

RULES

FOR THE CLASSIFICATION AND CONSTRUCTION OF CHEMICAL TANKERS

PART VII ELECTRICAL EQUIPMENT

ND No. 2-020101-164-E



**St. Petersburg
2022**

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 2022.

The present edition of the Rules is based on the 2021 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 Electrical equipment of chemical tankers, transporting fire- and explosion-hazardous cargoes shall meet the requirements of this Part of the Rules for the Classification and Construction of Chemical Tankers¹ and the requirements imposed upon the electrical equipment of oil tankers as put forward in Part XI "Electrical Equipment" of the Rules for the Classification and Construction of Sea-Going Ships².

1.2 Electrical equipment of chemical tankers shall be such as to minimize the risk of ignition and explosion from flammable cargoes. Electrical equipment complying with the requirements of the present Part shall not be considered a possible source of ignition.

1.3 The materials used in electrical apparatus installed in locations where contact with cargo or cargo vapours is possible, shall be resistant against attack of the cargo and its vapours.

Copper, aluminum and insulating materials used in electrical equipment shall be protected, as far as practicable, to prevent contact with cargo and/or its vapours which may provoke corrosion (e.g. hermetically sealed).

1.4 Installation of electrical equipment and cable laying shall not be installed in the hazardous locations, other than the equipment specially designated for the operation in the appropriate medium and certified by the relevant authorities which permit installation of the above equipment in the explosive atmosphere in compliance with Part XI "Summary of Technical Requirements".

1.5 Electrical requirements for individual products are shown in Part XI "Summary of Technical Requirements".

1.6 Absence of instructions in Part XI "Summary of Technical Requirements" for any particular kind of cargo does not provide reason enough to use electrical equipment of non-safe type. It is necessary to take into account if the flashpoint of the cargo intended for carriage is in excess of 60 °C. In case of heated cargo, carriage conditions may require not to apply the requirements specified in [Section 2](#) for the cargoes with a flashpoint exceeding 60 °C.

¹ Hereinafter referred to as "these Rules".

² Hereinafter referred to as "the Rules for the Classification".

2 HAZARDOUS LOCATIONS AND SELECTION OF ELECTRICAL EQUIPMENT

2.1 Classification of hazardous locations of the chemical tankers shall comply with the requirements in 19.2.3, Part XI "Electrical Equipment" of the Rules for the Classification.

2.2 The selection of the electrical equipment to be installed in the hazardous locations shall be carried out in compliance with 19.2.4, Part XI "Electrical Equipment" of the Rules for the Classification.

2.3 The restrictions of this Section do not preclude the use of structurally safe (intrinsically safe) circuits (systems, instruments, etc.) which are specially designed to be used in hazardous locations of Zone 0 including cargo piping. It is particularly recommended that intrinsically safe systems and circuits are used for measurements, monitoring, control and communication purposes.

2.4 REQUIREMENTS FOR CARGO TRANSPORTATION WITH A FLASH POINT EXCEEDING 60 °C

2.4.1 The use of submerged cargo-pump motors and their associated cables may, in exceptional circumstances for the cargoes of strictly particular class due consideration having been given to the chemical and physical characteristics of the cargo. Special arrangements shall be made to prevent the energizing of motors and cables in flammable gas-air mixtures and automatically to de-energize the motors and cables in the event of low liquid level. Such a shutdown shall be indicated by an alarm at CCR.

2.4.2 Where electrical equipment is located in CPR, due consideration shall be given to the use of types of apparatus with ensure the absence of arcs or sparks and hot spots during normal operation, or which are a certified safe type.

2.4.3 Where the cargo is heated to within 15 °C of its flash point value and less, CPR shall be considered as a dangerous area as well as areas within 3 m of openings from tanks and of the entrance or ventilation openings to CPR.

Electrical equipment installed within these hazardous locations shall be of a certified safe type.

2.5 REQUIREMENTS FOR CARGO TRANSPORTATION WITH A FLASH POINT NOT EXCEEDING 60 °C

2.5.1 Installation of additional electrical equipment in the rooms and spaces.

2.5.1.1 In addition to intrinsically safe systems and circuits, the only electrical installations permitted in hazardous locations are the following:

.1 void spaces adjacent to, above or below integral tanks:

.1.1 through runs of cables. Such cables shall be installed in heavy gauge steel pipes (with gastight joints). Expansion bends shall not be fitted in such spaces;

.1.2 electrical depth-sounding or log devices and impressed-current cathodic protection system electrodes (anodes). These devices shall be housed in gastight enclosures; associated cables shall be protected as referred to in [2.5.1.1.1](#);

.2 cargo spaces containing independent cargo tanks:

.2.1 through runs of cables without any additional protection against mechanical damage;

.2.2 flame-proof type lighting fittings with pressurized enclosure or of the safe-type.

The lighting system shall be divided between at least two independent branch circuits. All switches and protective devices shall interrupt all poles or phases and shall be located in non-hazardous location;

.3 CPR and pump-rooms in the cargo area:

.3.1 flame-proof type lighting fittings with pressurized enclosure or of the safe-type.

The lighting system shall be divided between at least two independent branch circuits. All switches and protective devices shall interrupt all poles or phases and shall be located in non-hazardous location;

.3.2 electrical motors for driving cargo pumps and any associated auxiliary pumps which shall be separated from the pumps and from the cargo spaces by a gastight bulkheads or decks. Flexible couplings or other means of maintaining alignment shall be fitted to the shafts and in addition glands shall be provided where the shafts pass through the gastight bulkheads or decks. Such electrical motors shall be located in compartments having positive-pressure ventilation;

.3.3 safe-type general alarm sound devices (bells, sirens etc.);

.4 zones on open deck, or semi-enclosed spaces on open deck, within 3 m of any cargo-tank outlets, (hatches, flanges, etc.) gas or vapour outlets, cargo-pipe flange, cargo valve or entrance and ventilation openings to CPR; cargo area on open deck over all cargo tanks and cargo-tank holds including ballast tanks and cofferdams within the cargo-tank block, to the full width of the ship, plus 3 m fore and aft and up to a height of 2,4 m above the deck:

.4.1 electrical and other equipment of a certified safe-type, adequate for open deck use;

.4.2 through runs of cables;

.5 enclosed or semi-enclosed spaces in which pipes containing cargoes are located; enclosed or semienclosed spaces immediately above cargo tanks (e.g. between decks) or having the bulkheads above or in line with cargo-tank bulkheads; enclosed or semi-enclosed spaces immediately above CPR adjacent to the cargo tanks, unless separated by a gastight deck and suitably ventilated; and compartments for cargo hoses:

.5.1 lighting fittings of a certified type.

The lighting system shall be divided between at least two branch circuits. All the switches and protective devices shall interrupt all poles or phases and shall be located in non-hazardous locations;

.5.2 through runs of cables;

.6 enclosed or semi-enclosed spaces having direct openings into any hazardous location:

.6.1 electrical equipment complying with the requirements for the spaces or zones into which the openings lead.

2.5.2 In cargo tanks and cargo piping (Zone 0) installation of electrical equipment other than electrical equipment other than intrinsically safe-type circuit is not permitted.

3 BONDING

3.1 Independent cargo tanks as well as sections of cargo and other piping within the cargo area shall be electrically bonded to the hull.

3.2 To ensure electrostatic safety the requirements of 2.10, Part XI "Electrical Equipment" of the Rules for the Classification shall be met.

Russian Maritime Register of Shipping

Rules for the Classification and Construction of Chemical Tankers
Part VII
Electrical Equipment

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