

**RULES
FOR THE CLASSIFICATION OF
SHIPS**

*Part 17 – FIRE PROTECTION
January 2017*

*Amendments No. 4
July 2019*

CROATIAN REGISTER OF SHIPPING

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By the decision of the General Committee of Croatian Register of Shipping,

Amendments No. 4 to the
RULES FOR THE CLASSIFICATION OF SHIPS
Part 17 – Fire protection

have been adopted on 17th June 2019 and shall enter into force on 1st July 2019

INTRODUCTORY NOTES

These amendments shall be read together with the requirements in the Rules for the Classification of Ships, Part 17 – Fire protection, edition January 2017, as amended by Amendments No. 1, edition July 2017, as amended by Amendments No. 2, edition January 2018 and as amended by Amendments No. 3, edition January 2018.

Table 1 contains review of amendments, where items changed or added in relating to previous edition are given, with short description of each modification or addition. All major changes throughout the text are shaded.

The purpose of issuing of these amendments is to provide compliance with is to provide compliance with IACS Unified Interpretations UI SC 284, UI SC 285, UI SC 286 and UI SC 287.

This Part of the Rules includes the requirements of the following international Organisations:

International Maritime Organization (IMO)

Conventions: International Convention for the Safety of Life at Sea, 1974 (SOLAS 74) and all subsequent amendments up to and including the 2015 amendments (MSC.392(95)). Protocol of 1988 relating to the International Convention for the Safety of Life at Sea, 1974, as amended (SOLAS PROT 1988)

Resolutions: A.123(V), A.567(14), A.654(16), A.752(18), A.756(18), A.800(19), A.951(23), A.952(23), A.1021(26) and A.1116(30); MSC.98(73), MSC.206(81), MSC.217(82), MSC.256(84), MSC.265(84), MSC.266(84), MSC.269(85), MSC.284(86), MSC.291(87), MSC.292(87), MSC.307(88), MSC.308(88), MSC.311(88), MSC.327(90), MSC.338(91), MSC.339(91), MSC.365(93), MSC.367(93), MSC.380(94), MSC.392(95) and MSC.408(96).

Circulars: MSC/Circ.353, MSC/Circ.387, MSC/Circ.451, MSC/Circ.474, MSC/Circ.485, MSC/Circ.553, MSC/Circ.606, MSC/Circ.608 Rev.1, MSC/Circ.670, MSC/Circ.677, MSC/Circ.730, MSC/Circ.731, MSC/Circ.777, MSC/Circ.798, MSC/Circ.808, MSC/Circ.848, MSC/Circ.849, MSC/Circ.858, MSC/Circ.910, MSC/Circ.917, MSC/Circ.917/Corr.1, MSC/Circ.1002, MSC/Circ.1003, MSC/Circ.1005, MSC/Circ.1009, MSC/Circ.1035, MSC/Circ.1036, MSC/Circ.1037, MSC/Circ.1050, MSC/Circ.1081, MSC/Circ.1082, MSC/Circ.1084, MSC/Circ.1085, MSC/Circ.1086, MSC/Circ.1087, MSC/Circ.1120, MSC/Circ.1129, MSC/Circ.1142, MSC/Circ.1165, MSC/Circ.1167 and MSC/Circ.1168; MSC.1/Circ.1002/Corr.1, MSC.1/Circ.1002/Corr.2, MSC.1/Circ.1120/Corr.1, MSC.1/Circ.1203, MSC.1/Circ.1237, MSC.1/Circ.1238, MSC.1/Circ.1240, MSC.1/Circ.1242, MSC.1/Circ.1266, MSC.1/Circ.1267, MSC.1/Circ.1268, MSC.1/Circ.1269, MSC.1/Circ.1270, MSC.1/Circ.1270/Corr.1, MSC.1/Circ.1275, MSC.1/Circ.1275/Corr.1, MSC.1/Circ.1276, MSC.1/Circ.1312, MSC.1/Circ.1312/Corr.1, MSC.1/Circ.1314, MSC.1/Circ.1316, MSC.1/Circ.1317, MSC.1/Circ.1318, MSC.1/Circ.1319, MSC.1/Circ.1320, MSC.1/Circ.1322, MSC.1/Circ.1324, MSC.1/Circ.1368, MSC.1/Circ.1369/Add.1, MSC.1/Circ.1370, MSC.1/Circ.1384, MSC.1/Circ.1385, MSC.1/Circ.1386, MSC.1/Circ.1387, MSC.1/Circ.1388, MSC.1/Circ.1395/Rev.3, MSC.1/Circ.1422, MSC.1/Circ.1430, MSC.1/Circ.1431, MSC.1/Circ.1432, MSC.1/Circ.1433, MSC.1/Circ.1434, MSC.1/Circ.1435, MSC.1/Circ.1436, MSC.1/Circ.1437, MSC.1/Circ.1456, MSC.1/Circ.1458, MSC.1/Circ.1459, MSC.1/Circ.1471, MSC.1/Circ.1472, MSC.1/Circ.1480, MSC.1/Circ.1487, MSC.1/Circ.1488, MSC.1/Circ.1491, MSC.1/Circ.1492, MSC.1/Circ.1499, MSC.1/Circ.1501, MSC.1/Circ.1505, MSC.1/Circ.1510, MSC.1/Circ.1511, MSC.1/Circ.1514, MSC.1/Circ.1515, MSC.1/Circ.1516, MSC.1/Circ.1527, MSC.1/Circ.1528, MSC.1/Circ.1550, MSC.1/Circ.1552, MSC.1/Circ.1554, MSC.1/Circ.1555, MSC.1/Circ.1556, MSC.1/Circ.1573, MSC.1/Circ.1581 and MSC.1/Circ.1582; BLG.1/Circ.23

International Association of Classification Societies (IACS)

Unified requirements (UR): F1(2002), F2(2012), F3(1971), F5(1973), F6(1996), F7(1999), F13(1977), F16(2000), F20(2015), F21(1974), F26(2004), F27(1978), F29(2005), F32(1976), F33(1981), F35(2005), F41(1993), F42(1995), F43(2002) and F44(2010)

Unified Interpretations (UI): SC16(2006), SC17(2005), SC25(2005), SC30(2005), SC32(2005), SC34(2005), SC35(2013), SC39(2005), SC41(2005), SC42(2007), SC43(2007), SC45(2005), SC46(2005), SC48(2005), SC49(2010), SC52(2005), SC54(2005), SC55(2005), SC57(2005), SC58(2005), SC60(2005), SC61(2005), SC62(2005), SC63(2005), SC64(2005), SC70(2010), SC73(2005), SC75(2005), SC79(2015), SC84(2005), SC85(2005), SC86(2005), SC87(2005), SC89(2018), SC90(2005), SC91(2005), SC92(2005), SC97(2005), SC98(2005), SC99(2014), SC100(2014), SC101(2005), SC102(2005), SC103(2005), SC106(2005), SC107(2005), SC108(2005), SC109(2005), SC110(2005), SC111(2005), SC114(2005), SC117(2005), SC118(2015), SC119(2005), SC120(2006), SC121(2005), SC125(2010), SC126(2005), SC127(2005), SC128(2005), SC129(2005), SC130(2005), SC132(2013), SC140(2011), SC146(2005), SC147(2005), SC148(2015), SC149(2012), SC150(2005), SC158(2005), SC159(2005), SC160(2005), SC162(2005), SC163(2009), SC164(2005), SC166(2005), SC167(2005), SC168(2005), SC169(2003), SC170(2005), SC172(2005), SC173(2003), SC174(2006), SC175(2003), SC176(2004), SC178(2011), SC188(2015), SC192(2004), SC196(2005), SC197(2006), SC198(2005), SC199(2005), SC200(2005), SC201(2006), SC204(2006), SC205(2006), SC211(2007), SC214(2006), SC217(2007), SC218(2007), SC219(2007), ~~SC221(2007)~~, SC239(2010), SC240(2011), SC241(2010), SC243(2012), SC245(2012), SC247(2011), SC250(2012), SC252(2011), SC253(2016), SC260(2015), SC262(2015), SC264(2013), SC268(2014), SC269(2016), SC270(2015), SC271(2015), SC272(2015), SC273(2015), SC275(2016), SC276(2016), SC277(2016), SC278(2016), SC282(2016), **SC284(2018)**, **SC285(2018)**, **SC286(2018)** and **SC287(2018)**; FTP1(2000), FTP2(2000), FTP3(2010), FTP4(2006), FTP5(2010) and FTP6(2015)

Recommendations (Rec.): No.123 (2012), No.131(2013) and No.135(2014)

TABLE 1 – REVIEW OF AMENDMENTS

This review comprises amendments in relation to the Rules for the classification of ships, Part 17 – Fire protection, edition January 2017, as amended by Amendments No. 1, edition July 2017, as amended by Amendments No. 2, edition January 2018 and as amended by Amendments No. 3, edition January 2019.

<i>ITEM</i>	<i>DESCRIPTION OF THE AMENDMENTS</i>
SECTION 24 - FIRE SAFETY SYSTEMS	
sub-item 24.15.2.2.2	has been amended in order to include provisions of IACS UI SC 284
sub-item 24.15.2.2.3	has been amended in order to include provisions of IACS UI SC 285
sub-item 24.15.2.2.4	has been amended in order to include provisions of IACS UI SC 286 and UI SC 287

24 FIRE SAFETY SYSTEMS

Head **24.15 - INERT GAS SYSTEMS**, sub-items 24.15.2.2.2, 24.15.2.2.3 and 24.15.2.2.4, are changed, and should read as follows:

24.15.2.2.2 Safety measures

- .1 The inert gas system shall be so designed that the maximum pressure which it can exert on any cargo tank will not exceed the test pressure of any cargo tank.
- .2 Automatic shutdown of the inert gas system and its components parts shall be arranged on predetermined limits being reached, taking into account the provisions of 24.15.2.2.4, 24.15.2.3.2 and 24.15.2.4.2. **See IACS UI SC 284.**
- .3 Suitable shutoff arrangements shall be provided on the discharge outlet of each generator plant.
- .4 The system shall be designed to ensure that if the oxygen content exceeds 5% by volume, the inert gas shall be automatically vented to atmosphere.
- .5 Arrangements shall be provided to enable the functioning of the inert gas plant to be stabilized before commencing cargo discharge. If blowers are to be used for gas-freeing, their air inlets shall be provided with blanking arrangements.
- .6 Where a double block and bleed valve is installed, the system shall ensure upon loss of power, the block valves are automatically closed and the bleed valve is automatically open.

24.15.2.2.3 System components

- .1 Non-return devices
 - (1) At least two non-return devices shall be fitted in order to prevent the return of vapour and liquid to the inert gas plant, or to any gas-safe spaces.
 - (2) The first non-return device shall be a deck seal of the wet, semi-wet, or dry type or a double-block and bleed arrangement. Two shut-off valves in series with a venting valve in between, may be accepted provided:
 - (2.1) the operation of the valve is automatically executed. Signal(s) for opening/closing is (are) to be taken from the process directly, e.g. inert gas flow or differential pressure; and
 - (2.2) alarm for faulty operation of the valves is provided, e.g. the operation status of "blower stop" and "supply valve(s) open" is an alarm condition. **See IACS UI SC 285.**
 - (3) The second non-return device shall be a non-return valve or equivalent capable of preventing the return of vapours and liquids and fitted between the deck water seal (or equivalent device) and the first connection from the inert gas main to a cargo tank. It shall be provided with positive means of closure. As an alternative to positive means of closure, an additional valve having such means of closure may be provided between the non-return valve and the first connection to the cargo tanks to isolate the deck water seal, or equivalent device, from the inert gas main to the cargo tanks.
 - (4) A water seal, if fitted, shall be capable of being supplied by two separate pumps, each of which shall be capable of maintaining an adequate supply at all times. The audible and visual alarm on the low level of water in the water seal shall operate at all times.
 - (5) The arrangement of the water seal, or equivalent devices, and its associated fittings shall be such that it will prevent backflow of vapours and liquids and will ensure the proper functioning of the seal under operating conditions.
 - (6) Provision shall be made to ensure that the water seal is protected against freezing, in such a way that the integrity of seal is not impaired by overheating.
 - (7) A water loop or other approved arrangement shall also be fitted to each associated water supply and drain pipe and each venting or pressure-sensing pipe leading to gas-safe spaces. Means shall be provided to prevent such loops from being emptied by vacuum.
 - (8) Any water seal, or equivalent device, and loop arrangements shall be capable of preventing return of vapours and liquids to an inert gas plant at a pressure equal to the test pressure of the cargo tanks.
 - (9) The non-return devices shall be located in the cargo area on deck.
- .2 Inert gas lines
 - (1) The inert gas main may be divided into two or more branches forward of the non-return devices required by 24.15.2.2.3.1.
 - (2) The inert gas main shall be fitted with branch piping leading to the cargo tank. Branch piping for inert gas shall be fitted with either stop valves or equivalent means of control for isolating each tank. Where stop valves are fitted, they shall be provided with locking arrangements. The control system shall provide unambiguous information of the operational status of such valves to at least the control panel required in 24.15.2.2.4.
 - (3) Each cargo tank not being inerted shall be capable of being separated from the inert gas main by:
 - (3.1) removing spool-pieces, valves or other pipe sections, and blanking the pipe ends; or
 - (3.2) arrangement of two spectacle flanges in series with provisions for detecting leakage into the pipe between the two spectacle flanges; or

- (3.3) equivalent arrangements to the satisfaction of the *Register*, providing at least the same level of protection.
- (4) Means shall be provided to protect cargo tanks against the effect of overpressure or vacuum caused by thermal variations and/or cargo operations when the cargo tanks are isolated from the inert gas mains.
- (5) Piping systems shall be so designed as to prevent the accumulation of cargo or water in the pipelines under all normal conditions.
- (6) Arrangements shall be provided to enable the inert gas main to be connected to an external supply of inert gas. The arrangements shall consist of a 250 mm nominal pipe size bolted flange, isolated from the inert gas main by a valve and located forward of the non-return valve. The design of the flange should conform to the appropriate class in the standards adopted for the design of other external connections in the ship's cargo piping system.
- (7) If a connection is fitted between the inert gas main and the cargo piping system, arrangements shall be made to ensure an effective isolation having regard to the large pressure difference which may exist between the systems. This shall consist of two shutoff valves with an arrangement to vent the space between the valves in a safe manner or an arrangement consisting of a spool-piece with associated blanks.
- (8) The valve separating the inert gas main from the cargo main and which is on the cargo main side shall be a non-return valve with a positive means of closure.
- (9) Inert gas piping systems shall not pass through accommodation, service and control station spaces.
- (10) In combination carriers, the arrangement to isolate the slop tanks containing oil or oil residues from other tanks shall consist of blank flanges which will remain in position at all times when cargoes other than oil are being carried except as provided for in the relevant section of the guidelines developed by IMO, see *Revised Guidelines for inert gas systems (MSC/Circ.353), as amended by MSC/Circ.387*.

See IACS UI SC 62, Rev.1 (taking into account 24.1.1.1).

24.15.2.2.4 Indicators and alarms

- .1 The operation status of the inert gas system shall be indicated in a control panel. See IACS UI SC 286.
- .2 Instrumentation shall be fitted for continuously indicating and permanently recording, when inert gas is being supplied:
 - (1) the pressure of the inert gas mains forward of the non-return devices; and
 - (2) the oxygen content of the inert gas.
- .3 The indicating and recording devices shall be placed in the cargo control room where provided. But where no cargo control room is provided, they shall be placed in a position easily accessible to the officer in charge of cargo operations.
- .4 In addition, meters shall be fitted:
 - (1) in the navigating bridge to indicate at all times the pressure referred to in 24.15.2.2.4.2(1) and the pressure in the slop tanks of combination carriers, whenever those tanks are isolated from the inert gas main; and
 - (2) in the machinery control room or in the machinery space to indicate the oxygen content referred to in 24.15.2.2.4.2(2).
- .5 Audible and visual alarms
 - (1) Audible and visual alarms shall be provided, based on the system designed, to indicate:
 - (1.1) oxygen content in excess of 5% by volume;
 - (1.2) failure of the power supply to the indicating devices as referred to in 24.15.2.2.4.2;
 - (1.3) gas pressure less than 100 mm water gauge. The alarm arrangement shall be such as to ensure that the pressure in slop tanks in combination carriers can be monitored at all times;
 - (1.4) high-gas pressure; and
 - (1.5) failure of the power supply to the automatic control system.
 - (2) The alarms required in 24.15.2.2.4.5(1.1), 24.15.2.2.4.5(1.3) and 24.15.2.2.4.5(1.5) shall be fitted in the machinery space and cargo control room, where provided, but in each case in such a position that they are immediately received by responsible members of the crew.
 - (3) An audible alarm system independent of that required in 24.15.2.2.4.5(1.3) or automatic shutdown of cargo pumps shall be provided to operate on predetermined limits of low pressure in the inert gas main being reached.
 - (4) Two oxygen sensors shall be positioned at appropriate locations in the space or spaces containing the inert gas system. If the oxygen level falls below 19%, these sensors shall trigger alarms, which shall be both visible and audible inside and outside the space or spaces and shall be placed in such a position that they are immediately received by responsible members of the crew.

See IACS UI SC 287.