
RULES FOR CARGO REFRIGERATING INSTALLATIONS

RULES

2019 AMENDMENT NO.1

Rule No.109 27 December 2019

Resolved by Technical Committee on 22 July 2019

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

“Rules for cargo refrigerating installations” has been partly amended as follows:

Amendment 1-1

Chapter 2 SURVEYS

2.1 General

2.1.2 Registration Surveys and Intervals of Registration Maintenance Surveys*

Sub-paragraph -2(3) has been amended as follows.

2 Registration Maintenance Surveys

Refrigerating installations which have been registered are to undergo surveys in accordance with the following intervals to maintain their registrations.

- (1) Special Surveys are to be carried out at intervals specified in **1.1.3-1(3), Part B of the Rules for the Survey and Construction of Steel Ships.**
- (2) Annual Surveys are to be carried out at intervals specified in **1.1.3-1(1), Part B of the Rules for the Survey and Construction of Steel Ships.**
- (3) An Occasional Survey: At a time falling on any of (a) to (d) mentioned below, independently of special surveys and annual surveys. To implement the survey, in lieu of the traditional ordinary surveys where a surveyor is in attendance, the Society may approve survey methods which it considers to be appropriate.
 - (a) When main parts of the installations have been damaged, repaired or renewed.
 - (b) When the installations are modified or altered.
 - (c) When it is considered necessary by the Society that an important part of the installation should be repaired at a time other than date for the special or annual survey.
 - (d) When a survey is needed for a reason other than the above.
- (4) The classed ships may be subject to Unscheduled Surveys when the confirmation of the status of the installations by survey is deemed necessary in cases where the Society suspects installations of not being in continued compliance with the Rules and Regulations of the Society, and of not being properly maintained and operated by the ship owner.

2.3 Registration Maintenance Surveys

Paragraph 2.3.3 has been amended as follows.

2.3.3 Occasional Surveys*

At an occasional survey, examinations or tests on items required are to be carried out in accordance with the requirements in **2.1.2-2(3)**, to the satisfaction of the Surveyor. To implement the survey, in lieu of the traditional ordinary surveys where a surveyor is in attendance, the Society may approve survey methods which it considers to be appropriate.

EFFECTIVE DATE AND APPLICATION (Amendment 1-1)

1. The effective date of the amendments is 27 December 2019.

Chapter 1 GENERAL

1.1 General

1.1.1 Scope*

Sub-paragraph -2 has been amended as follows.

2 For the refrigerating machinery within the refrigerating installations specified in -1 above, the requirements in the Rules apply to the refrigerating machinery using the primary refrigerants listed below. The surveys and constructions of the refrigerating machinery using primary refrigerants other than those listed below are to be as deemed appropriate by the Society.

~~R22~~ : ~~CHClF₂~~

R134a : CH₂FCF₃

R404A : R125/R143a/R134a (44/52/4 wt%) CHF₂CF₃ / CH₃CF₃ / CH₂FCF₃

R407C : R32/R125/R134a (23/25/52 wt%) CH₂F₂ / CHF₂CF₃ / CH₂FCF₃

R407H : R32/R125/R134a (32.5/15/52.5 wt%) CH₂F₂ / CHF₂CF₃ / CH₂FCF₃

R410A : R32/R125 (50/50 wt%) CH₂F₂ / CHF₂CF₃

R449A : R32/R125/R1234yf/R134a (24.3/24.7/25.7/25.3 wt%) CH₂F₂ / CHF₂CF₃ /

CF₃CF=CH₂/CH₂FCF₃

R507A : R125/R143a (50/50 wt%) CHF₂CF₃ / CH₃CF₃

R717 : NH₃

1.2 Definitions

The definitions of terms which appear in the Rules are to be as specified in the following (1) to (7), unless otherwise specified elsewhere.

((1) to (4) are omitted.)

(5) “Design pressures” means the maximum pressure designed by the manufacturer. However, design pressures are not to be less than the values specified in **Table 1.1** depending on the kind of the refrigerants.

((6) and (7) are omitted.)

Table 1.1 has been amended as follows.

Table 1.1 The Lowest Design Pressure

Refrigerant	High Pressure side ⁽¹⁾ (MPa)	Low Pressure side ⁽²⁾ (MPa)
R22	1.9	1.5
R134a	1.4	1.1
R404A	2.5	2.0
R407C	2.4	1.9
<u>R407H</u>	<u>2.5</u>	<u>2.0</u>
R410A	3.3	2.6
<u>R449A</u>	<u>2.6</u>	<u>2.0</u>
R507A	2.5	2.0
R717	2.3	1.8

Notes:

- (1) High Pressure side: The pressure part from the compressor delivery side to the expansion valve.
- (2) Low Pressure side: The pressure part from the expansion valve to the compressor suction valve. In case where a multistage compression system is adopted, the pressure part from the lower-stage delivery side to the higher-stage suction side is to be included.

Chapter 2 SURVEYS

2.3 Registration Maintenance Surveys

2.3.1 Special Surveys*

Sub-paragraph (16) has been amended as follows.

At a special survey, the examinations required by the following (1) to (18) are to be carried out.

((1) to (15) are omitted.)

(16) Pressure vessels are to be opened up for examination, and afterward pressure tested in accordance with the following procedures:

((a) to (d) are omitted.)

(e) Primary refrigerant receivers are to be hydrostatically tested at the design pressure of the high pressure side. However, when the receivers are designed to use such primary refrigerant as ~~R22~~, R134a, R404A, R407C, R407H, R410A, R449A or R507A, or when they are proved to have no harmful defects such as erosions or cracks on the inner surface of the vessels by means of ultrasonic test or other effective non-destructive examinations, the above mentioned pressure test may be omitted.

(f) For pressure vessels for the refrigerant of ~~R22~~, R134a, R404A, R407C, R407H, R410A, R449A or R507A, pressure tests specified in (a) through (e) above may be omitted at the first Special Survey provided that the vessels are found to be in good order.

((17) and (18) are omitted.)

Chapter 3 REFRIGERATING MACHINERY

3.1 General

3.1.1 General Requirements

Sub-paragraphs -4 and -5 have been amended as follows.

1 Refrigerating machinery are to be designed taking into account their purpose and service conditions.

2 All components of the refrigerating machinery are to be so constructed and arranged that they can be easily maintained and readily opened up for repair or renewal.

3 Where *R717* is used as refrigerant, the refrigerating machinery are to comply with the requirements in this chapter and, in addition, they are to comply with the requirements in **Chapter 4**.

4 Primary refrigerant pipes for ~~*R22*~~, *R134a*, *R404A*, *R407C*, *R407H*, *R410A*, *R449A* or *R507A* are to be classified into Group III specified in **12.1.3, Part D of the Rules for the Survey and Construction of Steel Ships**.

5 Pressure vessels for the refrigerant of ~~*R22*~~, *R134a*, *R404A*, *R407C*, *R407H*, *R410A*, *R449A* or *R507A* are to be classified in accordance with the requirements in **10.1.3, Part D of the Rules for the Survey and Construction of Steel Ships**, according to the design pressure specified in **1.2(5)** of the Rules.

6 Refrigerating machinery are to be provided with the following equipment.

- (1) Standard thermometer:
2 sets
- (2) Hydrometer:
1 set (in the case of brine-cooling)
- (3) Refrigerant leakage detector:
1 set

3.2 Construction, etc. of Refrigerating Machinery

Paragraph 3.2.6 has been amended as follows.

3.2.6 Refrigerating Driers

Driers are to be provided to the refrigerant pipes for ~~*R22*~~, *R134a*, *R404A*, *R407C*, *R407H*, *R410A*, *R449A* or *R507A*. Driers are to be so arranged that they can be by-passed or changed over to a stand-by unit without interrupting the operation of the plant in case of failure. However, such arrangement is not required when the change over to the stand-by unit is ensured by a unit integrated with the evaporator.

EFFECTIVE DATE AND APPLICATION (Amendment 1-2)

1. The effective date of the amendments is 1 January 2020.
2. Notwithstanding the amendments to the Rules, the current requirements apply to refrigerating machinery, refrigerating installations or controlled atmosphere systems other than refrigerating machinery, refrigerating installations or controlled atmosphere systems that fall under the following:
 - (1) that intended for installation on ships the keels of which are laid or which are at a similar stage of construction on or after 1 January 2020; or
 - (2) that intended for installation on ships the keels of which are laid or which are at a similar stage of construction before 1 January 2020 that fall under the following:
 - (a) that for which the contractual delivery date of the equipment to the ship is on or after 1 January 2020; or
 - (b) that for which, in the absence of a contractual delivery date, the actual delivery of the equipment to the ship is on or after 1 January 2020.
3. Notwithstanding the provision of preceding 2., the amendment to the Rules may apply, upon request of the owner, to refrigerating machinery, refrigerating installations or controlled atmosphere systems other than those specified in 2.(1) or (2) above.

GUIDANCE FOR CARGO REFRIGERATING INSTALLATIONS

GUIDANCE

2019 AMENDMENT NO.1

Notice No.76 27 December 2019

Resolved by Technical Committee on 22 July 2019

Notice No.76 27 December 2019

AMENDMENT TO THE GUIDANCE FOR CARGO REFRIGERATING INSTALLATIONS

“Guidance for cargo refrigerating installations” has been partly amended as follows:

Amendment 1-1

Chapter 2 SURVEYS

Section 2.1 has been added as follows.

2.1 General

2.1.2 Registration Surveys and Intervals of Registration Maintenance Surveys

The wording “the Society may approve the survey methods which it considers to be appropriate.” in 2.1.2-2(3) of the Rules means survey methods which the Society considers to be able to obtain information equivalent to that obtained through traditional ordinary surveys where a surveyor is in attendance.

2.3 Registration Maintenance Surveys

Paragraph 2.3.3 has been added as follows.

2.3.3 Occasional Surveys

The wording “the Society may approve the survey methods which it considers to be appropriate.” in 2.3.3 of the Rules means survey methods which the Society considers to be able to obtain information equivalent to that obtained through traditional ordinary surveys where a surveyor is in attendance.

EFFECTIVE DATE AND APPLICATION (Amendment 1-1)

1. The effective date of the amendments is 27 December 2019.

Chapter 1 GENERAL

1.1 General

1.1.1 Scope

Sub-paragraph -1 has been amended as follows.

1 The refrigerants listed below are not to be used as refrigerants.

(1) Methyl chloride (CH_3Cl)

(2) $R12$ (CCl_2F_2)

(3) $R22$ ($CHClF_2$)

~~(4)~~ $R502$ ($R22/R115$ (48.8/51.2 wt%) $CHClF_2/CClF_2CF_3$)

~~(5)~~ $R13B1$ (CF_3Br)

~~(6)~~ Other refrigerants as deemed inappropriate by the Society.

EFFECTIVE DATE AND APPLICATION (Amendment 1-2)

1. The effective date of the amendments is 1 January 2020.
2. Notwithstanding the amendments to the Guidance, the current requirements apply to refrigerating machinery, refrigerating installations or controlled atmosphere systems other than refrigerating machinery, refrigerating installations or controlled atmosphere systems that fall under the following:
 - (1) that intended for installation on ships the keels of which are laid or which are at a similar stage of construction on or after 1 January 2020; or
 - (2) that intended for installation on ships the keels of which are laid or which are at a similar stage of construction before 1 January 2020 that fall under the following:
 - (a) that for which the contractual delivery date of the equipment to the ship is on or after 1 January 2020; or
 - (b) that for which, in the absence of a contractual delivery date, the actual delivery of the equipment to the ship is on or after 1 January 2020.
3. Notwithstanding the provision of preceding 2., the amendment to the Guidance may apply, upon request of the owner, to refrigerating machinery, refrigerating installations or controlled atmosphere systems other than those specified in 2.(1) or (2) above.