

## **Clarification of the Application of Part GF and Part N**

### **Object of Amendment**

Rules for the Survey and Construction of Steel Ships Parts GF and N  
Guidance for the Survey and Construction of Steel Ships Parts B, GF and N  
Guidance for High Speed Craft  
Guidance for the Survey and Construction of Passenger Ships  
Guidance for the Survey and Construction of Inland Waterway Ships

### **Reason for Amendment**

A recent review of the NK Rules for the Survey and Construction of Steel Ships identified several requirements in Parts GF and N for which the application was unclear. Relevant requirements are, therefore, amended accordingly for clarification purposes and to also eliminate any other inconsistencies identified in Parts GF and N.

Additionally, although auxiliary machinery for the propulsion systems of ships using low-flashpoint fuels is commonly installed in fuel preparation rooms, Chapter 15 of Part GF of the Rules does not require the automatic shutdown of fuel supply when fire detection systems in said rooms are activated; moreover, the response of a responsible engineer officer may be delayed if they are not immediately made aware of such fires. As a result, fuel may continue to be supplied even after a fire has been detected despite the need for a responsible engineer officer to promptly decide whether to stop or continue the fuel supply.

Accordingly, the relevant requirements have been amended to ensure that a responsible engineer officer are promptly notified of fires in fuel preparation rooms when fire detection systems are activated.

### **Outline of Amendment**

The main contents of this amendment are as follows:

- (1) Specify the definition of “Process Pressure Vessels” in the Guidance for the Survey and Construction of Steel Ships Part GF.
- (2) Clarify the handling of certificates for ships that undergo gas trials or cargo full loading tests after classification surveys in the Guidance for the Survey and Construction of Steel Ships Part N.
- (3) Amend requirements related to “Product Inspections” specified in each chapter of Annex I, Guidance for the Survey and Construction of Steel Ships Part GF and Annex 1, Guidance for the Survey and Construction of Steel Ships Part N to clarify which tests are to be conducted by manufacturers and which tests are to be conducted by shipyards.
- (4) Clarify that fixed fire detection and alarm systems in the fuel preparation rooms of ships using low-flashpoint fuel are to initiate audible and visual alarms at sufficient

locations to ensure that a responsible engineer immediately recognise fires in such rooms in addition to the requirements of Chapter 29, Part R of the Rules.

**Effective Date and Application**

- (1) GF11.7.1, Part GF of the Guidance for the Survey and Construction of Steel Ships  
This amendment applies to ships for which the date of contract for construction is on or after 1 July 2025.
- (2) Others  
Effective date of the amendment is 1 July 2025.

ID:DD24-34, DX24-24

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

Amended-Original Requirements Comparison Table (Clarification of the Application of Part GF and Part N)

| Amended   | Original   | Remarks  |
|---|--|--|
| <p align="center"><b>RULES FOR THE SURVEY AND CONSTRUCTION OF STEEL SHIPS</b></p> <p align="center"><b>Part GF SHIPS USING LOW-FLASHPOINT FUELS</b></p> <p><b>Chapter 7 MATERIAL AND GENERAL PIPE DESIGN</b></p> <p><b>7.4 Regulations for Materials</b> (with reference to <i>IGF Code 7.4</i>)</p> <p><b>7.4.1 Metallic Materials*</b><br/>(-1 to -6 are omitted.)<br/><u>7 The materials listed in -1(2) through (4) above may be used at temperatures higher than the specified design temperature in cases where permitted by the Society.</u></p> | <p align="center"><b>RULES FOR THE SURVEY AND CONSTRUCTION OF STEEL SHIPS</b></p> <p align="center"><b>Part GF SHIPS USING LOW-FLASHPOINT FUELS</b></p> <p><b>Chapter 7 MATERIAL AND GENERAL PIPE DESIGN</b></p> <p><b>7.4 Regulations for Materials</b> (with reference to <i>IGF Code 7.4</i>)</p> <p><b>7.4.1 Metallic Materials*</b><br/>(-1 to -6 are omitted.)<br/>(Newly added)</p> | <p>For materials used in equipment whose design temperatures do not fall under those specified in Tables GF7.2 to GF7.4, Part GF of the Rules, it is specified that they are to be “as deemed appropriate by the Society”.</p> |

Amended-Original Requirements Comparison Table (Clarification of the Application of Part GF and Part N)

| Amended  | Original  | Remarks  |
|--|---|--|
| <p><b>RULES FOR THE SURVEY AND CONSTRUCTION OF STEEL SHIPS</b></p> <p><b>Part N SHIPS CARRYING LIQUEFIED GASES IN BULK</b></p> <p><b>Chapter 6 MATERIALS OF CONSTRUCTION AND QUALITY CONTROL</b></p> <p><b>6.4 Requirements for Metallic Materials (with reference to <i>IGC Code 6.4</i>)</b></p> <p><b>6.4.1 General Requirements for Metallic Materials*</b><br/>(-1 and -2 are omitted.)<br/><u>3 The materials listed in -1(2) through (4) above may be used at temperatures higher than the specified design temperature in cases where permitted by the Society.</u></p> <p><b>Chapter 17 SPECIAL REQUIREMENTS</b></p> <p><b>17.14 Ethylene Oxide</b></p> <p><b>17.14.4 Cleaning of Tanks (With reference to <i>IGC Code 17.14.4</i>)</b><br/>A cleaning system is to be provided to remove all traces of</p> | <p><b>RULES FOR THE SURVEY AND CONSTRUCTION OF STEEL SHIPS</b></p> <p><b>Part N SHIPS CARRYING LIQUEFIED GASES IN BULK</b></p> <p><b>Chapter 6 MATERIALS OF CONSTRUCTION AND QUALITY CONTROL</b></p> <p><b>6.4 Requirements for Metallic Materials (with reference to <i>IGC Code 6.4</i>)</b></p> <p><b>6.4.1 General Requirements for Metallic Materials*</b><br/>(-1 and -2 are omitted.)<br/>(Newly added)</p> <p><b>Chapter 17 SPECIAL REQUIREMENTS</b></p> <p><b>17.14 Ethylene Oxide</b></p> <p><b>17.14.4 Cleaning of Tanks (With reference to <i>IGC Code 17.14.4</i>)</b><br/>A cleaning system is to be provided to remove all traces of</p> | <p>For materials used in equipment whose design temperatures do not fall under those specified in Tables N6.2 to N6.4, Part N of the Rules, it is specified that they are to be “as deemed appropriate by the Society”.</p> <p>Corrected to IGC code</p> |

**Amended-Original Requirements Comparison Table (Clarification of the Application of Part GF and Part N)**

| Amended  | Original   | Remarks           |
|--|--|-------------------|
| <p>previous cargoes from tanks and associated pipework before loading, <u>except where the immediate prior cargo has been ethylene oxide, propylene oxide or mixtures of these products.</u></p> | <p>previous cargoes from tanks and associated pipework before loading.</p> | <p>expression</p> |

Amended-Original Requirements Comparison Table (Clarification of the Application of Part GF and Part N)

| Amended  | Original   | Remarks |
|--|--|---------|
| <p align="center"><b>GUIDANCE FOR THE SURVEY AND CONSTRUCTION OF STEEL SHIPS</b></p> <p align="center"><b>Part B CLASS SURVEYS</b></p> <p align="center"><b>B1 GENERAL</b></p> <p><b>B1.1 Surveys</b></p> <p><b>B1.1.3 Intervals of Class Maintenance Surveys</b><br/> <b>3</b> The Occasional Surveys specified in 1.1.3-3(5), <b>Part B of the Rules</b> are as specified below:<br/>                 ((1) to (21) are omitted.)<br/>                 (22) Ships using low-flashpoint fuels<br/>                 ((a) to (c) are omitted.)<br/> <u>(d) For ships that fall under the following i) or ii), a survey is to be carried out to verify compliance with GF11.7.1, Part GF of the Guidance before using low-flashpoint fuels or undertaking to use different low-flashpoint fuels than specified:</u><br/>                 i) <u>ships which convert to using low-flashpoint fuels on or after 1 January 2026; or</u><br/>                 ii) <u>ships which, on or after 1 January 2026, undertake to use low-flashpoint fuels different from those which they were originally approved to use before 1 January 2026.</u><br/>                 ((23) and (24) are omitted.)</p> | <p align="center"><b>GUIDANCE FOR THE SURVEY AND CONSTRUCTION OF STEEL SHIPS</b></p> <p align="center"><b>Part B CLASS SURVEYS</b></p> <p align="center"><b>B1 GENERAL</b></p> <p><b>B1.1 Surveys</b></p> <p><b>B1.1.3 Intervals of Class Maintenance Surveys</b><br/> <b>3</b> The Occasional Surveys specified in 1.1.3-3(5), <b>Part B of the Rules</b> are as specified below:<br/>                 ((1) to (21) are omitted.)<br/>                 (22) Ships using low-flashpoint fuels<br/>                 ((a) to (c) are omitted.)<br/>                 (Newly added)</p> <p>((23) and (24) are omitted)</p> |         |

**Amended-Original Requirements Comparison Table (Clarification of the Application of Part GF and Part N)**

| Amended  | Original   | Remarks |
|--|--|---------|
| <p><b>GUIDANCE FOR THE SURVEY AND CONSTRUCTION OF STEEL SHIPS</b></p> <p><b>Part GF SHIPS USING LOW-FLASHPOINT FUELS</b></p> <p><b>GF1 GENERAL</b></p> <p><b>GF1.1 General</b></p> <p><b>GF1.1.3 Approval of Systems and Equipment, etc.</b><br/> <b>1 (Omitted)</b><br/> <u><b>2 In applying Part GF of the Rules, “process pressure vessels” as referred to in 1.1.3-1 and other requirements refers to the following pressure vessels: those used for gas fuel operations and gas fuel cooling; those used for the processing of boil-off gases; and those used for the temporary internal storage of gas fuel. The above includes heat exchangers but does not include pressure vessels used for refrigerants which are not being carried as gas fuel as well as the pressure receiving parts of gas fuel pumps, compressors and valves.</b></u><br/> <b>3 (Omitted)</b></p> | <p><b>GUIDANCE FOR THE SURVEY AND CONSTRUCTION OF STEEL SHIPS</b></p> <p><b>Part GF SHIPS USING LOW-FLASHPOINT FUELS</b></p> <p><b>GF1 GENERAL</b></p> <p><b>GF1.1 General</b></p> <p><b>GF1.1.3 Approval of Systems and Equipment, etc.</b><br/> <b>1 (Omitted)</b><br/>                 (Newly added)<br/><br/> <b>2 (Omitted)</b></p> |         |
| <p>The effective date of the amendment is according to EFFECTIVE DATE AND APPLICATION (A)</p>  |  |         |

**Amended-Original Requirements Comparison Table (Clarification of the Application of Part GF and Part N)**

| Amended   | Original  | Remarks |
|---|---|---------|
| <p><b>GF11 FIRE SAFETY</b></p> <p><b><u>GF11.7 Fire Detection and Alarm System (IGF Code 11.7)</u></b></p> <p><b><u>GF11.7.1 General</u></b><br/> <u>The fixed fire detection and fire alarm system in the fuel preparation room required by 11.7.1-1, Part GF of the Rules is to initiate audible and visual alarms distinct in both respects from the alarms of any other system not indicating fire, in sufficient places to ensure that the alarms are heard and observed by a responsible engineer officer in addition to Chapter 29, Part R of the Rules, unless fuel supply is automatically shut off due to activation of fire detector in the fuel preparation room, in addition to safety system required in Table GF 15.1, Part GF of the Rules.</u></p> | <p><b>GF11 FIRE SAFETY</b></p> <p>(Newly added)</p> <p>(Newly added)</p> <p>(Newly added)</p> |         |
| <p>The effective date of the amendment is according to EFFECTIVE DATE AND APPLICATION (B)</p>   |   |         |

**Amended-Original Requirements Comparison Table (Clarification of the Application of Part GF and Part N)**

| Amended   | Original  | Remarks  |
|---|---|--|
| <p><b>Annex 1 GUIDANCE FOR EQUIPMENT AND FITTINGS OF SHIPS USING LOW-FLASHPOINT FUELS</b></p> <p align="center"><b>Chapter 1 GENERAL</b></p> <p><b>1.3 Tests</b></p> <p>(-1 and -2 are omitted.)</p> <p><b>3</b> The tests specified in -1 and -2 above are to be conducted at manufacturing plants, <u>unless specified separately</u>. At the request of the manufacturer, however, parts or all of these tests may be conducted after installation on board ship in cases where deemed appropriate by the Society. To implement surveys of shop tests, in lieu of traditional ordinary surveys where the Surveyor is in attendance, the Society may approve survey methods which it considers to be able to obtain information equivalent to that obtained through traditional ordinary surveys.</p> <p><b>Chapter 2 FUEL VAPOUR COMPRESSORS</b></p> <p><b>2.6 Tests and Inspections</b></p> <p><b>2.6.2 Product Inspections</b></p> <p>(-1 and -2 are omitted.)</p> <p>(Moved)</p> <p>(Moved)</p> | <p><b>Annex 1 GUIDANCE FOR EQUIPMENT AND FITTINGS OF SHIPS USING LOW-FLASHPOINT FUELS</b></p> <p align="center"><b>Chapter 1 GENERAL</b></p> <p><b>1.3 Tests</b></p> <p>(-1 and -2 are omitted.)</p> <p><b>3</b> The tests specified in -1 and -2 above are to be conducted at manufacturing plants. At the request of the manufacturer, however, parts or all of these tests may be conducted after installation on board ship in cases where deemed appropriate by the Society. To implement surveys of shop tests, in lieu of traditional ordinary surveys where the Surveyor is in attendance, the Society may approve survey methods which it considers to be able to obtain information equivalent to that obtained through traditional ordinary surveys.</p> <p><b>Chapter 2 FUEL VAPOUR COMPRESSORS</b></p> <p><b>2.6 Tests and Inspections</b></p> <p><b>2.6.2 Product Inspections</b></p> <p>(-1 and -2 are omitted.)</p> <p><b>3</b> <u>The leak tests specified in 16.7.3-3, Part GF of the Rules are to be carried out after installation on board ship.</u></p> <p><b>4</b> <u>Gas compressors are to be subjected to the service tests specified in 16.7.3-5, Part GF of the Rules after</u></p> | <p>The wording has been revised to not be limited to the manufacturing plant, as some tests will be performed after installation on board.</p> <p>Moved to 2.6.3-1</p> <p>Moved to 2.6.3-2</p> |

**Amended-Original Requirements Comparison Table (Clarification of the Application of Part GF and Part N)**

| Amended   | Original  | Remarks   |
|---|---|---|
| <p><b><u>2.6.3 Test after Installation On Board</u></b><br/> <u>1 The leak tests specified in 16.7.3-3, Part GF of the Rules are to be carried out after installation on board.</u><br/> <u>2 Gas compressors are to be subjected to the service tests specified in 16.7.3-5, Part GF of the Rules after installation on board.</u></p> <p align="center"><b>Chapter 3 FUEL PUMPS</b></p> <p><b>3.6 Tests and Inspections</b></p> <p><b>3.6.2 Product Inspections</b><br/>                     (-1 and -2 are omitted.)<br/>                     (Moved)<br/>                     (Moved)</p> <p><b><u>3.6.3 Test after Installation On Board</u></b><br/> <u>1 The leak tests specified in 16.7.3-3, Part GF of the Rules are to be carried out after installation on board.</u><br/> <u>2 Pumps are to be subjected to the service tests specified in 16.7.3-5, Part GF of the Rules after installation on board.</u></p> | <p><u>installation on board ship.</u></p> <p>(Newly added)<br/>                     (Moved)<br/>                     (Moved)</p> <p align="center"><b>Chapter 3 FUEL PUMPS</b></p> <p><b>3.6 Tests and Inspections</b></p> <p><b>3.6.2 Product Inspections</b><br/>                     (-1 and -2 are omitted.)<br/> <u>3 The leak tests specified in 16.7.3-3, Part GF of the Rules are to be carried out after installation on board ship.</u><br/> <u>4 Pumps are to be subjected to the service tests specified in 16.7.3-5, Part GF of the Rules after installation on board ship.</u></p> <p>(Newly added)<br/>                     (Moved)<br/>                     (Moved)</p> | <p>Moved to 3.6.3-1</p> <p>Moved to 3.6.3-2</p> |

**Amended-Original Requirements Comparison Table (Clarification of the Application of Part GF and Part N)**

| Amended   | Original   | Remarks                                     |
|---|--|---|
| <p align="center"><b>Chapter 4 HEAT EXCHANGERS</b></p> <p><b>4.3 Tests and Inspections</b></p> <p><b>4.3.2 Product Inspections</b><br/>(-1 and -2 are omitted.)<br/>(Moved)</p> <p><b><u>4.3.3 Test after Installation On Board</u></b><br/><u>Heat exchangers are to be subjected to service tests specified in 16.7.3-5, Part GF of the Rules after installation on board.</u></p> <p align="center"><b>Chapter 5 VALVES</b></p> <p><b>5.3 Tests and Inspections</b></p> <p><b>5.3.2 Product Inspections</b><br/><b>1</b> (Omitted)<br/>(Moved)</p> <p><b><u>2</u></b> (Omitted)<br/><b><u>3</u></b> <u>With respect to the tests and surveys specified in -1 above, in the case of valves used for isolating instrumentation in piping which has a diameter not exceeding 25 mm, the Society’s surveyor need not be present during the performing of required tests and surveys provided</u></p> | <p align="center"><b>Chapter 4 HEAT EXCHANGERS</b></p> <p><b>4.3 Tests and Inspections</b></p> <p><b>4.3.2 Product Inspections</b><br/>(-1 and -2 are omitted.)<br/><b>3</b> <u>Heat exchangers are to be subjected to service tests in accordance with the requirements in 16.7.3-5, Part GF of the Rules after installation on board ship.</u></p> <p>(Newly added)<br/>(Moved)</p> <p align="center"><b>Chapter 5 VALVES</b></p> <p><b>5.3 Tests and Inspections</b></p> <p><b>5.3.2 Product Inspections</b><br/><b>1</b> (Omitted)<br/><b><u>2</u></b> <u>Valves are to be subjected to the service tests specified in 16.7.3-3 and 16.7.3-5, Part GF of the Rules after installation on board ship.</u><br/><b><u>3</u></b> (Omitted)<br/>(Newly added)</p> | <p>Moved to 4.3.3</p> <p>Moved to 5.3.3</p> |

**Amended-Original Requirements Comparison Table (Clarification of the Application of Part GF and Part N)**

| Amended   | Original   | Remarks |
|---|--|---------|
| <p><u>that the results of in-house tests are submitted to the Society for review.</u></p> <p><b>5.3.3 Test after Installation On Board</b><br/> <u>Valves are to be subjected to the service tests specified in 16.7.3-3 and 16.7.3-5, Part GF of the Rules after installation on board.</u></p> <p><b>Chapter 7 BELLOWS AND EXPANSION JOINTS</b><br/> <b>(For Fuel Piping and Process Piping Systems)</b></p> <p><b>7.3 Tests and Inspections</b></p> <p><b>7.3.2 Product Inspections</b><br/>                     All bellows and expansion joints are to be subjected to the following tests and inspections during manufacturing:</p> <p>(1) Material tests are to be carried out in accordance with relevant requirements in <b>Table GF7.4, Part GF of the Rules and Part K of the Rules</b>. In cases where the provisions in 7.2.1-1 are applicable, however, submission of mill sheets may only be required.</p> <p>(2) Non-destructive tests are to be carried out for butt welded joints of bellows. 100% of welded joints of the bellows whose design temperatures do not exceed <math>-10^{\circ}\text{C}</math>, or whose inside diameters exceed 75 <i>mm</i> are to be subjected to non-destructive tests. Tests for other cases are to be as deemed appropriate by the Society, but sampling tests are to be conducted for at least 10% of the bellows.</p> <p>(3) Hydraulic tests are to be carried out at room</p> | <p>(Newly added)<br/>(Moved)</p> <p><b>Chapter 7 BELLOWS AND EXPANSION JOINTS</b><br/> <b>(For Fuel Piping and Process Piping Systems)</b></p> <p><b>7.3 Tests and Inspections</b></p> <p><b>7.3.2 Product Inspections</b><br/> <sup>1</sup> All bellows and expansion joints are to be subjected to the following tests and inspections during manufacturing:</p> <p>(1) Material tests are to be carried out in accordance with relevant requirements in <b>Table GF7.4, Part GF of the Rules and Part K of the Rules</b>. In cases where the provisions in 7.2.1-1 are applicable, however, submission of mill sheets may only be required.</p> <p>(2) Non-destructive tests are to be carried out for butt welded joints of bellows. 100 % of welded joints of the bellows whose design temperatures do not exceed <math>-10^{\circ}\text{C}</math>, or whose inside diameters exceed 75 <i>mm</i> are to be subjected to non-destructive tests. Test for other cases are to be as deemed appropriate by the Society, but sampling tests are to be conducted for at least 10% of the bellows.</p> <p>(3) Hydraulic tests are to be carried out at room</p> |         |

**Amended-Original Requirements Comparison Table (Clarification of the Application of Part GF and Part N)**

| Amended   | Original  | Remarks                                     |
|---|---|---|
| <p>temperature at test pressures 1.5 times design pressure.</p> <p>(4) Airtightness tests are to be carried out after completion of the tests specified in (2) above at design pressure.</p> <p>(Moved)</p> <p><b><u>7.3.3 Test after Installation On Board</u></b><br/> <u>All bellows and expansion joints are to be subjected to the tests specified in 16.7.3-3 and -5, Part GF of the Rules after installation on board.</u></p> <p align="center"><b>Chapter 8 INERT GAS<br/> GENERATOR/STORAGE SYSTEM AND LIQUID<br/> NITROGEN TANK</b></p> <p><b>8.2 Inert Gas Generators (IGG)</b></p> <p><b>8.2.5 Shop Tests and Inspections</b><br/> In general, inert gas generating systems, before being installed on board the ship, are to undergo test runs at the manufacturing plant.</p> <p>(Moved)</p> | <p>temperature at test pressures 1.5 times design pressure.</p> <p>(4) Airtightness tests are to be carried out after completion of the tests specified in (2) above at design pressure.</p> <p><b><u>2 All bellows and expansion joints are to be subjected to the tests specified in 16.7.3-3 and -5, Part GF of the Rules after installation on board ship.</u></b></p> <p>(Newly added)<br/> (Moved)</p> <p align="center"><b>Chapter 8 INERT GAS<br/> GENERATOR/STORAGE SYSTEM AND LIQUID<br/> NITROGEN TANK</b></p> <p><b>8.2 Inert Gas Generators (IGG)</b></p> <p><b>8.2.5 Tests and Inspection</b><br/> <b>1</b> In general, inert gas generating system, before being installed on board the ship, is to be made to a test run at the manufacturing plant.</p> <p><b><u>2 Inert gas generating system, after being installed in the ship, is to be subjected to the following tests (1) through (4):</u></b></p> <p>(1) <u>Airtightness test</u><br/> (2) <u>Performance test of the control system, safety system and alarm system</u><br/> (3) <u>Verification test of the rate of inert gas generation</u><br/> (4) <u>Combustion operation test</u></p> | <p>Moved to 7.3.3</p> <p>Moved to 8.2.6</p> |

**Amended-Original Requirements Comparison Table (Clarification of the Application of Part GF and Part N)**

| Amended   | Original  | Remarks  |
|---|---|--|
| <p><b><u>8.2.6 Test after Installation On Board</u></b><br/> <u>Inert gas generating systems are to be subjected to the following (1) through (4) tests after installation on board.</u></p> <p><u>(1) Airtightness test</u><br/> <u>(2) Performance tests of the control system, safety system and alarm system</u><br/> <u>(3) Verification test of the rate of inert gas generation</u><br/> <u>(4) Combustion operation test</u></p> <p><b>8.5 Tests and Inspections</b></p> <p><b>8.5.1 Tests and Inspections</b><br/>                     The inert gas storage system is to be subjected to the tests specified in 8.3.1-1 and -2, 8.4.1(1) and (2), and 8.4.8, in addition to the requirements in 8.2.5 <u>and 8.2.6</u> in a corresponding manner.</p> | <p><b>(Newly added)</b><br/> <b>(Moved)</b></p> <p><b>8.5 Tests and Inspection</b></p> <p><b>8.5.1 Tests and Inspection</b><br/>                     The inert gas storage system is to be subjected to the tests specified in 8.3.1-1 and -2, 8.4.1(1) and (2), and 8.4.8, and in addition to the requirements in 8.2.5 in a corresponding manner.</p> | <p>Correction of references due to addition of 8.2.6</p> |

**Amended-Original Requirements Comparison Table (Clarification of the Application of Part GF and Part N)**

| Amended   | Original  | Remarks   |     |           |                   |   |                              |  |   |                         |  |   |                         |  |   |           |                              |   |       |                  |   |                     |   |   |         |                                      |   |   |   |   |                   |                               |    |          |   |    |          |                    |    |                      |   |    |                         |                  |    |                                     |                             |    |   |   |
|---|---|---|-----|-----------|-------------------|---|------------------------------|--|---|-------------------------|--|---|-------------------------|--|---|-----------|------------------------------|---|-------|------------------|---|---------------------|---|---|---------|--------------------------------------|---|---|---|---|-------------------|-------------------------------|----|----------|---|----|----------|--------------------|----|----------------------|---|----|-------------------------|------------------|----|-------------------------------------|-----------------------------|----|---|---|
| <p><b>Chapter 12 INSULATION MATERIALS</b></p> <p><b>12.3 Tests and Inspections</b></p> <p><b>12.3.1 Tests and Inspections</b></p>   | <p><b>Chapter 12 INSULATION MATERIALS</b></p> <p><b>12.3 Tests and Inspection</b></p> <p><b>12.3.1 Tests and Inspection</b></p>   | <p>Reference standards updates</p>  |     |           |                   |   |                              |  |   |                         |  |   |                         |  |   |           |                              |   |       |                  |   |                     |   |   |         |                                      |   |   |   |   |                   |                               |    |          |   |    |          |                    |    |                      |   |    |                         |                  |    |                                     |                             |    |   |   |
| <p>Table 12.1 Test Items for Insulation Materials</p>   |   |   |     |           |                   |   |                              |  |   |                         |  |   |                         |  |   |           |                              |   |       |                  |   |                     |   |   |         |                                      |   |   |   |   |                   |                               |    |          |   |    |          |                    |    |                      |   |    |                         |                  |    |                                     |                             |    |   |   |
| <table border="1" style="width:100%; border-collapse: collapse;"> <thead> <tr> <th style="width:5%;">No.</th> <th style="width:25%;">Test item</th> <th style="width:70%;">Procedure of test</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>Compatibility with the cargo</td> <td>Tensile, compression, shearing, bending test after dipping in the cargo (<i>DIN 53428</i>)</td> </tr> <tr> <td>2</td> <td>Solubility in the cargo</td> <td>Changes in the size and weight of test specimen before and after dipping in the cargo (<i>DIN 53428</i>)</td> </tr> <tr> <td>3</td> <td>Absorption of the cargo</td> <td>Comparison of weight of test specimen or test of water absorbing properties before and after dipping in the cargo (<i>DIN 53428</i>)</td> </tr> <tr> <td>4</td> <td>Shrinkage</td> <td><i>ISO 2796, ASTM D 2126</i></td> </tr> <tr> <td>5</td> <td>Aging</td> <td><i>ASTM D756</i></td> </tr> <tr> <td>6</td> <td>Closed cell content</td> <td><i>ISO 4590, ASTM D2856, ASTM D6226</i></td> </tr> <tr> <td>7</td> <td>Density</td> <td><i>ISO 845, ISO 2781, ASTM D1622</i></td> </tr> <tr> <td>8</td> <td>Mechanical properties                             <ul style="list-style-type: none"> <li>• Bending strength</li> <li>• Compression strength</li> <li>• Tensile strength</li> <li>• Shearing strength</li> </ul> </td> <td> <i>ISO 1209, ASTM C 203, ASTM D790</i><br/> <i>ASTM D 695, ASTM D 1621</i><br/> <i>ISO 1926, EN 1607, ASTM D412, ASTM D638, ASTM D1623</i><br/> <i>ISO 1922, ASTM C 273</i> </td> </tr> <tr> <td>9</td> <td>Thermal expansion</td> <td><i>ASTM D 696, ASTM E 831</i></td> </tr> <tr> <td>10</td> <td>Abrasion</td> <td>—</td> </tr> <tr> <td>11</td> <td>Cohesion</td> <td><i>ASTM D 1623</i></td> </tr> <tr> <td>12</td> <td>Thermal conductivity</td> <td><i>ISO 8302, JIS A 1412, ASTM C 177, ASTM C 518</i></td> </tr> <tr> <td>13</td> <td>Resistance to vibration</td> <td><i>ISO 10055</i></td> </tr> <tr> <td>14</td> <td>Resistance to fire and flame spread</td> <td><i>JIS A 9511, DIN 4102</i></td> </tr> <tr> <td>15</td> <td>Resistance to fatigue failure and crack propagation</td> <td>—</td> </tr> </tbody> </table> |   |   | No. | Test item | Procedure of test | 1 | Compatibility with the cargo | Tensile, compression, shearing, bending test after dipping in the cargo ( <i>DIN 53428</i> ) | 2 | Solubility in the cargo | Changes in the size and weight of test specimen before and after dipping in the cargo ( <i>DIN 53428</i> ) | 3 | Absorption of the cargo | Comparison of weight of test specimen or test of water absorbing properties before and after dipping in the cargo ( <i>DIN 53428</i> ) | 4 | Shrinkage | <i>ISO 2796, ASTM D 2126</i> | 5 | Aging | <i>ASTM D756</i> | 6 | Closed cell content | <i>ISO 4590, ASTM D2856, ASTM D6226</i> | 7 | Density | <i>ISO 845, ISO 2781, ASTM D1622</i> | 8 | Mechanical properties <ul style="list-style-type: none"> <li>• Bending strength</li> <li>• Compression strength</li> <li>• Tensile strength</li> <li>• Shearing strength</li> </ul> | <i>ISO 1209, ASTM C 203, ASTM D790</i><br><i>ASTM D 695, ASTM D 1621</i><br><i>ISO 1926, EN 1607, ASTM D412, ASTM D638, ASTM D1623</i><br><i>ISO 1922, ASTM C 273</i> | 9 | Thermal expansion | <i>ASTM D 696, ASTM E 831</i> | 10 | Abrasion | — | 11 | Cohesion | <i>ASTM D 1623</i> | 12 | Thermal conductivity | <i>ISO 8302, JIS A 1412, ASTM C 177, ASTM C 518</i> | 13 | Resistance to vibration | <i>ISO 10055</i> | 14 | Resistance to fire and flame spread | <i>JIS A 9511, DIN 4102</i> | 15 | Resistance to fatigue failure and crack propagation | — |
| No.   | Test item   | Procedure of test   |     |           |                   |   |                              |  |   |                         |  |   |                         |  |   |           |                              |   |       |                  |   |                     |   |   |         |                                      |   |   |   |   |                   |                               |    |          |   |    |          |                    |    |                      |   |    |                         |                  |    |                                     |                             |    |   |   |
| 1   | Compatibility with the cargo  | Tensile, compression, shearing, bending test after dipping in the cargo ( <i>DIN 53428</i> )  |     |           |                   |   |                              |  |   |                         |  |   |                         |  |   |           |                              |   |       |                  |   |                     |   |   |         |                                      |   |   |   |   |                   |                               |    |          |   |    |          |                    |    |                      |   |    |                         |                  |    |                                     |                             |    |   |   |
| 2   | Solubility in the cargo   | Changes in the size and weight of test specimen before and after dipping in the cargo ( <i>DIN 53428</i> )  |     |           |                   |   |                              |  |   |                         |  |   |                         |  |   |           |                              |   |       |                  |   |                     |   |   |         |                                      |   |   |   |   |                   |                               |    |          |   |    |          |                    |    |                      |   |    |                         |                  |    |                                     |                             |    |   |   |
| 3   | Absorption of the cargo   | Comparison of weight of test specimen or test of water absorbing properties before and after dipping in the cargo ( <i>DIN 53428</i> )                                |     |           |                   |   |                              |  |   |                         |  |   |                         |  |   |           |                              |   |       |                  |   |                     |   |   |         |                                      |   |   |   |   |                   |                               |    |          |   |    |          |                    |    |                      |   |    |                         |                  |    |                                     |                             |    |   |   |
| 4   | Shrinkage   | <i>ISO 2796, ASTM D 2126</i>  |     |           |                   |   |                              |  |   |                         |  |   |                         |  |   |           |                              |   |       |                  |   |                     |   |   |         |                                      |   |   |   |   |                   |                               |    |          |   |    |          |                    |    |                      |   |    |                         |                  |    |                                     |                             |    |   |   |
| 5   | Aging   | <i>ASTM D756</i>  |     |           |                   |   |                              |  |   |                         |  |   |                         |  |   |           |                              |   |       |                  |   |                     |   |   |         |                                      |   |   |   |   |                   |                               |    |          |   |    |          |                    |    |                      |   |    |                         |                  |    |                                     |                             |    |   |   |
| 6   | Closed cell content   | <i>ISO 4590, ASTM D2856, ASTM D6226</i>   |     |           |                   |   |                              |  |   |                         |  |   |                         |  |   |           |                              |   |       |                  |   |                     |   |   |         |                                      |   |   |   |   |                   |                               |    |          |   |    |          |                    |    |                      |   |    |                         |                  |    |                                     |                             |    |   |   |
| 7   | Density   | <i>ISO 845, ISO 2781, ASTM D1622</i>  |     |           |                   |   |                              |  |   |                         |  |   |                         |  |   |           |                              |   |       |                  |   |                     |   |   |         |                                      |   |   |   |   |                   |                               |    |          |   |    |          |                    |    |                      |   |    |                         |                  |    |                                     |                             |    |   |   |
| 8   | Mechanical properties <ul style="list-style-type: none"> <li>• Bending strength</li> <li>• Compression strength</li> <li>• Tensile strength</li> <li>• Shearing strength</li> </ul> | <i>ISO 1209, ASTM C 203, ASTM D790</i><br><i>ASTM D 695, ASTM D 1621</i><br><i>ISO 1926, EN 1607, ASTM D412, ASTM D638, ASTM D1623</i><br><i>ISO 1922, ASTM C 273</i> |     |           |                   |   |                              |  |   |                         |  |   |                         |  |   |           |                              |   |       |                  |   |                     |   |   |         |                                      |   |   |   |   |                   |                               |    |          |   |    |          |                    |    |                      |   |    |                         |                  |    |                                     |                             |    |   |   |
| 9   | Thermal expansion   | <i>ASTM D 696, ASTM E 831</i>   |     |           |                   |   |                              |  |   |                         |  |   |                         |  |   |           |                              |   |       |                  |   |                     |   |   |         |                                      |   |   |   |   |                   |                               |    |          |   |    |          |                    |    |                      |   |    |                         |                  |    |                                     |                             |    |   |   |
| 10  | Abrasion  | —   |     |           |                   |   |                              |  |   |                         |  |   |                         |  |   |           |                              |   |       |                  |   |                     |   |   |         |                                      |   |   |   |   |                   |                               |    |          |   |    |          |                    |    |                      |   |    |                         |                  |    |                                     |                             |    |   |   |
| 11  | Cohesion  | <i>ASTM D 1623</i>  |     |           |                   |   |                              |  |   |                         |  |   |                         |  |   |           |                              |   |       |                  |   |                     |   |   |         |                                      |   |   |   |   |                   |                               |    |          |   |    |          |                    |    |                      |   |    |                         |                  |    |                                     |                             |    |   |   |
| 12  | Thermal conductivity  | <i>ISO 8302, JIS A 1412, ASTM C 177, ASTM C 518</i>   |     |           |                   |   |                              |  |   |                         |  |   |                         |  |   |           |                              |   |       |                  |   |                     |   |   |         |                                      |   |   |   |   |                   |                               |    |          |   |    |          |                    |    |                      |   |    |                         |                  |    |                                     |                             |    |   |   |
| 13  | Resistance to vibration   | <i>ISO 10055</i>  |     |           |                   |   |                              |  |   |                         |  |   |                         |  |   |           |                              |   |       |                  |   |                     |   |   |         |                                      |   |   |   |   |                   |                               |    |          |   |    |          |                    |    |                      |   |    |                         |                  |    |                                     |                             |    |   |   |
| 14  | Resistance to fire and flame spread   | <i>JIS A 9511, DIN 4102</i>   |     |           |                   |   |                              |  |   |                         |  |   |                         |  |   |           |                              |   |       |                  |   |                     |   |   |         |                                      |   |   |   |   |                   |                               |    |          |   |    |          |                    |    |                      |   |    |                         |                  |    |                                     |                             |    |   |   |
| 15  | Resistance to fatigue failure and crack propagation   | —   |     |           |                   |   |                              |  |   |                         |  |   |                         |  |   |           |                              |   |       |                  |   |                     |   |   |         |                                      |   |   |   |   |                   |                               |    |          |   |    |          |                    |    |                      |   |    |                         |                  |    |                                     |                             |    |   |   |
| <p>Note:</p> <p>Of those test items given above, necessary items are to be selected and tested depending on the insulation system. However, at least test items 4, 6 (for independent foam material only), 7, 8, 12 and 14 are to be dealt with for all the insulation systems. See GF6.4.13-1 to -4.</p>   |   |   |     |           |                   |   |                              |  |   |                         |  |   |                         |  |   |           |                              |   |       |                  |   |                     |   |   |         |                                      |   |   |   |   |                   |                               |    |          |   |    |          |                    |    |                      |   |    |                         |                  |    |                                     |                             |    |   |   |

Amended-Original Requirements Comparison Table (Clarification of the Application of Part GF and Part N)

| Amended  | Original  | Remarks   |
|--|---|---|
| <p align="center"><b>GUIDANCE FOR THE SURVEY AND CONSTRUCTION OF STEEL SHIPS</b></p> <p align="center"><b>Part N SHIPS CARRYING LIQUEFIED GASES IN BULK</b></p> <p align="center"><b>N4 CARGO CONTAINMENT</b></p> <p><b>N4.20 Construction Processes</b></p> <p><b>N4.20.3 Testing</b><br/>(-1 and -8 are omitted.)<br/><u>9</u> In cases where the tests specified in -4 are conducted after the completion of the Classification Survey in accordance with <b>2.1.7-9, Part B of the Rules</b>, the following <b>(1)</b> and <b>(2)</b> documents are to be “conditionally” issued at the time of delivery of the ship, subject to the satisfactory completion of all required testing, as applicable:</p> <p><u>(1) Survey Record</u><br/><u>(2) International Certificate of Fitness for the Carriage of Liquefied Gases in Bulk</u></p> | <p align="center"><b>GUIDANCE FOR THE SURVEY AND CONSTRUCTION OF STEEL SHIPS</b></p> <p align="center"><b>Part N SHIPS CARRYING LIQUEFIED GASES IN BULK</b></p> <p align="center"><b>N4 CARGO CONTAINMENT</b></p> <p><b>N4.20 Construction Processes</b></p> <p><b>N4.20.3 Testing</b><br/>(-1 and -8 are omitted.)<br/>(Newly added)</p> | <p>Stipulates the handling of certificates prescribed in MSC.1/Circ.1669.</p> |

Amended-Original Requirements Comparison Table (Clarification of the Application of Part GF and Part N)

| Amended  | Original  | Remarks   |
|--|---|---|
| <p><b>N6 MATERIALS OF CONSTRUCTION AND QUALITY CONTROL</b></p> <p><b>N6.4 Requirements for Metallic Materials</b></p> <p><b>N6.4.1 General Requirements for Metallic Materials</b><br/>(-1 to -4 are omitted.)</p> <p><b>5</b> For the purpose of the requirements in <b>6.4.1-1(6), Part N of the Rules</b>, the specifications of a certain type of material, if specified in <b>Part K of the Rules</b>, is to be in accordance with the relevant requirements in <b>Part K of the Rules</b>.</p> <p align="center"><b>N16 USE OF CARGO AS FUEL</b></p> <p><b><u>N16.4 Gas Fuel Supply (IGC Code 16.4)</u></b></p> <p><b><u>N16.4.5 Gas Consumer Isolation</u></b><br/><u>The wording “safe location” in 16.4.5, Part N of the Rules means an arrangement in accordance with N8.2.12.</u></p> | <p><b>N6 MATERIALS OF CONSTRUCTION AND QUALITY CONTROL</b></p> <p><b>N6.4 Requirements for Metallic Materials</b></p> <p><b>N6.4.1 General Requirements for Metallic Materials</b><br/>(-1 to -4 are omitted.)</p> <p><b>5</b> For the purpose of the requirements in <b>6.4.1(6), Part N of the Rules</b>, the specifications of a certain type of material, if specified in <b>Part K of the Rules</b>, is to be in accordance with the relevant requirements in <b>Part K of the Rules</b>.</p> <p align="center"><b>N16 USE OF CARGO AS FUEL</b></p> <p align="center"><b>(Newly added)</b></p> <p align="center"><b>(Newly added)</b><br/><b>(Newly added)</b></p> | <p>Correction of reference</p> <p>Clarified that the requirements for gas fuel pipe outlets are to be the same as those for cargo vent outlets.</p> |

**Amended-Original Requirements Comparison Table (Clarification of the Application of Part GF and Part N)**

| Amended   | Original  | Remarks   |
|---|---|---|
| <p align="center"><b>Annex 1 GUIDANCE FOR EQUIPMENT AND FITTINGS OF SHIPS CARRYING LIQUEFIED GASES IN BULK</b></p> <p align="center"><b>Chapter 1 GENERAL</b></p> <p><b>1.3 Tests</b></p> <p>(-1 and -2 are omitted.)</p> <p><b>3</b> The tests specified in the preceding -1 and -2 are to be conducted at the manufacturing plant, <u>unless specified separately</u>. However, when the Society deems appropriate at the request of the manufacturer, part or the whole of the test may be conducted after being installed on board the ship. To implement surveys of shop tests, in lieu of traditional ordinary surveys where the Surveyor is in attendance, the Society may approve survey methods which it considers to be able to obtain information equivalent to that obtained through traditional ordinary surveys.</p> <p align="center"><b>Chapter 2 CARGO COMPRESSORS</b></p> <p><b>2.6 Tests and Inspections</b></p> <p><b>2.6.2 Product Inspections</b><br/>(-1 and -2 are omitted.)<br/>(Moved)</p> <p>(Moved)</p> | <p align="center"><b>Annex 1 GUIDANCE FOR EQUIPMENT AND FITTINGS OF SHIPS CARRYING LIQUEFIED GASES IN BULK</b></p> <p align="center"><b>Chapter 1 GENERAL</b></p> <p><b>1.3 Tests</b></p> <p>(-1 and -2 are omitted.)</p> <p><b>3</b> The tests specified in the preceding -1 and -2 are to be conducted at the manufacturing plant. However, when the Society deems appropriate at the request of the manufacturer, part or the whole of the test may be conducted after being installed on board the ship. To implement surveys of shop tests, in lieu of traditional ordinary surveys where the Surveyor is in attendance, the Society may approve survey methods which it considers to be able to obtain information equivalent to that obtained through traditional ordinary surveys.</p> <p align="center"><b>Chapter 2 CARGO COMPRESSORS</b></p> <p><b>2.6 Tests and Inspection</b></p> <p><b>2.6.2 Product Inspections</b><br/>(-1 and -2 are omitted.)</p> <p><b>3</b> <u>The leak tests specified in 5.13.2-3, Part N of the Rules are to be carried out after installation on board ship.</u></p> <p><b>4</b> <u>Gas compressors are to be subjected to the service tests specified in 5.13.2-5, Part N of the Rules after</u></p> | <p>Moved to 2.6.3-1</p> <p>Moved to 2.6.3-2</p> |

**Amended-Original Requirements Comparison Table (Clarification of the Application of Part GF and Part N)**

| Amended   | Original  | Remarks   |
|---|---|---|
| <p><b><u>2.6.3 Test after Installation On Board</u></b><br/> <u>1 The leak tests specified in 5.13.2-3, Part N of the Rules are to be carried out after installation on board.</u><br/> <u>2 Gas compressors are to be subjected to the service tests specified in 5.13.2-5, Part N of the Rules after installation on board.</u></p> <p align="center"><b>Chapter 3 CARGO PUMPS</b></p> <p><b>3.6 Tests and Inspections</b></p> <p><b>3.6.2 Product Inspections</b><br/>                     (-1 and -2 are omitted.)<br/>                     (Moved)<br/><br/>                     (Moved)</p> <p><b><u>3.6.3 Test after Installation On Board</u></b><br/> <u>1 The leak tests specified in 5.13.2-3, Part N of the Rules are to be carried out after installation on board.</u><br/> <u>2 Pumps are to be subjected to the service tests specified in 5.13.2-5, Part N of the Rules after installation on board.</u></p> | <p><u>installation on board ship.</u></p> <p>(Newly added)<br/>                     (Moved)<br/><br/>                     (Moved)</p> <p align="center"><b>Chapter 3 CARGO PUMPS</b></p> <p><b>3.6 Tests and Inspection</b></p> <p><b>3.6.2 Product Inspections</b><br/>                     (-1 and -2 are omitted.)<br/> <u>3 The leak tests specified in 5.13.2-3, Part N of the Rules are to be carried out after installation on board ship.</u><br/> <u>4 Pumps are to be subjected to the service tests specified in 5.13.2-5, Part N of the Rules after installation on board ship.</u></p> <p>(Newly added)<br/>                     (Moved)<br/><br/>                     (Moved)</p> | <p>Moved to 3.6.3-1</p> <p>Moved to 3.6.3-2</p> |

Amended-Original Requirements Comparison Table (Clarification of the Application of Part GF and Part N)

| Amended   | Original   | Remarks                                     |
|---|--|---|
| <p align="center"><b>Chapter 4 HEAT EXCHANGERS</b></p> <p><b>4.3 Tests and Inspections</b></p> <p><b>4.3.2 Product Inspections</b><br/>(-1 and -2 are omitted.)<br/>(Moved)</p> <p><b>4.3.3 Test after Installation On Board</b><br/><u>Heat exchangers are to be subjected to service tests specified in N4.20.3-4 to -7 of the Guidance after installation on board.</u></p> <p align="center"><b>Chapter 5 VALVES</b></p> <p><b>5.3 Tests and Inspections</b></p> <p><b>5.3.2 Product Inspections</b><br/><b>1</b> (Omitted)<br/>(Moved)</p> <p><b>2</b> (Omitted)<br/><b>3</b> (Omitted)</p> <p><b>5.3.3 Test after Installation On Board</b><br/><u>Valves are to be subjected to service tests specified in 5.13.2-3 and 5.13.2-5, Part N of the Rules after installation on board.</u></p> | <p align="center"><b>Chapter 4 HEAT EXCHANGERS</b></p> <p><b>4.3 Tests and Inspection</b></p> <p><b>4.3.2 Product Inspection</b><br/>(-1 and -2 are omitted.)<br/><b>3</b> <u>Heat exchangers, after being installed in ships, are to be subjected to service tests in accordance with the requirements in N4.20.3-4 to -7 of the Guidance.</u></p> <p>(Newly added)<br/>(Moved)</p> <p align="center"><b>Chapter 5 VALVES</b></p> <p><b>5.3 Tests and Inspection</b></p> <p><b>5.3.2 Product Inspection</b><br/><b>1</b> (Omitted)<br/><b>2</b> <u>After assembled in the ship, valves are to be subjected to service test specified in 5.13.2-3 and 5.13.2-5, Part N of the Rules.</u></p> <p><b>3</b> (Omitted)<br/><b>4</b> (Omitted)</p> <p>(Newly added)<br/>(Moved)</p> | <p>Moved to 4.3.3</p> <p>Moved to 5.3.3</p> |

**Amended-Original Requirements Comparison Table (Clarification of the Application of Part GF and Part N)**

| Amended  | Original   | Remarks |
|--|--|---------|
| <p><b>Chapter 7 EXPANSION JOINTS (For Cargo Piping and Process Piping Systems)</b></p> <p><b>7.3 Tests and Inspections</b></p> <p><b>7.3.2 Product Tests</b><br/>                     All expansion joints are, at time of manufacture, to be subjected to the following tests and inspection:</p> <p>(1) Material test:<br/>                     To be in accordance with the requirements given in <b>Table N6.4, Part N of the Rules</b> and those specified in the relevant chapters of <b>Part K of the Rules</b>. However, in case where the provisions in <b>7.2.1-2</b> are relevant, submission of mill sheets may only be required.</p> <p>(2) Non-destructive tests for butt welded joints of bellows<br/>                     100% of the welded joints of the bellows with design temperatures not more than <math>-10^{\circ}\text{C}</math> that have inside diameters exceeding <i>75 mm</i> or wall thicknesses exceeding <i>10 mm</i> are to be subjected to non-destructive tests. However, for other cases, non-destructive tests are to be carried out at the discretion of the Society, but sampling tests are to be conducted for at least 10% of the bellows.</p> <p>(3) Hydraulic test:<br/>                     Hydraulic test is to be conducted at a test pressure of 1.5 times the design pressure at room temperature.</p> <p>(4) Airtightness test:<br/>                     After completion of the test specified in the preceding (2), airtightness test is to be conducted by applying the design pressure.</p> | <p><b>Chapter 7 EXPANSION JOINTS (For Cargo Piping and Process Piping Systems)</b></p> <p><b>7.3 Tests and Inspection</b></p> <p><b>7.3.2 Product Test</b><br/> <sup><b>1</b></sup> All expansion joints are, at time of manufacture, to be subjected to the following tests and inspection:</p> <p>(1) Material test:<br/>                     To be in accordance with the requirements given in <b>Table N6.4, Part N of the Rules</b> and those specified in the relevant Chapters of <b>Part K of the Rules</b>. However, in case where the provisions in <b>7.2.1-2</b> are relevant, submission of mill sheets may only be required.</p> <p>(2) Non-destructive tests for butt welded joints of bellows<br/>                     100 % of the welded joints of the bellows with design temperatures not more than <math>-10^{\circ}\text{C}</math> that have inside diameters exceeding <i>75 mm</i> or wall thicknesses exceeding <i>10 mm</i> are to be subjected to non-destructive tests. However, for other cases, non-destructive tests are to be carried out at the discretion of the Society, but sampling tests are to be conducted for at least 10 % of the bellows.</p> <p>(3) Hydraulic test:<br/>                     Hydraulic test is to be conducted at a test pressure of 1.5 times the design pressure at room temperature.</p> <p>(4) Airtightness test:<br/>                     After completion of the test specified in the preceding (2), airtightness test is to be conducted by applying the design pressure.</p> |         |

**Amended-Original Requirements Comparison Table (Clarification of the Application of Part GF and Part N)**

| Amended  | Original   | Remarks                                     |
|--|--|---|
| <p>(Moved)</p> <p><b><u>7.3.3 Test after Installation On Board</u></b><br/> <u>All expansion joints are to be subjected to the tests specified in 5.13.2-3 and -5, Part N of the Rules after installation on board.</u></p> <p align="center"><b>Chapter 8 INERT GAS<br/> GENERATOR/STORAGE SYSTEM AND LIQUID<br/> NITROGEN TANK</b></p> <p><b>8.2 Inert Gas Generators (IGG)</b></p> <p><b>8.2.5 Shop Tests and Inspections</b><br/> In general, inert gas generating systems, before being installed on board the ship, are to undergo test runs at the manufacturing plant.<br/> (Moved)</p> <p><b><u>8.2.6 Test after Installation On Board</u></b><br/> <u>Inert gas generating systems are to be subjected to the following (1) through (4) tests after installation on board.</u><br/> <u>(1) Airtightness test</u></p> | <p><b><u>2 All expansion joints are, after installed on board the ship, to be subjected to the tests specified in 5.13.2-3 and -5, Part N of the Rules.</u></b></p> <p>(Newly added)<br/> (Moved)</p> <p align="center"><b>Chapter 8 INERT GAS<br/> GENERATOR/STORAGE SYSTEM AND LIQUID<br/> NITROGEN TANK</b></p> <p><b>8.2 Inert Gas Generators (IGG)</b></p> <p><b>8.2.5 Tests and Inspection</b><br/> <b><u>1</u></b> In general, inert gas generating system, before being installed on board the ship, is to be made to a test run at the manufacturing plant.<br/> <b><u>2</u></b> <u>Inert gas generating system, after being installed in the ship, is to be subjected to the following tests (1) through (4):</u><br/> <u>(1) Airtightness test</u><br/> <u>(2) Performance test of the control system, safety system and alarm system</u><br/> <u>(3) Verification test of the rate of inert gas generation</u><br/> <u>(4) Combustion operation test</u></p> <p>(Newly added)<br/> (Moved)</p> | <p>Moved to 7.3.3</p> <p>Moved to 8.2.6</p> |

**Amended-Original Requirements Comparison Table (Clarification of the Application of Part GF and Part N)**

| Amended  | Original  | Remarks  |
|--|---|--|
| <p>(2) <u>Performance tests of the control system, safety system and alarm system</u></p> <p>(3) <u>Verification test of the rate of inert gas generation</u></p> <p>(4) <u>Combustion operation test</u></p> <p><b>8.5 Tests and Inspections</b></p> <p><b>8.5.1 Tests and Inspections</b><br/>                     The inert gas storage system is to be subjected to the tests specified in 8.3.1-1 and -2, 8.4.1(1) and (2), and 8.4.8, in addition to the requirements in 8.2.5 <u>and 8.2.6</u> in a corresponding manner.</p> <p><b>Chapter 12 INSULATION MATERIALS</b></p> <p><b>12.3 Tests and Inspections</b></p> <p><b>12.3.1 Tests and Inspections</b></p> | <p><b>8.5 Tests and Inspection</b></p> <p><b>8.5.1 Tests and Inspection</b><br/>                     The inert gas storage system is to be subjected to the tests specified in 8.3.1-1 and -2, 8.4.1(1) and (2), and 8.4.8, and in addition to the requirements in 8.2.5 in a corresponding manner.</p> <p><b>Chapter 12 INSULATION MATERIALS</b></p> <p><b>12.3 Tests and Inspection</b></p> <p><b>12.3.1 Tests and Inspection</b></p> | <p>Correction of references due to addition of 8.2.6</p> |

## Amended-Original Requirements Comparison Table (Clarification of the Application of Part GF and Part N)

| Amended  | Original   | Remarks                     |   |
|--|--|-----------------------------|---|
| <b>Table 12.1 Test Items for Insulation Materials</b>  |  | Reference standards updates |   |
| No.  | Test item  |                             | Procedure of test   |
| 1  | Compatibility with the cargo   |                             | Tensile, compression, shearing, bending test after dipping in the cargo ( <i>DIN 53428</i> )  |
| 2  | Solubility in the cargo  |                             | Changes in the size and weight of test specimen before and after dipping in the cargo ( <i>DIN 53428</i> )  |
| 3  | Absorption of the cargo  |                             | Comparison of weight of test specimen or test of water absorbing properties before and after dipping in the cargo ( <i>DIN 53428</i> )                                |
| 4  | Shrinkage  |                             | <i>ISO 2796, ASTM D 2126</i>  |
| 5  | Aging  |                             | <i>ASTM D756</i>  |
| 6  | Closed cell content  |                             | <i>ISO 4590, ASTM D2856, ASTM D6226</i>   |
| 7  | Density  |                             | <i>ISO 845, ISO 2781, ASTM D1622</i>  |
| 8  | Mechanical properties<br>• Bending strength<br>• Compression strength<br>• Tensile strength<br>• Shearing strength |                             | <i>ISO 1209, ASTM C 203, ASTM D790</i><br><i>ASTM D 695, ASTM D 1621</i><br><i>ISO 1926, EN 1607, ASTM D412, ASTM D638, ASTM D1623</i><br><i>ISO 1922, ASTM C 273</i> |
| 9  | Thermal expansion  |                             | <i>ASTM D696, ASTM E228, ASTM E831</i>  |
| 10   | Abrasion   |                             | —   |
| 11   | Cohesion   |                             | <i>ASTM D 1623</i>  |
| 12   | Thermal conductivity   |                             | <i>ISO 8302, JIS A 1412, ASTM C 177, ASTM C 518</i>   |
| 13   | Resistance to vibration  |                             | <i>ISO 10055</i>  |
| 14   | Resistance to fire and flame spread  | <i>JIS A 9511, DIN 4102</i> |   |
| 15   | Resistance to fatigue failure and crack propagation  | —                           |   |
| <p>Note:<br/>Of those test items given above, necessary items are to be selected and tested depending on the insulation system. However, at least test items 4, 6 (for independent foam material only), 7, 8, 12 and 14 are to be dealt with for all the insulation systems. See <b>N4.19.3-4 to -7 of the Guidance.</b></p> |  |                             |   |

Amended-Original Requirements Comparison Table (Clarification of the Application of Part GF and Part N)

| Amended  | Original  | Remarks |
|--|---|---------|
| <p align="center"><b>GUIDANCE FOR HIGH SPEED CRAFT</b></p> <p align="center"><b>Part 2 CLASS SURVEYS</b></p> <p align="center"><b>Chapter 1 GENERAL</b></p> <p><b>1.1 Surveys</b></p> <p><b>1.1.3 Occasional Surveys</b><br/>                     For the occasional surveys specified in 1.1.3(5), Part 2 of the Rules, the following is to be complied with:<br/>                     ((1) and (2) are omitted.)<br/>                     (3) Crafts Using Low-flashpoint Fuels<br/>                     ((a) to (c) are omitted.)<br/>                     (d) <u>For ships that fall under the following i) or ii), a survey is to be carried out to verify compliance with GF11.7.1, Part GF of the Guidance before using low-flashpoint fuels or undertaking to use different low-flashpoint fuels than specified:</u><br/>                     i) <u>ships which convert to using low-flashpoint fuels on or after 1 January 2026; or</u><br/>                     ii) <u>ships which, on or after 1 January 2026, undertake to use low-flashpoint fuels different from those which they were originally approved to use before 1 January 2026.</u></p> | <p align="center"><b>GUIDANCE FOR HIGH SPEED CRAFT</b></p> <p align="center"><b>Part 2 CLASS SURVEYS</b></p> <p align="center"><b>Chapter 1 GENERAL</b></p> <p><b>1.1 Surveys</b></p> <p><b>1.1.3 Occasional Surveys</b><br/>                     For the occasional surveys specified in 1.1.3(5), Part 2 of the Rules, the following is to be complied with:<br/>                     ((1) and (2) are omitted.)<br/>                     (3) Crafts Using Low-flashpoint Fuels<br/>                     ((a) to (c) are omitted.)<br/>                     (Newly added)</p> |         |

Amended-Original Requirements Comparison Table (Clarification of the Application of Part GF and Part N)

| Amended  | Original   | Remarks |
|--|--|---------|
| <p align="center"><b>GUIDANCE FOR THE SURVEY AND CONSTRUCTION OF PASSENGER SHIPS</b></p> <p align="center"><b>Part 2 CLASS SURVEY</b></p> <p align="center"><b>Chapter 1 GENERAL</b></p> <p><b>1.1 Surveys</b></p> <p><b>1.1.3 Intervals of Class Maintenance Surveys</b></p> <p><b>1</b> For the application of the requirements of 1.1.3-3, <b>Part 2 of the Rules</b>, in addition to the requirements specified in B1.1.3-3 (except for (22)), <b>Part B of the Guidance for the Survey and Construction of Steel Ships</b>, occasional surveys are to be in accordance with those specified in (1) to (7) below:</p> <p>((1) to (5) are omitted.)</p> <p>(6) Ships Using Low-flashpoint Fuels<br/>((a) to (c) are omitted.)</p> <p><u>(d) For ships that fall under the following i) or ii), a survey is to be carried out to verify compliance with 11.7.1, Part GF of the Guidance before using low-flashpoint fuels or undertaking to use different low-flashpoint fuels than specified:</u></p> <p>i) <u>ships which convert to using low-flashpoint fuels on or after 1 January 2026; or</u></p> <p>ii) <u>ships which, on or after 1 January 2026, undertake to use low-flashpoint fuels different from those which they were</u></p> | <p align="center"><b>GUIDANCE FOR THE SURVEY AND CONSTRUCTION OF PASSENGER SHIPS</b></p> <p align="center"><b>Part 2 CLASS SURVEY</b></p> <p align="center"><b>Chapter 1 GENERAL</b></p> <p><b>1.1 Surveys</b></p> <p><b>1.1.3 Intervals of Class Maintenance Surveys</b></p> <p><b>1</b> For the application of the requirements of 1.1.3-3, <b>Part 2 of the Rules</b>, in addition to the requirements specified in B1.1.3-3 (except for (22)), <b>Part B of the Guidance for the Survey and Construction of Steel Ships</b>, occasional surveys are to be in accordance with those specified in (1) to (7) below:</p> <p>((1) to (5) are omitted.)</p> <p>(6) Ships Using Low-flashpoint Fuels<br/>((a) to (c) are omitted.)<br/>(Newly added)</p> |         |

**Amended-Original Requirements Comparison Table (Clarification of the Application of Part GF and Part N)**

| Amended   | Original             | Remarks |
|---|----------------------|---------|
| <p align="center"><u>originally approved to use before 1 January 2026.</u></p> <p>(7) (Omitted)</p> | <p>(7) (Omitted)</p> |         |

Amended-Original Requirements Comparison Table (Clarification of the Application of Part GF and Part N)

| Amended   | Original   | Remarks |
|---|--|---------|
| <p align="center"><b>GUIDANCE FOR THE SURVEY AND CONSTRUCTION OF INLAND WATERWAY SHIPS</b></p> <p align="center"><b>Part 2 CLASS SURVEYS</b></p> <p align="center"><b>Chapter 1 GENERAL</b></p> <p><b>1.1 Surveys</b></p> <p><b>1.1.2 Class Maintenance Surveys</b><br/> <b>1</b> Modifications and changes that are subject to Occasional Surveys referred to in 1.1.2-2(3), <b>Part 2 of the Rules</b> are as specified in (1) through (5) below:<br/>                     ((1) to (4) are omitted.)<br/>                     (5) Ships Using Low-flashpoint Fuels<br/>                     ((a) to (c) are omitted.)<br/>                     (d) <u>For ships that fall under the following i) or ii), a survey is to be carried out to verify compliance with 11.7.1, Part GF of the Guidance before using low-flashpoint fuels or undertaking to use different low-flashpoint fuels than specified:</u><br/>                     i) <u>ships which convert to using low-flashpoint fuels on or after 1 January 2026; or</u><br/>                     ii) <u>ships which, on or after 1 January 2026, undertake to use low-flashpoint fuels different from those which they were originally approved to use before 1 January 2026.</u></p> | <p align="center"><b>GUIDANCE FOR THE SURVEY AND CONSTRUCTION OF INLAND WATERWAY SHIPS</b></p> <p align="center"><b>Part 2 CLASS SURVEYS</b></p> <p align="center"><b>Chapter 1 GENERAL</b></p> <p><b>1.1 Surveys</b></p> <p><b>1.1.2 Class Maintenance Surveys</b><br/> <b>1</b> Modifications and changes that are subject to Occasional Surveys referred to in 1.1.2-2(3), <b>Part 2 of the Rules</b> are as specified in (1) through (5) below:<br/>                     ((1) to (4) are omitted.)<br/>                     (5) Ships Using Low-flashpoint Fuels<br/>                     ((a) to (c) are omitted.)<br/>                     (Newly added)</p> |         |

**Amended-Original Requirements Comparison Table (Clarification of the Application of Part GF and Part N)**

| Amended   | Original | Remarks |
|---|----------|---------|
| The effective date of the amendment is according to EFFECTIVE DATE AND APPLICATION (A)  |          |         |
| <p align="center">EFFECTIVE DATE AND APPLICATION (A)</p> <p>1. The effective date of the amendments is 1 July 2025.</p> <p align="center">EFFECTIVE DATE AND APPLICATION (B)</p> <p>1. The effective date of the amendments is 1 July 2025.</p> <p>2. Notwithstanding the amendments, the current requirements apply to ships for which the date of contract for construction is before the effective date.</p> |          |         |