

RULES

FOR THE CLASSIFICATION AND CONSTRUCTION OF CHEMICAL TANKERS

PART V FIRE PROTECTION

ND No. 2-020101-182-E



St. Petersburg
2023

RULES FOR THE CLASSIFICATION AND CONSTRUCTION OF CHEMICAL TANKERS

Rules for the Classification and Construction of Chemical Tankers of Russian Maritime Register of Shipping (RS, the Register) have been approved in accordance with the established procedure and come into force on 1 January 2023.

The present edition of the Rules is based on the 2022 edition taking into account the amendments developed immediately before publication.

The provisions of the International Code for the Construction and Equipment of Ships Carrying Dangerous Chemicals in Bulk (IBC Code) with relevant amendments thereto implemented by resolutions MSC.460(101) and MEPC.318(74) of the International Maritime Organization (IMO) have been taken into consideration in the Rules.

The Rules establish requirements, which are specific for ships carrying dangerous chemicals in bulk, and supplement the Rules for the Classification and Construction of Sea-Going Ships and Rules for the Equipment of Sea-Going Ships of Russian Maritime Register of Shipping.

The Rules are published in the following parts:

- Part I "Classification";
 - Part II "Structure of Chemical Tanker";
 - Part III "Cargo Containment";
 - Part IV "Stability, Subdivision and Freeboard";
 - Part V "Fire Protection";
 - Part VI "Systems and Piping";
 - Part VII "Electrical Equipment";
 - Part VIII "Instrumentation";
 - Part IX "Materials of Construction";
 - Part X "Personnel Protection";
 - Part XI "Summary of Technical Requirements";
 - Part XII "Special Requirements";
- The Annexes to the Rules are published separately.

REVISION HISTORY

(purely editorial amendments are not included in the Revision History)

For this version, there are no amendments to be included in the Revision History.

1 GENERAL

1.1 Structural fire protection of chemical tankers, irrespective of tonnage, shall comply with the requirements of 2.1 and 2.4, Part VI "Fire Protection" of the Rules for the Classification and Construction of Sea-Going Ships¹, as they would apply to oil tankers, except for the requirement for location of CCR.

1.2 Fire extinguishing systems and fire-fighting outfit of machinery spaces of the chemical tankers irrespective of tonnage shall comply with the requirements of Sections 3 and 5, Part VI "Fire Protection" of the Rules for the Classification, as they would apply to oil tankers of 2000 gross tonnage and over.

1.3 Chemical tankers intended only for the carriage of products, which are non-flammable, shall comply with the requirements of Part VI "Fire Protection" of the Rules for the Classification, except for the requirements of Table 3.1.2.1 for protection of cargo spaces by fixed fire extinguishing systems. Requirements of Sections [2](#) and [3](#) of the Rules for the Classification and Construction of Chemical Tankers² do not apply to such ships.

1.4 Structural fire protection, fire extinguishing systems and fire-fighting outfit of chemical tankers intended only for the carriage of products with a flashpoint above 60 °C may be the same as used on board oil tankers intended for the carriage of oil products with a flashpoint above 60 °C in compliance with the requirements given in Part VI "Fire Protection" of the Rules for the Classification.

¹ Hereinafter referred to as "the Rules for the Classification".

² Hereinafter referred to as "these Rules".

2 CARGO PUMP-ROOMS (CPR)

2.1 CPR shall be provided with a carbon dioxide smothering system as specified in 3.8, Part VI "Fire Protection" of the Rules for the Classification (with a factor 0,45 in Formula (3.8.1.1) of the above mentioned Part).

This carbon dioxide smothering system may not be used for inerting purpose to which effect a notice shall be exhibited at the controls starting the system.

Audible alarm warning of starting of the carbon dioxide smothering system shall meet the requirements of 4.3.5, Part VI "Fire Protection" of the Rules for the Classification and shall be of explosion-proof type.

2.2 If cargoes are to be carried which are not suited to extinguishment by carbon dioxide, CPR shall be protected by a high-expansion foam system or a pressure water-spraying system. The Certificate of Fitness for the Chemical Tanker shall reflect this conditional requirement.

3 CARGO AREA

3.1 Every chemical tanker shall be provided with a fixed deck foam fire-extinguishing system in accordance with the requirements of [3.2–3.11](#).

3.2 Only one type of foam concentrate shall be supplied, and it shall be effective for the maximum possible number of cargoes intended to be carried. For other cargoes for which foam is not effective or is incompatible, additional arrangements shall be provided complying with Chapter 17 of the IBC Code when they are just as effective for the products concerned as the deck foam system required for the generality of flammable cargoes.

3.3 Foam applicators and monitors shall be so arranged as to be capable of delivering foam to the entire cargo area as well as into any cargo tank, the deck of which is assumed to be ruptured.

3.4 The main control station for the system shall be suitably located outside of the cargo area, adjacent to the accommodation spaces. It shall be readily accessible and operable in the event of fires in the areas protected.

3.5 The rate of supply of foam solution shall be not less than the greatest of the following:

.1 2 l/min per square meter of the cargo tanks deck area, where cargo tanks deck area means the maximum breadth of the ship times the total longitudinal extent of the cargo tank spaces;

.2 20 l/min per square meter of the horizontal sectional area of the single tank having the largest such area;

.3 10 l/min per square meter of the deck area protected by the largest monitor, such area being entirely forward of the monitor but not less than 1250 l/min.

For ships of less than 4000 t deadweight, the minimum capacity of the monitor shall be not less than 800 l/min.

3.6 Sufficient foam concentrate shall be supplied to ensure at least 30 minutes of foam generation when using the highest of the solution rates and at least 20 minutes for ships equipped with an inert gas system.

3.7 Foam from the fixed foam system shall be supplied by means of monitors and foam applicators. At least 50 % of the design foam quantity with a foam rate of at least 50 % out of required in [3.5.1](#) or [3.5.2](#) shall be delivered from each monitor. The capacity of any monitor shall be at least 10 l/min of foam solution per square meter of the deck protected by the monitor, such area being entirely forward of the monitor. Such capacity shall be not less than 1250 l/min.

3.8 The distance from the monitor to the farthest extremity of the protected area forward of that monitor shall be not more than 75 % of the monitor throw in still air conditions.

3.9 A monitor and hose connection for a foam applicator shall be situated both port and starboard at the poop front or accommodation spaces facing the cargo spaces.

3.10 Applicators shall be provided to cover areas screened from the monitors. The capacity of any applicator shall be not less than 400 l/min and the applicator throw in still air conditions shall be not less than 15 m.

The number of foam applicators provided shall be not less than four. The number and disposition of foam main outlets shall be such that foam from at least two applicators can be directed to any part of the cargo area.

3.11 Cut-off valves shall be provided in the foam main, and in the fire main where this is an integral part of the foam system, immediately forward of any monitor position to isolate damaged sections of those mains.

3.12 Chemical tankers, which are dedicated to the carriage of a restricted number of cargoes, shall be protected by alternative provisions complying with Chapter 17 of the IBC Code when they are just as effective for the products concerned as the deck foam system required for the generality of flammable cargoes.

3.13 At least four portable fire extinguishers suitable for the products to be carried shall be provided.

3.14 Where flammable cargoes are to be carried, all sources of ignition shall be excluded from hazardous locations.

3.15 Chemical tankers fitted with bow or stern loading and unloading arrangements shall be provided with one additional foam monitor ([refer to 3.7](#)) and one additional foam applicator ([refer to 3.10](#)) to protect cargo loading and unloading arrangements outside the cargo area.

3.16 Operation of a deck foam fire extinguishing system at its required output shall permit the simultaneous use of the minimum required number of jets of water at the required pressure from the fire main.

4 SPECIAL REQUIREMENTS

4.1 The fire extinguishing media are defined as being appropriate according to the following criteria related to the properties of the product:

Solubility > 10 % (> 100000 mg/l)	A	Alcohol-resistant foam
Solubility ≤ 10 % (≤ 100000 mg/l)	A	Alcohol-resistant foam; and/or
	B	Regular foam
Water Reactive Index (WRI) = 0	C	Water-spraying (generally used as a coolant and can be used with A and/or B providing that the WRI = 0)
WRI ≥ 1	D	Dry chemical
	No	No requirements under the IBC Code, where a product is identified as NF (non-flammable) in column "i" in accordance with paragraph 21.4.9.1.3 of the IBC Code.

4.2 Hydrogen sulphide (H₂S) detection equipment for bulk liquids.

Hydrogen sulphide (H₂S) detection equipment shall be provided on board ships carrying bulk liquids prone to H₂S formation. It should be noted that scavengers and biocides, when used, may not be 100 % effective in controlling the formation of H₂S. Toxic vapour detection instruments complying with the requirements in 5.1, Part VIII "Instrumentation" for testing for H₂S may be used to satisfy this requirement.

Russian Maritime Register of Shipping

Rules for the Classification and Construction of Chemical Tankers
Part V
Fire Protection

FAI "Russian Maritime Register of Shipping"
8, Dvortsovaya Naberezhnaya,
191186, St. Petersburg,
Russian Federation
www.rs-class.org/en/