



Treaty Series No. 35 (2003)

**1999 Amendments to the International Code for the Construction and  
Equipment of Ships carrying Dangerous Chemicals in Bulk (IBC Code)**

**1999 Amendments to the BCH Code**

Adopted London, 1 July 1999

**2000 Amendments to the IBC Code**

**Amendments to the International Code for the Construction and  
Equipment of Ships carrying Liquefied Gases in Bulk (IGC Code)**

**Amendments to the International Code for Application  
of Fire Test Procedures (FTP Code)**

Adopted London, 5 December 2000

[All the Amendments entered into force for the United Kingdom on 1 July 2002]

*Presented to Parliament  
by the Secretary of State for Foreign and Commonwealth Affairs  
by Command of Her Majesty  
August 2003*

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# 1999 AMENDMENTS TO THE INTERNATIONAL CODE FOR THE CONSTRUCTION AND EQUIPMENT OF SHIPS CARRYING DANGEROUS CHEMICALS IN BULK (IBC CODE)<sup>1</sup>

## Chapter 8 Cargo-Tank Venting and Gas-Freeing Arrangements

1 In paragraph 8.1.1, the word "This" is replaced by the words "Unless expressly provided otherwise, this".

2 The following new paragraph 8.1.6 is added after the existing paragraph 8.1.5:

"8.1.6 Ships constructed on or after 1 July 1986 but before 1 July 2002 should comply with the requirements of paragraph 8.3.3 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 paragraph 8.3.3 for ships of less than 500 gross tonnage which were constructed on or after 1 July 1986 but before 1 July 2002."

3 In the last sentence of the existing paragraph 8.3.2, the reference to "8.3.5" is replaced by reference to "8.3.6".

4 The following new paragraph 8.3.3 is added after the existing paragraph 8.3.2:

"8.3.3 On ships constructed on or after 1 July 2002, controlled tank venting systems 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."

5 The existing paragraphs 8.3.3 to 8.3.7 are renumbered as paragraphs 8.3.4 to 8.3.8.

6 In the last sentence of renumbered paragraph 8.3.5, the reference to "8.3.3.1" is replaced by reference to "8.3.4.1".

## Chapter 16 Operational Requirements

7 To the list of additional operational requirements (paragraph 16.7), "8.3.6" is added underneath "7.1.6.3."

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<sup>1</sup> Treaty Series No. 13 (1998) Cm 3926

**1999 AMENDMENTS TO THE CODE FOR THE CONSTRUCTION AND  
EQUIPMENT OF SHIPS CARRYING DANGEROUS CHEMICALS IN  
BULK (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.

**2000 AMENDMENTS TO THE INTERNATIONAL CODE FOR THE  
CONSTRUCTION AND EQUIPMENT OF SHIPS CARRYING  
DANGEROUS CHEMICALS IN BULK (IBC CODE)**

**Chapter 5 - Cargo Transfer**

**5.7 Ship's cargo hoses**

- 1 Existing paragraph 5.7.3 is replaced by the following:

"5.7.3 For cargo hoses installed on board ships on or after 1 July 2002, 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 8 -Cargo-Tank Venting and Gas-Freeing Arrangements**

- 2 In paragraph 8.1.1, the word "This" is replaced by the words "Unless expressly provided otherwise, this".

- 3 The following new paragraph 8.1.6 is added after the existing paragraph 8.1.5:

"8.1.6 Ships constructed on or after 1 July 1986, but before 1 July 2002 should comply with the requirements of paragraph 8.3.3 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 paragraph 8.3.3 for ships of less than 500 gross tonnage which were constructed on or after 1 July 1986, but before 1 July 2002."

- 4 In the last sentence of the existing paragraph 8.3.2, the reference to "8.3.5" is replaced by reference to "8.3.6".

- 5 The following new paragraph 8.3.3 is added after the existing paragraph 8.3.2:

"8.3.3 On ships constructed on or after 1 July 2002, controlled tank venting systems 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."

6 The existing paragraphs 8.3.3 to 8.3.7 are renumbered as paragraphs 8.3.4 to 8.3.8.

7 In the last sentence of renumbered paragraph 8.3.5, the reference to "8.3.3.1" is replaced by reference to "8.3.4.1".

## **Chapter 14 - Personnel Protection**

8 Existing paragraph 14.2.9 is replaced by the following:

"14.2.9 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 15 - Special Requirements**

9 The existing text of section 15.3 is replaced by the following:

### **"15.3 Carbon disulphide**

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

#### **Carriage under water pad**

15.3.1 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.

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

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

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

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

15.3.6 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.

15.3.7 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.

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

15.3.9 Safety relief valves should be of stainless steel construction.

15.3.10 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**

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

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

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

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

15.3.15 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.

15.3.16 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.

15.3.17 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.

15.3.18 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.

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

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

15.3.21 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 an uniform distribution rate of 10 l/m<sup>2</sup>/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.

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

15.3.23 The maximum volume (V<sub>L</sub>) 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

$\rho_R$  = relative density of cargo at the reference temperature (R)



$\rho_L$  = 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.

15.3.24 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.

15.3.25 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.

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

15.3.27 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 International Certificate of Fitness for the Carriage of Dangerous Chemicals in Bulk should be endorsed to include reference to the approved cargo handling plan."

## **Chapter 16 - Operational Requirements**

10 Existing paragraph 16.3.3 is replaced by the following:

"16.3.3 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.

11 To the list of additional operational requirements (paragraph 16.7), "8.3.6" is added underneath "7.1.6.3".

**AMENDMENTS TO THE INTERNATIONAL CODE FOR THE  
CONSTRUCTION AND EQUIPMENT OF SHIPS CARRYING  
LIQUEFIED GASES IN BULK (IGC CODE)<sup>1</sup>**

**Chapter 3**

**Ship Arrangements**

- 1 The following text is inserted after the title of paragraph 3.7:  
  
*“(Paragraph 3.7.2.2 applies to ships constructed on or after 1 July 2002)”*
- 2 The existing text of paragraph 3.7.2 is replaced by the following:  
  
"3.7.2.1 The hold or interbarrier spaces of Type A independent tank ships should be provided with a drainage system suitable for handling liquid cargo in the event of cargo tank leakage or rupture. Such arrangements should provide for the return of any cargo leakage to the liquid cargo piping.  
  
3.7.2.2 Arrangements referred to in 3.7.2.1 should be provided with a removable spool piece."
- 3 The existing text of paragraph 3.7.4 is replaced by the following:  
  
"3.7.4 Ballast spaces, including wet duct keels used as ballast piping, fuel-oil tanks and gas-safe spaces may be connected to pumps in the machinery spaces. Dry duct keels with ballast piping passing through, may be connected to pumps in the machinery spaces, provided the connections are led directly to the pumps and the discharge from the pumps lead directly overboard with no valves or manifolds in either line which could connect the line from the duct keel to lines serving gas-safe spaces. Pump vents should not be open to machinery spaces."

**Chapter 4**

**Cargo Containment**

- 4 The third sentence of paragraph 4.8.3 is replaced by the following:  
  
"For structural members connecting inner and outer hulls, the mean temperature may be taken for determining the steel grade."
- 5 The first sentence of paragraph 4.10.10.3.7 is replaced by the following:  
  
"Pneumatic testing of pressure vessels other than cargo tanks should only be considered on an individual case basis by the Administration."

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<sup>1</sup> Treaty Series No.15 (1998) Cm 3928

## Chapter 5

### Process Pressure Vessels and Liquid, Vapour, and Pressure Piping Systems

- 6 The following text is inserted after the title of paragraph 5.6:

*“(Paragraph 5.6.5 applies to ships constructed on or after 1 July 2002)”*

- 7 A new paragraph 5.6.5 is inserted after existing paragraph 5.6.4:

“5.6.5 The closure time of 30 s for the emergency shutdown valve referred to in 5.6.4 should be measured from the time of manual or automatic initiation to final closure. This is called the total shutdown time and is made up of a signal response time and a valve closure time. The valve closure time should be such as to avoid surge pressure in pipelines. Such valves should close in such a manner as to cut off the flows smoothly.”

- 8 Existing paragraph 5.6.5 is renumbered as paragraph 5.6.6.

### 5.7 Ship's cargo hoses

- 9 Existing paragraph 5.7.3 is replaced by the following:

"5.7.3 For cargo hoses installed on board ships on or after 1 July 2002, 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 8

### Cargo Tank Vent Systems

- 10 The existing text of the first sentence of paragraph 8.2.7 is replaced by the following:

"The changing of the set pressure under the provisions of 8.2.6, and the corresponding resetting of the alarms referred to in 13.4.1, should be carried out under the supervision of the master in accordance with procedures approved by the Administration and specified in the ship's operating manual."

## **Chapter 9**

### **Environmental Control**

- 11 The following sentence is added at the end of paragraph 9.5.3:

"When not in use, the inert gas system should be made separate from the cargo system in the cargo area except for connections to the hold spaces or interbarrier spaces."

## **Chapter 11**

### **Fire Protection and Fire Extinction**

- 12 The second sentence of paragraph 11.2.4 is replaced by the following:

"All pipes, valves, nozzles and other fittings in the fire-fighting systems should be resistant to the effects of fire and to corrosion by water."

## **Chapter 13**

### **Instrumentation (Gauging, Gas Detection)**

- 13 The last three sentences of paragraph 13.3.1 are replaced by the following:

"The emergency shutdown valve referred to in 5.6.1 and 5.6.3 may be used for this purpose. If another valve is used for this purpose, the same information as referred to in 5.6.4 should be available on board. During loading, whenever the use of these valves may possibly create a potential excess pressure surge in the loading system, the port State authority may agree to alternative arrangements such as limiting the loading rate, etc."

## **Chapter 14**

### **Personnel Protection**

- 14 Existing paragraph 14.3.2 is replaced by the following:

"14.3.2 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 18**

### **Operating Requirements**

15 Existing paragraph 18.3.3 is replaced by the following:

"18.3.3 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.

16 In paragraph 18.9, the reference to paragraph 17.4.3 is added to the list of references.

# AMENDMENTS TO THE INTERNATIONAL CODE FOR APPLICATION OF FIRE TEST PROCEDURES (FTP CODE)<sup>1</sup>

## 9 - LIST OF REFERENCES

1 The following references .12 and .13 are added after subparagraph .11:

“.12 resolution MSC.40(64), as amended by resolution MSC.90(71) – Standard for qualifying marine materials for high-speed craft as fire-restricting materials; and

.13 resolution MSC.45(65) – Test procedures for fire-resisting divisions of high-speed craft”.

## ANNEX 1

### FIRE TEST PROCEDURES

2 The following new parts 10 and 11 are added as follows:

#### **“Part 10 – Test for fire -restricting materials for high-speed craft**

##### **1 APPLICATION**

Where materials used in high-speed craft are required to be fire-restricting, they shall comply with this part.

##### **2 FIRE TEST PROCEDURE**

Surface materials on bulkheads, wall and ceiling linings including their supporting structure, furniture, and other structural or interior components required to be fire-restricting materials shall be tested and evaluated in accordance with the fire test procedures specified in resolution MSC.40(64), as amended by resolution MSC.90(71).

#### **Part 11 – Test for fire -resisting divisions of high-speed craft**

##### **1 APPLICATION**

Where constructions for use in high-speed craft are required to have fire-resisting properties, they shall comply with this part. Such constructions include fire-resisting bulkheads, decks, ceilings, linings and doors.

##### **2 FIRE TEST PROCEDURE**

Fire-resisting divisions of high-speed craft shall be tested and evaluated in accordance with the fire test procedures specified in resolution MSC.45(65).

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<sup>1</sup> Treaty Series No. 26 (1999) Cm 4329

### **3 ADDITIONAL REQUIREMENTS**

**3.1** Materials used in fire-resisting divisions shall be non-combustible or fire-restricting as verified in accordance with part 1 or part 10 of this annex, respectively.

**3.2** Part 3 of this annex is also applicable to certain constructions such as windows, fire dampers, pipe penetrations and cable transits.

**3.3** Part 4 of this annex is also applicable where a control system of fire doors is required to be able to operate in case of fire.

**3.4** Where combustible veneers are allowed to be provided in fire-resisting divisions in conjunction with non-combustible substrates, the low flame spread characteristics of such veneers, if required, shall be verified in accordance with part 5 of this annex.”

## **ANNEX 2**

### **PRODUCTS WHICH MAY BE INSTALLED WITHOUT TESTING AND/OR APPROVAL**

3 The following new paragraph 2.3 is added to annex 2 after existing paragraph 2.2:

“**2.3** For high-speed craft, fire-restricting materials are considered to comply with the requirements of part 2 of annex 1 without further testing.”

4 The following new paragraph 5.3 is added to annex 2 after existing paragraph 5.2:

“**5.3** For high-speed craft, surfaces and materials that are qualified as fire-restricting materials are considered to comply with the requirements of part 5 of annex 1 without further testing.”



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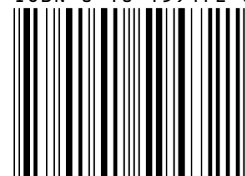
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