減至最少。

2 本規則的基本原則是根據每艘化學品船所載貨物的危險程度指定其船型。每一該類貨品可具有一個或多個危險特性，包括易燃性、毒性和反應性及其意外釋放可能對環境造成的危險。

3 在制定本規則的整個過程中，人們認識到必須以完善的造船學和工程學原理、以及對本規則所列的各種貨品的危險性有徹底的了解作為基礎；且進一步認識到化學品船的設計不僅是一門複雜的技術，而且還在快速發展，所以本規則也不應保持不變。因此，國際海事組織(IMO)要考慮到經驗和技術的進一步發展，定期對本規則進行評審。

4 本規則的修正案中對新貨品及其載運條件的要求，在國際海事組織海上安全委員會(MSC)及海上環境保護委員會(MEPC)通過後，將分別根據 1974 年國際海上人命安全公約(SOLAS 74)第 VIII 條規定及 1973 年國際防止船舶造成污染公約(MARPOL 73/78)的第 16 條規定，在這些修正案生效之前，暫作建議案予以散發。

5 本規則的主要內容是船舶設計和設備。為了確保能安全運輸這些貨品，必須對整個系統作出評估。安全運輸這些貨品的其他重要

方面，如培訓、操作、交通控制和港口裝卸等事項，正由或將由國際海事組織進行進一步的考核。

6 本規則第 VI 章涉及化學品船的操作要求突出了其他章節中的適用條文，並提到了化學品船安全操作的其他重要方面。本規則對所述貨品的最低要求的一覽表見《國際散裝運輸危險化學品船舶構造和設備規則》(IBC Code) 的第 17 章。IBC 和 BCH 規則的對照參考見本出版物的第 VI 章。

7 根據 MARPOL 附則 II 的 2007 年修訂版，本規則已進行了修訂。

第 I 章 總則

1.1 目的

本規則的目的，是對散裝運輸危險和有毒化學物質的船舶推薦適合的設計標準、構造標準及其他安全措施，借以減少對船舶、船員及環境造成的危險。按照 MARPOL 73/78，本規則僅適用於載運 X、Y 或 Z 類有毒液體物質的化學品船。且在《國際散裝運輸危險化學品船舶構造和設備規則》(IBC Code)第 17 章 C 欄中以 X、Y 或 Z 為標記。

1.2 適用範圍

1.2.1 貨品：本規則適用於除石油或類似的易燃貨品以外的危險和有毒的散裝化學品物質，貨品範圍如下：

(a) 具有重大火災危險性的貨品，其危險程度超過石油貨品和類似的易燃貨品；

(b) 除有易燃性外，還有其他重大危險性的貨品，或雖然沒有易燃性但有其他重大危險性的貨品；

(c) 如意外釋放，存在對環境有危害的貨品。

目前，本規則對液體貨品的限制，見 IBC 規則第 17 章最低要求一覽表。經審查並確定其安全及污染危險的危害程度沒有達到需要實施本規則的貨品，見 IBC 規則第 18 章。

1.2.2 船舶：本規則僅限於對液貨船。

1.3 危險性

1.3.1 關於化學品和其他物質對人類生命造成的危害，本規則考慮如下：

(a) 由化學品的閃點、沸點、爆炸極限和自燃溫度所確定的火災危險性。

(b) 由下述情況確定的健康危險性：

(i) 在乳化或具備蒸氣壓力的蒸氣狀態下，對皮膚產生刺激或有毒，或對眼、鼻、喉和肺的黏膜產生刺激或有毒；或

(ii) 在液體狀態下對皮膚有刺激作用；或

(iii) 經由皮膚吸收具有毒性，並應考慮致死濃度 LC50，口服致死濃度 LD50 和皮膚致死濃度 LD50 的數值。

(c) 水污染危險性由對人的毒害、水溶性、揮發性、氣味或味覺、及比重來確定。

(d) 空氣污染危險性由如下情況確定：

(i) 緊急情況暴露限度 (EEL) 或致死濃度 LC50；

(ii) 蒸氣壓力；

(iii) 水溶性；

(iv) 液態時的比重；

(v) 蒸氣狀態時的相對密度。

(e) 由與下列物質的反應性確定的反應危險性：

(i) 其他化學品，或

(ii) 水，或

(iii) 化學品本身（包括聚合性）。

1.3.2 關於化學品和其他物質對海洋環境造成的危害，本規則考慮如下：

(a) 對水生生物或人類健康產生危害或造成海洋食品腐壞的生物積聚；

(b) 對生物資源的破壞；

(c) 對人類健康的危害；和

(d) 環境舒適程度的下降。

1.4 定義

1.4.1 本規則中的液體係指當溫度為 37.8°C 時，其蒸氣壓力不超過 2.8 kPa/cm² 的液體。

1.4.2 蒸氣壓力係指，液體上面的飽和蒸氣在規定溫度時，用 kPa/cm² 或毫米高汞柱（mmHg）表示的平衡壓力。

1.4.3 閃點係指貨品釋放的易燃蒸氣足以被點燃時的攝氏溫度。本規則列出“開杯”和“閉杯”兩個數值，指明兩種不同的測試裝置。

1.4.4 沸點係指液體的蒸氣壓力等於大氣壓力時的溫度。

1.4.5 爆炸範圍係指氣體或蒸氣濃度（在空氣中的體積百分比）達到出現點火源就會燃燒或爆炸的範圍。

1.4.6 比重係指某一物質的某一體積的重量，與同體積水的重量之比。對於可溶性有限的液體，其比重將表明該貨品是沉於水下或浮於

水上。

1.4.7 蒸氣密度係指相對密度，或在相同壓力和溫度下，某種蒸氣或氣體（沒有任何空氣）的重量與同體積空氣的重量之比。數值小於 1，表示該蒸氣或氣體比空氣輕，數值大於 1，表示該氣體比空氣重。

1.4.8 黏度係指液體內部上下平行兩層，當其中一層在另一層上面移動時產生的一種剪力。某一物質的絕對黏度是力的達因數，該力能使兩個面積為 1 cm^2 的平行表平面，以 1 cm/s 的速度作相對移動，而這個表平面是由 1 厘米厚的物質分層出來的。某一物質的運動黏度是絕對黏度與該物質在測試溫度下的密度之比。

1.4.9 腐蝕侵襲係指由於某一物質產生電化學反應，因而對環境具有破壞作用的特性。

1.4.10 貨泵艙係指本規則涉及的設有操作貨品的貨泵及其輔助設備的處所。

1.4.11 泵艙係指位於貨物區域內，設有用於操作壓載水及燃油的泵及其輔助設備的處所。

1.4.12 貨艙區域係指船上包括液貨艙和貨泵艙以及包括隔離艙、留空處所和相臨及位於上述處所之上的甲板區域。

1.4.13 隔離係指一貨物管系或貨物透氣系統不與另一貨物管系或貨物透氣系統相連接。

此種隔離可以用設計或操作的方法實現。操作方法不得在液貨艙內使用，而應採用下列型式中的一種實現隔離：

(a) 拆去短管或閥並盲斷管端；

(b) 佈置兩個串聯的盲法蘭，並設有探測這兩個盲法蘭之間的管內有否滲漏的裝置。

1.4.14 獨立係指管系或透氣系統根本不與另一系統相連接，並且也沒有任何設施可與其他系統進行潛在的連接。

1.4.15 對於環氧丙烷和環氧乙烷/環氧丙烷混合物（含有重量不超過 30%的環氧乙烷）（4.7 節），參考溫度係指在壓力釋放閥設定壓力時貨物蒸氣壓力下的溫度。

1.4.16 毒性極限

(a) 口服致死劑量 LD50（口服）：即指口服時，使 50%受試對象死亡的劑量；

(b) 皮膚致死劑量 LD50（皮膚）：即指作用於皮膚時，使 50%受試對象死亡的劑量；

(c) 致死濃度 LC50（吸入）：即指吸入時，使 50%受試對象死亡的濃度。

1.4.16A 有毒液體物質係指在國際散裝化學品規則第 17 或 18 章中列入污染類別欄、或現行 MEPC.2/Circular 規定的或根據 1973 年國際防止船舶造成防污公約的 1987 議定書附則的修正案中 6.3 條規定臨時評定的 X、Y 或 Z 類的物質。

1.4.16B 已刪除。

1.4.16C 國際散化規則（IBC 規則）係指經國際海事組織海上安全委員會 MSC.4（48）決議和海上環境保護委員會 MEPC.19（22）決議分別修正通過的國際散裝運輸危險化學品船舶構造和設備規則。

1.4.17 凡引用本規則某一條款時，該條款下的所有規定均適用。

1.5 等效

1.5.1 對本規則要求船上應裝設或配備的特定的附件、材料、器具或儀器、或設備的型號，或應採取的任何特別措施，主管機關可允許在該船上裝設或配備任何其他的附件、材料、器具或儀器，或設備的型號，或採取任何其他的措施，但須通過試驗或其他方法，確定其至少與本規則要求者具有同等效能。

1.5.2 當主管機關准許以任何的附件、材料、器具、儀器、設備的部件、或其型號、或措施、程序、或佈置、或新穎設計或應用進行替代時，應將其細節連同驗證報告送交給 IMO，以便國際海事組織能將這些文件通告 MARPOL 73/78 的其他成員國和其他相關政府，供其官員參考。

1.6 檢驗要求

1.6.1 化學品船的構造、設備、附件、裝置和材料（但不包括簽發《貨船構造安全證書》、《貨船設備安全證書》、《貨船無線電安全證書》或《貨船無線電話安全證書》所需檢查的項目）應受到下列檢驗：

.1 初次檢驗。對此類檢驗，應在船舶投入營運前或在第 1 次簽發“散裝運輸危險化學品適裝證書”前進行。對於本規則範圍內的船舶，該檢驗應包括對結構、設備、附件、佈置和材料的全面檢查。初次檢驗時應確保結構、設備、附件、佈置和材料完全符合本規則中適用的規定。

.2 定期檢驗。其間隔由主管機關確定，但不得超過 5 年。定期檢驗應確保構造、設備、附件、裝置和材料均符合本規則適用的規定。

.3 中間檢驗。在《散裝運輸危險化學品適裝證書》的有效期內至少進行 1 次。如果在任何一個證書有效期內只進行 1 次中間檢驗，則檢驗應在證書有效期的中間日期前後 6 個月內進行。中間檢驗應確保安全設備、其他設備及有關的泵和管系符合本附則適用的規定，並處於良好工作狀態，對於這種檢驗，應在《散裝運輸危險化學品適裝證書》上進行簽署。

.4 年度檢驗。在《散裝運輸危險化學品適裝證書》簽發周年之日的前後 3 個月內進行。此年度檢驗應包括一個總體檢查，以確保構造、設備、附件、裝置和材料在各方面均滿足船舶預定的用途。對於這種檢驗，應在《散裝運輸危險化學品適裝證書》上進行簽署。

.5 附加檢驗。對此類檢驗，根據情況可以為總體的或局部的，並應在經過本章 1.6.2.3 規定的調查後有要求時進行，或在任何重大修理或更新時進行。此種檢驗時應確保必要的修理或更新行之有效，此種修理或更新的材料和工藝應是完全合格的，使船舶適於出海航行，不會對船舶或船上人員產生危險。

1.6.2 檢驗後狀況的維持

1.6.2.1 對船舶及其設備的狀況應予維持，使其符合本規則的規定，確保船舶適於出海航行，不會對船舶或船上人員產生危險。

1.6.2.2 在完成按本章規定的任何一次船舶檢驗後，非經主管機關許可，不得對檢驗範圍內的結構、設備、附件、佈置和材料做任何改變，但直接更換者除外。

1.6.2.3 每當船舶發生事故或發現缺陷從而影響船舶安全或船舶救生設備或本規則規定的其他設備的有效性和完整性時，則該船的船

長或船東應儘早向負責簽發有關證書的主管機關、指定驗船師或認可組織報告；該主管機關、驗船師或組織應進行調查，以確定是否需要進行本章 1.6.1.5 要求的檢驗。

1.6.3 適裝證書的簽發

1.6.3.1 在對符合本規則有關要求的從事國際航行的化學品液貨船進行了初次或定期檢驗後，應簽發 1 份《散裝運輸危險化學品適裝證書》，其標準格式列於本規則附件中。

1.6.3.2 按本節規定簽發的證書應存放於船上，以供隨時檢查。^①

1.6.4 由另一國政府簽發或簽署適裝證書

1.6.4.1 應另一締約國政府的要求，可對懸掛另一締約國國旗的船舶進行檢驗；如確認該船符合本規則的規定，可向該船簽發或授權簽發證書，並如適當時，按本規則對船上的證書進行簽署或授權簽署。在所簽發的任何證書上應聲明：該證書係應船旗國政府要求予以簽發的。

1.6.5 適裝證書的期限和有效期

1.6.5.1 《散裝運輸危險化學品適裝證書》的有效期由主管機關確定，但從初次檢驗或從定期檢驗之日算起，不得超過 5 年。

1.6.5.2 證書期限為 5 年不得展期。

1.6.5.3 下列情況證書失效：

^①由 1.7.3 所有認可要求的放寬和/或在 2.2.5 中認可的特殊免除和任何替代措施應記錄在《適裝證書》的第 4 項下。如果需要，主管機關也可註明其他事項，諸如 1.5.1 所提到的內容。

.1 在 1.6.1 規定的期限內未進行檢驗；

.2 船舶變更船旗國時，只有當簽發新證書的政府完全確認該船是符合 1.6.2.1 和 1.6.2.2 的要求時，才可簽發新證書。當這種變更在締約國之間進行時，變更後的 12 個月內，如前一個船旗國政府接到請求，則儘快將該船在變更船旗國前所持有的證書副本和有關檢驗報告副本（如有）轉交該船新的主管機關。

1.7 生效日期

1.7.1 本規則的生效日期是 1972 年 4 月 12 日（本規則在國際海事組織大會以 A.212（VII）決議通過後 6 個月生效）。

1.7.2 本規則適用於生效日期後安放龍骨或處於相似建造階段或開始進行改建的船舶。此改建規定不適用於 MARPOL 73/78 附則 II 第 1.17 條所涉及的船舶改建。

1.7.3 本規則還應適用於載運本規則所述貨物的現有船舶。現有船舶應滿足本規則對貨物載運的要求，下面的情況除外：

（a）載運需 1 型船舶運輸的貨物的液貨艙應滿足 2.2.4（a）（iii）條；但主管機關可允許與 2.2.2（a）（ii）和 2.2.2（b）（iii）規定的距離有較小的差異存在。

（b）載運需 2 型船舶運輸的貨物的液貨艙應位於 2.2.2（c）規定的舷側最小破損範圍以外；主管機關可允許對此有較小的放寬要求。

（c）不必遵守 2.2.4（b）（ii）和 2.2.4（c）的要求。

（d）希望遵守 2.2.4（b）（iii）的要求，但要求的船邊和船底距離可以放寬，條件是現有 2 型船的液貨艙應位於距船底板至少 760 mm

以上。

(e) 當現有化學品船從 3 型改為 2 型時，應滿足 2.2.4 的全部要求，除機器處所的破損殘存能力需由主管機關決定外。

(f) 不期望完全符合 2.7.1 的規定。

1.8 新貨品

如認為擬載運的散裝液態危險化學品和 X、Y 和 Z 類有毒液體物質應進入本規則範圍內但目前尚未列入本規則第 VI 章最低要求一覽表，則主管機關應根據本規則的原則規定適當的載運條件，並將這些條件通知國際海事組織。《散裝化學品危險性評定標準》在這方面應提供指導。當定期修訂本規則時，這些建議將被考慮在內。

第 II 章 貨物圍護系統

A^① – 實體保護（貨艙位置、浮性及破艙穩性）

2.1 通則

散裝載運危險化學品的船舶，由於碰撞、擱淺或其他情況造成的破損，遲早可能會導致貨物無控制地逸出，這點不可忽視。因此，液貨艙相對於船舷和船底的位置（這將對貨物圍護系統免受外部損傷起到一定保護作用）以及船舶在這種破損後能保持浮力的程度應與可容忍的貨物逸出量相關，並應考慮到對環境造成危害的性質和嚴重程度。

2.1.1 使用的實體保護可分為三級。對於對環境危害最大的貨品需採用保護的最高標準 1 型，對於危害依次遞減的貨品應採用 2 型和 3 型保護。

2.1.2 不同類別貨品需要的實體保護等級見第 VI 章最低要求一覽表的 e 欄目。

2.1.3 如擬運輸一種以上的貨品，則對船舶破損殘存能力的要求應適用於最危險的貨品，但貨物圍護系統只需符合對各類化學品規定的最低要求。

2.2 船型

2.2.1 一般要求：對本規則適用的船舶可以勘定 1966 年國際載重線公約所允許的最小乾舷。但是所有實際裝載工況下所允許的營運吃

^①如全部引用 IBC 規則第 2 章的規定，則可替代 A 部分的要求。

水應滿足 2.2.4 的附加要求，並考慮到所有空艙或部分裝載的情況以及所載運貨物的比重。為此目的，所有運輸散裝化學品的船舶應備有裝載手冊和穩性手冊，為船長提供參考和指導。這些手冊應包括液貨艙滿載和空艙或部分裝載的裝載工況、這些貨艙在船上的具體位置、所載運的不同貨物包的比重，以及在最危險裝載工況下的壓載佈置。

2.2.2 破損假定：在訂立有關液貨艙位置和船舶穩性的衡準時，有必要對假定破損進行規定並說明殘存條件和貨物圍護條件。假定破損情況要求按照下列規定。在這些情況下如果機器處所被視為可浸艙室，則將假定其滲透率為 0.85。其他可浸處所滲透率的確定應能反映對貨物、燃料或壓載的限制要求。這些限制要求應包含在提供給船長的資料中。

(a) 碰撞破損

(i)	縱向範圍	$L^{\frac{2}{3}}/3$ 或 14.5 m，取較小者
(ii)	橫向範圍（在載重線水平面上，自舷側向船內垂直於中心線的方向向船內量取）	B/5 或 11.5 m，取較小者
(iii)	垂向範圍	自基線向上不予限制

(b) 擱淺

		自船艏垂線起 0.3 L 內	船舶其他任何部分
(i)	縱向範圍	L/10	L/10 或 5 m，取較小者
(ii)	橫向範圍	B/6 或 10.0 m 取較小者	5 m
(iii)	垂向範圍 自基線量起	B/15 或 6 m，取較小者	

其中：對於船舶任何部分的 L 和 B（單位：m）及垂線見 1966 年國際載重線公約第 3 條的定義。

(c) 較小的舷側破損

由於拖輪、棧橋造成的破損，應取：

橫向範圍（在最深載重線水平面上，自舷側向船內垂直於中心線的方向向船內量取）	760 mm
---------------------------------------	--------

2.2.3 殘存假定：如船舶能保持穩定平衡的浮態，並滿足下列穩性衡準，則可認為船舶獲得了針對不同船型規定的破損殘存能力（見 2.2.4）。

(a) 如果復原力臂曲線在平衡位置以外具有 20° 的最小範圍，且相應的剩餘復原力臂至少為 100 mm，則可認為最終浸水情況下的穩性合格。如果機艙棚在此水平上是水密的，則可考慮機艙棚周圍的艙部上層建築的未浸水容積，此時破損水線不應高於艙部上層建築甲板頂部中心線處的後端。

(b) 最終浸水情況下的橫傾角不應超過 15°，只有當甲板的所有部分都未被浸沒時，17° 的橫傾角可以接受。對於長度小於 150 m 的船舶，如果能確定再小的限制角度不可能合理達到，且上述 2.2.3(a) 所述其他所有規定均已符合，則主管機關可以接受不超過 25° 的橫傾角。

2.2.4 船型要求

(a) 1 型船舶

(i) 概述

1 型船舶用於運輸的貨品需要最大限度地採取防禦措施防止其逸漏。

(ii) 船舶性能

船舶應能承受在其船長範圍內任何部位造成的碰撞破損(2.2.2(a))或擱淺破損(2.2.2(b))，並能按2.2.3規定獲得破損殘存能力。

(iii) 液貨艙位置

需要用1型船舶運輸的貨物，其液貨艙應位於按2.2.2(a)(ii)和2.2.2(b)(iii)所述破損範圍之外，且其任何部位距船體外板都不應小於760 mm。本要求不適用於作為稀釋洗艙污水的液艙。

(b) 2 型船舶

(i) 概述

2 型船舶用於運輸的貨品需要較大幅度地採取防禦措施防止其逸漏。

(ii) 船舶性能

(1) 船長 150 m 及以下船舶應能承受在其船長範圍內除艙部機器處所的任一邊界艙壁外的任何部位造成的碰撞破損(2.2.2(a))或擱淺破損(2.2.2(b))，並能按2.2.3規定獲得破損殘存能力。

(2) 船長超過 150 m 的船舶應能承受在其船長範圍內的任何部位造成的碰撞破損(2.2.2(a))或擱淺破損(2.2.2(b))，並能按2.2.3規定獲得破損殘存能力。

(iii) 液貨艙位置

需要用 2 型船舶運輸的貨物，其液貨艙應位於按 2.2.2 (b) (iii) 和 2.2.2 (c) 所述破損範圍之外，且其任何部位距船體外板都不應小於 760 mm。本要求不適用於作為稀釋洗艙污水的液艙。

(c) 3 型船舶

(i) 概述

3 型船舶用於運輸的貨品具有足夠危害性，需採取適當的圍護措施以增強其在破損狀況下的殘存能力。

(ii) 船舶性能

(1) 船長 125 m 及以上的 3 型船舶應能承受在其船長範圍內除艙部機器處所的任一邊界艙壁以外的任何部位造成的碰撞破損 (2.2.2 (a)) 或擱淺破損 (2.2.2 (b))，並能按 2.2.3 規定獲得破損殘存能力。

(2) 船長在 125 m 以下的 3 型船舶應能承受在其船長範圍內除艙部機器處所以外的任何部位造成的碰撞破損 (2.2.2 (a)) 或擱淺破損 (2.2.2 (b))，並能按 2.2.3 規定獲得破損殘存能力。此外，對於機器處所浸水後的船舶殘存能力應由主管機關確定。

(iii) 液貨艙位置

無特別要求。

2.2.5 對小船的特殊考慮：如小船擬載運需要 1 型或 2 型圍護的貨物，且不能在所有方面都符合上述 2.2.4 (a) (ii) 和 2.2.4 (b) (ii) 的要求，只有在採取了能保持同樣安全程度的替代措施時，主管機關才可考慮予以特別免除。在批准業已獲得免除的船舶設計時，指定的替代措施的性質應清楚地加以說明，並通知該船將前往的各國主管機

關，且任何此類免除應在證書上正式註明（1.6）。

B – 液艙類型

2.3 安裝

2.3.1 整體液艙：構成船體結構一部分的貨物圍護容器，以相同的方式與鄰近的船體結構一起承受相同的載荷。整體液艙是船體結構完整性所必需的。

2.3.2 獨立液艙：不是船體結構的一個連接部分的貨物圍護容器。建造和安裝獨立液艙是為了在所有可能時刻消除（或無論何種情況下最小化）因相鄰的船體結構受力或移動所引起的應力。

2.4 設計和建造

重力液艙：艙頂設計壓力不大於 0.7 kp/cm^2 的液艙。重力液艙可以是獨立液艙或整體液艙。應按主管機關的標準對重力液艙進行建造和試驗。

2.5 對各種物質的要求

對於各種物質的艙型要求（包括安裝和設計）見第 VI 章最低要求一覽表中的欄目中。

C – 船舶佈置

2.6 貨物分隔

2.6.1 除本規則另有規定之外，應該用隔離艙、留空處所、貨泵艙、泵艙、空液艙、燃油艙或其他類似處所將本規則所適用的貨物與機器和鍋爐處所、起居處所、服務處所、飲用水艙和生活用品儲藏室分隔

開。

2.6.2 與其他貨物、殘餘物或混合物會起危險反應的貨物、貨物的殘餘物或含有該貨物的混合物，應：

(a) 用隔離艙、留空處所、貨泵艙、泵艙、空液艙或彼此能相容的貨物將其與該類其他貨物分隔；

(b) 具有獨立的且不通過裝有該類其他貨物的液貨艙的泵和管系，除非它們被包圍在隧道內；且

(c) 具有獨立的液艙透氣系統。

2.6.3 貨物管路不應通過任何起居處所或機器處所，貨泵艙或泵艙除外。

2.6.4 適用本規則的貨物不應儲存於艙尖艙和艙尖艙內。

2.7 起居處所

2.7.1 起居處所不應位於液貨艙或泵艙上面，液貨艙不應位於起居處所的前端之後。^①

2.7.2 為了防止危害性蒸氣的侵襲，應適當考慮與貨物管系和液艙透氣系統有關的通往起居處所和機器處所的空氣進口和開口的位置。

2.7.3 起居處所的門和通風口應位於甲板室兩側，距離甲板室前端和液貨區域向後至少 $L/25$ (L 為船長) 但不少於 3 m。但該距離不必超過 5 m。上述規定範圍內的位於前艙壁或沿甲板兩側的弦燈應為固

^①對本規則生效之前建造的化學品船，可參見 2.7.1 和 2.7.3 的統一解釋建議案。

定式。駕駛室的門和窗可位於上述範圍之內，但其設計應能確保對駕駛室進行快速和有效的氣密和蒸氣密關閉。拆除機器時用的由螺栓緊固的門板可位於上述規定的範圍之內。

2.8 貨泵艙

2.8.1 貨泵艙的佈置應確保在任何時候都能從扶梯平台或從艙底板不受限制地通過。

2.8.2 應設有能用救生繩提升昏迷人員的永久性裝置，在提升時應不受任何凸出物的阻礙。

2.8.3 貨泵艙的佈置應能讓穿着防護服的人員能不受限制地接近貨物裝卸所需的一切閥門。

2.8.4 在所有扶梯和平台上都應設有欄杆。

2.8.5 正常出入泵艙的扶梯不應垂直設置，而且應在適當間隔處設置平台。

2.8.6 在貨泵艙內應裝有能處理貨泵艙內貨泵和閥門的排泄物或任何可能的泄漏物的設施。供貨泵艙用的艙底管系應能從貨泵艙外進行操作。應設有一個或幾個污水艙，用以儲存受污染的艙底水或洗艙水。還應配備帶有標準聯接器的通岸接頭或其他設備，以便把污水輸送至岸上的污水艙。

2.8.7 泵的排放壓力錶應安裝在貨泵艙之外。

2.8.8 有關特定貨品的貨泵艙要求見第 VI 章最低要求一覽表的 m 欄。

2.9 進入液貨區域內空艙、液貨艙和其他處所的通道

2.9.1 液貨區域內空艙、液貨艙和其他處所通道的設置應能確保全面檢查的進行。

2.9.2 進入液貨艙的通道應直接通到開敞甲板。

2.9.3 對於以水平的開口、艙口或人孔作為出入口的通道，其尺寸應足以使攜帶呼吸器的人員上下扶梯而無阻礙。同時，還應設置一無障礙的開口，以便從該處所底部提升受傷人員，該開口的最小淨尺寸不得小於 600 mm×600 mm。

2.9.4 對於以垂向開口或供某處所的長度和寬度範圍內使用的人孔作為出入口的通道，其最小淨開口不得小於 600 mm×800 mm，且離船底板的高度不大於 600 mm，除非設有格柵或其他腳蹬。

2.9.5 在特殊情況下，主管機關也可批准較小尺寸的開口。

D—貨物駁運

2.10 管路佈置^①

貨物管系的設計、佈置和製造應符合主管機關的標準，並考慮到下列規定。

2.10.1 所有管系構件的額定壓力應不小於該系統可能承受的最大壓力。如管系未裝有提供超壓保護的壓力釋放閥，或可能與其壓力釋放閥隔絕，則該管系的設計應能承受其在使用中遇到的最大壓力，同時應考慮到：

(a) 45°C 時的貨物蒸氣壓力；

^①對於經主管機關允許的船艙或船艙裝卸裝置，可參見 IBC 規則第 3.7 條規定。

(b) 液貨艙的額定壓力；

(c) 相關貨泵的最大排出壓力及其壓力釋放閥的設定值；和

(d) 正常操作中管路能產生的最大靜水壓力。

2.10.2 應保護與液艙連接的管路接頭免受機械損傷和野蠻對待。除經認可的連接截止閥的管路接頭和膨脹接頭以外，貨物管路的接頭都應是焊接連接。

2.10.3 除非能保持對破艙保護所要求的距離（見 2.1 和 2.2），否則，貨物管路不得安裝在甲板以下的貨物圍護處所外側與船體外板之間，但是，如果管子損壞後，不會導致貨物外流，則可以減小上述距離，即只要能保持檢查所需的距離。

2.10.4 位於主甲板以下的貨物管路可以通過其所服務的液貨艙並穿過艙壁或穿過與液貨艙、壓載艙、空液艙、貨泵艙或泵艙相鄰接的（縱向或橫向的）共同周界，但是，在其所服務的液貨艙內，應裝有能在露天甲板上操作的截止閥，並且在萬一管路受損時，要確保貨物的相容性。作為例外，如果液貨艙與貨泵艙相鄰接時，在露天甲板上操作的截止閥可位於在貨泵艙一側的液貨艙艙壁上。但是在艙壁上的閥和貨泵之間應加裝一個閥。

主管機關可接受安裝在液貨艙外的全封閉液壓操縱閥，但該閥應滿足下列條件：

(a) 被設計成無泄漏危險；

(b) 被安裝在其所服務的液貨艙艙壁上；

(c) 經適當保護，防止機械損傷；

(d) 被安裝的位置與外板之間的距離應滿足所要求的破艙保護的距離；和

(e) 能在露天甲板上對其操作。

2.10.5 在任何貨泵艙內，當由 1 台貨泵服務於 1 個以上液貨艙時，應在通往每個液貨艙的管路上安裝 1 個截止閥。

2.10.6 安裝在管隧內的貨物管路也應滿足 2.10.4 和 2.10.5 的要求。管隧應滿足對液貨艙有關結構、位置和通風的要求以及防止電氣危險的要求。當管路破損後應確保貨物的相容性。除了通往露天甲板和貨泵艙或泵艙的開口以外，在管隧上不得設有任何其他開口。

2.10.7 對穿過艙壁的貨物管路應佈置成能防止其在艙壁處產生過大的應力，並且不得使用以螺栓穿過艙壁的固定法蘭。

2.11 貨物駁運控制系統

2.11.1 為適當控制貨物，貨物駁運系統應滿足下述要求：

(a) 在每個液貨艙的注入管路和排放管路上應設 1 個能手動操作的截止閥，該閥應位於靠近管子穿過液貨艙艙壁之處；如果採用獨立深井泵排放貨物，則不要求在該艙的排放管路上設置截止閥；

(b) 在每個貨物軟管連接處應設 1 個截止閥；

(c) 所有貨泵和類似設備均應有遙控關閉裝置。

2.11.2 對於在駁運或輸送本規則所規定的貨物時所必需的控制裝置，除本規則其他條文已涉及的貨泵艙內的控制裝置以外，均不得設置在露天甲板以下。

2.11.3 本規則第 17 章最低要求一覽表中的“o”欄內，列出了對某些貨品的附加的貨物駁運控制要求。

2.12 船用貨物軟管

2.12.1 第 2.12.2 至 2.12.4 條適用於在 2002 年 7 月 1 日或以後安裝於船上的貨物軟管。

2.12.2 駁運氣體和液體所用的軟管應與貨物相容，並應適合於貨物的溫度。

2.12.3 對於承受液貨艙壓力和貨泵排放壓力的軟管，其設計爆破壓力應不低於在駁運貨物期間軟管所要承受的最大壓力的 5 倍。

2.12.4 每一新型貨物軟管，連同其端部附件，應在正常環境溫度下進行 200 個從零至至少 2 倍於規定的最大工作壓力的壓力循環型式試驗。在已進行循環壓力試驗後，該型式試驗應演示證實在極端運行溫度下至少 5 倍於其規定的最大工作壓力的爆破壓力。不得將用於型式試驗的軟管用於貨物輸送。其後，對所生產的每一根新軟管，在投入使用之前，都應在環境溫度下進行靜水壓力試驗，其試驗壓力不小於規定的最大工作壓力的 1.5 倍，但也不必大於其爆破壓力的五分之二。應採用模板噴刷或其他方法在軟管上標出其試驗日期及規定的最大工作壓力。對於不是在環境溫度下使用的軟管，還應標出其可適用的最高和最低操作溫度。規定的最大工作壓力應不低於 10 bar 表壓力。

E – 液艙透氣系統

2.13 一般要求

2.13.1

(a) 在所有液貨艙中應設置適合於所載運貨物的透氣系統。液貨艙透氣系統的設計應能儘量減少貨物蒸氣在甲板集聚和進入起居和機器處所的可能性，同時還能儘量減少易燃蒸氣進入有點火源的其他處所的可能性。其設計還應儘量減少飛濺到甲板上的可能行。透氣口的佈置應能防止水進入液貨艙，同時，應能使蒸氣不受阻礙直接向上噴射排出。應配備設施，以確保任何液貨艙內的液壓頭不超過對該液貨艙的試驗壓頭。可允許採用適當的高液位報警裝置、溢流控制系統或溢流閥，再配以測量裝置和液貨艙的充裝程序等。

(b) 當限制液貨艙過壓的裝置是基於高位報警器或自動關閉閥時，第 4.14 節適用。

2.13.2 對於裝有封閉式或限制式測量設備的液艙，應規定設有防火網（如設有時）時的透氣系統尺寸，以使在設計速率裝載時液艙不至超壓。特別是飽和貨物氣體在最大預計裝載速率下通過透氣系統排放時，液貨艙蒸氣空間與大氣壓之間的壓力差不應超過 0.2 kp/cm^2 ，或對於獨立液艙而言，不超過該艙的最大工作壓力。

2.13.3 任何裝設在透氣系統排放口的防火網應易於到達和取出，以便清洗。

2.13.4 應為透氣管路設有適當的泄放設施。

2.13.5 透氣管路如與抗腐蝕材料建成的液貨艙相連，或與按本規則要求的加有襯墊或塗層以裝卸特殊貨物的液貨艙相連，則該透氣管路也要同樣加有襯墊或塗層，或者用抗腐蝕材料製成。

2.14 液艙透氣系統的類型

2.14.1 開式透氣系統：係指在正常操作期間，除摩擦損失和裝有防火網外，對貨物蒸氣進出液貨艙的自由流動無任何限制的系統。開式透氣系統僅用於閃點在 60°C 以上且吸入時對人體健康無明顯危害的貨物。開式透氣系統可以由在每個液貨艙中單獨設置的透氣管構成，也可以在適當考慮到貨物分隔的情況下，將上述單獨透氣管組合成一個或幾個總管。但在任何情況下，在各個透氣管或總管上均不得設置截止閥。^①

2.14.2 控制式透氣系統：係指在每一液貨艙內設置的壓力/真空釋放閥的系統，以限制液貨艙中的壓力或真空，且用於不許使用開式透氣系統的貨物。控制式液貨艙透氣系統可由在每個液貨艙中單獨設置的透氣管構成，在適當考慮到貨物分隔的情況下，也可將上述僅與壓力有關的單獨透氣管組合成一個或幾個總管。在任何情況下，不得在壓力/真空釋放閥的上面或下面設置截止閥。在某些操作條件下可以設有壓力/真空釋放閥的旁通裝置。透氣管出口在露天甲板上的高度應不小於 4 m，如其設在離縱向步橋 4 m 的範圍內，則其高度應在縱向步橋之上不小於 4 m。如設有經主管機關型式認可的高速透氣閥，且能將蒸氣/空氣混合物以至少 30 m/s 的出口速度向上自由噴射，則透氣口在甲板或縱向步橋以上的高度可視情況減到 3 m。透氣出口應設在離開起居、服務和機器處所及點火源的最近空氣進口或開口至少 10 m 處。易燃蒸氣的出口應設有易於更新的並有效的防火網或型式經認可的安全頂蓋。在設計 PV 閥、防火網及透氣頂蓋時，應適當考慮到惡劣天氣下貨物蒸氣凍結或結冰可能引起的這些裝置的堵塞。

^①對於關於在透氣管路中禁止使用截止閥的規定，應將其擴大到禁止使用所有的其他隔斷裝置，包括盲通法蘭和盲板法蘭。

2.14.3 上述 2.14.2 所述的控制式液貨艙透氣系統應包括主透氣裝置和輔助透氣裝置，當其中一個透氣裝置損壞時蒸氣可以完全釋放以防止造成過壓或欠壓。作為替代，輔助透氣裝置可包括安裝在每一液貨艙內的壓力傳感器，並在船舶貨物控制室或從通常的貨物作業位置裝設監控系統。該監控設備應設有探測到液貨艙內出現超壓或欠壓時應激活的報警設施。船舶應在 2002 年 7 月 1 日以後不遲於其首次計劃進塢日的時間滿足本條規定，但不能遲於 2005 年 7 月 1 日。

對於低於 500 總噸的船舶，主管機關可接受放寬本條規定。

2.14.4 開式和限制式裝置只能用於下列情況：

(a) 本規則允許使用開式透氣時；

(b) 設有能在操作測量裝置之前釋放艙內壓力的裝置時。

2.14.5 對各種貨品的透氣要求見本規則第 VI 章最低要求一覽表中的 g 欄和 m 欄。

F—貨物溫度控制

2.15 一般要求

2.15.1 如設有貨物加熱或冷卻系統，則對該系統的製造、安裝和試驗均應使主管機關滿意。溫度控制系統中使用的材料應適合於擬裝運的貨品。

2.15.2 用於對特定貨物進行加熱或冷卻的介質應為經認可的類型。應對加熱盤管或導管的表面溫度加以考慮，以避免因貨物局部過熱或過冷而產生危險的反應。另見 4.10.6。

2.15.3 在加熱或冷卻系統中應設有控制閥，以便隔斷每個液貨艙

的加熱或冷卻系統並可以用人工調節其流量。

2.15.4 在任何加熱或冷卻系統中均應配備裝置，以確保在任何情況下（系統已被排空者除外）均能保持該系統中的壓力高於液貨艙內貨物作用於該系統的最大壓頭。

2.15.5

(a) 應設有測量貨物溫度的裝置。當過熱或過冷會導致危險情況發生時，應設有監測貨物溫度的報警系統。

(b) 如第 VI 章最低要求一覽表中“j”欄內所示，當各物質要求限制式或封閉測量裝置時，測量貨物溫度的裝置應分別為限制式或閉式。

(c) 限制式溫度測量裝置應符合 3.9 (b) 中對限制式測量裝置的定義。例如，可攜式溫度計安放在限制式表管內。

(d) 閉式溫度測量裝置應符合 3.9 (c) 中對閉式測量裝置的定義。例如，遙控讀數式溫度計的傳感器安裝在液貨艙內。

2.15.6 當對可能產生巨大有毒蒸氣的貨品進行加熱或冷卻時，其加熱或冷卻介質應在下述循環管路中工作：

(a) 除了用於其他貨物的加熱或冷卻系統外，循環管路應獨立於船上其他用途的系統，而且不進入機器處所；或

(b) 循環管路應在裝運有毒貨品的液貨艙之外^①；或

(c) 在介質循環到船上其他用途的系統或進入機艙之前，應能對

^①不適用於 1979 年 9 月 27 日以前建造的船舶。

其取樣檢查以檢查有無貨物存在。取樣設備應位於液貨艙區域內，並能檢測出任何已被加熱或已被冷卻的有毒貨品的存在。在對有毒貨物進行加熱和冷卻以前和之後還應遵守 5.6 的規定。

2.16 附加要求

對於某些貨品的附加要求見第 VI 章最低要求一覽表中的“m”欄。

G—構造材料

2.17 一般要求

2.17.1 用於液貨艙連同與其相關的管路、泵、閥門、透氣管及其接頭的構造材料應適合於所載貨物的溫度和壓力，並應符合公認的標準。通常的構造材料為鋼材。

2.17.2 選用構造材料時，根據需要應考慮下列要素：

- .1 在作業溫度下的缺口韌性；
- .2 貨物的腐蝕作用；和
- .3 貨物與構造材料之間產生有害反應的可能性。

2.17.3 貨主應負責向操作人員和/或船長提供適用性信息，且必須在運輸貨品之前及時提供該信息。所裝運的貨品應適於所有構造材料，以確保：

- .1 不會損壞船舶構造材料的完整性；和
- .2 不會引起危險或潛在危險的反應。

2.17.4 將貨品提交國際海事組織評估時，或當 2.17 中所列材料的

貨品適用性需要特殊要求時，應在 GESAMP/EHS 貨品資料報告表中提供關於所需構造材料的信息。這些特殊要求應在第 IV 章中進行說明，並隨後在 IBC 規則第 17 章的“o”欄中提及。報告表格還應標明是否需要其他特殊要求。貨品生產者應負責提供正確信息。

2.18 附加要求

已刪除。

H – 對液艙內的蒸氣空間以及液艙周圍的留空處所的環境控制

2.19 一般要求

2.19.1 對於液貨艙內的蒸氣空間以及在某些情況下液貨艙周圍空間，可要求其具有受特別控制的環境要求。

2.19.2 有以下四種不同控制方式：

(a) 惰化法 – 用不助燃也不與貨物反應的氣體或蒸氣充入液貨艙及相關管系和液貨艙周圍空間（若本規則第 IV 章有規定時），並維持這種狀態；

(b) 隔絕法 – 將液體、氣體或蒸氣充入液貨艙及相關管系（和液貨艙周圍空間，如有必要），使貨物與空氣隔絕並維持這種狀態；

(c) 乾燥法 – 將乾燥氣體或蒸氣充入液貨艙及相關管系，以防止水或水汽接近貨物，並維持這種狀態；就本條而言，乾燥氣體或蒸氣指在大氣壓力下其露點為 -40°C 或更低的氣體或蒸氣。

(d) 通風法 – 進行強制通風或自然通風。

2.19.3 與 2.19.2 (a)，(b) 和 (c) 相關的佈置要求如下：

(a) 除非岸上有惰性氣體可供隨時使用，否則，在船上應攜帶或製造足夠的惰性氣體，以供在對液貨艙進行裝、卸貨時使用。此外，船上還應另外備有足夠的惰性氣體，以補償其航行途中的正常損耗。

(b) 船上的惰性氣體系統應能使圍護系統內始終保持至少為 0.07 kPa/cm² 的表壓力。此外，惰性氣體系統不得使液貨艙內的壓力升高到超過液貨艙的釋放閥的壓力設定值。

(c) 採用隔絕法時，應設有供應隔絕介質的類似裝置，對此裝置的要求與上述 (a) 和 (b) 對惰性氣體供應裝置的要求相同。

(d) 應設有能監測液面以上空間中的氣體覆蓋層的裝置，以確保維持其恰當的氣體狀態。

(e) 當對易燃貨物採用惰化和/或隔絕裝置時，在惰性介質充入過程中，應儘量減少靜電荷的產生。

(f) 當採用乾燥法並以乾燥氮氣作介質時，對乾燥介質供應裝置的要求應與上述 (a)、(b) 和 (e) 中的要求相同。如在所有液艙的空氣進口使用乾燥劑作乾燥介質時，在整個航行期間應攜帶足夠量的乾燥劑，並考慮到晝夜溫差和預計濕度。

2.20 對各種貨品的環境控制要求

對某些貨品的環境控制需求見第 VI 章最低要求一覽表中的“h”欄。

2.21 壓載艙佈置

2.21.1 為固定壓載艙服務的泵、壓載管路、透氣管路和類似設備應獨立於服務液貨艙的類似設備和液貨艙本身。鄰接液貨艙的固定壓

載艙的排放裝置應設在機艙和起居處所的外面。充裝設備可位於機艙內，但此類設備應能確保從艙頂部充注，同時，在充裝設備中應設置止回閥。

2.21.2 對液貨艙進行壓載充裝時，可以使用在甲板平面上服務於固定壓載艙的泵，但注入管路與液貨艙或液貨艙管路間應無固定連接，且在注入管路上應裝有止回閥。

2.22 液貨區內處所的艙底水泵設置

用於貨泵艙、泵艙、留空處所、污液艙、雙層底和類似處所的艙底水泵裝置應完全位於液貨區域內。但對於留空處所、雙層底艙和壓載艙，如果用雙層艙壁將其與裝有貨物或貨物殘餘物的液貨艙相隔開時，則為例外。

2.23 泵和管路的識別

在泵、閥和管路上，應設有區別標記，以識別它們的用途和它們所服務的液艙。

第 III 章 安全設備和相關措施

A—貨物裝卸處所的通風

3.1 裝卸貨作業期間經常進入的處所

3.1.1 一般要求

對貨泵艙和容納貨物裝卸設備的其他圍蔽處所以及進行貨物作業的類似處所均應裝設機械通風系統，且應能從上述處所的外部對該系統進行控制。應採取措施，以便在進入艙室並操作設備之前對上述處所進行通風。

3.1.2 機械通風系統

(a) 對機械通風系統進氣口和排氣口的佈置應保證在該處所內有足夠的空氣流通，以避免有毒和/或易燃蒸氣（考慮其蒸氣密度）的積聚，同時應確保有足夠的氧氣，以便提供一個安全的工作環境。但無論如何，按處所的總容積計算，通風系統應具有每小時不小於 30 次的空氣交換能力。對於某些貨品，應按照 4.13 的規定，增加貨泵艙的通風率。

(b) 通風系統應為固定型的，而且通常應為抽出式，並應能從花鐵板的上面和下面抽出空氣。在裝有驅動貨泵的電動機的艙室內，應設有正壓式通風系統。

(c) 危險氣體處所的通風排氣管道應向上排放，其排氣口的位置與起居處所、服務處所、機器處所、控制站及其他無危險氣體處所的開口之間的水平距離至少為 10 m。

(d) 對通風進氣口的佈置應儘量減小任何通風排氣口排出的危險蒸氣發生再循環的可能性。

(e) 不應將通風管道穿過機艙、起居處所和工作處所或其他類似處所。

(f) 如果船上裝運易燃貨品，則風扇應經主管機關認可，確保能在爆炸氣體下使用。

(g) 對裝在船上的每一種風扇均應配有足夠的備件。

(h) 在通風導管的外部開口處，應設置單個網孔面積不大於 13 mm² 的保護網。

3.2 不經常進入的處所

對雙層底艙、隔離空艙、箱形龍骨、管隧、液貨艙處所以及可能積聚貨物的其他處所均應能進行通風，以確保有足夠的空氣防止有毒和/或可燃蒸氣的積聚並確保有足夠的氧氣以在進入前提供一個安全的環境。當上述處所內不設固定通風系統時，應備有經認可的移動式機械通風設備。

B— 易燃貨物的電氣要求

3.3 一般要求

電氣裝置的安裝應儘可能將易燃貨物發生火災和爆炸的危險減至最小。應小心防止在可能有易燃蒸氣的區域產生着火源。

3.4 含有液貨艙或管路的處所的電器裝置

3.4.1 一般含有液貨艙或管路的處所不允許設有電氣裝置。

3.4.2 在液貨艙或包含液貨艙或管路的處所只能允許使用設計成本質安全的測量和監控設備。由主管機關考慮使用潛沒馬達和泵。

3.4.3 貨泵艙只允許使用設計成防爆型的照明設備。

3.5 緊鄰液貨區域前部、後部或上部的圍閉處所內的電氣裝置

3.5.1 任何電氣測量或監控設備應設計成本質安全型。

3.5.2 如設有強制通風的處所可以使用防爆型的電氣設備。

3.5.3 只有當一處所可視為非危險處所，且其進口和通風口的位置離透氣口和排氣口有一段安全距離時，該處所可使用帶有圍閉通風設計的電氣設備。

3.6 開敞甲板上的電氣裝置

3.6.1 貨物甲板上只能使用設計成防爆型的電氣設備。

3.6.2 除貨物甲板以外的甲板上可使用帶有圍閉通風設計的電氣設備，但是電氣設備的位置離透氣口、排氣口、液艙開口、管路法蘭或貨物閥門要有一段安全距離，且高於甲板一段安全高度。

3.7 連接

在獨立液貨艙與船體之間應進行電氣連接。

3.8 對各種貨品的電氣要求

對各種貨品的電氣要求見第 VI 章最低要求一覽表中的“i”欄。

C – 測量

3.9 一般要求

液貨艙內應設有下列形式之一的液位測量裝置：

(a) 開式裝置：通過液貨艙的開口，將測量儀錶放置於貨物或其蒸氣之中，例如空檔液位測量孔。

(b) 限制式裝置：將此裝置伸入液貨艙內，使用時，允許少量貨物蒸氣或液體逸入大氣；不使用時，這種裝置是完全封閉的；其設計應確保在打開這種裝置時不致使艙內貨物（液體或氣霧）發生危險外溢。

(c) 封閉式裝置：將此裝置伸入液貨艙內，成為封閉系統的一部分，而且能防止艙內貨物溢出，例如浮筒式系統、電子探頭、磁性探頭和帶有防護裝置的觀察器等。

(d) 間接裝置：此裝置不用伸入液艙內，並獨立於液艙。間接測量裝置用於測量貨物數量，如貨物測重裝置、管路流量計等。

測量裝置應獨立於 4.14.2 所要求的設備，但對於 1982 年 9 月 27 日前建造的船舶除外，對於此類船舶，4.14.2 的要求可通過自動操作的截止閥得以滿足。

3.10 對各種貨品的測量

對於各種貨品的測量類型見第 VI 章最低要求一覽表的 j 欄。

D—蒸氣探測

3.11 一般要求^①

3.11.1 對載運有毒和/或易燃貨品的船舶至少應配備 2 套專為該類蒸氣而設計並經校準的試驗儀器，如果這種儀器不能兼用於試驗毒性濃度和可燃濃度，則應各備有 2 套單獨的儀器。

3.11.2 蒸氣探測儀可以是可攜式的，也可以是固定式的。如果已安裝一個固定的探測系統，則至少還應備有 1 套可攜式探測儀。

3.12 對各種貨品的要求

對於各種貨品的蒸氣探測要求見第 VI 章最低要求一覽表的 k 欄。

E—消防

(除了另有說明外，E 部分提及的 SOLAS 條文係指 1974 國際海上人命安全公約及之前經 MSC.99 (73) 決議通過的相關修正案的 II-2 章中的條文)

適合於特定貨品的滅火劑列於第 VI 章表中的 1 欄內。

3.13 消防安全佈置^②

3.13.1 經修正的 1974 年 SOLAS 公約第 II-2 章對液貨船的要求，

^①當在最低要求一覽表裏已註明需要探測某些貨品的有毒蒸氣而沒有適用的探測設備時，主管機關可以免除對該船的探測要求，但在適裝證書上應作適當的記錄。在批准這一免除時，主管機關應考慮到適當增加呼吸用空氣供應量的必要性，並應在適裝證書上註明，以引起對第 5.4.1 (b) 條規定的注意。

^②經修正的 1974 年 SOLAS 公約第 II-2/1.1 和 1.2 條所定義的船舶應符合經修訂的該 3.13 條。其他所有化學品液貨船應符合本規則 1980 年版的第 3.13 條。

應適用於本規則所涉及的船舶，且無論其噸位大小，包括小於 500 總噸的船舶，但下列除外：

(a) 第 60，61，62 和 63 條應不適用；

(b) 第 56.2 條（即：對主貨物控制站位置的要求）無需適用；

(c) 適用於貨船的第 4 條和第 7 條應適用，因為其可能適用 2,000 總噸及以上的貨船；

(d) 第 3.14 條的規定應適用並替代第 61 條；和

(e) 第 3.13.3 和 3.13.4 條規定應適用並替代第 63 條。

3.13.2 儘管有 3.13.1 的規定，但對於僅載運氫氧化鉀溶液、磷酸或氫氧化鈉溶液的船舶，如滿足了 1974 年 SOLAS 公約第 II-2 章 C 部分的要求，則不需要再滿足該章 D 部分的要求，但是第 53 條對此類船舶無需適用，且下列 3.13.3，3.13.4 和 3.14 條也無需適用。

3.13.3 已刪除。

3.13.4 如果能向主管機關證明要裝載的貨物不適宜採用二氧化碳或鹵化烴進行滅火，則可為貨泵艙設置一個固定壓力水霧或者高倍泡沫滅火系統。散裝危險化學品適裝證書中應反映出此特別要求。

3.13.5 經 MSC.99 (73) 通過的 SOLAS 第 II-2 章的下述要求應適用：

(a) 對於 500 總噸及以上的船舶，在修正案生效後的不遲於其首次計劃進塢日的時間，且不遲於修正案生效之後 3 年，應配備第 II-2/4.5.10.1.1 和 4.5.10.1.4 條所要求的裝置和持續監測易燃蒸氣濃度的系統。採樣點和探測頭應設置在適當位置，以隨時探測到潛在的危

險泄漏。如果易燃蒸氣濃度達到預先設定的水平（應不高於易燃蒸氣下限的 10%），應在泵艙和貨物控制室能自動激發連續視聽報警信號，以引起有關人員對潛在危險的警覺。但是，如果已安裝的現有監控系統的預先設定水平不高於易燃蒸氣下限的 30%，則可以接受該系統。儘管有上述規定，對於非國際航線的船舶，主管機關可以免除上述要求。

(b) 第 13.3.4.2 至 13.3.4.5 條和第 13.4.3 條應適用於 500 總噸及以上的船舶；

(c) 無論船舶尺寸的大小，除第 6.3.2.2 和 6.3.2.3 條以外的 SOLAS 公約第 II-2 章 E 部分的規定應適用；

(d) 如新裝有深油烹飪設備，則第 10.6.4 條應適用；和

(e) 按第 10.4.1.3 條規定，禁止新安裝以鹵代烷 1211、1301 和 2402 以及全氟化碳作為滅火劑的滅火系統。

3.14 液貨艙區域的消防佈置^①

3.14.1 所有船舶無論大小，應按下列要求設置固定甲板泡沫滅火系統。但對專門載運特定貨物^②的船舶可採用主管機關滿意的替代消防設施予以保護，但該替代設施對船上所載貨品的有效程度應達到甲板泡沫系統對大多數易燃貨品的有效性。

3.14.2 只准提供一種類型的泡沫劑，該泡沫劑應對擬載運的最大可能數量的貨物有效。對於泡沫無效或與泡沫不相容的其他貨物，應

^①在 1981 年 5 月 20 日及以後建造的船舶應符合本節規定。所有其他船舶應符合本規則 1977 年版本的規定。

^②專門載運特定貨物係指專門載運限定貨物。

另設主管機關滿意的附加滅火裝置。不應使用普通蛋白泡沫。

3.14.3 用於輸送泡沫的裝置應能把泡沫輸送到整個液貨艙甲板區域，並且能把泡沫送入假定甲板已經破裂的任何液貨艙內。

3.14.4 對甲板泡沫系統應能簡便、迅速地進行操作，該系統的主控制站應設在液貨區域以外的適當位置，並應鄰近起居處所，以便當被保護區域發生火災時易於接近並對其進行操作。

3.14.5 泡沫液的供給速率應不小於下列規定中的最大值：

(a) 按液貨艙甲板區域的面積計算，每平方米為 21/min。液貨艙甲板區域的面積是指船舶的最大寬度乘以總的液貨艙處所的縱向長度；

(b) 按具有最大水平截面積的單個液貨艙的水平截面積計算，每平方米為 20 l/min；

(c) 按最大的泡沫炮所保護的區域面積計算此區域係完全位於該泡沫炮的前方，每平方米為 10 l/min，但總量應不小於 1250 l/min，對於 4,000 載重噸以下的船舶，其泡沫炮的最小排量應經主管機關同意。

3.14.6 應提供足夠的泡沫濃縮液，以保證在使用按 3.14.5(a)、(b) 和 (c) 中規定的泡沫液供給速率時，使產生泡沫的時間至少能持續 30 min。

3.14.7 由固定泡沫系統提供泡沫炮和泡沫槍噴射的泡沫。每具泡沫炮的排量至少應為 3.14.5 (a) 或 (b) 所要求的泡沫液供給速率的 50%。對於任何泡沫炮的排量，按被該泡沫炮所保護的甲板區域面積

計算，此甲板區域係完全位於該泡沫炮的前方，每平方米至少為 10 l/min，但排量應不小於 1250 l/min。對於 4,000 載重噸以下的船舶，泡沫炮的最小排量應經主管機關同意。

3.14.8 從泡沫炮到其前部的被保護區域最遠端的距離應不大於該泡沫炮在靜空氣中射程的 75%。

3.14.9 在尾樓前端的左右兩舷或面向液貨艙區域的起居處所的左右兩舷，應各裝一具泡沫炮和連接泡沫槍的軟管接頭。

3.14.10 應提供能在消防作業中操作靈活的泡沫槍，同時，該泡沫槍應能覆蓋泡沫炮所保護的屏蔽區域。任何泡沫槍的排量應不小於 400 l/min，且在靜空氣中的射程應不小於 15 m。每艘船舶所配備的泡沫槍數量應不小於 4 具。泡沫總管出口的數量和佈置應能使至少從兩具泡沫槍噴出的泡沫直接射至液貨艙甲板區域的任何部位。

3.14.11 在泡沫總管上應設置截止閥，當消防總管成為甲板泡沫系統的組成部分時，在消防總管上也應設置截止閥。應將這些截止閥設在任何泡沫炮的前方，以隔斷總管的破損管段。

3.14.12 按所需輸出量使用甲板泡沫系統時，應能同時按所需壓力從消防總管噴射出最低要求數量的水柱。

3.14.13 應設有適用於所裝貨品的手提式滅火設備，並保持其良好可用狀態。

3.14.14 應將所有點火源排除出可能存在易燃蒸氣的處所。

3.15 對 1980 年 5 月 20 日以前建造的船舶的防火保護^①

^①MSC 在其第 42 屆會議上提請各主管機關在考慮了經第 9 次修正案修訂的

3.15.1 在 1980 年 5 月 20 日以前簽訂建造合同的船舶，或如無建造合同但在 1980 年 11 月 20 日以前安放龍骨或處於類似建造階段的船舶，或交船日期在 1984 年 5 月 20 日以前的船舶，均應符合本節要求。

3.15.2 對於本規則所適用的所有船舶，無論其噸位大小，均應符合 1974 年 SOLAS 公約的第 II-2/52 條。貨泵艙還應受到滅火系統的保護，該滅火系統應經主管機關根據擬載運的貨物進行認可。^①

3.15.3 應將所有點火源排除出可能存在易燃蒸氣的處所。

3.15.4 應為所有擬載運的貨品設置合適的滅火設備，並且這些設備應處於良好運轉狀態。

3.15.5 對於會產生易燃蒸氣的貨品，這些滅火設備應包含經主管機關根據擬載運的貨物進行認可的固定滅火系統。除非充分考慮到了靜電危險性，否則應避免使用 CO₂ 和窒息性蒸氣系統。

F – 人員保護

（除了另有說明外，F 部分提及的 SOLAS 條文係指 1974 國際海上人命安全公約及之前經 MSC.99(73)決議通過的其修正案的 II-2 章中的條文）

3.16 要求

3.16.1 為保護從事裝卸作業的船員，船上應有合適的防護設備，

本規則 3.13 和 3.14 條的要求下，儘可能實際並合理地考慮對 BCH 規則第 9 次修正案的 3.15 條涉及的船舶，改善液貨艙滅火器的佈置。特別是當不能用泡沫替代化學乾粉滅火劑時，主管機關應考慮增加化學乾粉的數量。

^①不適用於在 1983 年 6 月 14 日以及以後建造的船舶。

包括大圍裙、有長袖的特別手套、適用的鞋襪、用抗化學性材料製成的連衣褲工作服以及貼肉護目鏡和/或面罩等。用於保護人身的衣服和設備應圍罩人體全身皮膚，使全部人體受到保護。

3.16.2 工作服和防護設備應保存在易於到達處的專用儲存櫃內。除了新的和沒有被用過的設備及經徹底洗淨後沒有用過的設備外，這些設備均不應存放在起居處所內。如果能將存放此類設備的儲藏室與生活處所（例如臥室、過道、餐廳、浴室等）作適當地隔離，則主管機關也可批准在起居處所內設置存放此類設備的儲藏室。

3.16.3 在可能對人員產生危險的所有作業中，應使用防護設備。

3.16.4 當船舶載運有毒貨物時，船上應有足夠數量的（但不小於 3 整套）安全設備，每套設備應保證使人員能進入充滿氣體的艙室並在艙室內工作至少為 20 min。此類設備應是經修正的 1974 年 SOLAS 公約第 II-2/17 條所要求的設備的補充。^①

3.16.5 一套完整的安全設備應包括：

- (a) 自吸式空氣呼吸器 1 具（不使用儲存的氧氣）；
- (b) 防護服、長靴、手套和貼肉防護目鏡；
- (c) 配有腰帶的鋼芯的救生繩索；和
- (d) 防爆燈。

3.16.6 空氣供給

- (a) 所有船舶應攜帶下列裝置中的任何一種：

^①該規定適用於在 1983 年 6 月 14 日及以後建造的船舶。

(i) 為 3.16.4 要求的每套呼吸器具配備 1 套充滿空氣的備用空氣瓶；

(ii) 1 台能供應所需純度的高壓空氣的特種空氣壓縮機；

(iii) 1 台能對用於 3.16.4 所要求的呼吸器的足夠多的備用空氣瓶進行充注的充氣閥箱；或 (iv) ^①超過經修正的 1974 SOLAS 公約第 II-2/17 條的要求時，對於船上每具呼吸器配備的充滿空氣的備用空氣瓶，其總容量至少應達 6,000 l 的自由空氣。

(b) 對於任何船舶而言，若對其貨泵艙載運的貨物在第 VI 章表中的 m 欄裏有 4.13.2 表示，或要求貨物配備有毒蒸氣探測設備但又未配備時，該船應具備下列設備中的任何一種：

(i) 連接泵艙的低壓管系，該管系帶有軟管接頭適合 3.16.4 所要求的呼吸器使用。該系統應通過減壓裝置將足夠量的高壓空氣降壓，供 2 個人在氣體危險處所內至少工作 1 h 而不需使用呼吸器的氣瓶。應配備裝置，使特種空氣壓縮機能對固定空氣瓶再充氣；或

(ii) 等量的備用瓶裝空氣，以替代低壓空氣管。

3.16.7 應至少有 1 套符合 3.16.5 要求的安全設備存放在貨泵艙附近易到達處且具有明顯標誌的合適儲藏櫃內，其他幾套安全設備也應存放在合適的、有明顯標誌的和易於到達的處所。

3.16.8 承擔相應職責的船員應對壓縮空氣設備進行檢查，至少為每月 1 次。專業人員應對該設備進行檢查和試驗，至少為每年 1 次。

3.16.9 適合於從貨泵艙等處所抬起受傷人員的擔架應放置在易於

^①該規定適用於在 1983 年 6 月 14 日及以後建造的船舶。

到達的位置。

3.16.10 對於擬載運第 VI 章中最低要求一覽表 n 欄內有“4.17”標示的貨物的船舶，應為船上每個人員配備在應急逃生時使用的合適的呼吸防毒面具和眼睛防護設備，並應符合下列要求：

(a) 不能使用過濾式的呼吸防毒面具；

(b) 自給式呼吸器一般應具有至少為 15 min 的持續工作時間的能力；

(c) 不得將應急逃生防毒面具用於消防或裝卸貨物的目的，並應對其作出有效的標誌。

3.16.11 應根據國際海事組織制定的指南 1，在船上設有醫療急救設備，包括氧氣復蘇設備和供所載貨物用的解毒劑。^①

3.16.12 在甲板上方便的地方，應設置有合適標誌的能消除污染的淋浴和眼沖洗設備。這些設備應在所有環境條件下均能使用。

G—液艙充注

3.17 一般要求

在環境溫度下載運液體貨物的液貨艙，應充分考慮到所裝貨物可能達到的最高溫度，裝載時應避免在航行期間該液貨艙被液體漲滿。

第 IV 章 特殊要求

^①參見《危險貨物事故醫療急救指南》(MFAG)，該指南建議了如何根據症狀救治傷員，並建議了適合救治傷員的設備和解毒劑。

4.1 二硫化碳

二硫化碳可根據以下要求的水墊或適當的惰性氣體氣墊之下載運。

在水墊下載運

4.1.1 在裝載、卸載和運輸期間，應對液貨艙採取措施以保持艙內有一層水墊。此外，在運輸期間，液貨艙液面以上的空間應保持有一層惰性氣體的氣墊。

4.1.2 所有開口應位於甲板以上的液貨艙頂部。

4.1.3 裝載管路的端部應接近液貨艙底部。

4.1.4 應備有標準的空檔間隙測量孔，以使用於應急測量。

4.1.5 貨物管路和透氣管路應獨立於其他貨物的管路和透氣管路。

4.1.6 可以用泵卸貨，但此種泵應為深井泵或液壓驅動的潛液泵。深井泵的驅動裝置不應產生能點燃二硫化碳的點火源，並且不得採用其溫度可能超過 80°C 的設備。

4.1.7 如果採用卸貨泵，則應把它放入一個從艙頂伸到接近艙底的圓柱形圍阱。在打算把泵取出之前，圍阱內應形成一層水墊，除非能證明該液貨艙已無危險氣體。

4.1.8 如果貨物系統是按預計壓力和溫度進行設計的，則可用水或惰性氣體置換進行卸貨。

4.1.9 安全釋放閥應採用不鏽鋼製造。

4.1.10 由於二硫化碳的低着火溫度，需用較小的間隙阻止其火焰傳播，因而只允許在 10.2.3 所述危險位置設置本質安全型系統和電路。

在適當的惰性氣體的氣墊下載運

4.1.11 二硫化碳應裝載於設計壓力不小於 0.6 bar（表壓力）的獨立液貨艙中。

4.1.12 所有開口都應位於甲板以上的液貨艙頂部。

4.1.13 用於圍護系統的墊圈應使用不會與二硫化碳產生反應或溶解於二硫化碳的材料。

4.1.14 貨物圍護系統，包括蒸氣管路不允許使用螺紋連接。

4.1.15 裝載之前應在液貨艙內注入適當的惰性氣體直到氧氣體積為 2%或以下。裝載、運輸、卸載過程中應使用適當的惰性氣體自動保持液貨艙的正壓力。系統正壓力應保持在 0.1 和 0.2 bar（表壓力）之間，且應能夠遙控監測並裝有過壓/欠壓報警裝置。

4.1.16 裝有二硫化碳的獨立液貨艙周圍的貨艙處所，應注入適當的惰性氣體直至氧氣體積為 2%或以下。整個營運期間應有監控和保持這種條件的措施，並可以取樣檢查這些處所的二硫化碳蒸氣。

4.1.17 裝載、運輸和卸載二硫化碳應防止其向外泄漏。如二硫化碳在裝載時回收到岸上或在卸載時回收到船上，則蒸氣回流系統應獨立於所有其他圍護系統。

4.1.18 只能使用浸沒的深井泵或通過適當的惰性氣體換置卸載二硫化碳。浸沒的深井泵應有在作業時防止熱量積聚的設施。該泵還應

在泵殼上安裝溫度傳感器，且在貨物控制室裝有溫度遙控讀數器和報警器，報警器應設定為 80°C。此外，泵還應設有自動關閉裝置，用以卸載中如液貨艙壓力低於大氣壓力時自動關閉。

4.1.19 液貨艙、貨泵或管路裏裝有二硫化碳時不允許空氣進入這些系統。

4.1.20 裝載或卸載二硫化碳期間不允許進行其他貨物裝卸、液貨艙清洗或壓載。

4.1.21 應設置具有足夠能量的水霧滅火系統，該水霧滅火系統應能有效地覆蓋設有裝載支管的周圍區域、露天甲板上與貨品裝卸有關的管路和液貨艙頂部氣室。管路和噴嘴的佈置應能使受保護的全部區域都得到均勻噴灑的水霧（噴灑率 10 l/m²/min）。遙控手動操作裝置應設置在貨物區域外鄰近居住處所的合適位置，以便在受保護區域發生火災時能遙控啟動水霧系統的供水泵和遙控操作該系統中通常關閉的任何閥門。噴水系統進行就地和遙控手動操作，而且其佈置應確保能把任何泄漏的貨物沖洗掉。此外，在大氣溫度許可時，應將供水軟管與壓力噴嘴連接，以便在裝卸作業期間隨時即可使用。

4.1.22 在基準溫度（R）下，任何液貨艙可能裝載的貨物量均不得超過液貨艙容積的 98%。

4.1.23 液貨艙能裝載貨物的最大容積（ V_L ）應按下式進行計算：

$$V_L = 0.98V \frac{\rho_R}{\rho_L}$$

式中：

V=液貨艙的容積；

ρ_R =基準溫度（R）時貨物的相對密度；

ρ_L =裝載溫度時貨物的相對密度；

R=基準溫度，即係指貨物蒸氣壓力與壓力釋放閥的設定壓力值相等時的溫度。

4.1.24 對於每一液貨艙在可適用的每一裝載溫度和可適用的最大基準溫度時的最大充裝極限，應在主管機關認可的表格上予以標明。該表格的副本應由船長永久保存在船上。

4.1.25 距液貨艙開口、氣體或蒸氣出口、貨物管法蘭或適於裝載二硫化碳的液貨艙貨物閥門 3 m 範圍內的開敞甲板區域，或開敞甲板上的半圍蔽處所，應符合 17 章第“i”欄所列關於二硫化碳的電器設備的要求。並且在此特定區域內的其他如蒸氣管道等熱源的表面溫度不可超過 80°C。

4.1.26 應設有測量液面上部的空間和進行貨物取樣的裝置，此設施無需打開液貨艙或不干擾惰性氣體適當的正壓氣層。

4.1.27 只有按照主管機關認可的貨物裝卸計劃才可運輸貨物。貨物裝卸計劃中應標明整個貨物管系；船上應保存 1 份經認可的貨物裝卸計劃的副本；在簽發“散裝運輸危險化學品適裝證書”時，還應依據經認可的裝卸計劃。

4.2 二乙醚

4.2.1 船舶航行期間液貨艙周圍的留空處所均應進行自然通風，除非該處所已被惰化。如果設有機械通風系統，所有鼓風機應為無火花型結構。不得將機械通風設備置於液貨艙周圍的留空處所內。

4.2.2 重力液貨艙的壓力釋放閥的調定值不得小於 0.2 kPa/cm^2 。

4.2.3 如果按預計壓力設計貨物系統，則惰性氣體置換可用作從壓力艙卸貨。

4.2.4 在貨艙鄰近的圍蔽處所內，除了認可的固定照明用具外，不許安裝電氣設備。固定照明用具應經認可適用於二乙醚蒸氣。在露天甲板安裝電氣設備應符合本規則的要求。

4.2.5 為防止發生火災，在貨物區域內應採取措施，以避免產生任何點火源和/或熱源。

4.2.6 可以用泵卸貨，但這種泵的設計型式應能避免對泵軸的密封壓蓋產生液體壓力，或採用潛沒泵，並應適用於這種貨物。

4.2.7 液貨艙在裝載、卸載和運輸期間，應採取措施以使艙內保持惰性氣體氣墊。

4.3 硫（熔融的）

4.3.1 液貨艙通風

（a）在一切載運情況下，應對液貨艙通風使全部貨艙蒸氣空間內保持 H_2S （硫化氫）的濃度低於它的爆炸下限的一半，即體積在 1.85% 以下。

（b）如使用機械通風系統來使液貨艙內氣體保持低濃度，應裝有一個報警系統，當機械通風失效時報警。

（c）通風系統的設計和佈置，應能排除硫在該系統內的積存。

4.3.2 留空處所

(a) 在鄰近液貨艙的留空處所的開口，其設計和裝置應能防止水、硫或貨物蒸氣進入。

(b) 應裝有允許對留空處所內的蒸氣進行取樣和分析的接頭。

4.3.3 應具備貨物溫度控制裝置，以保證硫的溫度不超過 155°C。

4.4 丙酮氰醇及乳腓溶液（80%或低於 80%）

丙酮氰醇及乳腓溶液必須用無機酸加以穩定以防分解。製造廠應提供穩定證書，並列明：

(a) 所加穩定劑的名稱和數量；

(b) 穩定劑加入的日期及有效期；

(c) 保證穩定劑有效期的溫度界限；

(d) 航程超過穩定劑有效期時應採取的措施。

4.5 磷（黃磷或白磷）

4.5.1 磷在進行裝載、運輸和卸載的任何時候都必須使其處於最小深度為 760 mm 的水層之下。在卸載作業期間，應配備裝置用以確保水能佔據已卸去的磷的體積。從裝載磷的液貨艙排出的水，只能輸回到岸上的裝置。

4.5.2 應按設計的裝載工況，並考慮磷所處的深度、磷的相對比重和對磷的裝卸方法，對液貨艙進行設計並試驗至能至少高出該液貨艙艙頂 2.4 m 的水壓頭。

4.5.3 在設計液貨艙時，應考慮儘量減少液體磷與其水層之間的面積。

4.5.4 在水層液面上至少應保持 1% 艙容的空檔間隙。在液面空檔間隙內應充以惰性氣體，或用兩個具有不同高度通風帽的豎管進行自然通風，但豎管高出甲板至少為 6 m，高出泵室頂至少為 2 m。

4.5.5 液貨艙的所有開口都應位於艙的頂部，用於製造開口的附件和連接件的材料均應為能抵禦五氧化二磷的材料。

4.5.6 應在溫度不超過 60°C 的條件下裝載磷。

4.5.7 液貨艙加熱裝置應位於液貨艙外，同時，應採用合適的溫度控制方法，以確保磷的溫度不超過 60°C。應裝設高溫報警器。

4.5.8 在所有液貨艙周圍的留空處所內，均應設有經主管機關認可的水淋系統。當發生磷逸出時，該系統能自動啟動。

4.5.9 應對 4.5.8 所述留空處所配備有效的機械通風裝置，若遇緊急情況應能迅速將其關閉。

4.5.10 裝卸磷作業應由船上中央系統予以控制，該系統除有高位報警器外，還應能保證液貨艙不會溢流，而且遇緊急情況時，能在船上或岸上對該系統進行操作，以迅速停止裝卸作業。

4.5.11 在貨物駁運中，應將甲板上的水龍帶與水源連接，並保持在整個作業中有水流通，以保證可以立刻用水沖洗任何漏逸的磷。

4.5.12 船、岸裝卸管路接頭應經主管機關認可。

4.6 內燃機燃油（含有烷基鉛）的防爆化合物

4.6.1 用於這種貨物的液貨艙，不能用來運輸任何其他貨物，但用於製造內燃機燃油含有烷基鉛的防爆化合物的貨品除外。

4.6.2 如果貨泵艙按照 4.13.2 的規定位於甲板平面上，則通風裝置應符合 4.13.1 的要求。

4.6.3 用於運輸這種貨物的液貨艙，除經主管機關認可外，不准許進入。

4.6.4 在允許人員進入貨泵艙或液貨艙周圍的留空處所之前，應進行空氣分析以測定含鉛量是否合格。

4.7 環氧丙烷及環氧乙烷/環氧丙烷混合物，而環氧乙烷的含量不超過 30%（按重量）

4.7.1 按本節規定運輸的貨品，不應含有乙炔。

4.7.2 (a) 除非液貨艙已適當清洗，凡上三個航次中有一航次已裝過已知能產生催化聚合作用的貨物的液貨艙，不得裝運環氧丙烷或環氧乙烷/環氧丙烷混合物。已知能產生催化聚合作用的貨品如下：

- (i) 無機酸（如硫酸、鹽酸、硝酸）；
- (ii) 羧酸和酞（如甲酸、醋酸）；
- (iii) 鹵化羧酸（如氯醋酸）；
- (iv) 磺酸（如苯磺酸）；
- (v) 苛性鹼（如氫氧化鈉、氫氧化鉀）；
- (vi) 氨及氨溶液；
- (vii) 胺及胺溶液；
- (viii) 氧化物質。

(b) 裝載前，應對液貨艙進行徹底和有效的清洗，以便清除液貨艙及其管路內前一次所裝貨物的所有痕跡，但前一次所裝貨物是環氧丙烷或環氧乙烷/環氧丙烷混合物者除外。在用非不鏽鋼建造的鋼質液貨艙內裝載氨時，應予特別注意。

(c) 在任何情況下，應對液貨艙及其相關管路清洗程序的有效性進行試驗或檢查，以確定其不存在酸或鹼的物質痕跡，因為這些殘留痕跡在與環氧丙烷或環氧乙烷/環氧丙烷混合物接觸時，可能會產生危險情況。

(d) 每當在液貨艙首次裝載環氧丙烷或環氧乙烷/環氧丙烷混合物之前，應進入液貨艙檢查，查明有否大量的鐵鏽沉澱物和明顯的結構缺陷。當液貨艙連續載運這些貨品時，則上述檢查的間隔期應不超過兩年。

(e) 裝運環氧丙烷或環氧乙烷/環氧丙烷混合物的液貨艙應為鋼或不鏽鋼結構。

(f) 對裝運環氧丙烷或環氧乙烷/環氧丙烷混合物的液貨艙及其附屬管路系統進行徹底清洗或惰氣驅氣以後，該液貨艙仍可裝運其他貨物。

4.7.3 (a) 對於所有閘門、法蘭、附件和附屬設備，其型式必須適用於環氧丙烷或環氧乙烷/環氧丙烷混合物，並應採用鋼或不鏽鋼或主管機關所接受其他材料。所有材料的化學成份，應在製造之前提交主管機關認可。對於閘門的閘盤或閘盤面、閘座和其他磨損部分，應採用含鉻不少於 11% 的不鏽鋼製造。

(b) 對於所有墊圈，應採用不會與環氧丙烷或環氧乙烷/環氧丙

烷混合物起反應，不會溶解於這些貨品，也不會降低這些貨品的自燃溫度、耐火以及具有足夠力學性能的材料製造。墊圈接觸貨物的一面應為聚四氟乙烯（PTFE）或按其惰性具有同樣安全程度的材料。主管機關可以接受具有聚四氟乙烯填料或類似氟化聚合物作為填充物的螺旋纏繞不鏽鋼製件。

（c）如果使用絕緣和填料，其材料應不會與環氧丙烷或環氧乙烷/環氧丙烷混合物起反應、不會溶解於這些貨品以及不會降低這些貨品的自燃溫度。

（d）下列材料一般不宜用作裝載環氧丙烷或環氧乙烷/環氧丙烷混合物的圍護系統中的墊圈、填料和類似用途，若要使用，須在主管機關批准之前對其進行試驗：

- （i）氯丁橡膠或天然橡膠（如其與這些貨品接觸時）；
- （ii）石棉或與石棉混合使用的黏結料；
- （iii）含有鎂氧化物的材料，如礦物棉。

4.7.4 在貨物液體和蒸氣的管路中，禁止使用螺紋連接。

4.7.5 應將裝載和卸載的管路延伸至距液貨艙底部或任何聚液井底部 100 mm 之內。

4.7.6 （a）用於載有環氧丙烷或環氧乙烷/環氧丙烷混合物的液貨艙的圍護系統應設有由閘門控制的蒸氣回路接頭。

（b）在裝卸環氧丙烷或環氧乙烷/環氧丙烷混合物時，不能使液貨艙與大氣相通；在對液貨艙進行裝載期間，如需將蒸氣輸回到岸上接收設備時，則應將連接用於該貨品的圍護系統的蒸氣回路系統與所

有其他圍護系統的蒸氣回路系統分開。

(c) 液貨艙在進行卸貨作業期間，其壓力必須保持在 0.7 kPa/cm^2 的表壓力。

4.7.7 在對液貨艙進行卸貨時，只能使用深井泵、液壓操作的潛沒泵或惰性氣體置換法。在對每一貨泵進行佈置時，應確保在泵的排出管路被關閉或阻塞時不致於使貨品產生很大的熱量。

4.7.8 對於載運環氧丙烷或環氧乙烷/環氧丙烷混合物的液貨艙，其透氣管應獨立於載運其他貨品的液貨艙的透氣管。應配備當液貨艙無通向大氣的開口時能進行取樣的設施。

4.7.9 在用於裝卸環氧丙烷或環氧乙烷/環氧丙烷混合物的貨物軟管上應標明“駁運環氧烷專用”。

4.7.10 與載運環氧丙烷的整體重力液貨艙相鄰的液貨艙、留空處所和其他圍蔽處所均應裝載相容的貨物（4.7.2 中規定的貨物是作為不相容貨物的例子）或被所充的合適惰性氣體惰化。應對設有獨立液貨艙的任何貨艙處所進行惰化。應在被惰化的處所和液貨艙中監測環氧丙烷和氧氣。這些處所內的含氧量均應保持在 2% 以下。便攜式取樣設備應符合要求。

4.7.11 當貨泵或管系內存有環氧丙烷或環氧乙烷/環氧丙烷混合物時，在任何情況下均應禁止空氣進入該貨泵或管系。

4.7.12 在拆卸岸上管路之前，對於液體和蒸氣管路內的壓力，應通過設在裝貨端管上的閥門予以釋放。不准將從這些管路中流出的液體和蒸氣排入大氣。

4.7.13 可以在壓力液貨艙或獨立重力液貨艙或整體重力液貨艙內載運環氧丙烷。對於環氧乙烷/環氧丙烷混合物，應在獨立重力液貨艙或壓力液貨艙內載運。設計液貨艙時應考慮能使其承受在對貨物的裝載、運輸和卸載中預計會遇到的最大壓力。

4.7.14 (a) 用於載運環氧丙烷且其設計壓力小於 0.5 kPa/cm^2 (表壓力) 的液貨艙及用於載運環氧乙烷/環氧丙烷混合物且其設計壓力小 1.2 kPa/cm^2 (表壓力) 的液貨艙均應具有冷卻系統，以保持貨物的溫度低於基準溫度 (見 1.4.15)。

(b) 對於營運於有限航區或從事有限時間航行的船舶，主管機關可免除對設計壓力小於 0.6 kPa/cm^2 (表壓力) 的液貨艙的製冷要求，但在此種情況下，應考慮對該液貨艙採取絕熱措施。在適裝證書的載運條件中應標明該船允許營運的航區和年限。

4.7.15

(a) 任何冷卻系統均應能保持艙內液體溫度低於在圍護壓力下液體的沸點溫度，至少應配備能根據液貨艙內的溫度變化進行自動調節的兩套完整的冷卻裝置；對每套裝置應配齊正常作業時所必需的輔助設備，還應能對其控制系統進行人工操作，應設有報警器，用於指出溫度控制的故障；每個冷卻系統應能足以保持液體貨物的溫度低於該系統的基準溫度 (見 1.4.15)。

(b) 另一種方案是設 3 套冷卻裝置，其中任何 2 套裝置應能足以保持液體溫度低於基準溫度 (見 1.4.15)。

(c) 當用單壁將冷卻介質與環氧丙烷或環氧乙烷/環氧丙烷混合物隔開時，該冷卻介質應為不會與這些貨品起反應的介質。

(d) 環氧丙烷或環氧乙烷/環氧丙烷混合物禁止使用加壓冷卻系統。

4.7.16 壓力釋放閥的設定壓力應不小於 0.2 kPa/cm^2 (表壓力)，對於載運環氧丙烷的壓力液貨艙，其壓力釋放閥的設定值應不大於 7.0 kPa/cm^2 (表壓力)，而對於載運環氧乙烷/環氧丙烷混合物的壓力式液貨艙，其壓力釋放閥的設定值應不大於 5.3 kPa/cm^2 (表壓力)。

4.7.17 (a) 應將用於裝載環氧丙烷或環氧乙烷/環氧丙烷混合物的液貨艙的管系與所有其他液艙(包括空液艙)的管系隔離(見 1.4.13 的定義)，若用於液貨艙的裝載管系並非獨立的(見 1.4.14 的定義)，則可拆去短管、閥或其他管段，並在這些位置上安裝盲板法蘭，以達到所需的管系分隔；該所需的分隔適用於所有液體和蒸氣管系、液體和蒸氣通風管路以及任何其他可能的連接管路，例如公用惰性氣體供給管路等。

(b) 只有按照主管機關認可的貨物裝卸計劃才可運輸環氧丙烷或環氧乙烷/環氧丙烷混合物。對於所擬定的每種裝載佈置，應在單獨的貨物裝卸計劃中予以標明；在貨物裝卸計劃中應標明整個貨物管系和需要符合上述管系分隔要求時的盲板法蘭的安裝位置；船上應保存 1 份經認可的貨物裝卸計劃的副本；在簽發“散裝運輸危險化學品適裝證書”時，還應依據經認可的裝卸計劃。

(c) 每當船舶在首次裝載環氧丙烷或環氧乙烷/環氧丙烷混合物之前以及在裝運過其他貨品後仍然轉為裝載這些貨品之前，均應從港口當局承認的負責人員處獲得能證明該船業已達到所需管系分隔的證書，並將其存於船上，在盲板法蘭和管路法蘭的每個接頭處均應裝設金屬線，並由船上的負責人員對其鉛封，以保證盲板法蘭不被無意

拆移。

4.7.18

(a) 在基準溫度下，任何液貨艙所能裝載的貨物量均不得超過液貨艙容積的 98% (見 1.4.15)。

(b) 液貨艙能裝載貨物的最大容積 (V_L) 應按下式進行計算：

$$V_L = 0.98V \frac{d_R}{d_L}$$

式中 V_L =液貨艙載運的最大容積；

V =液貨艙的容積；

d_R =貨物在基準溫度時的相對密度 (見 1.4.15)；

d_L =裝載溫度和裝載壓力下貨物的相對密度。

(c) 對於每一液貨艙在可適用的每一裝載溫度和可適用的最大基準溫度時的最大充裝極限，應在主管機關認可的表格上予以標明。該表格的副本應由船長永久保存在船上。

4.7.19 貨物應在合適的氮氣保護層之下載運。應裝有自動補充氮氣的系統，以便在由於環境條件或對製冷系統的不正確操作而致使貨品溫度下降時，能夠防止液貨艙的壓力不致低於 0.07 kPa/cm^2 (表壓力)。船上應提供充足的氮氣，以便滿足自動壓力控制的需要。用於保護層的氮應為工業用純質的氮 (其容積純度為 99.9%)。通過減壓閥連接液貨艙的一組氮氣瓶可滿足上述“自動”的要求。

4.7.20 在裝載前後均應對液貨艙的蒸氣空間進行測試，以保證其含氧量按容積計為 2%或以下。

4.7.21 應設置具有足夠能量的水霧滅火系統，該水霧滅火系統應能有效地覆蓋設有裝載支管的周圍區域以及露天甲板上的與貨品裝卸有關的管路和液貨艙的頂部。對管路和噴嘴的佈置應能保證 $10 \text{ l/m}^2/\text{min}$ 的均勻噴灑率。應能對該水霧系統進行就地和遠距離的人工操作，而且應將其佈置成能把任何泄漏的貨物沖洗掉。遙控手動操作裝置應設置在貨物區域外鄰近居住處所的合適位置，以便在受保護區域發生火災時能遙控啟動水霧系統的供水泵和遙控操作該系統中通常關閉的任何閥門。噴水系統進行就地和遙控手動操作，而且其佈置應確保能把任何泄漏的貨物沖洗掉。此外，在大氣溫度許可時，應將供水軟管與壓力噴嘴連接，以便在裝卸作業期間隨時即可使用。

4.7.22 在貨物駁運時使用的每個貨物軟管接頭處，都應配備一個能控制關閉速率的遙控截止閥。

4.8 酸類

4.8.1 不得將船體外板用作裝載礦物酸的液貨艙的周界。

4.8.2 主管機關可以考慮關於採用抗腐蝕材料作為鋼質液貨艙和有關的管系襯裏的建議。襯裏的彈性應不低於其支承周界板的彈性。

4.8.3 除非液貨艙是完全採用抗腐蝕材料建造的，或者在液貨艙內裝有經認可的襯裏，否則在決定艙壁厚度時應考慮其受貨物腐蝕的影響。

4.8.4 在裝卸集管的連接法蘭處應設有可移動的防護罩，以防貨物噴出的危險；此外，還應設有溢流盤，以防貨物滴漏到甲板上。

4.8.5 由於在裝載這些酸類物質時會出現產生氫的危險，不允許在鄰近液貨艙的封閉處所內設有電氣設備或其他火源。

4.8.6 對於受本節要求約束的貨物，除應符合 2.6 的分隔要求外，尚須將其與燃油艙隔開。

4.8.7 應配備合適的儀器，以探測貨物是否漏逸到鄰近處所。

4.8.8 貨泵艙的艙底泵裝置及排放裝置均應為由抗腐蝕材料製成的。

4.9 有毒貨品

4.9.1 液貨艙透氣系統排放口的位置應符合下列規定：

(a) 在露天甲板以上的高度為 $B/3$ 或 6 m，取大者，對於甲板液貨艙，其高度為從通道步橋量起；

(b) 如透氣管設在距步橋 6 m 範圍內，則其排放口的高度應為在前後步橋以上不小於 6 m；且

(c) 與通向起居和服務處所的任何開口或空氣入口之間的距離應不小於 15 m；

(d) 如適用時，透氣管的高度可減至距甲板或前後方向步橋以上 3 m，但在透氣管上應設置經主管機關認可的高速透氣閥，該閥應能將蒸氣和空氣的混合物以至少 30 m/s 的出口速度向上無阻擋地噴出。

4.9.2 液貨艙的透氣系統應配備能使其蒸氣回路與岸上裝置相連接的接頭。

4.9.3 對於此類貨品：

(a) 不得在鄰接燃油艙的液貨艙內儲存；

(b) 應具有獨立的管系；且

(c) 應將液貨艙的透氣系統與裝載無毒貨品的液貨艙的透氣系統分開。

4.9.4 液貨艙壓力釋放閥的調定壓力的最小值應為 0.2 kPa/cm^2 。但是，對於以前經認可的裝載有毒貨品的現有船舶，其液貨艙壓力釋放閥的調定壓力的最小值應儘量接近 0.2 kPa/cm^2 ，並考慮到液貨艙的尺度。

4.10 由添加劑保護的貨物

4.10.1 對於在第 VI 章表中的 m 欄內列出的某些貨物，按其化學構成的性質，在某些溫度、暴露於空氣或與催化劑接觸的條件下，可能會發生聚合、分解、氧化或其他的化學變化。通過在液體貨物中加入少量化學添加劑或通過控制液貨艙的環境，可緩和這種趨向。

4.10.2 設計用於載運這些貨物的船舶時，應考慮排除液貨艙和貨物裝卸系統內的任何結構材料或污染物對貨物起催化作用或破壞抑制劑的可能性。

4.10.3 應注意對這些貨物進行有效保護，以在整個航行期間能防止貨物發生有害的化學變化。載運這種貨物的船舶應備有製造商提供的保護證書，並在航行期間將其保存在船上，該證書應註明下列事項：

- .1 所用添加劑的名稱和數量；
- .2 添加劑是否需依賴氧氣；
- .3 將添加劑加入貨品的日期及添加劑的有效期；

.4 確保添加劑有效期的任何溫度界限；和

.5 航行期超過添加劑有效期時應採取的措施。

4.10.4 使用排除空氣作為防止貨物氧化的方法的船舶應符合 2.19.3 的要求。

4.10.5 含有依賴氧的添加劑的貨品在裝載時不需惰化。

4.10.6 設計透氣系統時應考慮該系統能消除由於化學聚合物增多而造成的阻塞，透氣設備的型式應符合能定期檢查其使用性能的要求。

4.10.7 通常以熔化狀態載運的貨物，其結晶或凝固可能會導致液貨艙所裝貨物中的部分抑制劑消失。隨後的重新熔化可能產生無抑制液體的積囊，同時還會出現聚合的危險。為防止這種情況，應保證貨物在任何時候和在液貨艙的任何部分都不會產生全部或局部的結晶或凝固。任何所需的加熱裝置應能保證不使液貨艙內任何部分的貨物被過分加熱至可能產生危險的聚合反應的程度。若蒸氣盤管溫度可能導致貨物被過分加熱時，應採用間接的低溫加熱系統。

4.11 在 37.8°C 時蒸氣壓力超過 1.033 kPa/cm² 的貨物

4.11.1 除非液貨艙經特別設計能經受貨物的蒸氣壓力，否則應採取措施保持貨物的溫度在大氣壓力下低於其沸點溫度。

4.11.2 應設有能在裝載作業時把排出的氣體輸回岸上的管路接頭。

4.11.3 應對每個液貨艙均配備 1 隻壓力錶，用以指示貨物上面的蒸氣空間中的壓力。

4.11.4 如對貨物進行冷卻時，則應在每個液貨艙的頂部和底部設置溫度計。

4.12 構造材料

已刪除。

4.13 貨泵艙

4.13.1 如 3.1.2 所述的通風系統，應根據該處所的總容積具有至少每小時換氣 45 次的最低能力。通風系統的排氣導管距通向起居處所的開口、通風系統的進口、工作區域或其他類似處所至少應為 10 m，同時還應高出液貨艙甲板至少為 4 m。

4.13.2 應將貨泵設置在液貨艙內，或者貨泵艙應位於甲板平面上。應要求主管機關對低於甲板的貨泵艙給予特殊考慮。

4.14 溢流控制（選擇 1）

作為測量裝置要求的補充，本節規定適用於第 VI 章最低要求一覽表中的“m”欄內列有特定要求的貨物。

4.14.1 高位報警器：液貨艙應設置報警器，用來指示液貨艙裝載過滿的緊急危險。應採取措施在裝貨之前對該報警器進行試驗。

4.14.2 液貨艙溢流控制

(a) 應設置一個能滿足如下要求的系統：

(i) 該系統應是自動的、不依賴於人工介入或控制、並為主管機關所接受，以保證液貨艙在裝貨時不會溢流到甲板或舷外；

(ii) 在液貨艙的正常裝載程序不能制止液位超過正常滿載狀態時，

該系統即應開始工作；

(iii) 該系統應獨立於 4.14.1 所要求的高位報警器操作。

(b) 如該系統包含能防止液貨艙溢流的自動關閉閥，則該閥應按下述要求操作：

(i) 總的關閉時間，以秒計，即從開始發出信號到完全關閉閥門的時間間隔，不應超過：

$$\frac{3600U}{LR}$$

式中：

U=在發出液位信號時液貨艙內液面以上空間的容積， m^3 ；

LR=船岸雙方協議的最大裝載率 (m^3/h)，見 (ii) (3)。

(ii)

(1) 船上應保存關於閥門特性的資料，包括關閉次數，應能對該次數進行驗證和疊加。

(2) 自動閥關閉時不應振動。

(3) 裝載率 (LR) 的計算應將閥門關閉所產生的壓力波動限制在可接受程度，並考慮裝貨軟管或貨臂及船岸的管路系統。

(4) 在誤操作或系統動力故障情況下，該閥門應能“安全失效”。除非該系統包含的蓄電源足以操作該系統所有閥門至少兩次，或者警報顯示為系統故障或主電源故障，否則這一般表明該閥門不能達到關閉位置。安全失效的關閉時間不應小於正常關閉時間。

(c) 當船舶設置符合本節要求的速閉閥進行本節不適用的貨品的作業時，經主管機關同意，可採取措施使閥門與系統隔離。這種措施可以是完全拆除閥門或安裝帶有可拆裝管路的曲管或盲板組成的轉換系統。本節描述的任何自動系統的故障及相應的系統恢復應記入船舶操作日誌中。

4.14 溢流控制（選擇 2）

作為測量裝置要求的補充，本節規定適用於第 VI 章最低要求一覽表中的“m”欄內列有特定要求的貨物。

4.14.1 高位報警器：在液貨艙內應設置能示明液貨艙內液位到達正常滿載時的聽覺和視覺高位報警器。該高位報警系統應獨立於 3.9 和 4.14.2 所要求設置的設備。

4.14.2 液貨艙溢流控制：應設置一個能滿足如下要求的系統：

(a) 在液貨艙的正常裝載程序不能制止液位超過正常滿載狀態時，該系統即應開始工作；

(b) 該系統應能向船上操作人員發出聽覺和視覺報警；

(c) 如有必要，該系統應提供相繼關閉岸泵和/或閥門及關閉船上閥門的一致信號。對於信號以及泵和閥門的關閉，可由操作人員予以控制。在任何情況下，裝載率 LR (m^3/h) 不應超過：

$$\frac{3600U}{t}$$

式中：U 係在發出液位信號時液貨艙內液面以上空間的容積， m^3 ；

t 係從發出信號到貨物完全停止注入液貨艙所需的時間。此時

間應為下述每一相繼動作所需時間的總和：

操作人員對信號的響應；

停泵；和

關閉閘門。

當用於安全裝載的任何重要系統不運行時，應能立即停止所有裝載作業。

4.14.3 在裝載作業前應能對液位報警器進行試驗。當用於安全裝載的任何重要系統出現動力故障時，應能向有關操作人員報警。

4.15 貨物圍護系統

已刪除。

4.16 化學品貨物的樣品

4.16.1 須保存在船上的貨物樣品應儲存在位於貨物區域內的指定處所，或在特殊情況下，可將其存放在主管機關認可的其他處所。

4.16.2 儲存處所應符合下列要求：

- (a) 應具有分隔的格柵，以防這些瓶子在海上航行時移動；
- (b) 其材料應能完全抵禦擬儲存的各種液體；
- (c) 應配備合適的通風裝置。

4.16.3 相互之間起危險反應的樣品不得緊靠在一起儲存。

4.16.4 在船上保留樣品的時間不應超過所需的時間。

4.17 呼吸防毒面具和眼睛防護設備

對於第 VI 章最低要求一覽表 “m” 欄中所列的參照本節的內容，
3.16.10 條規定應適用。

4.18 不得暴露於過熱狀態下的貨物

4.18.1 當液貨艙或附屬管路內的貨物在受到局部的過分加熱後，若可能產生危險的反應，諸如聚合、分解、熱不穩定性或放出氣體等，則應將這些貨物與溫度高於其初始反應溫度的其他貨品適當分開裝運。

4.18.2 應對載運上述貨物的液貨艙內的加熱盤管予以盲斷或採用等效措施，以保障貨品的安全。

4.18.3 未經絕緣的甲板液貨艙不得載運熱過敏貨品。

4.18.4 為了避免溫度升高，該貨物不得裝運在甲板液貨艙內。

4.19 93%或以下的硝酸銨溶液

4.19.1 硝酸銨溶液至少應含有質量百分比濃度為 7%的水。對該溶液在以 10 份水與 1 份溶液（按重量）進行稀釋時，酸度（PH）應在 5.0 和 7.0 之間。該溶液中所含的氯化物離子和鐵離子均不應超過 10 ppm，並不得含有其他雜質。

4.19.2 用於裝載硝酸銨溶液的液貨艙和設備應獨立於裝載其他貨物或易燃貨品的液貨艙和設備。不得使用那些在營運中或在發生故障時會將可燃物品（如潤滑油）釋放至貨物中的設備。液貨艙不得用海水壓載。

4.19.3 除主管機關明確表示同意外，不得在以前裝過其他貨物的液貨艙內裝運硝酸銨溶液，但能將液貨艙及其設備清洗至主管機關滿

意者除外。

4.19.4 液貨艙加熱系統中熱交換介質的溫度不能超過 160°C。在該加熱系統中應設有控制裝置，使散裝貨物的平均溫度保持在 140°C。報警裝置應設定在 145°C 和 150°C 時高溫報警及在 125°C 時低溫報警。當熱交換介質的溫度超過 160°C 時，也應報警。溫度報警裝置及控制器應位於駕駛室內。

4.19.5 如果散裝貨物的平均溫度達到 145°C，則應取出貨物試樣，並以 10 份蒸餾水或軟水對 1 份貨物試樣（按重量）進行稀釋，應用具有精確測量範圍的試紙或試棒確定其酸度。應每隔 24 h 測量一次酸度，一旦酸度（PH）低於 4.2，則應將氨氣注入貨物，直到酸度（PH）達到 5.0 為止。

4.19.6 應設有能將氨氣注入貨物的固定裝置。該裝置的控制器應位於駕駛室內。為此對船上的每 1000 t 硝酸銨溶液應備有 300 kg 氨。

4.19.7 貨泵應為離心式深井泵或水封閉離心泵。

4.19.8 透氣管上應設有經認可的風雨帽蓋，以防阻塞。此種帽蓋應便於檢查和清洗。

4.19.9 凡是與硝酸銨溶液接觸過的液貨艙、管路和設備，只有在徹底清除其所有硝酸銨的痕跡後，方可進行熱作業。

4.19.10 作為裝載此種貨品的條件，1983 年 6 月 14 日以後建造或改建的船舶應完全符合本規則的要求。

4.20 過氧化氫溶液

濃度為 60% 以上但不超過 70% 的過氧化氫溶液（按重量）。

4.20.1 只能用專用船載運濃度為 60%以上但不超過 70%的過氧化氫溶液，且該船不得載運其他貨物。

4.20.2 液貨艙及其相關設備應採用純鋁（99.5%）或全不鏽鋼（如 304、304L、316、316L、316Ti）製造液貨艙及其設備，並按認可的程序對其進行鈍化。甲板上的管路不得使用鋁材料。用於製造圍護系統的所有非金屬材料應不能與過氧化氫起化學反應，也不能有助於過氧化氫的分解。

4.20.3 泵艙不得用於貨物駁運作業。

4.20.4 液貨艙與燃油艙或裝有易燃或可燃材料的其他處所之間應用隔離艙加以分隔。

4.20.5 對擬載運過氧化氫的液貨艙不得用海水進行壓載。

4.20.6 在液貨艙的頂部和底部應設置感溫器。駕駛室內應設有溫度遙測讀出器及連續監測器。如液貨艙內溫度超過 35°C 時，應在駕駛室內發出聽覺和視覺報警。

4.20.7 在與液貨艙鄰接的留空處所內應設有固定式氧氣監測器（或氣體取樣管路），以探測是否有貨物泄漏到這些處所內。駕駛室內也應設有遙測讀出器，連續監測器（如果採用氣體取樣管路，則可同意採用間歇取樣）以及類似用於感溫器的聽覺和視覺報警裝置。如在這些留空處所內氧濃度超過 30%容積濃度時，應發出聽覺和視覺報警。應配備兩個可攜式氧氣監測器作為備用裝置。

4.20.8 為防止發生無法控制的分解，應設置貨物投棄系統，以便將分解的貨物排放到船外。如果在 5 h 內每小時貨物溫升率超過 2°C/h，或者艙內溫度超過 40°C 時，應將該貨物投棄。

4.20.9 液貨艙的透氣系統應具有用於正常控制透氣的壓力/真空釋放閥和用於應急透氣的安全膜或類似裝置，以防因無法控制的貨物分解導致液貨艙壓力迅速升高。應根據液貨艙的設計壓力、液貨艙的尺寸和預計的貨物分解率確定安全膜的尺寸。

4.20.10 應設置固定式噴水系統，以便稀釋並洗掉溢漏在甲板上的任何濃縮的過氧化氫溶液。水霧所覆蓋的區域應包括支管/軟管接頭和用於載運過氧化氫溶液的專用液貨艙的頂部。最小噴灑率應符合下列標準：

(a) 應在貨品溢漏後的 5 min 內將其原來的濃度稀釋到 35% (按質量計)；

(b) 對於溢漏率和估計的溢漏量，應根據預計的最大裝卸率、液貨艙溢流或管路/軟管破損時停止貨物流動所需的時間以及從貨物控制站或駕駛室啟動稀釋水噴灑裝置所需的時間予以確定。

4.20.11 過氧化氫應進行穩定處理，以防分解。製造廠應提供穩定證書，載明：

(a) 所加穩定劑的名稱和數量；

(b) 穩定劑加入日期與有效期；

(c) 確保穩定劑有效期的溫度界限；

(d) 航程超過穩定劑有效期時應採取的措施。

4.20.12 只有那些在 25°C 時具有每年 1% 的最大分解率的過氧化氫溶液才准於載運。應將託運人用以說明貨品符合這一標準的證書送交船長並將其保存在船上。製造商應派技術代表上船監察駁運操作，

所派代表應具有試驗過氧化物穩定性的能力。技術代表應向船長證明，貨物是在穩定狀況下裝載的。

4.20.13 對涉及貨物裝卸作業的每一位船員均應配備能抵禦過氧化氫溶液的防護衣。防護服應包括不易燃的連衣褲工作服、合適的手套、靴子和眼睛防護裝置。

4.20.14 作為裝載此種貨品的條件，1983年6月14日以後建造或改建的船舶應完全符合本規則的要求。

濃度為8%以上但不超過60%的過氧化氫溶液（按重量）。

4.20.15 不得將船體外板作為裝載本品的液貨艙的任何周界。

4.20.16 在載運過氧化氫前，先應徹底和有效地清除液貨艙中以前所裝貨物的痕跡及貨物蒸氣或壓載水。對液貨艙的檢驗、清洗、鈍化和裝載的程序應按海安會通函 MSC/Circ.394 的要求。船上應有一份表明該通函要求的程序已予以遵守的證書。對於國內短途航行的船舶，主管機關可免除其鈍化要求。為確保過氧化氫的安全載運，還應特別注意下列要求。

(a) 載運過氧化氫時不得同時裝運其他貨物；

(b) 裝運過過氧化氫的液貨艙在按海安會通函 MSC/Circ.394 規定的程序對其進行清洗後可用於裝運其他貨物；

(c) 設計液貨艙時應考慮儘量減少艙內構件、免設艙底排放系統、卸空後艙內不得留有液貨，以及易於對艙內進行外觀檢查。

4.20.17 液貨艙及其設備應採用純鋁(99.5%)或全不鏽鋼(如304、304L、316、316L、316Ti)製造。不得用鋁製造甲板上的管路。用於

製造圍護系統的所有非金屬材料應不能與過氧化氫起化學反應，也不能有助於過氧化氫的分解。

4.20.18 液貨艙與燃油艙或含有與過氧化氫不相容材料的其他處所之間應用隔離艙加以分隔。

4.20.19 在液貨艙的頂部和底部應設置感溫器。駕駛室內應設有溫度遙測讀出器及連續監測器。如液貨艙內溫度超過 35°C 時，應在駕駛室內發出聽覺和視覺報警。

4.20.20 在與液貨艙鄰接的留空處所內應設有固定式氧氣監測器（或氣體取樣管路），以探測是否有貨物泄漏到這些處所內。還應測出由於氧氣聚集使可燃性增大的危險情況。駕駛室內也應設有遙測讀出器、連續監測器（如果採用氣體取樣管路，則可同意採用間歇取樣）以及類似用於感溫器的聽覺和視覺報警裝置。如在這些留空處所內氧濃度超過 30% 的容積濃度時，應發出聽覺和視覺報警。應配備兩個可攜式氧氣監測器，以作為備用裝置。

4.20.21 為防止發生無法控制的分解，應設置貨物投棄系統，以便將分解貨物排放到船外。如果在 5 h 內每小時貨物溫升率超過 2°C/h，或者艙內溫度超過 40°C 時，應將該貨物投棄。

4.20.22 帶濾網的液貨艙的透氣系統應具有用於正常控制透氣的壓力/真空釋放閥，同時還應具有用於應急透氣的裝置，以防因無法控制的貨物分解（見 4.20.21）而引起液貨艙壓力迅速升高。透氣系統的設計應使海水不能進入液貨艙內，甚至在嚴重海況時也應如此。應根據液貨艙的設計壓力和液貨艙的尺寸確定所需的應急透氣的能力。

4.20.23 應設置固定式噴水系統，以便稀釋並洗掉溢漏在甲板上的任何濃縮的過氧化氫溶液。水霧所覆蓋的區域應包括支管/軟管接頭和用於載運過氧化氫溶液的專用液貨艙的頂部。最小噴灑率應符合下列標準：

(a) 應在貨品溢漏後的 5 min 內將其原來的濃度稀釋到 35% (按重量)；

(b) 對於溢漏率和估計的溢漏量，應根據預計的最大裝卸率、液貨艙溢流或管路/軟管破損時停止貨物流通所需的時間以及從貨物控制站或駕駛室啟動稀釋水噴灑裝置所需的時間予以確定。

4.20.24 過氧化氫應予以穩定，以防分解。製造廠應提供穩定證書，載明：

(a) 所加穩定劑的名稱與數量；

(b) 穩定劑加入日期與有效期；

(c) 確保穩定劑有效期的溫度界限；

(d) 航行途中貨品變為不穩定時應採取的措施。

4.20.25 只能載運那些在 25°C 時具有每年 1% 的最大分解率的過氧化氫溶液。應將託運人用以說明貨品符合這一標準的證書送交船長並將其保存在船上。製造商應派技術代表上船監察駁運操作，所派代表應有試驗過氧化物穩定性的能力。技術代表應向船長證明，貨物是在穩定狀況下裝載的。

4.20.26 對涉及貨物裝卸作業的每一位船員均應配備能抵禦過氧化氫溶液的防護衣。防護衣應包括不易燃的連衣褲工作服、合適的手

套、靴子和眼睛防護裝置。

4.20.27 在駁運過氧化氫作業時，應將與駁運有關的管系與所有其他管系分離，在用於駁運過氧化氫的軟管上應標明“駁運過氧化氫專用”。

4.21 50%或 50%以下的氯酸鈉溶液

4.21.1 裝過本貨品的液貨艙及其附屬設備，只有經過徹底的清洗或惰氣驅氣後，才能裝運其他貨物。

4.21.2 一旦發生本貨品泄漏時，應立即將所有泄漏的液體徹底洗掉，不得延緩。為使火災危險減至最小，不允許使泄漏物乾透。

4.22 硝酸辛酯，所有異構物

4.22.1 該貨物的運輸溫度應保持在 100°C 以下，以防其發生自激放熱分解反應。

4.22.2 貨物不可固定在船舶甲板上的獨立壓力容器內進行載運，除非：

.1 液貨艙與火有效隔絕；和

.2 船上設置用於液貨艙的水淹浸系統，使貨物溫度保持在 100°C 以下，並且當失火溫度為 650°C 時，液貨艙內的溫升不超過 1.5°C/h。

4.23 溫度傳感器

應使用溫度傳感器監視貨泵的溫度，以探測由於泵的故障造成的過熱溫度。

第 V 章 操作要求

5.1 每個液貨艙的最大允許裝貨量

5.1.1 需在 1 型船舶內載運的貨物，其貨物量在任一液貨艙內均不得超過 1,250 m³。

5.1.2 需在 2 型船舶內載運的貨物，其貨物量在任一液貨艙內均不得超過 3,000 m³。

5.2 貨物資料

5.2.1 在本規則所適用的每艘船上，均應備有本規則的副本，或備有納入本規則規定的船旗國規則。

5.2.2 船上應備有安全載運散裝貨物所必需的資料，並可供所有有關人員使用。該資料應包括一份貨物積載圖，其存放於易於到達處，標明船上的所有貨物，包括所載運的每一種危險化學品：

(a) 對貨物安全圍護所需的物理和化學性能（包括反應性）的詳細說明書；

(b) 發生溢漏或滲漏時應採取的措施；

(c) 防止人員意外接觸的措施；

(d) 消防程序和滅火劑；

(e) 用於貨物駁運、液貨艙清洗、除氣和壓載的程序；和

(f) 對需要按 4.4 和 4.10 節的要求分別進行穩定或抑制的貨物，如未能提供 4.4 和 4.10.3 所要求的證書，則應拒絕載運該貨物。

5.2.3 如未能得到安全運輸該貨物所需的足夠資料，則應拒絕載運該貨物。

5.2.4 對凡能放出覺察不到的劇毒蒸氣的貨物，除非在貨物中放入能覺察到的添加劑，否則不得進行運輸。

5.2.5 如第 VI 章表中的“m”欄內涉及本段時，應在貨運單據中詳細標明該貨物在 20°C 時的黏度，而在 20°C 時如該貨物的黏度超過 50 mPa.s 時，則應在貨運單據中詳細標明該貨物在其黏度為 50 mPa.s 時的溫度。

5.2.6 已刪除。

5.2.7 已刪除。

5.2.8 如第 VI 章表中的“m”欄內涉及本段時，應在貨運單據中標明該貨物的熔點。

5.3 人員培訓

5.3.1 所有使用防護設備的人員均應經過適當的培訓，並接受在應急情況下與其職責相應的必要的操作程序基本培訓。

5.3.2 從事貨物作業的人員應進行貨物裝卸程序的適當培訓。

5.3.3 根據國際海事組織制定的指南^①，高級船員應進行關於應急措施方面的培訓，以處理貨物的泄漏、溢出或火災事故，同時還應對他們中相當部分的人員在用於所載貨物的主要急救方法方面進行教

^①參見《危險貨物事故醫療急救指南》(MFAG)，該指南建議了如何根據症狀救治傷員，並建議了適合救治傷員的設備和解毒劑。還參見 STCW 規則 A、B 部分的有關規定。

授和培訓。

5.4 進入液貨艙

5.4.1 人員不得進入液貨艙以及這些液貨艙周圍的留空處所、貨物裝卸處所或其他封閉處所，除非：

(a) 該艙室有毒蒸氣已排除，並且不缺少氧氣；或

(b) 人員已穿戴呼吸器具和其他必要的防護設備，並且整個作業是在一位負責的高級船員的密切監視下進行的。

5.4.2 對於僅有易燃危險的處所，只有在一位負責的高級船員的密切監視下，人員才能准予進入。

5.5 液貨艙的開口

在裝卸和運載會產生易燃和/或有毒蒸氣的貨物時，或在卸去這種貨物後進行壓載時，或在裝載這種貨物時，應使液貨艙的艙蓋保持關閉。在裝載任何有危害性的貨物時，液貨艙的艙蓋、液貨位測量和觀察孔、液貨艙的清洗出入口蓋只有在必要時才可開啟。

5.6 貨艙的加熱盤管

如用 2.15.6 (c) 中所述的方法對可能含有毒貨品的液貨艙進行加熱或冷卻時，不僅要在有毒貨品加熱或冷卻開始的時候對盤管進行測試，而且要在載運未加熱或未冷卻的有毒貨品之後使用盤管的第一時間對盤管進行測試。

5.7 附加操作要求

附加操作要求見在本規則以下各段：

2.6.1、2.6.2 (a) 和 (b)、2.6.4、2.15.2、2.21.1、2.21.2、3.11.1、
3.11.2、3.16、3.17、4.1.1、4.1.7、4.1.8、4.2.7、4.3.1、4.4、4.51、
4.54、4.5.6、4.5.11、4.6.1、4.6.3、4.6.4、4.7.1、4.7.2、4.7.6、4.7.8、
4.7.9、4.7.10、4.7.11、4.7.12、4.7.13、4.7.15、4.7.17、4.7.18、4.7.19、
4.7.20、4.7.21、4.7.22、4.8.4、4.8.5、4.8.6、4.9.3 (a)、4.10.1、4.10.3、
4.10.6、4.18、4.19.2、4.19.3、4.19.5、4.19.6、4.19.9、4.20.3、4.20.5、
4.20.8、4.20.12、4.20.15、4.20.16、4.20.21、4.20.25、4.20.27、4.21.1、
4.21.2。

第 VA 章 保護海洋環境的附加措施

已刪除。

第 VI 章 最低要求一覽表

本規則所涉及貨品的最低要求一覽表見 IBC 規則第 17 章。

為方便應用本規則的各最低要求，下表左欄中的 IBC 規則與右欄中的 BCH 規則相對應。如 BCH 規則中標明參見第 VI 章的 m 欄，則意指 IBC 規則第 17 章中的 m, R 或 o 欄。

IBC/BCH 規則有關最低要求的對照參考

IBC 規則第 17 章項目	IBC 規則對照參考 ^①	BCH 規則對照參考 ^②
船型 (e 欄)		
1=船型 1	(2.1.2)	(2.2.4 (a))
2=船型 2	(2.1.2)	(2.2.4 (b))
3=船型 3	(2.1.2)	(2.2.4 (c))
艙型 (f 欄)		
1=獨立液貨艙	(4.1.1)	(2.3.2)
2=整體液貨艙	(4.1.2)	(2.3.1)
G=重力液貨艙	(4.1.3)	(2.4)
P=壓力液貨艙	(4.1.4)	—
液貨艙環境控制 (h 欄)		
Inert : 惰性法	(9.1.2.2)	(2.19.2 (a))
Pad : 用液體或氣體作隔	(9.1.2.2)	(2.19.2 (b))

^①圓括號中的數字係指該章節號引自 IBC 規則第 17 章中的說明。

^②圓括號中的數字係指對應於 IBC 規則相同章節的 BCH 章節號。

絕的方法	(9.1.2.3)	(2.19.2 (c))
Dry : 乾燥法	(9.1.2.4)	(2.19.2 (d))
Vent : 自然或強力通風法		
電氣設備 (i 欄)		
NF : 非易燃貨品	(10.1.6)	標準電氣系統
Yes : 閃點超過 60°C (閉 杯)	(10.1.6)	
電氣設備 (i 欄) 續		
No : 閃點不超過 60°C 的 產品 (閉杯)	(10.1.6)	特殊電氣系統
測量 (j 欄)		
O : 開式測量	(13.1.1.1)	開式裝置 (3.9 (a))
R : 限制式測量	(13.1.1.2)	限制式裝置 (3.9 (b))
C : 閉式測量	(13.1.1.3)	閉式裝置 (3.9 (c))
I : 間接測量	(13.1.1.3)	間接裝置 (3.9 (d))
呼吸防毒面具和眼睛防 護設備 (n 欄)		
	E : 見 14.2.8	3.16.10
特殊要求 (o 欄)	15.1	4.4
	15.2	4.19
	15.3	4.1
	15.4	4.2
	15.5.1 – 13	4.20.1 – 14
	15.5.14 – 26	4.20.15 – 27

	15.6	4.6
	15.7	4.5
	5.8	4.7
	15.9	4.21
	15.10	4.3
	15.11	4.8
	15.12	4.9
	15.13	4.10
	15.14	4.11
	15.16.2	4.15.2
	15.17	4.13.1
	18.18	4.13.2
	18.19	4.14
	15.19.6	4.14.1
	15.20	4.22
	15.21	4.23
	16.2.6	5.2.5
	16.2.9	5.2.8
	16.6	4.18.1
	16.6.1	4.18.1*
	16.6.2	4.18.2*
	16.6.3	4.18.3*
	16.6.4	4.18.4*

*這些修正經海上環境保護委員會於 1996 年 7 月 10 日以 MEPC.70 (38) 決議通過，並於 1998 年 7 月 1 日生效。

第 VII 章 不適用本規則的化學品清單

對其安全和污染危害性已進行過審查並已確定其危害性尚不足以列入本規則適用範圍的化學品清單見 IBC 規則的第 18 章。

第 VIII 章 液體化學品廢棄物的運輸

8.1 前言

8.1.1 海上運輸液體化學品廢棄物可能會對人類健康和環境構成威脅。

8.1.2 對液體化學品廢棄物的運輸應按照有關的國際公約和建議，特別是在海上進行散裝運輸時，更應符合本規則的要求。

8.2 定義

就本章而言：

8.2.1 液體化學品廢棄物係指被提供載運的、且其所含的或被污染的一種或多種成份是受本規則要求約束的物質、溶液或混合物，同時認為它們已無直接用途，對其進行載運是為了能在除海上以外的地方對其進行傾倒、焚燒或其他方式的處理。

8.2.2 跨境運輸係指對廢棄物所進行的海上運輸，即從一個國家管轄的區域到或通過另一個國家管轄的區域，或者到或通過沒有任何國家管轄的區域，但此種運輸至少應涉及兩個國家。

8.3 適用範圍

8.3.1 本章的要求適用於使用海船以散裝形式對液體化學品廢棄物進行的跨境運輸，同時，對本規則的所有其他要求也應一併考慮；

8.3.2 本章的要求不適用於：

.1 MARPOL 73/78 要求所涉及的由船上作業所產生的廢棄物；

.2 IBC 規則第 20 章所涉及的在海上從事焚燒廢棄物的船舶所載運的液體化學品廢棄物；和

.3 含有放射性物質或被放射性物質污染的物質、溶液或混合物，且這些物質均受到有關放射性物質適用要求的約束。

8.4 允許的運輸

8.4.1 僅在下述情況下才能允許對廢棄物進行跨境運輸：

.1 始發國主管當局，或者廢棄物的產生者或出口者通過始發國主管當局，已向最終目的地國發出通知書；和

.2 始發國主管當局在獲得最終目的地國關於表明能將廢棄物安全地進行焚燒或將以其他方式對廢棄物進行處理的書面許可後，批准了這種運輸。

8.5 文件

8.5.1 除本規則 5.2 中所規定的文件外，從事液體化學品廢棄物跨境運輸的船舶應備有始發國主管當局簽發的廢棄物運輸文件。

8.6 液體化學品廢棄物的分類

8.6.1 為保護海洋環境，對於所有散裝運輸的液體化學品廢棄物，無論其實際被評估的類別如何，均應作為 X 類有毒液體物質處置。

8.7 液體化學品廢棄物的載運和裝卸

8.7.1 應按 IBC 規則第 17 章中規定的對液體化學品廢棄物的最低要求，使用船舶及液貨艙載運液體化學品廢棄物，除非有明確的理由表明由於廢棄物的危害性而必須符合下列要求：

.1 按須用 1 型船舶進行載運的要求；或

.2 按本規則中適用於該物質或其主要成份具有危害性的混合物的任何附加要求。