

RULES FOR THE SURVEY AND CONSTRUCTION OF STEEL SHIPS

GUIDANCE FOR THE SURVEY AND CONSTRUCTION OF STEEL SHIPS

Part R

Fire Protection, Detection and Extinction

Rules for the Survey and Construction of Steel Ships

Part R

2022 AMENDMENT NO.1

Guidance for the Survey and Construction of Steel Ships

Part R

2022 AMENDMENT NO.1

Rule No.45 / Notice No.31 30 June 2022

Resolved by Technical Committee on 26 January 2022

ClassNK
NIPPON KAIJI KYOKAI

An asterisk (*) after the title of a requirement indicates that there is also relevant information in the corresponding Guidance.

RULES FOR THE SURVEY AND CONSTRUCTION OF STEEL SHIPS

RULES

Part R

**Fire Protection, Detection and
Extinction**

2022 AMENDMENT NO.1

Rule No.45 30 June 2022

Resolved by Technical Committee on 26 January 2022

An asterisk (*) after the title of a requirement indicates that there is also relevant information in the corresponding Guidance.

AMENDMENT TO THE RULES FOR THE SURVEY AND CONSTRUCTION OF STEEL SHIPS

“Rules for the survey and construction of steel ships” has been partly amended as follows:

Part R FIRE PROTECTION, DETECTION AND EXTINCTION

Chapter 29 FIXED FIRE DETECTION AND FIRE ALARM SYSTEMS

29.2 Engineering Specifications

29.2.3 Component Requirements*

Sub-paragraph -3 has been amended as follows.

3 Cables

Cables used in the electrical circuits are to be flame retardant according to standard *IEC 60332-1-2:2004+AMD1:2015*.

EFFECTIVE DATE AND APPLICATION

1. The effective date of the amendments is 1 July 2022.
2. Notwithstanding the amendments to the Rules, the current requirements apply to ships for which the date of contract for construction* is before the effective date.
* “contract for construction” is defined in the latest version of IACS Procedural Requirement (PR) No.29.

IACS PR No.29 (Rev.0, July 2009)

1. The date of “contract for construction” of a vessel is the date on which the contract to build the vessel is signed between the prospective owner and the shipbuilder. This date and the construction numbers (i.e. hull numbers) of all the vessels included in the contract are to be declared to the classification society by the party applying for the assignment of class to a newbuilding.
2. The date of “contract for construction” of a series of vessels, including specified optional vessels for which the option is ultimately exercised, is the date on which the contract to build the series is signed between the prospective owner and the shipbuilder. For the purpose of this Procedural Requirement, vessels built under a single contract for construction are considered a “series of vessels” if they are built to the same approved plans for classification purposes. However, vessels within a series may have design alterations from the original design provided:
 - (1) such alterations do not affect matters related to classification, or
 - (2) If the alterations are subject to classification requirements, these alterations are to comply with the classification requirements in effect on the date on which the alterations are contracted between the prospective owner and the shipbuilder or, in the absence of the alteration contract, comply with the classification requirements in effect on the date on which the alterations are submitted to the Society for approval.The optional vessels will be considered part of the same series of vessels if the option is exercised not later than 1 year after the contract to build the series was signed.
3. If a contract for construction is later amended to include additional vessels or additional options, the date of “contract for construction” for such vessels is the date on which the amendment to the contract, is signed between the prospective owner and the shipbuilder. The amendment to the contract is to be considered as a “new contract” to which 1. and 2. above apply.
4. If a contract for construction is amended to change the ship type, the date of “contract for construction” of this modified vessel, or vessels, is the date on which revised contract or new contract is signed between the Owner, or Owners, and the shipbuilder.

Note:

This Procedural Requirement applies from 1 July 2009.

GUIDANCE FOR THE SURVEY AND CONSTRUCTION OF STEEL SHIPS

Part R

**Fire Protection, Detection and
Extinction**

GUIDANCE

2022 AMENDMENT NO.1

Notice No.31 30 June 2022

Resolved by Technical Committee on 26 January 2022

AMENDMENT TO THE GUIDANCE FOR THE SURVEY AND CONSTRUCTION OF STEEL SHIPS

“Guidance for the survey and construction of steel ships” has been partly amended as follows:

Part R FIRE PROTECTION, DETECTION AND EXTINCTION

Amendment 1-1

R6 SMOKE GENERATION POTENTIAL AND TOXICITY

R6.2 Finishes

R6.2.1 Paints, Varnishes and Other Finishes

Sub-paragraph -1 has been amended as follows.

1 The wording “exposed interior surfaces” specified in **6.2.1, Part R of the Rules** means the surfaces exposed to accommodation spaces, services spaces, control stations and machinery spaces in addition to the surfaces of corridors and stairway enclosures exposed to accommodation spaces, services spaces, control stations and machinery spaces (other than the exposed surfaces specified in **5.3.1-1, Part R of the Rules** or the exposed surfaces of finishes used in similarly small spaces).
(-2 and -3 are omitted.)

R9 CONTAINMENT OF FIRE

R9.7 Ventilation Systems

R9.7.3 Details of Fire Dampers and Duct Penetrations

Sub-paragraph -4 has been added as follows.

4 Ducts with free sectional area of 0.075 m^2 or less need to be fitted with fire damper at their passage through Class "A" divisions in those cases indicated in requirements **9.7.2-2 Part R of the Rules** and **9.7.2-3 Part R of the Rules**. The fire damper can be omitted if the duct is arranged in compliance with the requirements of **9.7.2-4(2) Part R of the Rules**.

R10 FIRE FIGHTING

R10.7 Fire-extinguishing Arrangements in Cargo Spaces

R10.7.2 Fixed Fire-extinguishing Systems for Dangerous Goods

Sub-paragraph -2 has been amended as follows.

2 With respect to the requirements of **10.7.2, Part R of the Rules**, a means of water supply complying with the requirements of **19.3.1-2, Part R of the Rules** may be considered as a “fire-extinguishing system which gives equivalent protection” specified in **10.7.2, Part R of the Rules** for the cargoes listed in Table 2 of the latest version of MSC.1/Circ.1395/Rev.4.

R19 CARRIAGE OF DANGEROUS GOODS

R19.2 General Requirements

R19.2.2 Application for Categories of Cargo Spaces

Sub-paragraph -2 has been amended as follows.

2 ~~For the application of~~ The wording “ro-ro spaces” specified in **19.2.2(4) or (5), Part R of the Rules**, ~~vehicle spaces are considered as a ro-ro space as defined in 19.2.2(4) or (5), Part R of the Rules~~, includes the “special category spaces” specified in **3.2.46, Part R of the Rules** and “vehicle spaces” specified in **3.2.49, Part R of the Rules**.

R19.3 Special Requirements

R19.3.2 Sources of Ignition

Table R19.3.2-1 has been amended as follows.

Table R19.3.2-1 Hazardous Areas and Permitted Electrical Installations (Related to **R19.3.2-1(1)**)

Hazardous areas		Permitted electrical installations
(a)	Enclosed or semi-enclosed cargo spaces, closed or open ro-ro spaces and closed or open vehicle spaces	(1) Electrical equipment of degree of protection: IP65, maximum surface temperature: 100 °C, and associated cables (2) Through run cables
(b)	Inert and exhaust ventilation ducts	
(c)	Permanently fixed magazines	

Note:

~~For some dangerous goods to be transported, 7.1.7.4.7.2 of IMDG Code is to be taken into consideration. Electrical equipment is to be a type for use in the atmospheres present when dangerous goods which generate explosive dust and flammable gas are transported.~~

R20 PROTECTION OF VEHICLE AND RO-RO SPACES

R20.5 Fire-extinction

R20.5.2 Portable Fire Extinguishers

Sub-paragraph -4 has been amended as follows.

4 The ~~W~~“water fog applicators deemed as appropriate by the Society” specified in **20.5.2-2(1)**, ~~Part R of the Rules are to be in accordance with **R10.2.3-1**.~~ means ones that have passed inspections by organisations authorised by the Administration or that are otherwise deemed appropriate by the Society.

1 FIRE PROTECTION MATERIALS FOR CARGO SHIPS

Section 1.1 has been amended as follows.

1.1 Restricted Use of Combustible Materials and Details of Construction

Following figure and tables show the details on the requirements specified in **4.4.4**, **5.3**, **6.2.1** and **6.3.1, Part R of the Rules** for every subject of members fitted in accommodation spaces, service spaces and control stations. The requirements for Method IC and for Method IIC and IIIC are summarized in accordance with **Table 1** and **Table 2** respectively.

Fig. 1

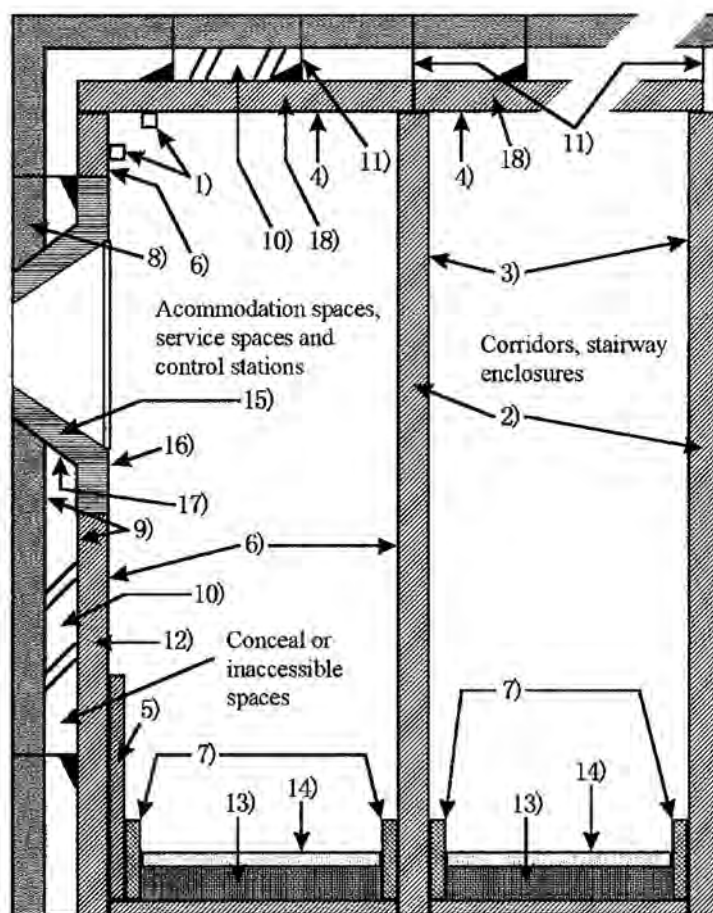


Table 1 has been amended as follows.

Table 1 Method IC

Requirements		Non Combustible material	Non Combustible material	Low flame spread	Equivalent volume	Calorific value	Smoke production	Not readily ignited
Part R of the Rules		5.3.1-2	5.3.1-1	5.3.2-4	5.3.2-1	5.3.2-2	6.2.1 6.3.1	4.4.4
1)	Moulding				○			
2)	Panel	○						
3)	Painted surface or Veneer or Fabric or Foils			○	○	○	○ ⁽²⁾	
4)	Painted surface or Veneer or Fabric or Foils			○	○	○	○ ⁽²⁾	
5)	Decoration				○		○	
6)	Painted surface or Veneer or Fabric or Foils				○	○	○ ⁽²⁾	
7)	Skirting board				○			
8)	Insulation		○ ⁽¹⁾					
9)	Surfaces and paints in concealed or inaccessible spaces			○				
10)	Draught stop	○						
11)	Grounds and supports	○		○				
12)	Lining	○						
13)	Primary deck covering 1st layer						○	○
14)	Floor finishing			○ ⁽³⁾			○	
15)	Window box	○						
16)	Window box surface			○	○	○	○	
17)	Window box surface in concealed or inaccessible spaces			○				
18)	Ceiling panel	○						

Notes:

- (1) Vapour barriers and adhesives used in conjunction with insulation, as well as the insulation of on pipes fittings, for cold services (see **R5.3.1-2**) ~~systems, need not~~ may be of non-combustible materials, ~~but their exposed~~ providing that their surfaces ~~are to have~~ has low flame spread characteristics". (**5.3.1-1, Part R of the Rules**)
- (2) Applicable to paints, varnishes and other finishes (**6.2.1, Part R of the Rules**)
- (3) Only in corridors and stairway enclosures

Table 2 has been amended as follows.

Table 2 Method IIC and IIIC

Requirements		Non Combustible material	Non Combustible material	Low flame spread	Equivalent volume	Calorific value	Smoke production	Not readily ignite
Part R of the Rules		5.3.1-2	5.3.1-1	5.3.2-4	5.3.2-1	5.3.2-2	6.2.1 6.3.1	4.4.4
1)	Moulding				○ ⁽³⁾			
2)	Panel	○ ⁽⁴⁾						
3)	Painted surface or Veneer or Fabric or Foils			○	○	○	○ ⁽⁵⁾	
4)	Painted surface or Veneer or Fabric or Foils			○	○ ⁽³⁾	○ ⁽²⁾	○ ⁽⁵⁾	
5)	Decoration				○ ⁽³⁾		○	
6)	Painted surface or Veneer or Fabric or Foils				○ ⁽³⁾	○ ⁽²⁾	○ ⁽⁵⁾	
7)	Skirting board				○ ⁽³⁾			
8)	Insulation		○ ⁽¹⁾					
9)	Surfaces and paints in concealed or inaccessible spaces			○				
10)	Draught stop	○ ⁽⁴⁾						
11)	Grounds and supports	○ ⁽⁴⁾		○				
12)	Lining	○ ⁽⁴⁾						
13)	Primary deck covering 1st layer						○	○
14)	Floor finishing			○ ⁽⁶⁾			○	
15)	Window box	○ ⁽⁴⁾						
16)	Window box surface			○ ⁽³⁾	○ ⁽³⁾	○ ⁽²⁾	○	
17)	Window box surface in concealed or inaccessible spaces			○				
18)	Ceiling panel	○ ⁽⁴⁾						

Notes:

- (1) Vapour barriers and adhesives used in conjunction with insulation, as well as the insulation of on pipes fittings, for cold services (see **R5.3.1-2**) ~~systems, need not may be of non-combustible materials, but their exposed~~ providing that their surfaces are to have has low flame spread characteristics". (5.3.1-1, Part R of the Rules)
- (2) Where the material is fitted on non-combustible bulkheads, ceiling on lining in accommodation and service spaces. (5.3.2-2, Part R of the Rules)
- (3) To be applied to those accommodation and service spaces bounded by non-combustible bulkheads, ceiling and linings. (5.3.2-3(1), Part R of the Rules)
- (4) Only in corridors and stairway enclosures serving accommodation and service spaces and control stations. (5.3.1-2(2), Part R of the Rules)
- (5) Applicable to paints, varnishes and other finishes (6.2.1, Part R of the Rules)
- (6) Only in corridors and stairway enclosures

EFFECTIVE DATE AND APPLICATION (Amendment 1-1)

1. The effective date of the amendments is 30 June 2022.

R4 PROBABILITY OF IGNITION

R4.5 Cargo Areas of Tankers

R4.5.3 Cargo Tank Venting

Sub-paragraph -5 has been amended as follows.

5 The area around the vent outlets specified in **4.5.3-4(1)(c)** and **(d)**, **Part R of the Rules** is defined as a hazardous area in accordance with ~~4.3.1(2)(h) and 4.3.1(3)(b), Part H of the Rules~~ *IEC 60092-502:1999*. ~~In addition, electrical equipment fitted in compliance with the applicable provisions of 4.2.4, Part H of the Rules is not considered as a source of ignition or ignition hazard.~~

- (1) Areas on open deck, or semi-enclosed spaces on open deck, within a vertical cylinder of unlimited height and 6 m radius upon the centre of the outlet, and within a hemisphere of 6 m radius below the outlet which permit the flow of large volumes of vapour, or gas mixtures during loading, discharging, or ballasting are defined as Zone 1 as specified by IEC 60092-502:1999 para 4.2.2.8.
- (2) Area within 4 m beyond the zone specified in (1) above are defined as Zone 2 as specified by IEC 60092-502:1999 para 4.2.2.8.
- (3) Electrical equipment or cables are not normally to be installed in hazardous areas. Where essential for operational purposes, electrical equipment may be installed in accordance with IEC 60092-502:1999 (see 4.2.4, Part H).
- (4) Electrical equipment fitted in compliance with IEC 60092-502:1999 is not considered as a source of ignition or ignition hazard (see 4.2.4, Part H).

R11 STRUCTURAL INTEGRITY

R11.6 Protection of Cargo Tank Structure against Pressure or Vacuum

Paragraph R11.6.2 has been amended as follows.

R11.6.2 Openings for Small Flow by Thermal Variations

The area around the air intakes and openings specified in **11.6.2(2), Part R of the Rules** is defined as a hazardous area in accordance with ~~4.3.1(2)(g) and 4.3.1(3)(a), Part H of the Rules IEC 60092-502:1999. In this case, the “1.5 m” in 4.3.1(3)(a), Part H of the Rules is to be read as “2 m”. Furthermore, electrical equipment fitted in compliance with the applicable provisions of 4.2.4, Part R of the Rules is not considered as a source of ignition or ignition hazard.~~

- (1) Areas on open deck, or semi-enclosed spaces on open deck, within 3 m of cargo tank ventilation outlets which permit the flow of small volumes of vapor or gas mixtures caused by thermal variation are defined as Zone 1 as specified by IEC 60092-502:1999 para 4.2.2.7.
- (2) Area within 2 m beyond the zone specified in (1) above are to be considered Zone 2 (as opposed to 1.5 m as specified by IEC 60092-502:1999 para 4.2.3.1).
- (3) Electrical equipment or cables are not normally to be installed in hazardous areas. Where essential for operational purposes, electrical equipment may be installed in accordance with IEC 60092-502:1999 (see 4.2.4, Part H).

R19 CARRIAGE OF DANGEROUS GOODS

R19.3 Special Requirements

R19.3.2 Sources of Ignition

Sub-paragraph -1(3) has been amended as follows.

1 Applying to the requirements in **19.3.2, Part R of the Rules**, permitted electrical installations are to be in accordance with the followings.

((1) and (2) are omitted.)

- (3) For ships carrying solid dangerous goods in bulk specified in **19.2.3(12), Part R of the Rules** which may create explosive gas and ships carrying dangerous goods in a packaged form specified in **19.2.3(3), (7)** (except the liquids of which flash point is less than -18 °C), **(15)** or **(19), Part R of the Rules**, the requirements in **Table R19.3.2-3** (Classified as hazardous area by IEC 60092-506:2003) and **Table R19.3.2-4** (Classified as extended hazardous area by IEC 60092-506:2003) are to apply.

The hazardous areas specified in **Table R19.3.2-4(d)** for ships carrying flammable liquid substances having flashpoints of less than 23 °C, as specified in **19.2.3(7), (15)** or **(19), Part R of the Rules**, are to apply. However, enclosed spaces served by continuously forced mechanical ventilation capable of at least 6 air changes per hour may be considered as non-hazardous areas if they satisfy the following **(a)** and **(b)**:

((a) and (b) are omitted.)

((4) to (10) are omitted.)

R20 PROTECTION OF VEHICLE AND RO-RO SPACES

R20.3 Precaution against Ignition of Flammable Vapours in Closed Vehicle Spaces and Closed Ro-ro Spaces

R20.3.2 Electrical Equipment and Wiring

Sub-paragraphs -1 and -2 have been amended as follows.

1 The wording “electrical equipment of a type suitable for use in explosive petrol and air mixture” in **20.3.2-1, Part R of the Rules** means those generally meeting the requirements in **2.16, Part H of the Rules**, having an intrinsically safe, flameproof, pressurized, increased safety, encapsulation, powder filling or oil immersion construction certified as Apparatus Group IIA and Temperature Class *T3* or higher as specified in *IEC Publication 60079-10-1:2015* or Explosion Class *d3* and Ignition Group *G3* or higher as specified in the Recommended Practices for Explosion-Protected Electrical Installations in General Industries (NIIS-TR-NO.39 (2006)) issued by National Institute of Industrial Safety in Japan, or equivalent thereto. Further, cables complying with the requirements in **4.2.4-5, Part H of the Rules** may generally be regarded as wiring of a type suitable for use in explosive petrol and air mixture.

2 The wording “electrical equipment of a type so enclosed and protected as to prevent the escape of sparks” in **20.3.2-2, Part R of the Rules** means the following **(1)** or **(2)**.

(1) The electrical equipment with a protection degree of at least *IP55* as defined in **H2.1.3-4**.

(2) The electrical equipment suitable for use in the area of zone 2 as specified in *IEC 60079-14:2013* (e.g. type of protection “*n*”) and with a Temperature class of at least *T3* as defined in *IEC 60079-10-1:2015*.

(3 and 4 are omitted.)

EFFECTIVE DATE AND APPLICATION (Amendment 1-2)

1. The effective date of the amendments is 1 July 2022.
2. Notwithstanding the amendments to the Guidance, the current requirements apply to ships for which the date of contract for construction* is before the effective date.
* “contract for construction” is defined in the latest version of IACS Procedural Requirement (PR) No.29.

IACS PR No.29 (Rev.0, July 2009)

1. The date of “contract for construction” of a vessel is the date on which the contract to build the vessel is signed between the prospective owner and the shipbuilder. This date and the construction numbers (i.e. hull numbers) of all the vessels included in the contract are to be declared to the classification society by the party applying for the assignment of class to a newbuilding.
2. The date of “contract for construction” of a series of vessels, including specified optional vessels for which the option is ultimately exercised, is the date on which the contract to build the series is signed between the prospective owner and the shipbuilder. For the purpose of this Procedural Requirement, vessels built under a single contract for construction are considered a “series of vessels” if they are built to the same approved plans for classification purposes. However, vessels within a series may have design alterations from the original design provided:
 - (1) such alterations do not affect matters related to classification, or
 - (2) If the alterations are subject to classification requirements, these alterations are to comply with the classification requirements in effect on the date on which the alterations are contracted between the prospective owner and the shipbuilder or, in the absence of the alteration contract, comply with the classification requirements in effect on the date on which the alterations are submitted to the Society for approval.The optional vessels will be considered part of the same series of vessels if the option is exercised not later than 1 year after the contract to build the series was signed.
3. If a contract for construction is later amended to include additional vessels or additional options, the date of “contract for construction” for such vessels is the date on which the amendment to the contract, is signed between the prospective owner and the shipbuilder. The amendment to the contract is to be considered as a “new contract” to which **1.** and **2.** above apply.
4. If a contract for construction is amended to change the ship type, the date of “contract for construction” of this modified vessel, or vessels, is the date on which revised contract or new contract is signed between the Owner, or Owners, and the shipbuilder.

Note:

This Procedural Requirement applies from 1 July 2009.