RULES
FOR THE CLASSIFICATION OF SHIPS

2017

Part 17 – FIRE PROTECTION

Amendments No. 1

2017

CROATIAN REGISTER OF SHIPPING

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

Amendments No. 1 to the
RULES FOR THE CLASSIFICATION OF SHIPS
Part 17 – FIRE PROTECTION

have been adopted on 30th June 2017 and shall enter into force on 1st July 2017

INTRODUCTORY NOTES

These amendments shall be read together with the requirements in the Rules for the Classification of Ships, Part 17 – Fire protection, edition 2017.

Table 1 contains review of amendments, where items changed or added in relation to 2017 edition are given, with short description of each modification or addition.

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) and A.1021(26);
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.1002/Corr. 3, 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.2, 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 and MSC.1/Circ.1556; 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(2011), 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) and SC282(2016);
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, issued 2017.

ITEM	*DESCRIPTION OF THE AMENDMENTS*
SECTION 3 –DEFINITIONS AND EXPLANATIONS	
sub-item 3.1.2.56	is changed (inclusion of MSC.1/Circ.1555)
SECTION 4 - PROBABILITY OF IGNITION SECTION	
sub-item 4.2.2.5	is changed (inclusion of IACS UI SC 282)
sub-item 4.5.5.1.4	is changed (inclusion of MSC.1/Circ.1555)
SECTION 5 – FIRE GROWTH POTENTIAL	
sub-items 5.2.1.2 and 5.2.1.3	are changed (inclusion of MSC.1/Circ.1555)
SECTION 7 – FIRE DETECTION AND ALARM	
item 7.9.3	is changed (inclusion of MSC.1/Circ.1555)
SECTION 9 – STRUCTURAL INTEGRITY AND CONTAINMENT OF FIRE	
sub-item 9.2.1.1	is changed (inclusion of MSC.1/Circ.1555)
SECTION 10 – FIRE FIGHTING	
sub-items 10.2.1.3 and 10.2.2.4	are changed (inclusion of MSC.1/Circ.1550)
item 10.3.1	is changed (inclusion of MSC.1/Circ.1275/Corr.1)
items 10.5.1, 10.5.2 and 10.5.3	are changed (inclusion of MSC.1/Circ.1275/Corr.1)
sub-item 10.7.3.2.3	is changed (inclusion of MSC.1/Circ.1550)
SECTION 13 – MEANS OF ESCAPE	
sub-items 13.4.2.2 and 13.4.2.3	are changed (inclusion of IACS UI SC 269 Rev.1)
SECTION 15 - INSTRUCTIONS, ONBOARD TRAINING AND DRILLS	
sub-item 15.2.2.6	is changed (inclusion of MSC.1/Circ.1555)
SECTION 17 - ALTERNATIVE DESIGN AND ARRANGEMENTS	
item 17.3.1 and 17.4.1	are changed (inclusion of MSC.1/Circ.1002/Corr.2, MSC.1/Circ.1002/Corr.3 and MSC.1/Circ.1552)
SECTION 18 - HELICOPTER FACILITIES	
item 18.5.1	is changed (inclusion of MSC.1/Circ.1275/Corr.1)
SECTION 19 - CARRIAGE OF DANGEROUS GOODS	
item 19.3.1	is changed (inclusion of MSC.1/Circ.1550)
item 19.3.2	is changed (inclusion of MSC.1/Circ.1555)
item 19.3.7	is changed (inclusion of MSC.1/Circ.1275/Corr.1)
SECTION 20 - PROTECTION OF VEHICLE, SPECIAL CATEGORY AND RO-RO SPACES	
sub-item 20.6.2.1	is changed (inclusion of MSC.1/Circ.1275/Corr.1)
SECTION 24 - FIRE SAFETY SYSTEMS	
item 24.8.3	is added (inclusion of MSC.1/Circ.1556)
sub-item 24.9.2.2.4	is changed (inclusion of MSC.1/Circ.1554)
SECTION 25 - FIRE-EXTINGUISHING APPLIANCES, SPARE PARTS AND TOOLS	
item 25.1.2	is changed (inclusion of MSC.1/Circ.1275/Corr.1)

SECTION 3 – DEFINITIONS AND EXPLANATIONS

■ Head **3.1 – DEFINITIONS**, sub-item 3.1.2.56 is changed, and should read as follows:

3.1.2

.56 *Vehicle carrier* - a cargo ship with multi deck ro-ro spaces designed for the carriage of empty cars and trucks as cargo. See MSC.1/Circ.1555.

SECTION 4 – PROBABILITY OF IGNITION

■ Head **4.2 – ARRANGEMENTS FOR OIL FUEL, LUBRICATION OIL AND OTHER FLAMMABLE OILS**, sub-item 4.2.2.5 is changed, and should read as follows:

4.2.2.5 Oil fuel piping

.1 Oil fuel pipes and their valves and fittings shall be of steel or other approved material, see IACS UI SC 282, except that restricted use of flexible pipes shall be permissible in positions where the *Register* is satisfied that they are necessary, *see recommendations published by the International Organization for Standardization, in particular publications ISO 15540:1999, Fire resistance of hose assemblies – test methods and ISO 15541:1999, Fire resistance of hose assemblies – requirements for the test bench.* Such flexible pipes and end attachments shall be of approved fire-resisting materials of adequate strength and shall be constructed to the satisfaction of the *Register*. For valves fitted to oil fuel tanks and under static pressure, steel or spheroidal-graphite cast iron may be accepted. However, ordinary cast iron valves may be used in piping systems where the design pressure is lower than 7 bar and the design temperature is below 60°C.
Following additional requirement (IACS UR F 35 Rev. 8) applies:
Hose clamps and similar types of attachments for flexible pipes should not be permitted.

.2 External high-pressure fuel delivery lines between the high-pressure fuel pumps and fuel injectors shall be protected with a jacketed piping system capable of containing fuel from a high-pressure line failure. A jacketed pipe incorporates an outer pipe into which the high-pressure fuel pipe is placed, forming a permanent assembly. The jacketed piping system shall include a means for collection of leakages and arrangements shall be provided with an alarm in case of a fuel line failure.

.3 Oil fuel lines shall not be located immediately above or near units of high temperature, including boilers, steam pipelines, exhaust manifolds, silencers or other equipment required to be insulated by 4.2.2.6. As far as practicable, oil fuel lines shall be arranged far apart from hot surfaces, electrical installations or other sources of ignition and shall be screened or otherwise suitably protected to avoid oil spray or oil leakage onto the sources of ignition. The number of joints in such piping systems shall be kept to a minimum.

.4 Components of a diesel engine fuel system shall be designed considering the maximum peak pressure which will be experienced in service, including any high-pressure pulses which are generated and transmitted back into the fuel supply and spill lines by the action of fuel injection pumps. Connections within the fuel supply and spill lines shall be constructed having regard to their ability to prevent pressurized oil fuel leaks while in service and after maintenance.

.5 In multi-engine installations which are supplied from the same fuel source, means of isolating the fuel supply and spill piping to individual engines shall be provided. The means of isolation shall not affect the operation of the other engines and shall be operable from a position not rendered inaccessible by a fire on any of the engines.

.6 Where the *Register* may permit the conveying of oil and combustible liquids through accommodation and service spaces, the pipes conveying oil or combustible liquids shall be of a material approved by the *Register* having regard to the fire risk.

■ Head **4.5 – CARGO AREAS OF TANKERS**, sub-item 4.5.5.1.4 is changed, and should read as follows:

4.5.5.1.4 Tankers required to be fitted with inert gas systems shall comply with the following provisions:

.1 double hull spaces shall be fitted with suitable connections for the supply of inert gas.
See IACS UI SC 272. See MSC.1/Circ.1555;

.2 where hull spaces are connected to a permanently fitted inert gas distribution system, means shall be provided to prevent hydrocarbon gases from the cargo tanks entering the double hull spaces through the system; and

.3 where such spaces are not permanently connected to an inert gas distribution system, appropriate means shall be provided to allow connection to the inert gas main.

SECTION 5 – FIRE GROWTH POTENTIAL

■ Head **5.2 – CONTROL OF AIR SUPPLY AND FLAMMABLE LIQUID TO THE SPACE**, sub-items 5.2.1.2 and 5.2.1.3 are changed, and should read as follows:

5.2.1.2 Power ventilation of accommodation spaces, service spaces, cargo spaces, control stations and machinery spaces shall be capable of being stopped from an easily accessible position outside the space being served. This position shall not be readily cut off in the event of a fire in the spaces served. *See IACS UI SC 148 Rev.2. See MSC.1/Circ.1555.*

5.2.1.3 In passenger ships carrying more than 36 passengers, power ventilation, except machinery space and cargo space ventilation and any alternative system which may be required under 8.2, shall be fitted with controls so grouped that all fans may be stopped from either of two separate positions which shall be situated as far apart as practicable. Fans serving power ventilation systems to cargo spaces shall be capable of being stopped from a safe position outside such spaces. *See IACS UI SC 148 Rev.2. See MSC.1/Circ.1555.*

SECTION 7 – FIRE DETECTION AND ALARM

■ Head **7.9 – FIRE ALARM SIGNALLING SYSTEMS IN PASSENGER SHIPS,** item 7.9.3 is changed, and should read as follows:

7.9.3 Passenger ships carrying more than 36 passengers shall have the fire detection alarms for the systems required by 7.5.2 centralized in a continuously manned central control station. In addition, controls for remote closing of the fire doors and shutting down the ventilation fans shall be centralized in the same location. The ventilation fans shall be capable of reactivation by the crew at the continuously manned control station. The control panels in the central control station shall be capable of indicating open or closed positions of fire doors and closed or off status of the detectors, alarms and fans. The control panel shall be continuously powered and shall have an automatic change-over to standby power supply in case of loss of normal power supply. The control panel shall be powered from the main source of electrical power and the emergency source of electrical power defined by *Rules, Part 12 – Electrical Equipment,* 9 unless other arrangements are permitted by this Part of the Rules, as applicable. *See IACS UI SC 148 Rev.2. See MSC.1/Circ.1555*.

SECTION 9 – STRUCTURAL INTEGRITY AND CONTAINMENT OF FIRE

■ Head **9.2 – THERMAL AND STRUCTURAL BOUNDARIES,** sub-item 9.2.1.1 is changed, and should read as follows:

9.2.1.1 Ships of all types shall be subdivided into spaces by thermal and structural divisions having regard to the fire risks of the spaces. *See MSC.1/Circ.1555.*

SECTION 10 – FIRE FIGHTING

■ Head **10.2 – WATER SUPPLY SYSTEMS**, sub-items 10.2.1.3 and 10.2.2.4 are changed, and should read as follows:

10.2.1.3 Diameter of fire mains

The diameter of the fire main and water service pipes shall be sufficient for the effective distribution of the maximum required discharge from two fire pumps operating simultaneously, except that in the case of cargo ships, other than those included in 10.7.3.2, the diameter need only be sufficient for the discharge of 140 m^3/h.

See IACS UI SC 270 Rev.1. See also MSC.1/Circ.1550.

10.2.2.4 Capacity of fire pumps

10.2.2.4.1 Total capacity of required fire pumps

The required fire pumps shall be capable of delivering for fire-fighting purposes a quantity of water, at the pressure specified in 10.2.1.6, as follows:

.1 pumps in passenger ships: the quantity of water is not less than two thirds of the quantity required to be dealt with by the bilge pumps when employed for bilge pumping; and

.2 pumps in cargo ships, other than any emergency pump: the quantity of water is not less than four thirds of the quantity required under *Rules, Part 8 – Piping,* 2.1 to be dealt with by each of the independent bilge pumps in a passenger ship of the same dimension when employed in bilge pumping, provided that in no cargo ship, other than those included in 10.7.3.2, need the total required capacity of the fire pumps exceed 180 m^3/h.
See IACS UI SC 270 Rev.1. See also MSC.1/Circ.1550.

10.2.2.4.2 Capacity of each fire pump

Each of the required fire pumps (other than any emergency pump required in 10.2.2.3.1.2 for cargo ships) shall have a capacity not less than 80% of the total required capacity divided by the minimum number of required fire pumps, but in any case not less than 25 m^3/h, and each such pump shall in any event be capable of delivering at least the two required jets of water. These fire pumps shall be capable of supplying the fire main system under the required conditions. Where more pumps than the minimum of required pumps are installed, such additional pumps shall have a capacity of at least 25 m^3/h and shall be capable of delivering at least the two jets of water required in 10.2.1.5.1. *See IACS UI SC 163 Rev.2.*

■ Head **10.3 – PORTABLE FIRE EXTINGUISHERS**, item 10.3.1 is changed, and should read as follows:

10.3.1 Type and design

Portable fire extinguishers shall comply with the requirements of the Section 24. *See requirements in 24.4.*

See also Improved Guidelines for marine portable fire extinguishers (resolution A.951(23)) and Unified interpretation of SOLAS chapter II-2 on the number and arrangement of portable fire extinguishers on board ships (MSC.1/Circ.1275 and MSC.1/Circ.1275/Corr.1).

■ Head **10.5 – FIRE-EXTINGUISHING ARRANGEMENTS IN MACHINERY SPACES**, items 10.5.1, 10.5.2 and 10.5.3 are changed, and should read as follows:

10.5.1 Machinery spaces containing oil-fired boilers or oil fuel units

10.5.1.1 Fixed fire-extinguishing systems

Machinery spaces of category A containing oil-fired boilers or oil fuel units shall be provided with any one of the fixed fire-extinguishing systems in 10.4.1. In each case, if the engine-room and boiler room are not entirely separate, or if fuel oil can drain from the boiler room into the engine-room, the combined engine and boiler rooms shall be considered as one compartment.

10.5.1.2 Additional fire-extinguishing arrangements

See Unified interpretation of SOLAS chapter II-2 on the number and arrangement of portable fire extinguishers on board ships (MSC.1/Circ.1275 and MSC.1/Circ.1275/Corr.1).

10.5.1.2.1 There shall be in each boiler room or at an entrance outside of the boiler room at least one portable foam applicator unit complying with the provisions of the Section 24.

10.5.1.2.2 There shall be at least two portable foam extinguishers or equivalent in each firing space in each boiler room and in each space in which a part of the oil fuel installation is situated. There shall be not less than one approved foam-type extinguisher of at least 135 *l* capacity or equivalent in each boiler room. These extinguishers shall be provided with hoses on reels suitable for reaching any part of the boiler room. In the case of domestic boilers of less than 175 kW an approved foam-type extinguisher of at least 135 *l* capacity is not required.

10.5.1.2.3 In each firing space there shall be a receptacle containing at least 0.1 m^3 sand, sawdust impregnated with soda, or other approved dry material, along with a suitable shovel for spreading the material. An approved portable extinguisher may be substituted as an alternative.

10.5.2 Machinery spaces of category A containing internal combustion machinery

10.5.2.1 Fixed fire-extinguishing systems

Machinery spaces of category A containing internal combustion machinery shall be provided with one of the fixed fire-extinguishing systems in 10.4.1.

10.5.2.2 Additional fire-extinguishing arrangements

See Unified interpretation of SOLAS chapter II-2 on the number and arrangement of portable fire extinguishers on board ships (MSC.1/Circ.1275 and MSC.1/Circ.1275/Corr.1).

10.5.2.2.1 There shall be at least one portable foam applicator unit complying with the provisions of the Section 24.

10.5.2.2.2 There shall be in each such space approved foam-type fire extinguishers, each of at least 45 *l* capacity or equivalent, sufficient in number to enable foam or its equivalent to be directed onto any part of the fuel and lubricating oil pressure systems, gearing and other fire hazards. In addition, there shall be provided a sufficient number of portable foam extinguishers or equivalent which shall be so located that no point in the space is more than 10 m walking distance from an extinguisher and that there are at least two such extinguishers in each such space. For smaller spaces of cargo ships the *Register* may consider relaxing this requirement.

10.5.3 Machinery spaces containing steam turbines or enclosed steam engines

10.5.3.1 Fixed fire-extinguishing systems

In spaces containing steam turbines or enclosed steam engines used for main propulsion or other purposes having in the aggregate a total output of not less than 375 kW, one of the fire-extinguishing systems specified in 10.4.1 shall be provided if such spaces are periodically unattended.

10.5.3.2 Additional fire-extinguishing arrangements

10.5.3.2.1 There shall be approved foam fire extinguishers, each of at least 45 l capacity or equivalent, sufficient in number to enable foam or its equivalent to be directed on to any part of the pressure lubrication system, on to any part of the casings enclosing pressure-lubricated parts of the turbines, engines or associated gearing, and any other fire hazards. However, such extinguishers shall not be required if protection, at least equivalent to that required by this sub-item, is provided in such spaces by a fixed fire-extinguishing system fitted in compliance with 10.4.1.

10.5.3.2.2 There shall be a sufficient number of portable foam extinguishers (*See Unified interpretation of SOLAS chapter II-2 on the number and arrangement of portable fire extinguishers on board ships (MSC.1/Circ.1275 and MSC.1/Circ.1275/Corr.1)*) or equivalent which shall be so located that no point in the space is more than 10 m walking distance from an extinguisher and that there are at least two such extinguishers in each such space, except that such extinguishers shall not be required in addition to any provided in compliance with 10.5.1.2.2.

■ Head **10.7 – FIRE-EXTINGUISHING ARRANGEMENTS IN CARGO SPACES**, sub-item 10.7.3.2.3 is changed, and should read as follows:

10.7.3.2.3 The mobile water monitors may be supplied by the fire main, provided the capacity of fire pumps and fire main diameter are adequate to simultaneously operate the mobile water monitors and two jets of water from fire hoses at the required pressure

values. If carrying dangerous goods, the capacity of fire pumps and fire main diameter shall also comply with 19.3.1.5, as far as applicable to on-deck cargo areas.

See *IACS UI SC 270 Rev.1. See also MSC.1/Circ.1550.*

SECTION 13 – MEANS OF ESCAPE

Head **13.4 – MEANS OF ESCAPE FROM MACHINERY SPACES**, sub-items 13.4.2.2 and 13.4.2.3 are changed, and should read as follows:

13.4.2.2 Dispensation from two means of escape

In a ship of less than 1,000 gross tonnage, the Register may dispense with one of the means of escape required under 13.4.2.1, due regard being paid to the dimension and disposition of the upper part of the space. In addition, the means of escape from machinery spaces of category A need not comply with the requirement for an enclosed fire shelter listed in 13.4.2.1.1. In the steering gear space, a second means of escape shall be provided when the emergency steering position is located in that space unless there is direct access to the open deck. See IACS UI SC 269 Rev.1.

13.4.2.3 Escape from machinery spaces other than those of category A

From machinery spaces other than those of cate-gory A, two escape routes shall be provided except that a single escape route may be accepted for spaces that are entered only occasionally and for spaces where the maximum travel distance to the door is 5 m or less. See IACS UI SC 269 Rev.1.

SECTION 15 – INSTRUCTIONS, ONBOARD TRAINING AND DRILLS

Head **15.2 – GENERAL REQUIREMENTS**, sub-item 15.2.2.6 is changed, and should read as follows:

15.2.2.6 An onboard means of recharging breathing apparatus cylinders used during drills shall be provided or a suitable number of spare cylinders shall be carried on board to replace those used. *See IACS UI SC 275. See also MSC.1/Circ.1555.*

SECTION 17 – ALTERNATIVE DESIGN AND ARRANGEMENTS

Head **17.3 – ENGINEERING ANALYSIS**, items 17.3.1 and 17.4.1 are changed, and should read as follows:

17.3.1 The engineering analysis shall be prepared and submitted to the *Register*, based on the guidelines developed by IMO and adopted by the *Register* (*see MSC/Circ.1002, MSC.1/Circ.1002/Corr.1, MSC.1/Circ.1002/Corr.2, MSC.1/Circ.1002/Corr.3 and MSC.1/Circ.1552*), and shall include, as a minimum, the following elements:

.1 determination of the ship type and space(s) concerned;
.2 identification of prescriptive requirement(s) with which the ship or the space(s) will not comply;
.3 identification of the fire and explosion hazards of the ship or the space(s) concerned, including:
.3.1 identification of the possible ignition sources;
.3.2 identification of the fire growth potential of each space concerned;
.3.3 identification of the smoke and toxic effluent generation potential for each space concerned;
.3.4 identification of the potential for the spread of fire, smoke or of toxic effluents from the space (s) concerned to other spaces;
.4 determination of the required fire safety performance criteria for the ships or the space(s) concerned addressed by the prescriptive requirement(s), in particular:
.4.1 performance criteria shall be based on the fire safety objectives and on the functional requirements of this Rules;
.4.2 performance criteria shall provide a degree of safety not less than that achieved by using the prescriptive requirements; and
.4.3 performance criteria shall be quantifiable and measurable;
.5 detailed description of the alternative design and arrangements, including a list of the assumptions used in the design and any proposed operational restrictions or conditions; and
.6 technical justification demonstrating that the alternative design and arrangements meet the required fire safety performance criteria.

17.4.1 The engineering analysis required in 17.3 shall be evaluated and approved by the *Register*, taking into account the guidelines developed by IMO and adopted by the *Register (see Guidelines on alternative design and arrangements for fire safety (MSC/Circ.1002, MSC.1/Circ.1002/Corr.1, MSC.1/Circ.1002/Corr.2, MSC.1/Circ.1002/Corr.3 and MSC.1/Circ.1552).*

SECTION 18 – HELICOPTER FACILITIES

Head **18.5 – FIRE-FIGHTING APPLIANCES**, item 18.5.1 is changed, and should read as follows:

18.5.1 In close proximity to the helideck, the following fire-fighting appliances shall be provided and stored near the means of access to that helideck:

.1 at least two dry powder extinguishers having a total capacity of not less than 45 kg, *see MSC.1/Circ.1275 and MSC.1/Circ.1275/Corr.1;*

.2 carbon dioxide extinguishers of a total capacity of not less than 18 kg or equivalent, *see MSC.1/Circ.1275 and MSC.1/Circ.1275/Corr.1;*

.3 a suitable foam application system consisting of monitors or foam-making branch pipes capable of delivering foam to all parts of the helideck in all weather conditions in which helicopters can operate. The system shall be capable of delivering a discharge rate as required in table 18.1 for at least five minutes;

.4 the principal agent shall be suitable for use with salt water and conform to performance standards not inferior to those acceptable to the *Register*; *refer to the International Civil Aviation Organization Airport Services Manual, part 1, Rescue and Fire Fighting, chapter 8, Extinguishing Agent Characteristics, paragraph 8.1.5, Foam Specifications table 8-1, level 'B'.*

.5 at least two nozzles of an approved dual-purpose type (jet/spray) and hoses sufficient to reach any part of the helideck;

.6 in addition to the requirements of 10.10, two sets of fire-fighter's outfits; and

.7 at least the following equipment shall be stored in a manner that provides for immediate use and protection from the elements:
adjustable wrench; blanket, fire-resistant; cutters, bolt, 60 cm; hook, grab or salving; hacksaw, heavy duty complete with 6 spareblades; ladder; lift line 5 mm diameter and 15 m in length; pliers, side-cutting; set of assorted screwdrivers; and harness knife complete with sheath.

Table 18.1 Foam discharge rates

Category	Helicopter overall length	Discharge rate foam solution (lit./min.)
H1	Less than 15 m	250
H2	15 m and over, but less than 24 m	500
H3	24 m and over, but less than 35 m	800

SECTION 19 – CARRIAGE OF DANGEROUS GOODS

Head **19.3 – SPECIAL REQUIREMENTS**, items 19.3.1, 19.3.2 and 19.3.7 are changed, and should read as follows:

19.3.1 Water supplies

See IACS UI SC 109 Rev.1 and IACS UI SC 270 Rev.1. See also MSC.1/Circ.1550.

19.3.2 Sources of ignition

Electrical equipment and wiring shall not be fitted in enclosed cargo spaces or vehicle spaces unless it is essential for operational purposes in the opinion of the *Register*. However, if electrical equipment is fitted in such spaces, it shall be of a certified safe type *(see recommendations of the International Electrotechnical Commission, in particular publication IEC 60092, Electrical installations in ships)* for use in the dangerous environments to which it may be exposed unless it is possible to completely isolate the electrical system (e.g. by removal of links in the system, other than fuses). See MSC.1/Circ.1555.

Electrical appliances which are not required in conjunction with the transport of dangerous goods or which are not essential either for the safety of the ship or crew need not have a type of protection corresponding to the goods to be transported if they can be isolated from the electrical supply completely and protected against anauthorized reconnection.

Disconnection shall be made outside the hazardous areas and shall be effected by removal of links in the system, other than fuses, or with lockable switches.

Portable electrical equipment which is necessary for ship operation or which is required by the Rules shall be of certified safe type.

Cable penetrations of the decks and bulkheads shall be sealed against the passage of gas or vapour. Through runs of cables and cables within the cargo spaces shall be protected against damage from impact (see *Rules, Part 12. - Electrical Equipment*, 2.9 and 16.8).

Any other equipment which may constitute a source of ignition of flammable vapour shall not be permitted.

See IACS UI SC 79 Rev.4.

19.3.7 Portable fire extinguishers

Portable fire extinguishers with a total capacity of at least 12 kg of dry powder or equivalent shall be provided for the cargo spaces. These extinguishers shall be in addition to any portable fire extinguishers required elsewhere in this Rules.

See MSC.1/Circ.1275 and MSC.1/Circ.1275/Corr.1.

SECTION 20 – PROTECTION OF VEHICLE, SPECIAL CATEGORY AND RO-RO SPACES

Head **20.6 – FIRE EXTINCTION**, sub-item 20.6.2.1 is changed, and should read as follows:

20.6.2.1 Portable fire extinguishers shall be provided at each deck level in each hold or compartment where vehicles are carried, spaced not more than 20 m apart on both sides of the space. At least one portable fire extinguisher shall be located at each access to such a cargo space, *see Unified interpretation of SOLAS chapter II-2 on the number and arrangement of portable fire extinguishers on board ships (MSC.1/Circ.1275 and MSC.1/Circ.1275/Corr.1).*

SECTION 24 – FIRE SAFETY SYSTEMS

Head **24.8 – AUTOMATIC SPRINKLER, FIRE DETECTION AND FIRE ALARM SYSTEMS**, item 24.8.3 is added, and should read as follows:

24.8.3 *See MSC.1/Circ.1556.*

Head **24.9 – FIXED FIRE DETECTION AND FIRE ALARM SYSTEMS**, sub-item 24.9.2.2.4 is changed, and should read as follows:

24.9.2.2.4 The emergency source of power specified in 24.9.2.2.1 above may be supplied by accumulator batteries or from the emergency switchboard. The power source shall be sufficient to maintain the operation of the fire detection and fire alarm system for the periods required under Rules, *Part 12 - Electrical Equipment*, 19.1 or 9.3 (as applicable) and, at the end of that period, shall be capable of operating all connected visual and audible fire alarm signals for a period of at least 30 min. *See MSC.1/Circ.1554.*

SECTION 25 – FIRE-EXTINGUISHING APPLIANCES, SPARE PARTS AND TOOLS

Head **25.1 – FIRE-EXTINGUISHING APPLIANCES**, item 25.1.2 is changed, and should read as follows:

25.1.2 Depending on the type and size of the ship and category and equipment of the ship's spaces, the ships shall be provided with fire-extinguishing appliances as prescribed in Table 25.1 (*see also MSC.1/Circ.1275 and MSC.1/Circ.1275/Corr.1*).

Where, in the opinion of the *Register*, a fire hazard exists in any machinery space for which no specific provisions for fire-extinguishing appliances are prescribed in Table 25.1 there shall be provided in, or adjacent to, that space such a number of approved portable fire extinguishers or other means of fire extinction as the *Register* may deem sufficient.

See also ANNEX 5 to this Part of the Rules.