

Mildly Flammable Refrigerants

Object of Amendment

Rules for the Survey and Construction of Steel Ships Parts B, D, P and PS
Guidance for the Survey and Construction of Steel Ships Part D
Rules for High Speed Craft

Reason for Amendment

Traditionally, nonflammable refrigerants (i.e. refrigerants with low toxicity and no flammability) have been used in refrigerating installations of ships, such as those for provision storerooms and those for accommodation space air conditioning. Part D of the Rules specifies safety requirements also based on the assumption that nonflammable refrigerants are used.

In recent years, however, certain regions, such as Europe and the United States, have introduced their own regulations restricting the use of high-GWP (Global Warming Potential) refrigerants in response to the enactment of international measures for mitigating global warming. Consequently, refrigerating installations of land facilities have been shifting from traditional nonflammable refrigerants to mildly flammable refrigerants (i.e. refrigerants with low toxicity and limited flammability having low burning velocity) to comply with such regulations. A similar transition is expected for refrigerants being used for maritime use as well.

Accordingly, relevant requirements are amended to clarify treatment with respect to the use of mildly flammable refrigerants.

Outline of the Amendment

Stipulates requirements related to the use of mildly flammable refrigerants in refrigerating machinery and air-conditioning machinery.

Effective Date and Application

Effective date of this amendment is 1 July 2026.

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| An asterisk (*) after the title of a requirement indicates that there is also relevant information in the corresponding Guidance. |
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ID:DD25-24

Amended-Original Requirements Comparison Table (Mildly Flammable Refrigerants)

| Amended | Original | Remarks | | | | | | | | |
|--|---|--------------|---------|------------------------|-----------|---|---|------------------------|-----------|---|
| <div><p>RULES FOR THE SURVEY AND CONSTRUCTION OF STEEL SHIPS</p><p>Part B CLASS SURVEYS</p><p>Chapter 2 CLASSIFICATION SURVEYS</p><p>2.3 Alterations</p><p>2.3.1 Examinations of Altered Parts*</p></div> | <div><p>RULES FOR THE SURVEY AND CONSTRUCTION OF STEEL SHIPS</p><p>Part B CLASS SURVEYS</p><p>Chapter 2 CLASSIFICATION SURVEYS</p><p>2.3 Alterations</p><p>2.3.1 Examinations of Altered Parts*</p></div> | | | | | | | | | |
| <p>Table B2.8 Survey - Machinery and Electrical Installations*1</p> <table><tr><th>Survey Items</th><th>Details</th></tr><tr><td>(1 to 22 are omitted.)</td><td>(Omitted)</td></tr><tr><td>22 Refrigerating machinery, <u>air conditioning machinery</u> and controlled atmosphere systems</td><td>(1) For refrigerating machinery, the pressure relief devices specified in 17.2.4, Part D of the Rules are properly installed. (2) The hydrostatic or tightness tests specified in 17.25.1, Part D of the Rules are to be carried out for pressure vessels exposed to the pressure of primary refrigerants, cylinders and crank cases of the compressors of refrigerators. (3) The leak tests specified in 17.45.2-1, Part D of the Rules are to be carried out at a pressure of 90 % of the design pressure for piping systems which are exposed to the pressure of primary refrigerants after installation on board. (4) The operation tests and other tests specified in 17.45.2-2, Part D of the Rules are to be carried out for installations <u>refrigerating machinery and air conditioning machinery using mildly flammable refrigerants as primary refrigerants, as specified in 17.1.1-2, Part D of the Rules,</u> and equipment connected with controlled atmosphere systems to confirm normal operation.</td></tr><tr><td>(23 to 37 are omitted)</td><td>(Omitted)</td></tr></table> | | Survey Items | Details | (1 to 22 are omitted.) | (Omitted) | 22 Refrigerating machinery, <u>air conditioning machinery</u> and controlled atmosphere systems | (1) For refrigerating machinery, the pressure relief devices specified in 17.2.4, Part D of the Rules are properly installed. (2) The hydrostatic or tightness tests specified in 17.25.1 , Part D of the Rules are to be carried out for pressure vessels exposed to the pressure of primary refrigerants, cylinders and crank cases of the compressors of refrigerators. (3) The leak tests specified in 17.45.2-1 , Part D of the Rules are to be carried out at a pressure of 90 % of the design pressure for piping systems which are exposed to the pressure of primary refrigerants after installation on board. (4) The operation tests and other tests specified in 17.45.2-2 , Part D of the Rules are to be carried out for installations <u>refrigerating machinery and air conditioning machinery using mildly flammable refrigerants as primary refrigerants, as specified in 17.1.1-2, Part D of the Rules,</u> and equipment connected with controlled atmosphere systems to confirm normal operation. | (23 to 37 are omitted) | (Omitted) | Add test requirement for mildly flammable refrigerants. |
| Survey Items | Details | | | | | | | | | |
| (1 to 22 are omitted.) | (Omitted) | | | | | | | | | |
| 22 Refrigerating machinery, <u>air conditioning machinery</u> and controlled atmosphere systems | (1) For refrigerating machinery, the pressure relief devices specified in 17.2.4, Part D of the Rules are properly installed. (2) The hydrostatic or tightness tests specified in 17.25.1 , Part D of the Rules are to be carried out for pressure vessels exposed to the pressure of primary refrigerants, cylinders and crank cases of the compressors of refrigerators. (3) The leak tests specified in 17.45.2-1 , Part D of the Rules are to be carried out at a pressure of 90 % of the design pressure for piping systems which are exposed to the pressure of primary refrigerants after installation on board. (4) The operation tests and other tests specified in 17.45.2-2 , Part D of the Rules are to be carried out for installations <u>refrigerating machinery and air conditioning machinery using mildly flammable refrigerants as primary refrigerants, as specified in 17.1.1-2, Part D of the Rules,</u> and equipment connected with controlled atmosphere systems to confirm normal operation. | | | | | | | | | |
| (23 to 37 are omitted) | (Omitted) | | | | | | | | | |
| <p>Notes</p> <p>(Omitted)</p> | | | | | | | | | | |

Amended-Original Requirements Comparison Table (Mildly Flammable Refrigerants)

| Amended | Original | Remarks |
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| <p>RULES FOR THE SURVEY AND CONSTRUCTION OF STEEL SHIPS</p> <p>Part D MACHINERY INSTALLATIONS</p> <p>Chapter 17 REFRIGERATING MACHINERY, <u>AIR CONDITIONING MACHINERY AND CONTROLLED ATMOSPHERE SYSTEMS</u></p> <p>17.1 General</p> <p>17.1.1 Scope*</p> <p>1 The requirements in this chapter apply to refrigerating machinery using the primary refrigerants listed below <u>or the mildly flammable refrigerants specified in -2,</u> and those forming refrigerating cycles used for refrigeration <u>and air conditioning machinery (hereinafter all of the above will be referred to as “refrigerating machinery”),</u> as well as any controlled atmosphere systems for cargo holds. However, <u>the requirements in this chapter do not apply to refrigerating machinery with compressors of 7.5 kW or less. Furthermore,</u> any refrigerating machinery with compressors <u>exceeding 7.5 kW</u> and any refrigerating machinery using primary refrigerants other than those listed below <u>or other than the mildly flammable refrigerants specified in -2</u> are to be as deemed appropriate by the Society.</p> <p><i>R134a : (Omitted)</i> <i>R404A : (Omitted)</i> <i>R407C : (Omitted)</i></p> | <p>RULES FOR THE SURVEY AND CONSTRUCTION OF STEEL SHIPS</p> <p>Part D MACHINERY INSTALLATIONS</p> <p>Chapter 17 REFRIGERATING MACHINERY AND CONTROLLED ATMOSPHERE SYSTEMS</p> <p>17.1 General</p> <p>17.1.1 Scope*</p> <p>1 The requirements in this chapter apply to refrigerating machinery using the primary refrigerants listed below and those forming refrigerating cycles used for refrigeration, air conditioning, etc., as well as any controlled atmosphere systems for cargo holds. However, any refrigerating machinery with compressors of 7.5 kW or less and any refrigerating machinery using primary refrigerants other than those listed below are to be as deemed appropriate by the Society.</p> <p><i>R134a : (Omitted)</i> <i>R404A : (Omitted)</i> <i>R407C : (Omitted)</i></p> | <p>Specifies inclusion of an explicit statement that the requirements of this Chapter 17 do not apply to refrigerating machinery using the refrigerants specified in -1 and -2 as the primary refrigerant and having a compressor power input not exceeding 7.5 kW.</p> |

Amended-Original Requirements Comparison Table (Mildly Flammable Refrigerants)

| Amended | Original | Remarks |
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| <p><i>R407H</i> : (Omitted)</p> <p><i>R410A</i> : (Omitted)</p> <p><i>R449A</i> : (Omitted)</p> <p><i>R507A</i> : (Omitted)</p> <p>2 In cases where the mildly flammable refrigerants listed below are used as primary refrigerants, 17.4 is also to be complied with.</p> <p><i>R32</i> : CH_2F_2</p> <p><i>R1234yf</i> : $CF_3CF=CH_2$</p> <p><i>R1234ze(E)</i> : $CF_3CH=CHF$</p> <p>3 For those items mentioned in this Chapter, the requirements given in this Chapter are applied in lieu of the requirements in Chapters 10, 12 and 13.</p> <p><u>17.4 Mildly Flammable Refrigerants</u></p> <p><u>17.4.1 Drawings for Refrigerating Machinery Using Mildly Flammable Refrigerants</u></p> <p><u>In addition to those specified in 17.1.2, drawings to be submitted are generally as follows:</u></p> <p>(1) <u>Piping diagrams for mildly flammable refrigerants</u></p> <p>(2) <u>Gas detector arrangements</u></p> <p>(3) <u>General arrangements for refrigerating machinery compartments</u></p> <p>(4) <u>Data on the chemical properties of mildly flammable refrigerants</u></p> <p><u>17.4.2 General Requirements for Refrigerating Machinery Using Mildly Flammable Refrigerants</u></p> <p>1 <u>Pressure vessels used in refrigerating machinery are to be classified as specified in 10.1.3.</u></p> | <p><i>R407H</i> : (Omitted)</p> <p><i>R410A</i> : (Omitted)</p> <p><i>R449A</i> : (Omitted)</p> <p><i>R507A</i> : (Omitted)</p> <p>(Newly added)</p> <p>2 For those items mentioned in this Chapter, the requirements given in this Chapter are applied in lieu of the requirements in Chapters 10, 12 and 13.</p> <p>(Newly added)</p> <p>(Newly added)</p> <p>(Newly added)</p> <p>(Newly added)</p> <p>(Newly added)</p> | <p>Specifies the reference sections for the requirements when the primary refrigerant is a mildly flammable refrigerant.</p> <p>Specifies requirement for mildly flammable refrigerants based on from D17.1.1-4 to -12, Part D of the Guidance.</p> <p>Specifies the drawings and data required to be submitted for installations that use the mildly flammable refrigerant as the primary refrigerant; note that item (4) corresponds to a Safety Data Sheet (SDS) or equivalent.</p> <p>Specifies requirements for pressure vessels and</p> |

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| <p><u>2</u> Notwithstanding <u>17.2.3-2</u>, primary refrigerant pipes (hereinafter referred to as “refrigerant pipes”) are to be classified by replacing the term “design pressure” and “fuel oil” therein by the terms “working pressure” and “mildly flammable refrigerants” in Chapter 12.</p> | (Newly added) | primary refrigerant pipes of refrigerating machinery using mildly flammable refrigerants. |
| <p><u>3</u> The design pressure of pressure vessels and pipes which make up refrigerating machinery is not to be less than saturated vapour pressure at 55 °C on the high pressure side and at 45 °C on the low pressure side.</p> | (Newly added) | |
| <p><u>17.4.3 Control and Alarm Systems of Refrigerating Machinery Using Mildly Flammable Refrigerants</u></p> | (Newly added) | |
| <p><u>1</u> Notwithstanding <u>17.2.4-1(1)</u>, relief valves are to be provided between cylinders of compressors for refrigerant and gas delivery stop valves with discharge being led to suction side of the compressor.</p> | (Newly added) | |
| <p><u>2</u> Devices which automatically stop compressors of refrigerants when pressures on high pressure sides of refrigerant piping systems become excessively high are to be installed. Furthermore, when the above devices are activated, alarm systems that activate visible and audible alarms in refrigerating machinery compartments and at monitoring positions are also to be installed.</p> | (Newly added) | Specifies requirements for compressor of refrigerants. |
| <p><u>17.4.4 Expulsion Systems of Mildly Flammable Refrigerants</u></p> | (Newly added) | |
| <p><u>Mechanical ventilation systems which comply with the following requirements are, to be installed in refrigerating machinery compartments.</u></p> | (Newly added) | |
| <p><u>(1) Ventilation systems are to ventilate all times.</u></p> | | |
| <p><u>(2) Such ventilation systems are to have enough capacity to ensure at least 30 air changes per hour in refrigerating machinery compartments. However,</u></p> | | Specifies ventilation requirements to prevent unintended accumulation of refrigerant. |

Amended-Original Requirements Comparison Table (Mildly Flammable Refrigerants)

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| <p><u>this requirement may be relaxed when deemed appropriate by the Society.</u></p> <p>(3) <u>Such ventilation systems are to be independent of other ventilation systems on board ship and are to be capable of being operated from outside refrigerating machinery compartments.</u></p> <p>(4) <u>Exhaust outlets are to be installed at horizontal distances of more than 10 m from the nearest air intake openings and openings of accommodation spaces, service spaces and control stations, and at vertical distances of more than 4 m from weather decks.</u></p> <p>(5) <u>Air intake openings are to be provided at high positions, and exhaust openings are to be provided at low positions in refrigerating machinery compartments so that no gas accumulates inside compartments and exhaust ducts.</u></p> <p>(6) <u>Exhaust fans are to be of a construction that does not allow any sparks to be generated complying with R4.5.4-1(2), Part R of the Guidance. Protection screens of not more than 13 mm square mesh are to be fitted in the inlet and outlet ventilation openings of ducts fitted with such fans on open decks. For the purpose of this requirement, as a principle, motors for driving the fans are to be of the exterior mounted type.</u></p> <p><u>17.4.5 Detection and Alarm Systems of Mildly Flammable Refrigerants</u></p> <p><u>Gas detection and alarm systems complying with the following requirements are to be provided in refrigerating machinery compartments and other locations deemed necessary by the Society.</u></p> | <p>(Newly added)</p> <p>(Newly added)</p> | <p>Specifies requirements for refrigerant stirring devices, separate from the requirements for mechanical ventilation newly established in 17.4.5, to reduce the risks of ignition, oxygen</p> |

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| <p>(1) <u>An adequate number of flammable gas detectors are to be provided so that alarm systems are activated in cases where mildly flammable refrigerant concentration reach up to 30 %LFL.</u></p> <p>(2) <u>In cases where leaking refrigerants are detected by the detectors referred to (1), the leaking refrigerants are to be stirred by stirring devices that are separate from mechanical ventilation systems.</u></p> <p>(3) <u>Alarm systems are to generate visible and audible alarms near doors, inside and outside refrigerating machinery compartments and at monitoring locations.</u></p> <p>(4) <u>Manually-operated transmitters for leakage warnings are to be provided near the doors and outside refrigerating machinery compartments</u></p> | | <p>deficiency, and related hazards in the event of refrigerant leakage.</p> |
| <p>17.5 Tests</p> | <p>17.4 Tests</p> | |
| <p>17.5.1 Shop Tests (Omitted)</p> | <p>17.4.1 Shop Tests (Omitted)</p> | |
| <p>17.5.2 Tests after Installation On Board*</p> <p>1 (Omitted)</p> <p>2 All installations and equipment connected <u>with refrigerating machinery using mildly flammable refrigerants as primary refrigerants, as specified in 17.1.1-2,</u> and with controlled atmosphere systems are to be tested by operation tests and other relevant tests, to verify that they operate normally.</p> | <p>17.4.2 Tests after Installation On Board*</p> <p>1 (Omitted)</p> <p>2 All installations and equipment connected with controlled atmosphere systems are to be tested by operation tests, etc. to verify that they operate normally.</p> | <p>Specifies the required functional verification by operation tests and similar methods, for refrigerating machinery using a mildly flammable refrigerants as the primary refrigerant.</p> |

Amended-Original Requirements Comparison Table (Mildly Flammable Refrigerants)

| Amended | Original | Remarks |
|---|---|-------------------|
| <p>RULES FOR THE SURVEY AND CONSTRUCTION OF STEEL SHIPS</p> <p>Part P MOBILE OFFSHORE DRILLING UNITS AND SPECIAL PURPOSE BARGES</p> <p>Chapter 11 MACHINERY INSTALLATIONS</p> <p>11.1 General</p> <p>11.1.2 General</p> <p>1 For machinery installations other than those used for solely for the operation which is the purpose of the unit, relevant requirements in Part D listed in the following (1) to (40) as well as the requirements in this Chapter are to be applied.</p> <p>((1) to (37) are omitted.)</p> <p>(38) Chapter 17, Part D Refrigerating Machinery, Air Conditioning Machinery and Controlled Atmosphere Systems</p> <p>((39) and (40) are omitted.)</p> | <p>RULES FOR THE SURVEY AND CONSTRUCTION OF STEEL SHIPS</p> <p>Part P MOBILE OFFSHORE DRILLING UNITS AND SPECIAL PURPOSE BARGES</p> <p>Chapter 11 MACHINERY INSTALLATIONS</p> <p>11.1 General</p> <p>11.1.2 General</p> <p>1 For machinery installations other than those used for solely for the operation which is the purpose of the unit, relevant requirements in Part D listed in the following (1) to (40) as well as the requirements in this Chapter are to be applied.</p> <p>((1) to (37) are omitted.)</p> <p>(38) Chapter 17, Part D Refrigerating Machinery</p> <p>((39) and (40) are omitted.)</p> | <p>Correction</p> |

Amended-Original Requirements Comparison Table (Mildly Flammable Refrigerants)

| Amended | Original | Remarks |
|---|---|-------------------|
| <p>RULES FOR THE SURVEY AND CONSTRUCTION OF STEEL SHIPS</p> <p>Part PS FLOATING OFFSHORE FACILITIES FOR CRUDE OIL/PETROLEUM GAS PRODUCTION, STORAGE AND OFFLOADING</p> <p>Chapter 7 MACHINERY INSTALLATIONS</p> <p>7.1 General</p> <p>7.1.2 General</p> <p>1 With respect to machinery installations other than those used solely for the specific operation which is the purpose of the Floating Offshore Facility (the processing of crude oil, etc. extracted from seabeds.), relevant requirements given in Part D listed in the following (1) to (46) as well as the requirements given in this Chapter are to be applied. (The terms “cargo” and “cargo oil” are to be construed as “crude oil”, “carry” and “transport” are to be construed as “process/store”, “ship” and “tanker” are to be construed as “Floating Offshore Facility”).</p> <p>((1) to (43) are omitted.)</p> <p>(44) Chapter 17, Part D Refrigerating Machinery, Air Conditioning Machinery and Controlled Atmosphere Systems</p> <p>((45) and (46) are omitted.)</p> | <p>RULES FOR THE SURVEY AND CONSTRUCTION OF STEEL SHIPS</p> <p>Part PS FLOATING OFFSHORE FACILITIES FOR CRUDE OIL/PETROLEUM GAS PRODUCTION, STORAGE AND OFFLOADING</p> <p>Chapter 7 MACHINERY INSTALLATIONS</p> <p>7.1 General</p> <p>7.1.2 General</p> <p>1 With respect to machinery installations other than those used solely for the specific operation which is the purpose of the Floating Offshore Facility (the processing of crude oil, etc. extracted from seabeds.), relevant requirements given in Part D listed in the following (1) to (46) as well as the requirements given in this Chapter are to be applied. (The terms “cargo” and “cargo oil” are to be construed as “crude oil”, “carry” and “transport” are to be construed as “process/store”, “ship” and “tanker” are to be construed as “Floating Offshore Facility”).</p> <p>((1) to (43) are omitted.)</p> <p>(44) Chapter 17, Part D Refrigerating Machinery and Controlled Atmosphere Systems</p> <p>((45) and (46) are omitted.)</p> | <p>Correction</p> |

Amended-Original Requirements Comparison Table (Mildly Flammable Refrigerants)

| Amended | Original | Remarks |
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| <p>RULES FOR HIGH SPEED CRAFT</p> <p>Part 9 MACHINERY INSTALLATIONS</p> <p>Chapter 1 GENERAL</p> <p>1.3 Tests</p> <p>1.3.1 Shop Tests Before installation on board, machinery installations are to be tested according to the following requirements at the plants. ((1) to (8) are omitted.) (9) Refrigerating <u>and Air Conditioning Machinery</u> are to be tested in accordance with <u>17.5.1, Part D of the Rules for the Survey and Construction of Steel Ships</u>. ((10) is omitted.)</p> <p>1.3.2 Tests after Installation On Board* After installation on board, the following tests are to be carried out. ((1) to (15) are omitted.) (16) <u>Refrigerating and air conditioning machinery are to be tested in accordance with 17.5.2, Part D of the Rules for the Survey and Construction of Steel Ships.</u> ((17) is omitted.)</p> | <p>RULES FOR HIGH SPEED CRAFT</p> <p>Part 9 MACHINERY INSTALLATIONS</p> <p>Chapter 1 GENERAL</p> <p>1.3 Tests</p> <p>1.3.1 Shop Tests Before installation on board, machinery installations are to be tested according to the following requirements at the plants. ((1) to (8) are omitted.) (9) Refrigerating Equipment is to be tested in accordance with <u>17.4.1, Part D of the Rules for the Survey and Construction of Steel Ships</u>. ((10) is omitted.)</p> <p>1.3.2 Tests after Installation On Board* After installation on board, the following tests are to be carried out. ((1) to (15) are omitted.) (16) <u>For the piping systems of refrigerating equipment, which are exposed to a pressure of the primary refrigerant, leak tests at a pressure of 90% of the design pressure.</u> ((17) is omitted.)</p> | <p>Correction</p> <p>Specifies that the provisions are to take into account operational tests of refrigeration machinery using mildly flammable refrigerants as primary refrigerants.</p> |

Amended-Original Requirements Comparison Table (Mildly Flammable Refrigerants)

| Amended | Original | Remarks |
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| <p>Chapter 11 REFRIGERATING AND AIR CONDITIONING MACHINERY</p> <p>11.1 General</p> <p>11.1.1 Scope</p> <p><u>1</u> This chapter applies to the refrigerating machinery using the primary refrigerants listed below <u>or the mildly flammable refrigerants specified in -2,</u> and forming the refrigerating cycle used for refrigeration <u>and</u> air conditioning machinery (hereinafter all of the above will be referred to as “refrigerating machinery”). However, <u>this chapter does not apply to refrigerating machinery with compressors of 7.5 kW or less. Furthermore, any refrigerating machinery with compressors exceeding 7.5 kW and any refrigerating machinery using primary refrigerants other than those listed below or other than the mildly flammable refrigerants specified in -2</u> are to be as deemed appropriate by the Society.</p> <p><i>R134a : (Omitted)</i> <i>R404A : (Omitted)</i> <i>R407C : (Omitted)</i> <i>R407H : (Omitted)</i> <i>R410A : (Omitted)</i> <i>R449A : (Omitted)</i> <i>R507A : (Omitted)</i></p> <p><u>2</u> In cases where the mildly flammable refrigerants listed below are used as primary refrigerants, 17.4, Part D of the Rules for the Survey and Construction of Steel Ships is also to be complied with.</p> <p><i><u>R32 : CH₂F₂</u></i> <i><u>R1234yf : CF₃CF=CH₂</u></i></p> | <p>Chapter 11 REFRIGERATING EQUIPMENT</p> <p>11.1 General</p> <p>11.1.1 Scope</p> <p>The requirements in this chapter apply to the refrigerating machinery using the primary refrigerants listed below and forming the refrigerating cycle used for refrigeration, air conditioning, etc., as well as to the controlled atmosphere systems for the cargo holds. However, the refrigerating machinery with compressors of 7.5 kW or less <u>and the refrigerating machinery using the primary refrigerants other than those listed below</u> are to be as deemed appropriate by the Society.</p> <p><i>R134a : (Omitted)</i> <i>R404A : (Omitted)</i> <i>R407C : (Omitted)</i> <i>R407H : (Omitted)</i> <i>R410A : (Omitted)</i> <i>R449A : (Omitted)</i> <i>R507A : (Omitted)</i> (Newly added)</p> | <p>Specifies inclusion of an explicit statement that the requirements of this Chapter 17 do not apply to refrigerating machinery using the refrigerants specified in -1 and -2 as the primary refrigerant and having a compressor power input not exceeding 7.5 kW.</p> <p>Specifies the reference sections for the requirements when the primary refrigerant is a mildly flammable refrigerant.</p> |

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| <u>R1234ze(E): CF₃CH=CHF</u> | | |

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| Amended | Original | Remarks |
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| <p align="center">GUIDANCE FOR THE SURVEY AND CONSTRUCTION OF STEEL SHIPS</p> <p align="center">Part D MACHINERY INSTALLATIONS</p> <p align="center">D17 REFRIGERATING MACHINERY AND CONTROLLED ATMOSPHERE SYSTEMS</p> <p>D17.1 General</p> <p>D17.1.1 Scope 1 Refrigerating and air conditioning machinery forming refrigerating cycles in 17.1.1-1, Part D of the Rules contains condensers, receivers, evaporators, piping and associated equipment, etc.</p> <p>D17.5 Tests</p> <p>D17.5.2 Tests after Installation On Board 1 <u>All installations and equipment connected with refrigerating machinery using R717 as primary refrigerants are to be tested by operation tests and other relevant tests, to verify that they operate normally.</u> 2 Tests and surveys for controlled atmosphere systems are as follows: ((1) to (4) are omitted.)</p> | <p align="center">GUIDANCE FOR THE SURVEY AND CONSTRUCTION OF STEEL SHIPS</p> <p align="center">Part D MACHINERY INSTALLATIONS</p> <p align="center">D17 REFRIGERATING MACHINERY AND CONTROLLED ATMOSPHERE SYSTEMS</p> <p>D17.1 General</p> <p>D17.1.1 Scope 1 “Refrigerating machinery forming refrigerating cycle” in 17.1.1-1, Part D of the Rules contains condensers, receivers, evaporators, piping and associated equipment, etc.</p> <p>D17.4 Tests</p> <p>D17.4.2 Tests after Installation On Board (Newly added)</p> <p>Tests and surveys for controlled atmosphere systems are as follows: ((1) to (4) are omitted.)</p> | <p>Specifies the test requirement for refrigerating machinery using R717 as primary refrigerants</p> |

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| EFFECTIVE DATE AND APPLICATION | | |
| 1. The effective date of the amendments is 1 July 2026. | | |