Review of Existing Requirements of Part GF and Part N (Equipment Related)

Object of Amendment

Guidance for the Survey and Construction of Steel Ships Part GF and N

Reason for Amendment

The Society has incorporated the International Code for the Construction and Equipment of Ships Carrying Liquefied Gases in Bulk (IGC Code) and the International Code of Safety for Ship Using Gases or Other Low-flashpoint Fuels (IGF Code) respectively into Part N and Part GF of its Rules for the Survey and Construction of Steel Ships.

Based on the experience gained through the application of Part GF and Part N of its Rules and Guidance, the Society decided to review those requirements about which inquiries have been often received from relevant industry members to determine whether they were in need of clarification.

Accordingly, relevant requirements in Part GF and Part N of the Guidance are amended for clarification purposes based on the results of the aforementioned review.

Outline of the Amendment

The main contents of this amendment are as follows.

(1) Moves requirements related to the testing of insulation materials and construction of liquefied gas tanks conducted at manufacturer factories to the annexes of Part GF and Part N of the Guidance.
(2) Moves requirements related to inert gas systems to the annexes of Part GF and Part N. In addition, specifies requirements related to inert gas bottles in Part GF of the Guidance based on relevant requirements in Part N.
(3) Specifies the conditions for which materials for fuel piping systems conforming to JIS or other standards can be used in Part GF of the Guidance based on relevant requirements in Part N.
(4) Specifies the test pressures for leak tests of fuel piping systems and pressure tests of double walled fuel pipes and ducts in Part GF of the Guidance based on relevant requirements in Part N.
(5) Clarifies that the term “design temperature” mentioned in the material requirements prescribed in Annex 1 of Part GF and Annex 1 of Part N of the Guidance (Guidance for Equipment and Fittings of Ships Using Low-flashpoint Fuels) refers to the design temperature of the piping systems in which said equipment is used, not the design temperature of said equipment.
(6) Clarifies that, regarding the requirements of materials of pipes provided inside and outside cargo tanks, excluding membrane and semi-membrane tanks, with design temperatures of −55 °C or higher, pipe fittings may also be made of materials conforming to *JIS* standards, etc. in Part N of the Guidance.
(7) Deletes the requirement in Part N of the Guidance that the distance, required by Part N of the Rules, between the vent outlet of the PRV of the cargo tanks and the openings of the accommodation should be measured horizontally.
(8) Clarifies that minimum distance requirement (10 *m*) between the vent outlet of the PRVs of the cargo tanks and the openings of the accommodation also applies to vent

outlets of PRVs and rupture disks of interbarrier spaces in Part N of the Guidance.

Effective Date and Application

Effective date of the amendment is 1 January 2026.

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

ID:DD25-04

Amended-Original Requirements Comparison Table
(Review of Existing Requirements of Part GF and Part N (Equipment Related))

Amended	Original	Remarks
GUIDANCE FOR THE SURVEY AND CONSTRUCTION OF STEEL SHIPS **Part GF SHIPS USING LOW-FLASHPOINT FUELS** **GF6 FUEL CONTAINMENT SYSTEM** **GF6.4 Liquefied Gas Fuel Containment** **GF6.4.13 Materials and Construction** **1** For the purpose of the requirements in **6.4.13-1(1)(a), Part GF of the Rules**, the calculation conditions in computing the temperature of hull structures are to be in accordance with the following **(1)** through **(4)**: (1) The loading condition of the ship for the calculation is to be full-loaded condition at the upright. (Omitted) **5** For the purpose of **6.4.13-3(2), Part GF of the Rules**, tests and inspections specified in the following **(1)** to **(3)** are to be carried out. (1) Insulation materials are to be approved in accordance with the **Annex 1** "**Guidance for Equipment and Fittings of Ships Using Low-flashpoint Fuels**" according to the type or member of the tank on which the insulation materials are used.	**GUIDANCE FOR THE SURVEY AND CONSTRUCTION OF STEEL SHIPS** **Part GF SHIPS USING LOW-FLASHPOINT FUELS** **GF6 FUEL CONTAINMENT SYSTEM** **GF6.4 Liquefied Gas Fuel Containment** **GF6.4.13 Materials and Construction** **1** For the purpose of the requirements in **6.4.13-1(1)(a), Part GF of the Rules**, the calculation conditions in computing the temperature of hull structures are to be in accordance with the following **(1)** through **(4)**: (1) The loading condition of the ship for the calculation is to be full-loaded condition at the upright. (Omitted) **5** For the purpose of the requirements in **6.4.13-3(2), Part GF of the Rules**, tests and inspection specified in the following **(1)** and **(2)** are to be carried out. (1) The insulation materials are to be approved in accordance with the **Annex 1** "**Guidance for Equipment and Fittings of Ships Using Low-flashpoint Fuels**". In the above, tests and inspection are to be conducted according to the procedures on the manufacture, storage, handling and product quality control established by the manufacturer.	(For reference) References 12.1.1-1 of Annex 1 Outline of Amendment (1) (1): Requirements for material manufacturer moved to 12.3.1 of Annex 1

Amended-Original Requirements Comparison Table
(Review of Existing Requirements of Part GF and Part N (Equipment Related))

Amended	Original	Remarks
(2) In the application of insulation materials for ships, detailed application procedures for each ship are to be submitted to the Society for approval.	(Newly added)	(2): Requirement for individual ships moved from 12.2.2 of Annex 1
(3) The inspection for insulation work is to include the following items of tests and inspections **(a)** to **(c)**: (a) Insulation procedure test (Omitted) (b) Insulation production test (Omitted) (c) Completion inspection (Omitted)	(2) The inspection for insulation work is to include the following items of tests and inspections **(a)** to **(c)**: (a) Insulation procedure test (Omitted) (b) Insulation production test (Omitted) (c) Completion inspection (Omitted)	
(Deleted)	**6** For the purpose of the requirements in **6.4.13-3(2), Part GF of the Rules**, the properties of insulation materials are, in general, to be verified by the tests given in **Table GF6.4.13-2**.	Moved to 12.3.1 of Annex 1
(Deleted)	**7** In addition to complying with the requirements in the preceding **-6**, property verification test may be requested by the Society depending on the insulation system.	Moved to 12.3.1 of Annex 1
(Deleted)	**8** If the material, which has been approved according to the **Annex 1 "Guidance for Equipment and Fittings of Ships Using Low-flashpoint Fuels"**, satisfies the performance requirements and such performance is considered to serve the purpose, the tests referred to in the preceding **-6** may be omitted.	Deleted due to duplication with the preceding -5
(Deleted)	**9** For insulation materials to which the requirements in the preceding **-6** to **-8** do not apply, the following requirements **(1)** and **(2)** are to be complied with: (1) For insulation materials used for supports of independent tanks, the requirements given in the column of membrane tank in **Table GF6.4.13-2** apply. (2) For insulation materials provided in fuel tanks to which no provision of insulation is required accord-	Moved to 12.3.1 of Annex 1

Amended	Original	Remarks
	ing to the requirements in **6.4.8, Part GF of the Rules**, data on the necessary properties of those specified in **6.4.13-3(2), Part GF of the Rules** depending on the insulation system is to be submitted to the Society.	
(Deleted)	Table GF6.4.13-2 Properties of Insulation Material for Fuel Tank Types (Omitted)	Moved to 12.3.1 of Annex 1
GF6.14 Inert Gas Production and Storage on Board	**GF6.14 Inert Gas Production and Storage on Board**	
GF6.14.1 Inert Gas Production and Storage on Board **1** For the purpose of **6.14.1-1, Part GF of the Rules**, inert gas systems are to comply with the following **(1)** through **(3)**. (1) Materials used in inert gas systems are to be suitable for their intended purpose. (2) Each system component of the inert gas systems, inert gas storage systems and liquid nitrogen storage tanks is to be approved in accordance with **Annex 1** "**Guidance for Equipment and Fittings of Ships Using Low-flashpoint Fuels**".	**GF6.14.1 Inert Gas Production and Storage on Board** **1** For the purpose of the requirements in **6.14.1-1, Part GF of the Rules**, inert gas systems are to comply with the following **(1)** through **(4)**. (1) Materials used in inert gas systems are to be suitable for their intended purpose. (2) Each system component of the inert gas systems using oil fired inert gas generators, inert gas storage systems and liquid nitrogen storage tanks is to be approved in accordance with the **Annex 1** "**GUIDANCE FOR SURVEY AND CONSTRUCTION OF EQUIPMENT AND FITTINGS OF SHIPS USING LOWFLASHPOINT FUELS**". Where the oil fired inert gas generator is fitted for the purposes of **6.11** and **6.12 of the Rules**, the requirements of **8.2.2-4**, **8.2.2-8**, **8.2.2-9**, **8.2.2-10**, **8.2.2-12** and	Outline of Amendment (2) Moved to 8.1.1 of Annex 1

Amended	Original	Remarks
(Deleted)	**8.2.3-2** of the **Annex 1** may not apply. (3) Inert gas systems using nitrogen generators are to comply with the following requirements in **(a)**. (a) **35.2.2-2(2)**, **35.2.2-2(4)**, **35.2.2-4(2)**, **35.2.2-4(3)**, **35.2.2-4(5)(a)**, (except **(a)iii)** through **v))**, **35.2.2-4(5)(d)**, **35.2.4(1)(c)**, **35.2.4(1)(d)**, **35.2.4(1)(f)**, **35.2.4(1)(g)**, **35.2.4(1)(h)**, **35.2.4(1)(i)**, **35.2.4(1)(j)**, **35.2.4(2)**, **Part R of the Rules** and the requirements of **8.2.2-11** in the **Annex 1** "**GUIDANCE FOR SURVEY AND CONSTRUCTION OF EQUIPMENT AND FITTINGS OF SHIPS USING LOW-FLASHPOINT FUELS**" are to apply.	
(Deleted)	(4) Inert gas systems using boiler flue gases are to comply with the requirements of **Chapter 35, Part R of the Rules** under the following conditions. (a) The requirements of **8.2.2-11** in the **Annex 1** "**GUIDANCE FOR SURVEY AND CONSTRUCTION OF EQUIPMENT AND FITTINGS FOR SHIPS USING LOW-FLASHPOINT FUELS**" may apply in place of the requirements of **35.2.3(1)(b)i)** and **ii)**, **Part R of the Rules**. (b) The requirements of **6.13.1**, **Part GF of the Rules** may apply in place of the requirements of **35.2.2-3(1)(a)** through **(i)**, **Part R of the Rules**. (c) The requirements of **35.2.2-4(5)(c)** and **35.2.3(2)(b)vii)**, **Part R of the Rules** may not apply. (d) Where the systems are fitted for the purposes of **6.11** and **6.12**, **Part GF of the Rules**, the re-	

Amended	Original	Remarks
	quirements of **4.5.3-4(2)**, **4.5.6-3**, **11.6.3-4**, **35.2.2-1(2)(d)**, **35.2.2-2(4)**, **35.2.2-3(2)**, (except **(d)**), **35.2.3(1)(c)i)** and **35.2.3(1)(d)i)**, **Part R of the Rules** may not apply, in addition to **(1)** to **(3)** above.	
(3) Where the inert gas is stored in inert gas bottles, the following **(a)** through **(d)** are to be complied with:	(Newly added) (For reference: N9.4.1(2)) (2) Where the inert gas is stored in inert gas bottles, the following requirements **(a)** through **(d)** are to be complied with:	(3): Adds requirements for inert gas bottles based on N9.4.1(2).
(a) The inert gas bottles and piping are to be dealt with according to the following **i)** and **ii)**:	(a) The inert gas bottles and piping are to be dealt with according to the following requirements **i)** to **iii)**:	
i) Materials satisfying standards deemed appropriate by the Society may be used.	i) The material of the piping may be to the requirements of the standard as deemed appropriate by the Society.	
	ii) The gas bottle may be to the requirements of the National Standards notwithstanding the requirements in **Chapter 10, Part D of the Rules**.	
ii) Hydraulic tests for pipes, valves and pipe fittings may be omitted.	iii) The hydraulic tests for pipes, valves and pipe fittings may be omitted.	
(b) The location of installation of the bottles is to be as given in **35.2.4(1)(h), Part R of the Rules**.	(b) The location of installation of the bottles is to be as given in the following **i)** and **ii)**:	
	i) The inert gas bottles are, as a rule, to be located in the storage room within the cargo area.	
	ii) The storage room of inert gas bottles is to be well ventilated so as not to allow leaked gas accumulate the room and be capable of being accessed from the exposed deck.	
(c) Inert gas storage containers are to be so arranged	(c) The inert gas storage containers are to be so ar-	

Amended	Original	Remarks
to be safe against ship motions and vibrations and are to be stored upright as far as practicable. (d) Piping systems, after assembly on board, are to be subjected to airtightness tests at a pressure 1.25 *times* the maximum working pressure or more and free flow tests at a suitable pressure. (For reference: 35.2.4(1)(h), Part R of the Rules) **35.2.4 Requirements for Nitrogen Generator Systems*** (1) System requirements (h) Where a nitrogen receiver or a buffer tank is installed, it may be installed in a dedicated compartment, in a separate compartment containing the air compressor and the generator, in the engine room, or in the cargo area. Where the nitrogen receiver or a buffer tank is installed in an enclosed space, the access is to be arranged only from the open deck and the access door is to open outwards. Adequate, independent mechanical ventilation, of the extraction type, is to be provided for such a compartment.	ranged to be safe against ship motions and vibrations, and are to be stored upright as far as practicable. (d) The piping system, after assembly on board, is to be subjected to airtightness test at a pressure 1.25 *times* the maximum working pressure or more, and free flow test at a suitable pressure.	

Amended	Original	Remarks
GF7 MATERIAL AND GENERAL PIPE DESIGN	**GF7 MATERIAL AND GENERAL PIPE DESIGN**	
GF7.4 Regulations for Materials	**GF7.4 Regulations for Materials**	
GF7.4.1 Metallic Materials	**GF7.4.1 Metallic Materials** (Newly added) (For reference: N5.12.1)	Outline of Amendment (3) Clarifies according to N5.12.1
1 For the purpose of **7.4.1, Part GF of the Rules**, the materials used for piping, valves and pipe fittings are to comply with relevant requirements in **Chapter 7, Part GF of the Rules** and relevant requirements in **Part K of the Rules**. However, for materials used for the piping specified in the following **(1)** to **(5)**, those conforming to *JIS* or other standards deemed appropriate by the Society may be used where they comply with **Chapter 7, Part GF of the Rules**.	**1** For the purpose of **5.12.1, Part N of the Rules**, the materials used for piping, valves and fittings are to comply with the relevant requirements in **Chapter 6, Part N of the Rules**, and at the same time, to conform to the relevant requirements in **Part K of the Rules**. However, for materials used for the piping specified in the following **(1)** to **(5)**, those conforming to *JIS* or other standards deemed appropriate by the Society may be used where they comply with the requirements in **Chapter 6, Part N of the Rules**.	Reference: 5.2, 6.2.1 and 7.2.1 of Annex 1
(1) Pipes, valves and pipe fittings used for cargo piping and process piping with design pressures not exceeding 1 *MPa* (refer to **7.3.3-2, Part GF of the Rules**) and design temperatures of 0 °C or more.	(1) Pipes, valves and pipe fittings used for cargo piping and process piping with design pressures not exceeding 1 *MPa* and design temperatures of 0℃ or more.	
(2) Valves and pipe fittings used for cargo piping and process piping with design pressures not exceeding 3 *MPa* and design temperatures of 0 °C or more as well as nominal diameters less than 100 *A*.	(2) Valves and pipe fittings used for cargo piping and process piping with design pressures not exceeding 3 *MPa* and design temperatures of 0℃ or more as well as nominal diameters less than 100 *A*.	
(3) Pipes, valves and pipe fittings used for accessory piping or instrumentation piping with diameters not exceeding 25 *mm* irrespective of design pressure and design temperature.	(3) Pipes, valves and pipe fittings used for accessory piping or instrumentation piping with diameters not exceeding 25 *mm* irrespective of design pressure and design temperature.	Outline of Amendment (6) (4): Clarifies that pipe fittings are included in (4)
(4) Open-ended pipes and pipe fittings provided inside and outside cargo tanks, excluding membrane and semi-membrane tanks, with design temperatures of	(4) Open-ended pipes provided inside and outside cargo tanks, excluding membrane and semi-membrane tanks, with design temperatures of -55℃ or higher.	

Amended	Original	Remarks
−55 °C or higher. (5) Pipe joints of a butt welded type and pipe joints of a slip-on sleeve welded type (such as elbows, reducers, tees, bends and sockets, etc.) for which hot forming or heat treatment is carried out during their manufacturing process in accordance with the requirements in **D12.6.1(1)(a)ii), Part D of the Guidance** on the condition that they receive approval of use from Society in accordance with **Chapter 12, Part 6 of the Guidance for the Approval and Type Approval of Materials and Equipment for Marine Use**.	(5) Pipe joints of a butt welded type and pipe joints of a slip-on sleeve welded type (such as elbows, reducers, tees, bends and sockets, etc.) for which hot forming or heat treatment is carried out during their manufacturing process in accordance with the requirements in **D12.6.1(1)(a)ii), Part D of the Guidance** on the condition that they receive approval of use from Society in accordance with **Chapter 12, Part 6 of the Guidance for the Approval and Type Approval of Materials and Equipment for Marine Use**.	
	(Newly added) (For reference: N5.12.1)	Outline of Amendment (3)
2 Notwithstanding **-1** above, piping having open ends not coming into contact with liquid cargoes led from the pressure relieving valves of cargo tanks and cargo piping or process piping with design temperatures of −55 °C or higher may not be made of steel used for the low temperature services specified in **Table GF7.4, Chapter 7, Part GF of the Rules**. Furthermore, piping material may be such as to comply with *JIS* or other standards deemed appropriate by the Society.	**2** Notwithstanding the requirements in the **-1** above, piping having open ends not coming into contact with the liquid cargo led from the pressure relieving valves of cargo tanks and cargo piping or process piping with design temperatures of -55℃ or higher may not be made of steel used for low temperature services specified in **Table N6.4**, **Chapter 6, Part N of the Rules**. Furthermore, piping material may be such as to comply with *JIS* or other standards deemed appropriate by the Society.	Clarifies according to N5.12.1
3 For the purpose of **Table GF7.1, Part GF of the Rules**, the following **(1)** to **(3)** are to be complied with: (1) (Omitted) (2) Fittings of type *C* independent tanks and process pressure vessels with the design pressure below 3 *MPa* and design temperature of 0 °C or more and nominal diameter less than 100 *mm*. (3) (Omitted)	**1** For the purpose of the requirements in **Table GF7.1**, **Part GF of the Rules**, the following requirements **(1)** to **(3)** are to be complied with: (1) (Omitted) (2) Fittings of Type *C* independent tanks and process pressure vessels with the design pressure not exceeding 3*MPa* and design temperature of 0°C or more and nominal diameter less than 100*A*. (3) (Omitted)	Correction Revises the unit of nominal diameter (A(JIS) to mm)

Amended-Original Requirements Comparison Table
(Review of Existing Requirements of Part GF and Part N (Equipment Related))

Amended	Original	Remarks
4 (Omitted) **5** (Omitted) **6** (Omitted) **7** (Omitted)	**2** (Omitted) **3** (Omitted) **4** (Omitted) **5** (Omitted)	
GF16 MANUFACTURE, WORKMANSHIP AND TESTING	**GF16 MANUFACTURE, WORKMANSHIP AND TESTING**	
GF16.7 Testing	**GF16.7 Testing**	
GF16.7.3 System Testing	**GF16.7.3 System Testing** (Newly added)	Outline of Amendment (4)
1 For the purpose of **16.7.3-3, Part GF of the Rules**, leak tests of piping systems are to be conducted at pressures which are 90 % of the design pressure of the piping. Test pressures, however, may be modified when the test is conducted using a liquid which has high leak detecting ability.	(For reference: N5.13.2) **1** For the purpose of **5.13.2-3, Part N of the Rules**, the leak test of piping systems are to be conducted at a pressure which are 90% of the design pressure of the piping. Test pressures, however, may be modified when the test is conducted using a liquid which has high leak detecting ability.	Clarifies according to N5.13.2-1
2 The wording "maximum pressure at pipe rupture" in **16.7.3-4, Part GF of the Rules** means the maximum pressure to which the outer pipe or duct is subjected after inner pipe rupture. For testing purposes, it is the same as the design pressure specified in **9.8.1** or **9.8.2, Part GF of the Rules**.	(Newly added) (For reference: N5.13.2) **2** The wording "maximum pressure at gas pipe rupture" specified in **5.13.2-4, Part N of the Rules** is the maximum pressure to which the outer pipe or duct is subjected after the inner pipe rupture. For testing purposes, it is the same as the design pressure specified in **5.4.4, Part N of the Rules**.	Outline of Amendment (4) Clarifies according to N5.13.2-2
3 In applying **16.7.3-7, Part GF of the Rules**, functional testing is to be carried out to confirm the closing time.	In applying **16.7.3-7, Part GF of the Rules**, functional testing is to be carried out to confirm the closing time.	

Amended	Original	Remarks
Annex 1 GUIDANCE FOR EQUIPMENT AND FITTINGS OF SHIPS USING LOW-FLASHPOINT FUELS	**Annex 1 GUIDANCE FOR EQUIPMENT AND FITTINGS OF SHIPS USING LOW-FLASHPOINT FUELS**	
Chapter 1 GENERAL	**Chapter 1 GENERAL**	Part GF
1.1 Application	**1.1 Application**	
3 In applying this guidance, the "design temperature" specified in **Chapter 2** to **Chapter 7** means the design temperature of the piping system in which the equipment is used.	(Newly added)	Outline of Amendment (5) Clarifies "design temperature"
Chapter 5 VALVES	**Chapter 5 VALVES**	Part GF
5.2 Materials, Construction and Strength	**5.2 Materials, Construction and Strength**	
1 Materials used for the main pressure-bearing parts of valves are to be in accordance with **GF7.4.1, Part GF of the Guidance**.	**1** Materials used for the main pressure-bearing parts of valves are to be in accordance with the following **(1)** and **(2)**: (1) Be ones in accordance with relevant requirements in **7.4, Part GF of the Rules** and **Part K of the Rules**; however, materials for the valves of the piping specified in the following **(a)** to **(c)** may be those which meet the *JIS* or other standards deemed appropriate by the Society, but only on the condition they satisfy the requirements in **7.4, Part GF of the Rules**. (a) Valves used for fuel piping and process piping whose design pressures do not exceed 1 *MPa* and whose design temperatures are 0°C or high-	Outline of Amendment (3) Refer to GF7.4.1

Amended	Original	Remarks
	er. (b) Valves used for fuel piping and process piping whose design pressures do not exceed 3 *MPa*, whose design temperatures are 0°C or higher and whose nominal diameters are less than 100 *A*. (c) Valves used for accessory piping or instrumentation piping whose diameters do not exceed 25 *mm* regardless of design pressure and design temperature. (2) Notwithstanding the requirements in **(1)** above, valves of piping having open ends which do not come in contact with the fuel liquids led from the pressure-relieving valves of fuel tanks and fuel piping or process piping whose design temperatures are -55°C or higher.	
2 (Omitted)	**2** (Omitted)	
Chapter 6 RELIEF VALVES	**Chapter 6 RELIEF VALVES**	Part GF
6.2 Materials, Construction and Strength	**6.2 Materials, Construction and Strength**	
6.2.1 Materials **1** Materials used for the main structural parts of relief valves whose design temperatures are not below 0 °C are to be in accordance with **GF7.4.1, Part GF of the Guidance**.	**6.2.1 Materials** **1** Materials used for the main structural parts of relief valves whose design temperatures are not below 0°C are to be in accordance with relevant requirements in **Part K of the Rules**. For the main structural parts of relief valves whose design pressures are less that 3 *MPa* and whose nominal diameters are less than 100 *A*, however, materials which satisfy the *JIS* or other standards deemed appropriate	Outline of Amendment (3) Refer to GF7.4.1

Amended	Original	Remarks
	by the Society may be used.	
Chapter 7 BELLOWS AND EXPANSION JOINTS (For Fuel Piping and Process Piping Systems)	**Chapter 7 BELLOWS AND EXPANSION JOINTS (For Fuel Piping and Process Piping Systems)**	Part GF
7.2 Materials, Construction and Strength	**7.2 Materials, Construction and Strength**	
7.2.1 Materials **2** Materials for the main structural parts of bellows and expansion joints whose design temperatures are not less than 0 °C are to be in accordance with **GF7.4.1, Part GF of the Guidance**.	**7.2.1 Materials** **2** Materials for the main structural parts of bellows and expansion joints whose design temperatures are not less than 0°C and which are specified in the following **(1)** or **(2)** may be those which meet the *JIS* or other standards deemed appropriate by the Society, but only on the condition that they satisfy the requirements in **Table GF7.4, Part GF of the Rules**. (1) Those used for fuel piping and process piping whose design pressures do not exceed 3 *MPa*, whose design temperatures are 0°C or higher and whose nominal diameters are less than 100 *A*. (2) Those used for accessory piping or instrumentation piping whose diameters do not exceed 25 *mm* regardless of design pressure and design temperature.	Outline of Amendment (3) Refer to GF7.4.1

Amended-Original Requirements Comparison Table
(Review of Existing Requirements of Part GF and Part N (Equipment Related))

Amended	Original	Remarks
Chapter 8 INERT GAS GENERATOR/STORAGE SYSTEM AND LIQUID NITROGEN TANK	**Chapter 8 INERT GAS GENERATOR/STORAGE SYSTEM AND LIQUID NITROGEN TANK**	Part GF
8.1 General	**8.1 General**	
8.1.1 Application	**8.1.1 Application**	Outline of Amendment (2)
1 The requirements in this Chapter apply to inert gas generator/storage system and liquid nitrogen tanks in accordance with the requirements in **1.1.3-1**, **Part GF of the Rules**.	**1** The requirements in this Chapter apply to inert gas generator/storage system and liquid nitrogen tanks in accordance with the requirements in **1.1.3-1**, **Part GF of the Rules**.	
	(Newly added)	Moved from GF6 (Refer to GF6.14.1)
	(For reference GF6.14.1-1)	
2 Where inert gas systems using oil fired inert gas generator are fitted for the purposes of **6.11** and **6.12 of the Rules**, the requirements of **8.2.2-4**, **8.2.2-8**, **8.2.2-9**, **8.2.2-10**, **8.2.2-12** and **8.2.3-2** of this annex need not be applied.	(2) (Omitted) Where the oil fired inert gas generator is fitted for the purposes of **6.11** and **6.12 of the Rules**, the requirements of **8.2.2-4**, **8.2.2-8**, **8.2.2-9**, **8.2.2-10**, **8.2.2-12** and **8.2.3-2** of the **Annex 1** may not apply.	
	(Newly added)	Moved from GF6 Refer GF6.14.1
	(For reference GF6.14.1-1)	
3 Inert gas systems using nitrogen generators are to comply with **35.2.2-2(2)**, **35.2.2-2(4)**, **35.2.2-4(2)**, **35.2.2-4(3)**, **35.2.2-4(5)(a)**, (except **(a)iii)** through **v))**, **35.2.2-4(5)(d)**, **35.2.4(1)(c)**, **35.2.4(1)(d)** (except **35.2.2-1(2)(d)**), **35.2.4(1)(f)**, **35.2.4(1)(g)**, **35.2.4(1)(h)**, **35.2.4(1)(i)**, **35.2.4(1)(j)** and **35.2.4(2)**, **Part R of the Rules** and **8.2.2-11** in the **Annex 1** "**Guidance for Equipment and Fittings of Ships Using Low-flashpoint Fuels**".	(3) Inert gas systems using nitrogen generators are to comply with the following requirements in **(a)**. (a) **35.2.2-2(2)**, **35.2.2-2(4)**, **35.2.2-4(2)**, **35.2.2-4(3)**, **35.2.2-4(5)(a)**, (except **(a)iii)** through **v))**, **35.2.2-4(5)(d)**, **35.2.4(1)(c)**, **35.2.4(1)(d)**, **35.2.4(1)(f)**, **35.2.4(1)(g)**, **35.2.4(1)(h)**, **35.2.4(1)(i)**, **35.2.4(1)(j)**, **35.2.4(2)**, **Part R of the Rules** and the requirements of **8.2.2-11** in the **Annex 1** "**GUIDANCE FOR SURVEY AND CONSTRUCTION OF**	

Amended	Original	Remarks
	EQUIPMENT AND FITTINGS OF SHIPS USING LOW-FLASHPOINT FUELS" are to apply.	
4 Inert gas systems using boiler flue gases are to comply with **Chapter 35, Part R of the Rules** under the following conditions. (1) The requirements of **8.2.2-11** in the **Annex 1** "**Guidance for Equipment and Fittings of Ships Using Low-flashpoint Fuels**" may be applied in place of **35.2.3(1)(b)i)** and **ii), Part R of the Rules**. (2) The requirements of **6.13.1, Part GF of the Rules** may be applied in place of **35.2.2-3(1)(a)** through **(i), Part R of the Rules**. (3) The requirements of **35.2.2-4(5)(c)** and **35.2.3(2)(b)vii), Part R of the Rules** need not be applied. (4) Where systems are fitted for the purposes of **6.11** and **6.12, Part GF of the Rules, 4.5.3-4(2), 4.5.6-3, 11.6.3-4, 35.2.2-1(2)(d), 35.2.2-2(4), 35.2.2-3(2),** (except **(d)**), **35.2.3(1)(c)i)** and **35.2.3(1)(d)i), Part R of the Rules** need not be applied in addition to **(1)** to **(3)** above.	**2** The requirements in this Chapter do not apply to the inert gas generating system utilizing the exhaust gas from boilers and the system of generating nitrogen gas by separating from the atmospheric air. These systems are to be deemed appropriate by the Society.	Moved from GF6 Refer to GF6.14.1
5 (Omitted)	**3** (Omitted)	
Chapter 12 INSULATION MATERIALS	**Chapter 12 INSULATION MATERIALS**	Part GF
12.1 General	**12.1 General**	
12.1.1 Application **1** The requirements in this Chapter apply to the insula-	**12.1.1 Application** **1** The requirements in this Chapter apply to the insula-	Outline of Amendment (1) Correction of reference

Amended	Original	Remarks
tion materials used in fuel containment systems in accordance with **1.1.3-1, Part GF of the Rules** or **GF6.4.13-5(1) of the Guidance**. **2** For the insulation materials applied to the fuel piping systems, the requirements in this Chapter are to apply correspondingly.	tion materials used in the fuel containment systems in accordance with the requirements in **1.1.3-1**, **Part GF of the Rules** or **GF6.4.13-1(1) of the Guidance**. **2** For the insulation materials applied to the fuel piping systems, the requirements in this Chapter are to apply correspondingly.	Refer to GF6.4.13
12.2 Insulation Application Procedures	**12.2 Insulation Application Procedures**	
12.2.1 General For the approval application of insulation materials, in addition to those general procedures, all precautions at time of application and test items are to be specified.	**12.2.1 General** **1** For the approval application of insulation materials, in addition to those general procedures, all precautions at time of application and test items are to be specified.	
(Deleted)	**2** In the application of insulation materials in each ship, detailed application procedures for each ship are to be submitted to the Society for approval.	Moves to GF6 Refer GF6.4.13
12.3 Tests and Inspections	**12.3 Tests and Inspections**	
12.3.1 Tests and Inspections	**12.3.1 Tests and Inspections** (Newly added)	Moved from GF6
	(For reference: GF6.4.13-5) (1) (Omitted) In the above, tests and inspection are to be conducted according to the procedures on the manufacture, storage, handling and product quality control established by the manufacturer.	Refer to GF6.4.13
1 Tests and inspections are to be conducted according to procedures on manufacture, storage, handling and product quality control established by manufacturers. **2** By using the test specimens taken with due regard paid to the actual application procedures, tests to verify the test items given in **Table 12.1** are to be conducted by the	By using the test specimens taken with due regard paid to the actual application procedures, tests to verify the test items given in **Table 12.1** are to be conducted by the	

Amended	Original	Remarks
test procedure as specified in the same table or suitable other procedure as approved by the Society, and it is to be verified that the specifications and physical properties established by the manufacturer are complied with.	test procedure as specified in the same Table or suitable other procedure as approved by the Society, and it is to be verified that the specifications and physical properties established by the manufacturer are complied with.	
	(Newly added)	Moved from GF6
	(For reference: GF6.4.13)	
3 The properties of insulation materials are, in principle, to be verified by the tests given in **Table 12.2**.	**6** For the purpose of the requirements in **6.4.13-3(2), Part GF of the Rules**, the properties of insulation materials are, in general, to be verified by the tests given in **Table GF6.4.13-2**.	Refer to GF6.4.13
	(Newly added)	Moved from GF6
	(For reference: GF6.4.13)	
4 In addition to complying with the preceding **-3**, property verification tests may be requested by the Society depending on the type of insulation system.	**7** In addition to complying with the requirements in the preceding **-6**, property verification test may be requested by the Society depending on the insulation system.	Refer to GF6.4.13
	(Newly added)	Moved from GF6
	(For reference: GF6.4.13)	
5 For insulation materials to which **Table 12.2** does not apply, the following **(1)** and **(2)** are to be complied with:	**9** For insulation materials to which the requirements in the preceding **-6** to **-8** do not apply, the following requirements **(1)** and **(2)** are to be complied with:	Refer to GF6.4.13
(1) For insulation materials used for supports of independent tanks, the column for membrane tanks in **Table 12.2** applies.	(1) For insulation materials used for supports of independent tanks, the requirements given in the column of membrane tank in **Table GF6.4.13-2** apply.	
(2) For insulation materials provided for fuel tanks to which no insulation is required according to **6.4.8, Part GF of the Rules**, data on the necessary properties of those materials in **6.4.13-3(2), Part GF of the Rules** (depending on the type of insulation system) is to be submitted to the Society.	(2) For insulation materials provided in fuel tanks to which no provision of insulation is required according to the requirements in **6.4.8, Part GF of the Rules**, data on the necessary properties of those specified in **6.4.13-3(2), Part GF of the Rules** depending on the insulation system is to be submitted to the Society.	

Amended-Original Requirements Comparison Table
(Review of Existing Requirements of Part GF and Part N (Equipment Related))

Amended	Original	Remarks

Table 12.1 Test Items for Insulation Materials

No.	Test item	~~Procedure of test~~Test procedure
1	Compatibility with the cargo	Tensile, compression, shearing, bending test after dipping in the cargo (*DIN 53428*)
2	Solubility in the cargo	Changes in the size and weight of test specimen before and after dipping in the cargo (*DIN 53428*)
3	Absorption of the cargo	Comparison of weight of test specimen or test of water absorbing properties before and after dipping in the cargo (*DIN 53428*)
4	Shrinkage	*ISO 2796, ASTM D 2126*
5	Aging	*ASTM D756*
6	Closed cell content	*ISO 4590, ASTM D*2856, *ASTM D*6226
7	Density	*ISO 845, ISO* 2781, *ASTM D*1622
8	Mechanical properties ・Bending strength ・Compression strength ・Tensile strength ・Shearing strength	 *ISO 1209, ASTM C 203, ASTM D790* *ASTM D 695, ASTM D 1621* *ISO* 1926, *EN* 1607, *ASTM D412, ASTM D*638, *ASTM D*1623 *ISO 1922, ASTM C 273*
9	Thermal expansion	*ASTM D 696, ASTM E 831*
10	Abrasion	—
11	Cohesion	*ASTM D 1623*
12	Thermal conductivity	*ISO 8302, JIS A 1412, ASTM C 177, ASTM C 518*
13	Resistance to vibration	*ISO 10055*
14	Resistance to fire and flame spread	*JIS A 9511, DIN 4102*
15	Resistance to fatigue failure and crack propagation	—

Note:
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 ~~CF6.4.13-1~~12.3.1.3 to -~~4~~5.

Amended	Original	Remarks
Table 12.2 Properties of Insulation Material for Fuel Tank Types		(Newly added) Moved from GF6 Refer to GF6.4.13

No.	Verified items		Membrane tank	Type *A* or *B* independent tank	Type *C* independent tank	Note
1	Compatibility with the fuel		○[1)]	○[1)]		
2	Solubility in the fuel		○[1)]	○[1)]		
3	Absorption of the fuel		○[1)]	○[1)]		
4	Shrinkage		○[1)]	○[1)]		
5	Ageing		○	○[1)]	□	
6	Closed cell content		△	△	△	Applies only to closed cell materials
7	Density		○	○	○	
8	Mechanical properties	Bending strength	○	○	○	
		Compress strength	○			
		Tensile strength	○	○	○	
		Shearing strength	○			
9	Thermal expansion		○	○[2)]	○[2)]	
10	Abrasion		○			
11	Cohesion		△	△[1)]	□	Applies to cohered material
12	Thermal conductivity		○	○	○	
13	Resistance to vibration		△	△[1)]		Refer to **6.4.13-3(7), Part GF of the Rules**
14	Resistance to fire and flame spread		○	○	○	
15	Resistance to fatigue failure		○			
16	Resistance to crack propagation		△			

Amended	Original	Remarks
Symbols ○: Items to be verified through verification test for properties. △: Items to be verified through verification test where deemed necessary depending on the insulation material. □: Items for which preparation of data on the properties is desirable. Notes: 1) Necessary when the insulation material acts as the spray shield specified in **6.4.5-1, Part GF of the Rules**. In other cases, data on the properties is to be prepared. 2) Not generally required for fuel tanks where the design temperature exceeds −10 °C.		

Amended	Original	Remarks
GUIDANCE FOR THE SURVEY AND CONSTRUCTION OF STEEL SHIPS	**GUIDANCE FOR THE SURVEY AND CONSTRUCTION OF STEEL SHIPS**	
Part N SHIPS CARRYING LIQUEFIED GASES IN BULK	**Part N SHIPS CARRYING LIQUEFIED GASES IN BULK**	
N4 CARGO CONTAINMENT	**N4 CARGO CONTAINMENT**	
N4.19 Materials	**N4.19 Materials**	
N4.19.3 Thermal Insulation and Other Materials Used in Cargo Containment Systems	**N4.19.3 Thermal Insulation and Other Materials Used in Cargo Containment Systems**	
3 For the purpose of **4.19.3-2, Part N of the Rules**, tests and inspections specified in the following **(1)** to **(3)** are to be carried out.	**3** For the purpose of the requirements in **4.19.3-2, Part N of the Rules**, tests and inspection specified in the following **(1)** and **(2)** are to be carried out.	Outline of Amendment (1)
(1) The insulation materials are to be approved in accordance with the **Annex 1** "**Guidance for Survey and Construction of Equipment and Fittings for Ships Carrying Liquefied Gases in Bulk**" according to the type or member of tank on which the insulation materials are applied.	(1) The insulation materials are to be approved in accordance with the **Annex 1** "GUIDANCE FOR EQUIPMENT AND FITTINGS OF SHIPS CARRYING LIQUEFIED GASES IN BULK". In the above, tests and inspection are to be conducted according to the procedures on the manufacture, storage, handling and product quality control established by the manufacturer.	(1): Requirements for material manufacturer moved to 12.3.1 of Annex 1
(2) In the application of insulation materials for ships, detailed application procedures for each ship are to be submitted to the Society for approval.	(Newly added)	(2): Requirement for individual ships moved from 12.2.2 of Annex 1
(3) The inspection for insulation work is to include the following **(a)** to **(c)**:	(2) The inspection for insulation work is to include the following items of tests and inspections **(a)** to **(c)**:	

Amended-Original Requirements Comparison Table
(Review of Existing Requirements of Part GF and Part N (Equipment Related))

Amended	Original	Remarks
(a) Insulation procedure test (Omitted) (b) Insulation production test (Omitted) (c) Completion inspection (Omitted)	(a) Insulation procedure test (Omitted) (b) Insulation production test (Omitted) (c) Completion inspection (Omitted)	
(Deleted)	**4** For the purpose of the requirements in **4.19.3-2, Part N of the Rules**, the properties of insulation materials are, in general, to be verified by the tests given in **Table N4.19.3**.	Moved to 12.3.1 of Annex 1
(Deleted)	**5** In addition to complying with the requirements in the preceding **-4**, property verification test may be requested by the Society depending on the insulation system.	Moved to 12.3.1 of Annex 1
(Deleted)	**6** If the material, which has been approved according to the **Annex 1 "GUIDANCE FOR EQUIPMENT AND FITTINGS OF SHIPS CARRYING LIQUEFIED GASES IN BULK"**, satisfies the performance requirements and such performance is considered to serve the purpose, the tests referred to in the preceding **-4** may be omitted.	Deleted due to duplication with the preceding -3
(Deleted)	**7** For insulation materials to which the requirements in the preceding **-4** to **-6** do not apply, the following requirements **(1)** and **(2)** are to be complied with: (1) For insulation materials used for supports of independent tanks, the requirements given in the column of membrane tank and semi-membrane tank in **Table N4.19.3** apply. (2) For insulation materials provided in cargo tanks to which no provision of insulation is required according to the requirements in **4.10.1, Part N of the Rules**, data on the necessary properties of those specified in **4.19.3-2, Part N of the Rules** depending on the insulation system is to be submitted to the Society.	Moved to 12.3.1 of Annex 1

Amended-Original Requirements Comparison Table
(Review of Existing Requirements of Part GF and Part N (Equipment Related))

Amended	Original	Remarks
(Deleted)	Table N4.19.3 Properties of Insulation Material for Cargo Tank Types (Omitted)	Moved to 12.3.1 of Annex 1
N5 PROCESS PRESSURE VESSELS AND LIQUID, VAPOUR, AND PRESSURE PIPING SYSTEMS	**N5 PROCESS PRESSURE VESSELS AND LIQUID, VAPOUR, AND PRESSURE PIPING SYSTEMS**	
N5.12 Materials	**N5.12 Materials**	
N5.12.1 Materials **1** For the purpose of **5.12.1, Part N of the Rules**, the materials used for piping, valves and pipe fittings are to comply with the relevant requirements in **Chapter 6, Part N of the Rules**, and at the same time, to conform to the relevant requirements in Part K of the Rules. However, for materials used for the piping specified in the following **(1)** to **(5)**, those conforming to JIS or other standards deemed appropriate by the Society may be used where they comply with the requirements in **Chapter 6, Part N of the Rules**. (1) Pipes, valves and pipe fittings used for cargo piping and process piping with design pressures not exceeding 1 *MPa* (refer to **5.4.1, Part N of the Rules**) and design temperatures of 0 ℃ or more. (2) Valves and pipe fittings used for cargo piping and process piping with design pressures below 3 *MPa* and design temperatures of 0 ℃ or more as well as nominal diameters less than 100 *mm*. (3) (Omitted)	**N5.12.1 Materials** **1** For the purpose of **5.12.1, Part N of the Rules**, the materials used for piping, valves and pipe fittings are to comply with the relevant requirements in **Chapter 6, Part N of the Rules**, and at the same time, to conform to the relevant requirements in Part K of the Rules. However, for materials used for the piping specified in the following **(1)** to **(5)**, those conforming to JIS or other standards deemed appropriate by the Society may be used where they comply with the requirements in **Chapter 6, Part N of the Rules**. (1) Pipes, valves and pipe fittings used for cargo piping and process piping with design pressures not exceeding 1 *MPa* and design temperatures of 0℃ or more. (2) Valves and pipe fittings used for cargo piping and process piping with design pressures not exceeding 3 *MPa* and design temperatures of 0℃ or more as well as nominal diameters less than 100 *A*. (3) (Omitted)	Correction Revises the unit of nominal diameter (A(JIS) to mm) Outline of Amendment (6) (4): Clarifies that pipe

Amended-Original Requirements Comparison Table
(Review of Existing Requirements of Part GF and Part N (Equipment Related))

Amended	Original	Remarks
(4) Open-ended pipes and pipe fittings provided inside and outside cargo tanks, excluding membrane and semi-membrane tanks, with design temperatures of -55 ℃ or higher. (5) (Omitted)	(4) Open-ended pipes provided inside and outside cargo tanks, excluding membrane and semi-membrane tanks, with design temperatures of -55℃ or higher. (5) (Omitted)	fittings are included in (4)
N6 MATERIALS OF CONSTRUCTION AND QUALITY CONTROL	**N6 MATERIALS OF CONSTRUCTION AND QUALITY CONTROL**	
N6.4 Requirements for Metallic Materials	**N6.4 Requirements for Metallic Materials**	
N6.4.1 General Requirements for Metallic Materials **1** For the purpose of the requirements in **Table N6.1, Part N of the Rules**, the following **(1)** to **(3)** are to be complied with: (1) (Omitted) (2) Fittings of type *C* independent tanks and process pressure vessels with the design pressure below 3 *MPa* and design temperature of 0 °C or more and nominal diameter less than 100 *mm*. (3) (Omitted)	**N6.4.1 General Requirements for Metallic Materials** **1** For the purpose of the requirements in **Table N6.1, Part N of the Rules**, the following requirements **(1)** to **(3)** are to be complied with: (1) (Omitted) (2) Fittings of Type *C* independent tanks and process pressure vessels with the design pressure not exceeding 3 *MPa* and design temperature of 0°C or more and nominal diameter less than 100*A*. (3) (Omitted)	Correction Revises the unit of nominal diameter (A(JIS) to mm)

Amended-Original Requirements Comparison Table
(Review of Existing Requirements of Part GF and Part N (Equipment Related))

Amended	Original	Remarks
N8 CARGO TANK VENT SYSTEMS	**N8 CARGO TANK VENT SYSTEMS**	
N8.2 Pressure Relief Systems	**N8.2 Pressure Relief Systems**	
N8.2.11 Arrangement of Vent Outlets (Deleted)	**N8.2.11 Arrangement of Vent Outlets** For the purpose of the requirements in **8.2.11, Part N of the Rules**, the distance to the vent outlet is to be measured horizontally.	Outline of Amendment (7) Deleted in consideration of industry practice
Arrangements of vent outlets from *PRV* and rupture disks for interbarrier spaces are to be in accordance with **8.2.11-2, Part N of the Rules**.	(Newly added)	Outline of Amendment (8)
N8.2.12 Arrangement of All Other Cargo Vent Outlets For the purpose of **8.2.12, Part N of the Rules**, outlets from the gas fuel piping specified in **16.4.5, Part N of the Rules** are to be in accordance with **8.2.10** and **8.2.11, Part N of the Rules**.	**N8.2.12 Arrangement of All Other Cargo Vent Outlets** For the purpose of the requirements in **8.2.12, Part N of the Rules**, the arrangements of other cargo vent piping is to be in accordance with following requirements **(1)** and **(2)**:	Outline of Amendment (8)
(Deleted)	(1) Outlets from the gas fuel piping specified in **16.4.5, Part N of the Rules** are to be in accordance with the requirements in **8.2.10** and **8.2.11, Part N of the Rules**. (a) The vent outlets of *PRV* or rupture disc of interbarrier spaces of type *A* independent tank. However, when both *PRV* and rupture disc are provided in combination, only the vent discharge outlet for the *PRV* may be applied. (b) Vent outlet from the gas fuel piping specified in **16.4.5, Part N of the Rules**. (2) Vent outlets from *PRV*s or rupture discs of interbarrier spaces are to be installed in gas dangerous zones.	

Amended-Original Requirements Comparison Table
(Review of Existing Requirements of Part GF and Part N (Equipment Related))

Amended	Original	Remarks
N9 CARGO CONTAINMENT SYSTEM ATMOSPHERE CONTROL	**N9 CARGO CONTAINMENT SYSTEM ATMOSPHERE CONTROL**	
N9.4 Inerting	**N9.4 Inerting**	
N9.4.1 Properties of Inert Gas and Its Supply For the purpose of **9.4.1, Part N of the Rules**, the following **(1)** through **(4)** are to be complied with: (1) (Omitted) (2) Where the inert gas is stored in inert gas bottles, the following **(a)** through **(d)** are to be complied with: (a) The inert gas bottles and piping are to be dealt with according to the following **i)** and **ii)**: i) Materials satisfying standards deemed appropriate by the Society may be used. (Deleted) ii) Hydraulic tests for pipes, valves and pipe fittings may be omitted. ((b) to (d) are omitted.) (3) (Omitted) (4) (Omitted)	**N9.4.1 Properties of Inert Gas and Its Supply** For the purpose of the requirements in **9.4.1, Part N of the Rules**, the following requirements **(1)** through **(4)** are to be complied with: (1) (Omitted) (2) Where the inert gas is stored in inert gas bottles, the following requirements **(a)** through **(d)** are to be complied with: (a) The inert gas bottles and piping are to be dealt with according to the following requirements **i)** to **iii)**: i) The material of the piping may be to the requirements of the standard as deemed appropriate by the Society. ii) The gas bottle may be to the requirements of the National Standards notwithstanding the requirements in **Chapter 10, Part D of the Rules**. iii) The hydraulic tests for pipes, valves and pipe fittings may be omitted. ((b) to (d) are omitted.) (3) (Omitted) (4) (Omitted)	Deleted due to duplication with the relevant requirements of Annex 1

Amended	Original	Remarks
N9.5 Inert Gas Production On Board	**N9.5 Inert Gas Production On Board**	
N9.5.1 Inert Gas Production Equipment	**N9.5.1 Inert Gas Production Equipment**	
1 For the purpose of **9.5.1, Part N of the Rules**, inert gas systems are to comply with the following **(1)** and **(2)**.	**1** For the purpose of the requirements in **9.5.1, Part N of the Rules**, inert gas systems are to comply with the following **(1)** through **(4)**.	Outline of Amendment (2)
(1) Materials used in inert gas systems are to be suitable for their intended purpose.	(1) Materials used in inert gas systems are to be suitable for their intended purpose.	
(2) Each system component of the inert gas systems using oil fired inert gas generators, inert gas storage systems and liquid nitrogen storage tanks is to be approved in accordance with the **Annex 1** "**Guidance for Survey and Construction of Equipment and Fittings for Ships Carrying Liquefied Gases in Bulk**".	(2) Each system component of the inert gas systems using oil fired inert gas generators, inert gas storage systems and liquid nitrogen storage tanks is to be approved in accordance with the **Annex 1** "**GUIDANCE FOR SURVEY AND CONSTRUCTION OF EQUIPMENT AND FITTINGS OF SHIPS CARRYING LIQUEFIED GASES IN BULK**". Where the oil fired inert gas generator is fitted for the purposes of **9.2** and **9.3 of the Rules**, the requirements of **8.2.2-4**, **8.2.2-8**, **8.2.2-9**, **8.2.2-10**, **8.2.2-12** and **8.2.3-2** of the **Annex 1** may not apply.	Moved to 8.1.1 of Annex 1
	(3) Inert gas systems using nitrogen generators are to comply with the following requirements in **(a)** and **(b)**.	
	(a) **35.2.2-2(2)**, **35.2.2-2(4)**, **35.2.2-4(2)**, **35.2.2-4(3)**, **35.2.2-4(5)(a)** (except **(a)iii)** through **v))**, **35.2.2-4(5)(d)**, **35.2.4(1)(c)**, **35.2.4(1)(d)**, **35.2.4(1)(f)**, **35.2.4(1)(g)**, **35.2.4(1)(h)**, **35.2.4(1)(i)**, **35.2.4(1)(j)**, **35.2.4(2)**, **Part R of the Rules** and the requirements of **8.2.2-11** in the **Annex 1** "**Guidance for Survey and Construction of Equipment and Fittings**	

Amended	Original	Remarks
	for Ships Carrying Liquefied Gases in Bulk" are to apply. (b) The two non-return devices as required by **35.2.2-3(1)(a)** are to be fitted in the inert gas main. The non-return devices are to comply with **35.2.2-3(1)(b)** and **35.2.2-3(1)(c), Part R of the Rules**, however, where the connections to the cargo tanks, to the hold spaces or to cargo piping are not permanent, the non-return devices required by **35.2.2-3(1)(a)** may be substituted by two non-return valves. (4) Inert gas systems using boiler flue gases are to comply with the requirements of **Chapter 35, Part R of the Rules** under the following conditions. (a) The requirements of **8.2.2-11** in the **Annex 1** "**GUIDANCE FOR SURVEY AND CONSTRUCTION OF EQUIPMENT AND FITTINGS FOR SHIPS CARRYING LIQUEFIED GASES IN BULK**" may apply in place of the requirements of **35.2.3(1)(b)i)** and **ii), Part R of the Rules**. (b) The requirements of **9.4.4, Part N of the Rules** may apply in place of the requirements of **35.2.2-3(1)(a)** through **(i), Part R of the Rules**. (c) The requirements of **35.2.2-4(5)(c)** and **35.2.3(2)(b)vii), Part R of the Rules** may not apply. (d) Where the systems are fitted for the purposes of **9.2** and **9.3, Part N of the Rules**, the requirements of **4.5.3-4(2), 4.5.6-3, 11.6.3-4, 35.2.2-1(2)(d), 35.2.2-2(4), 35.2.2-3(2)** (except **(d)), 35.2.3(1)(c)i)** and **35.2.3(1)(d)i), Part R of**	

Amended	Original	Remarks
	the Rules may not apply, in addition to **(1)** to **(3)** above. (e) Where the connections to the cargo tanks, to the hold spaces or to cargo piping are not permanent, the non-return devices required by **35.2.2-3(1)(a), Part R of the Rules** may be substituted by two non-return valves.	

Amended-Original Requirements Comparison Table
(Review of Existing Requirements of Part GF and Part N (Equipment Related))

Amended	Original	Remarks
Annex 1 GUIDANCE FOR EQUIPMENT AND FITTINGS OF SHIPS CARRYING LIQUEFIED GASES IN BULK	**Annex 1 GUIDANCE FOR EQUIPMENT AND FITTINGS OF SHIPS CARRYING LIQUEFIED GASES IN BULK**	
Chapter 1 GENERAL	**Chapter 1 GENERAL**	Part N
1.1 Application	**1.1 Application**	
3 In applying this guidance, the "design temperature" specified in **Chapter 2** to **Chapter 7** means the design temperature of piping systems in which the equipment is used.	(Newly added)	Outline of Amendment (5) Clarifies "design temperature"
Chapter 6 RELIEF VALVES	**Chapter 6 RELIEF VALVES**	Part N
6.2 Materials, Construction and Strength	**6.2 Materials, Construction and Strength**	
6.2.1 Materials **1** The materials of principal structural members of relief valve with the design temperature not less than 0 °C are to be in accordance with the requirements in the relevant Chapters of **Part K of the Rules**. However, when the design pressure is below 3 *MPa* and nominal diameter is below 100 *mm*, the materials of structural members may be such as to conform to the requirements of *JIS* or recognised standards.	**6.2.1 Materials** **1** The materials of principal structural members of relief valve with the design temperature not less than 0°C are to be in accordance with the requirements in the relevant Chapters of **Part K of the Rules**. However, when the design pressure is below 3 *MPa* and nominal diameter is below 100*A*, the materials of structural members may be such as to conform to the requirements of *JIS* or recognized standards.	Revises the unit of nominal diameter (A(JIS) to mm)

Amended	Original	Remarks
Chapter 8 INERT GAS GENERATOR/STORAGE SYSTEM AND LIQUID NITROGEN TANK	**Chapter 8 INERT GAS GENERATOR/STORAGE SYSTEM AND LIQUID NITROGEN TANK**	Part N
8.1 General	**8.1 General**	
8.1.1 Application	**8.1.1 Application**	Outline of Amendment (2)
1 The requirements in this Chapter apply to inert gasgenerator/storage system and liquid nitrogen tanks in accordance with the requirements in **N9.5.1-1 of the Guidance**.	**1** The requirements in this Chapter apply to inert gasgenerator/storage system and liquid nitrogen tanks in accordance with the requirements in **N9.5.1-1 of the Guidance**.	
	(Newly added) (For reference: N9.5.1)	Moved from N9 (Refer to N9.5.1)
2 Where inert gas systems using oil fired inert gas generators are fitted for the purposes of **9.2** and **9.3 of the Rules**, the requirements of **8.2.2-4**, **8.2.2-8**, **8.2.2-9**, **8.2.2-10**, **8.2.2-12** and **8.2.3-2** of **Annex 1** need not be applied.	(2) (Omitted) Where the oil fired inert gas generator is fitted for the purposes of **9.2** and **9.3 of the Rules**, the requirements of **8.2.2-4**, **8.2.2-8**, **8.2.2-9**, **8.2.2-10**, **8.2.2-12** and **8.2.3-2** of the **Annex 1** may not apply.	
	(Newly added) (For reference: N9.5.1)	Moved from N9 (Refer to N9.5.1)
3 Inert gas systems using nitrogen generators are to comply with the following **(1)** and **(2)**.	(3) Inert gas systems using nitrogen generators are to comply with the following requirements in **(a)** and **(b)**.	
(1) **35.2.2-2(2)**, **35.2.2-2(4)**, **35.2.2-4(2)**, **35.2.2-4(3)**, **35.2.2-4(5)(a)** (except **(a)iii)** through **v))**, **35.2.2-4(5)(d)**, **35.2.4(1)(c)**, **35.2.4(1)(d)** (except **35.2.2-1(2)(d))**, **35.2.4(1)(f)**, **35.2.4(1)(g)**, **35.2.4(1)(h)**, **35.2.4(1)(i)**, **35.2.4(1)(j)** and **35.2.4(2)**, **Part R of the Rules** and **8.2.2-11** in **Annex 1** "**Guidance for Equipment and Fittings for Ships Carrying Liquefied Gases in Bulk**".	(a) **35.2.2-2(2)**, **35.2.2-2(4)**, **35.2.2-4(2)**, **35.2.2-4(3)**, **35.2.2-4(5)(a)** (except **(a)iii)** through **v))**, **35.2.2-4(5)(d)**, **35.2.4(1)(c)**, **35.2.4(1)(d)**, **35.2.4(1)(f)**, **35.2.4(1)(g)**, **35.2.4(1)(h)**, **35.2.4(1)(i)**, **35.2.4(1)(j)**, **35.2.4(2)**, **Part R of the Rules** and the requirements of **8.2.2-11** in the **Annex 1** "**Guidance for Survey**	

Amended	Original	Remarks
	and Construction of Equipment and Fittings for Ships Carrying Liquefied Gases in Bulk" are to apply.	
(2) The two non-return devices required by **35.2.2-3(1)(a), Part R of the Rules** are to be fitted in the inert gas main. The non-return devices are to comply with **35.2.2-3(1)(b)** and **35.2.2-3(1)(c), Part R of the Rules**; however, where the connections to cargo tanks, to hold spaces or to cargo piping are not permanent, the non-return devices required by **35.2.2-3(1)(a), Part R of the Rules** may be substituted for by two non-return valves.	(b) The two non-return devices as required by **35.2.2-3(1)(a)** are to be fitted in the inert gas main. The non-return devices are to comply with **35.2.2-3(1)(b)** and **35.2.2-3(1)(c), Part R of the Rules**, however, where the connections to the cargo tanks, to the hold spaces or to cargo piping are not permanent, the non-return devices required by **35.2.2-3(1)(a)** may be substituted by two non-return valves.	
4 Inert gas systems using boiler flue gases are to comply with **Chapter 35, Part R of the Rules** under the following conditions.	**2** The requirements in this Chapter do not apply to the inert gas generating system utilizing the exhaust gas from boilers and the system of generating nitrogen gas by separating from the atmospheric air.	Moved from N9 (Refer to N9.5.1)
(1) The requirements of **8.2.2-11** in the **Annex 1** "**Guidance for Survey and Construction of Equipment and Fittings for Ships Carrying Liquefied Gases in Bulk**" may be applied in place of **35.2.3(1)(b)i)** and **ii), Part R of the Rules**.		
(2) The requirements of **9.4.4, Part N of the Rules** may be applied in place of **35.2.2-3(1)(a)** through **(i), Part R of the Rules**.		
(3) The requirements of **35.2.2-4(5)(c)** and **35.2.3(2)(b)vii), Part R of the Rules** need not be applied.		
(4) Where systems are fitted for the purposes of **9.2** and **9.3, Part N of the Rules, 4.5.3-4(2), 4.5.6-3, 11.6.3-4, 35.2.2-1(2)(d), 35.2.2-2(4), 35.2.2-3(2)** (except **(d)**), **35.2.3(1)(c)i)** and **35.2.3(1)(d)i), Part R of the Rules** need not be applied in addition to **(1)**		

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to **(3)** above. (5) Where the connections to cargo tanks, to hold spaces or to cargo piping are not permanent, the non-return devices required by **35.2.2-3(1)(a), Part R of the Rules** may be substituted for by two non-return valves. **5** (Omitted)	**3** (Omitted)	
Chapter 12 INSULATION MATERIALS	**Chapter 12 INSULATION MATERIALS**	Part N
12.2 Insulation Application Procedures	**12.2 Insulation Application Procedures**	
12.2.1 General	**12.2.1 General**	Outline of Amendment (1)
For the approval application of insulation materials, in addition to those general procedures, all precautions at time of application and test items are to be specified. (Deleted)	**1** For the approval application of insulation materials, in addition to those general procedures, all precautions at time of application and test items are to be specified. **2** In the application of insulation materials in each ship, detailed application procedures for each ship are to be submitted to the Society for approval.	Moved to N4 (Refer to N4.19.3)
12.3 Tests and Inspections	**12.3 Tests and Inspections**	
12.3.1 Tests and Inspections	**12.3.1 Tests and Inspections** (Newly added) (For reference: N4.19.3-3)	Moved from N4 (Refer to N4.19.3)
1 Tests and inspections are to be conducted according to the procedures on manufacture, storage, handling and	(1) (Omitted) In the above, tests and inspection are to be conducted according to the procedures on the manu-	

Amended	Original	Remarks
product quality control established by manufacturers.	facture, storage, handling and product quality control established by the manufacturer.	
2 By using the test specimens taken with due regard paid to the actual application procedures, tests to verify the test items given in **Table 12.1** are to be conducted by the test procedure as specified in the same table or suitable other procedure as approved by the Society, and it is to be verified that the specifications and physical properties established by the manufacturer are complied with.	By using the test specimens taken with due regard paid to the actual application procedures, tests to verify the test items given in **Table 12.1** are to be conducted by the test procedure as specified in the same Table or suitable other procedure as approved by the Society, and it is to be verified that the specifications and physical properties established by the manufacturer are complied with.	
	(Newly added)	Moved from N4
	(For reference: N4.19.3-4)	(Refer to N4.19.3)
3 The properties of insulation materials are, in principle, to be verified by the tests given in **Table 12.2**.	**4** For the purpose of the requirements in **4.19.3-2, Part N of the Rules**, the properties of insulation materials are, in general, to be verified by the tests given in **Table N4.19.3**.	
	(Newly added)	Moved from N4
	(For reference: N4.19.3-5)	(Refer to N4.19.3)
4 In addition to complying with the preceding **-3**, property verification tests may be requested by the Society depending on the type of insulation system.	**5** In addition to complying with the requirements in the preceding **-4**, property verification test may be requested by the Society depending on the insulation system.	
	(Newly added)	Moved from N4
	(For reference: N4.19.3-7)	(Refer to N4.19.3)
5 For insulation materials to which **Table 12.2** does not apply, the following **(1)** and **(2)** are to be complied with:	**7** For insulation materials to which the requirements in the preceding **-4** to **-6** do not apply, the following requirements **(1)** and **(2)** are to be complied with:	
(1) For insulation materials used for supports of independent tanks, the columns for membrane tanks and semi-membrane tanks in **Table 12.2** apply.	(1) For insulation materials used for supports of independent tanks, the requirements given in the column of membrane tank and semi-membrane tank in **Table N4.19.3** apply.	
(2) For insulation materials provided for cargo tanks to which no insulation is required according to **4.10.1, Part N of the Rules**, data on the necessary properties of those material in **4.19.3-2, Part N of the**	(2) For insulation materials provided in cargo tanks to which no provision of insulation is required according to the requirements in **4.10.1, Part N of the Rules**, data on the necessary properties of those	

Amended	Original	Remarks
Rules (depending on the type of insulation system) is to be submitted to the Society.	specified in **4.19.3-2, Part N of the Rules** depending on the insulation system is to be submitted to the Society.	

Table 12.1 Test Items for Insulation Materials

No.	Test item	Procedure of test Test procedure
1	Compatibility with the cargo	Tensile, compression, shearing, bending test after dipping in the cargo (*DIN 53428*)
2	Solubility in the cargo	Changes in the size and weight of test specimen before and after dipping in the cargo (*DIN 53428*)
3	Absorption of the cargo	Comparison of weight of test specimen or test of water absorbing properties before and after dipping in the cargo (*DIN 53428*)
4	Shrinkage	*ISO 2796, ASTM D 2126*
5	Aging	*ASTM D*756
6	Closed cell content	*ISO* 4590, *ASTM D*2856, *ASTM D*6226
7	Density	*ISO* 845, *ISO* 2781, *ASTM D*1622
8	Mechanical properties ・Bending strength ・Compression strength ・Tensile strength ・Shearing strength	 *ISO 1209, ASTM C 203, ASTM D790* *ASTM D 695, ASTM D 1621* *ISO* 1926, *EN* 1607, *ASTM D*412, *ASTM D*638, *ASTM D*1623 *ISO 1922, ASTM C 273*
9	Thermal expansion	*ASTM D*696, *ASTM E*228, *ASTM E*831
10	Abrasion	—
11	Cohesion	*ASTM D 1623*
12	Thermal conductivity	*ISO 8302, JIS A 1412, ASTM C 177, ASTM C 518*
13	Resistance to vibration	*ISO 10055*
14	Resistance to fire and flame spread	*JIS A 9511, DIN 4102*
15	Resistance to fatigue failure and crack propagation	—

Note:
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 ~~N4.19.3-4~~**12.3.1-3** to ~~7~~**-5 of the Guidance**.

Amended-Original Requirements Comparison Table
(Review of Existing Requirements of Part GF and Part N (Equipment Related))

Amended	Original	Remarks

Table 12.2 Properties of Insulation Material for Cargo Tank Types

No.	Verified items		Integral tank	Membrane/Semi-membrane tank	Type *A*/*B* independent tank	Type *C* independent tank	Note
1	Compatibility with the cargo			○[1)]	○[1)]		
2	Solubility in the cargo			○[1)]	○[1)]		
3	Absorption of the cargo		□	○[1)]	○[1)]		
4	Shrinkage			○[1)]	○[1)]		
5	Ageing		□	○	○[1)]	□	
6	Closed cell content		△	△	△	△	Applied only to closed cell material
7	Density		○	○	○	○	
8	Mechani-cal properties	Bending strength	○	○	○	○	
		Compress strength		○			
		Tensile strength	○	○	○	○	
		Shearing strength	○	○			
9	Thermal expansion		□	○	○[2)]	○[2)]	
10	Abrasion			○			
11	Cohesion		□	△	△[1)]	□	Applied to cohered material
12	Thermal conductivity		○	○	○	○	
13	Resistance to vibration		△	△	△[1)]		Refer to **4.19.3-7, Part N of the Rule**
14	Resistance to fire and flame spread		○	○	○	○	
15	Resistance to fatigue failure			○			
16	Resistance to crack propagation			△			

Symbols:

○: Items to be verified through verification test for properties.

△: Items to be verified through verification test where deemed necessary depending on the insulation material.

□: Items for which preparation of data on the properties is desirable.

Notes:

1) Necessary when the insulation material acts as the spray shield specified in **4.7.1, Part N of the Rules**. In other cases, data on the properties is to be prepared.

2) Not generally required for cargo tanks where the design temperature exceeds -10 °C.

(Newly added)
Moved from N4
(Refer to N4.19.3)

Amended-Original Requirements Comparison Table
(Review of Existing Requirements of Part GF and Part N (Equipment Related))

Amended	Original	Remarks
EFFECTIVE DATE AND APPLICATION **1.** The effective date of the amendments is 1 January 2026.		