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

Object of Amendment

Guidance for the Survey and Construction of Steel Ships Parts 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.

ID:DD25-04

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

(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	Moved to <u>12.3.1 of Annex 1</u>
	(Omitted)	
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"	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 "GUID-"	Outline of Amendment (2)
Using Low-flashpoint Fuels".	ANCE 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	Moved to 8.1.1 of Annex 1

Amended-Original Requirements Comparison Table

(Review of Existing Requirements of Part GF ar	nd Part N (Equipment Related))
--	--------------------------------

Amended	Original	Remarks
	8.2.3-2 of the Annex 1 may not apply.	
(Deleted)	(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),	
	$\frac{(a)}{35.2.2-4(3)}$, $\frac{35.2.2-4(5)(a)}{35.2.2-4(5)(a)}$, (except (a)iii)	
	through v)), $35.2.2-4(5)(d)$, $35.2.4(1)(c)$,	
	$\frac{1}{35.2.4(1)(d)}$, $\frac{1}{35.2.4(1)(f)}$, $\frac{1}{35.2.4(1)(g)}$,	
	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 com-	
	ply 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 CON-	
	STRUCTION OF EQUIPMENT AND FIT-	
	TINGS 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-	

(Review of Existing Requiren	nents of Part GF and Part N (Equipment Related))	
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	
(3) Where the inert gas is stored in inert gas bottles, the following (a) through (d) are to be complied with:	the Rules may not apply, in addition to (1) to (3) above. (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	(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):i) Materials satisfying standards deemed ap-	complied with: (a) The inert gas bottles and piping are to be dealt with according to the following requirements i) to iii):	01177.111(2).
propriate 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. (b) The location of installation of the bottles is to be as given in 35.2.4(1)(h), Part R of the Rules. 	 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 the following i) and ii): i) The inert gas bottles are, as a rule, to be lo- 	
(c) Inert gas storage containers are to be so arranged	cated 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) The inert gas storage containers are to be so ar-	

\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \	ments of Fart OF and Fart N (Equipment Related))	
Amended	Original	Remarks
to be safe against ship motions and vibrations	ranged to be safe against ship motions and vi-	
and are to be stored upright as far as practicable.	brations, and are to be stored upright as far as	
	practicable.	
(d) Piping systems, after assembly on board, are to	(d) The piping system, after assembly on board, is	
be subjected to airtightness tests at a pressure	to be subjected to airtightness test at a pressure	
1.25 times the maximum working pressure or	1.25 times the maximum working pressure or	
more and free flow tests at a suitable pressure.	more, and free flow test at a suitable pressure.	
(For reference: 35.2.4(1)(h), Part R of the Rules)		
35.2.4 Requirements for Nitrogen Generator Sys-		
tems*		
(1) System requirements		
(h) Where a nitrogen receiver or a buffer tank is in-		
stalled, it may be installed in a dedicated com-		
partment, in a separate compartment containing		
the air compressor and the generator, in the en-		
gine room, or in the cargo area. Where the ni-		
trogen 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 mechan-		
ical ventilation, of the extraction type, is to be		
provided for such a compartment.		

(Review of Existing Require	ments of Part GF and Part N (Equipment Related))	
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	
GI WII III III III III III III III III I	(Newly added)	Outline of Amendment
	(For reference: N5.12.1)	(3)
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.	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 re-	Clarifies according to N5.12.1
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	quirements in Part K of the Rules . However, for materials used for the piping specified in the following (1) to (5), those conforming to <i>JIS</i> or other standards deemed appropriate by	Reference: <u>5.2</u> , <u>6.2.1</u> and <u>7.2.1</u> of Annex 1
they comply with Chapter 7, Part GF of the Rules.	the Society may be used where they comply with the re-	
	quirements in Chapter 6, Part N of the Rules.	
(1) Pipes, valves and pipe fittings used for cargo piping	(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.	and process piping with design pressures not exceeding 1 <i>MPa</i> and design temperatures of 0°C 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	(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 mm. (3) Pipes, valves and pipe fittings used for accessory piping or instrumentation piping with diameters not	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. (4) Open-ended pipes and pipe fittings provided inside and outside cargo tanks, excluding membrane and 	exceeding 25 <i>mm</i> irrespective of design pressure and design temperature. (4) Open-ended pipes provided inside and outside cargo tanks, excluding membrane and semi-membrane	Outline of Amendment (6) (4): Clarifies that pipe
semi-membrane tanks, with design temperatures of	tanks, with design temperatures of -55°C or higher.	fittings are included in (4)

(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(I)(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. 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 J/S or other standards deemed appropriate by the Society. 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 a slip-on sleeve welded type (such as elobows, 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(I)(a)ii), Part D of the Guidance on the condition that they receive approval of use from Society in accordance with Chapter (Sudance on the condition that they receive approval of use from Society in accordance with Chapter (Sudance on the condition that they receive approval of use from Society in accordance with Chapter (Sudance on the condition that they receive approval of use from Society in accordance with Chapter (Sudance on the condition that they receive approval of use from Society in accordance with Chapter (Sudance on the condition that they receive approval of use from Society and Equipment for Ma	Amended Amended	Original	Remarks
(5) Pipe joints of a butt welded type and pipe joints of a slip-on sleeve welded type (such as clbows, 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. 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. 3 For the purpose of Table GF7.1, Part GF of the Rules, furthermore, piping material may be compliced with: (1) (Omitted) (2) Fittings of type C independent tanks and process pressure vessels with the design pressure below 3		Original	IXCIIIai K5
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. 2 Notwithstanding -1 above, piping having open ends not coming into contact with liquid cargoes led from the pressure relieving valves of eargo tanks and eargo 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. 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 spressure vessels with the design pressure not early 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) 2 Notwithstanding the requirements in the -1 above, piping having open ends not coming into contact with the pressure relieving valves of eargo tanks and eargo piping or process piping with design temperature services specified in Table N6.4, Chapter 6, Part N of the Rules. Furthermore, p		(5) Ding joints of a butt worlded type and nine joints of a	
ers, 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. 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 GF7.1, Part GF of the Rules, Furthermore, piping material may be such as to comply with JIS or other standards deemed appropriate by the Society. 3 For the purpose of Table GF7.1, Part GF of the Rules, Furthermore, piping material may be such as to comply with JIS or other standards deemed appropriate by the Society. 1 For the purpose of the requirements in 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 pressure vessels with the design pressure below 3 pressure vessels with the design pressure unit of nomine 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 condition that they receive approval of use condition that they receive approval of use from Society in accordance with Chapter 12, Part 6 of the Guidance on the condition that they receive approval of use from Society in accordance with Chapter 12, Part 6 of the Guidance on the condition that they receive approval and Type Approval of Materials and Equipment for Marine Use. (Newly added) (For reference: N5.12.1) 2 Notwithstanding the requirements in the -1 above, piping having open ends not coming into contact			
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. 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 JJS or other standards deemed appropriate by the Society. 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	* * * *	* * * `	
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. 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. 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			
quirements 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. 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 temperatures 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. 3 For the purpose of Table GF7.1, Part GF of the Rules, furthermore, piping material may be such as to comply with JIS or other standards deemed appropriate by the Society. 3 For the purpose of Table GF7.1, Part GF of the Rules, furthermore, piping material may be such as to comply with JIS or other standards deemed appropriate by the Society. 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 below 3			
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. 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. 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 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) 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 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. 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 ex-			
al 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. 12. 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 come ply with JIS or other standards deemed appropriate by the Society. 2 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 al 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) 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°C 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. 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 ex- Revises the unit of nomi-		• / / / //	
12, Part 6 of the Guidance for the Approval and Type Approval of Materials and Equipment for Marine Use. 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) 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. 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 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) 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 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. 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 experiment to the control of the Guidance for the Approval of Materials and Equipment for Marine Use. (Newly added) (For reference: N5.12.1) 2 Notwithstanding the requirements in the -1 above, piping and cargo piping or process piping with design temperatures of -55°C or higher may	• • • • • • • • • • • • • • • • • • • •		
Type Approval of Materials and Equipment for Marine Use. (Newly added) (For reference: N5.12.1) 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. 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 Type Approval of Materials and Equipment for Marine Use. (Newly added) (For reference: N5.12.1) 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°C 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. 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 below 3			
Marine Use. Marine Use.		* *	
Courting into contact with liquid cargoes led from the pressure relieving valves of cargo tanks and cargo piping or process piping with design temperatures 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. 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 (Newly added) (For reference: N5.12.1) 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 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. 1 For the purpose of Table GF7.1, Part GF of the Rules, the following 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 expression 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 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. 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 ex-			
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. 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 (3) Clarifies according to N5.12.1) 1 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°C 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. 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 expected to the 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°C 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. 1 For the purpose of the requirements in Table GF7.1, Part GF of the Rules, the following requirements (1) to (3) ar	Marine Use.		
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. 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			
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. 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 Diping 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°C 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. 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 expressure vessels with the design pressure not expression.		,	(3)
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. 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 N5.12.1 N5.12.1 N5.12.1 N5.12.1 N5.12.1 N5.12.1 N5.12.1			Clarifies asserting to
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. 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 liquid cargo 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 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. 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 expressive vessels with the design pressure not expressive vessels with the design pressure not expressive vessels with the design pressure of -55°C or higher may not be made of steel used for low temperatures 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. 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 expression.	not coming into contact with liquid cargoes led from the	piping having open ends not coming into contact with the	
atures 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. 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 atures of -55°C 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. 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 of the Rules. Furthermore, piping material may be such as to comply with JIS or other standards deemed appropriate by the Society. 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 unit of nomination of the Rules. Furthermore, piping material may be such as to comply with JIS or other standards deemed appropriate by the Society. 2 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: (2) Fittings of type C independent tanks and process pressure vessels with the design pressure unit of nomination to the theory than the type of the Rules. Furthermore, piping material may be such as to comply with JIS or other standards deemed appropriate by the Society. 2 Fittings of type C independent tanks and process pressure vessels with the design pressure unit of	pressure relieving valves of cargo tanks and cargo piping or	liquid cargo led from the pressure relieving valves of cargo	1(3.12.1
vices 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. 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 Omitted Divided Correction Correction Correction Revises the unit of nominal process Revises the unit of	process piping with design temperatures of -55 °C or higher	tanks and cargo piping or process piping with design temper-	
Rules. Furthermore, piping material may be such as to comply with JIS or other standards deemed appropriate by the Society. 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 (5) Part N of the Rules. Furthermore, piping material may be such as to comply with JIS or other standards deemed appropriate by the Society. 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 of the Rules. Furthermore, piping material may be such as to comply with JIS or other standards deemed appropriate by the Society. 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 of the Rules. Furthermore, piping material may be such as to comply with JIS or other standards deemed appropriate by the Society. 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: (2) Fittings of type C independent tanks and process pressure vessels with the design pressure of the Rules. Furthermore, piping material may be such as to comply with JIS or other standards deemed appropriate by the Society. 2 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: (2) Fittings of type C independent tanks and process pressure vessels with the design pressure of the Rules.	may not be made of steel used for the low temperature ser-	atures of -55°C or higher may not be made of steel used for	
ply with JIS or other standards deemed appropriate by the Society. 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 such as to comply with JIS or other standards deemed appropriate by the Society. 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 below 3 Revises the unit of nominal contents are to be completed with: (2) Fittings of Type C independent tanks and process pressure vessels with the design pressure not ex-	vices specified in Table GF7.4, Chapter 7, Part GF of the	low temperature services specified in Table N6.4, Chapter	
such as to comply with JIS or other standards deemed appropriate by the Society. 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 such as to comply with JIS or other standards deemed appropriate by the Society. 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 below 3 Revises the unit of nomi-	Rules. Furthermore, piping material may be such as to com-	6, Part N of the Rules. Furthermore, piping material may be	
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 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 expression expression in 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 expression expression in 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: (2) Fittings of type C independent tanks and process pressure vessels with the design pressure not expression expression in 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: (3) (Omitted) (4) (Omitted) (5) Fittings of type C independent tanks and process pressure vessels with the design pressure not expression to 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: (4) (Omitted) (5) Fittings of type C independent tanks and process pressure vessels with the design pressure not expression to the type of the requirements in Table GF7.1, Part GF of the Rules, the following requirements (1) to (3) are to be complied with: (5) (Omitted) (6) (Omitted) (7) (Omitted) (8) (Omitted) (9) (Omitted) (9) (Omitted) (9) (Omitted) (1) (Omitted) (1) (Omitted) (1) (Omitted) (2) (Omitted) (3) (Omitted) (4) (Omitted) (5) (Omitted) (6) (Omitted) (7) (Omitted) (8) (Omitted) (9) (Omitted) (9) (Omitted) (1) (Omitted) (1) (Omitted) (1) (Omitted) (1) (Omitted) (2) (Omitted) (3) (Omitt	ply with JIS or other standards deemed appropriate by 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 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 expression in the process pressure vessels with the design pressure not expression in the process pressure vessels with the design pressure not expression in the process pressure vessels with the design pressure not expression in the process pressure vessels with the design pressure not expression in the process pressure vessels with the design pressure not expression in the process pressure vessels with the design pressure not expression in the process pressure vessels with the design pressure not expression in the process pressure vessels with the design pressure not expression in the process pressure vessels with the design pressure not expression in the process pressure vessels with the design pressure not expression in the process pressure vessels with the design pressure not expression in the process pressure vessels with the design pressure not expression in the process pressure vessels with the design pressure not expression in the process pressure vessels with the design pressure not expression in the process pressure not	Society.	priate by the Society.	
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 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 expression in the process pressure vessels with the design pressure not expression in the process pressure vessels with the design pressure not expression in the process pressure vessels with the design pressure not expression in the process pressure vessels with the design pressure not expression in the process pressure vessels with the design pressure not expression in the process pressure vessels with the design pressure not expression in the process pressure vessels with the design pressure not expression in the process pressure vessels with the design pressure not expression in the process pressure vessels with the design pressure not expression in the process pressure vessels with the design pressure not expression in the process pressure vessels with the design pressure not expression in the process pressure vessels with the design pressure not expression in the process pressure vessels with the design pressure not expression in the process pressure vessels with the design pressure not expression in the process pressure not	3 For the purpose of Table GF7.1, Part GF of the	1 For the purpose of the requirements in Table GF7.1,	
are to be complied with: (1) (Omitted) (2) Fittings of type C independent tanks and process pressure vessels with the design pressure below 3 are to be complied with: (1) (Omitted) (2) Fittings of Type C independent tanks and process pressure vessels with the design pressure not expression expression in the complied with: (2) Fittings of Type C independent tanks and process pressure vessels with the design pressure not expression expression in the complied with: (3) Fittings of type C independent tanks and process pressure vessels with the design pressure not expression in the complied with: (3) Fittings of type C independent tanks and process pressure vessels with the design pressure not expression in the complied with: (4) Omitted (5) Fittings of type C independent tanks and process pressure vessels with the design pressure not expression in the complied with: (6) Omitted (7) Omitted (8) Fittings of type C independent tanks and process pressure vessels with the design pressure not expression in the complied with: (8) Omitted (9) Omitted (10) Omitted (11) Omitted (12) Omitted (13) Omitted (14) Omitted (15) Omitted (16) Omitted (17) Omitted (18) Omitted (19) Omitted (19) Omitted (19) Omitted (19) Omitted (19) Omitted (20) Omitted (20) Omitted (21) Omitted (22) Omitted (23) Omitted (24) Omitted (25) Omitted (26) Omitted (27) Omitted (28) Omitted (29) Omitted (29) Omitted (20) Omitted (20) Omitted (20) Omitted (20) Omitted (20) Omitted (21) Omitted (22) Omitted (23) Omitted (24) Omitted (25) Omitted (26) Omitted (27) Omitted (28) Omitted (29) Omitted (29) Omitted (20) Omitted (20) Omitted (20) Omitted (20) Omitted (20) Omitted (20) Omitted (21) Omitted (22) Omitted (23) Omitted (24) Omitted (25) Omitted (26) Omitted (27) Omitted (28) Omitted (28) Omitted (29) Omitted (20) Omit	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 (1) (Omitted) (2) Fittings of Type C independent tanks and process pressure vessels with the design pressure not expression expression in the design pressure not expression in the		are to be complied with:	
(2) Fittings of type C independent tanks and process pressure vessels with the design pressure below 3 (2) Fittings of Type C independent tanks and process pressure vessels with the design pressure not expression expression (2) Fittings of Type C independent tanks and process pressure vessels with the design pressure not expression (2) Fittings of Type C independent tanks and process pressure vessels with the design pressure not expression (2) Fittings of Type C independent tanks and process pressure vessels with the design pressure vessels with the desig	(1) (Omitted)	<u> </u>	Commention
pressure vessels with the design pressure below 3 pressure vessels with the design pressure not ex-			Correction
1			Revises the unit of nomi-
with a land design competation of the Color more and proceeding swith a land design competation. Of the Color had distributed (Alsis) to the color of the color o	MPa and design temperature of 0 °C or more and	$\frac{1}{\text{ceeding }} 3MPa$ and design temperature of $\frac{1}{0^{\circ}\text{C}}$ or	nal diameter (A(JIS) to
nominal diameter less than 100 mm. more and nominal diameter less than 100A. mm)	- -		
(3) (Omitted) (3) (Omitted)		_	

5 (Or Part GF through (5 (1) The gir	mitted) mitted) r the purpose of the requirements in Table GF7.4, of the Rules, the following requirements (1) b) are to be complied with: the use of longitudinally or spirally welded pipes ven in Note 1 of the Table is to be in accordance		Original (Omitted) (Omitted) For the purpose of the requirements in Table GF7.4, GF of the Rules, the following requirements (1) gh (5) are to be complied with:	Remarks
5 (Or Part GF through (5 (1) The gir	r the purpose of the requirements in Table GF7.4, of the Rules, the following requirements (1) are to be complied with: he use of longitudinally or spirally welded pipes	3 4 Part throug	(Omitted) For the purpose of the requirements in Table GF7.4, GF of the Rules, the following requirements (1)	
Part GF through (5 (1) Th	of the Rules, the following requirements (1) s) are to be complied with: he use of longitudinally or spirally welded pipes	Part throug	GF of the Rules, the following requirements (1)	
(2) The Notice of the Notice o	ith the requirements in Chapter 4 and 8, Part K the Rules. The Rules. The requirements for forgings and castings given in ote 2 of the Table are to be in accordance with the levant requirements in the Part K of the Rules, if becified. The design temperature given in Note 3 of the able lower than -165°C, the provision in the preciding -5(1) are to apply. The chemical composition limit given in Note 5 of the Table is to be in accordance with the requirements in the preceding -5(3).	(2) (3) (4)	The use of longitudinally or spirally welded pipes given in Note 1 of the Table is to be in accordance with the requirements in Chapter 4 and 8, Part K of the Rules . The requirements for forgings and castings given in Note 2 of the Table are to be in accordance with the relevant requirements in the Part K of the Rules , if specified. For the design temperature given in Note 3 of the Table lower than -165°C, the provision in the preceding -3(1) are to apply. The chemical composition limit given in Note 5 of the Table is to be in accordance with the requirements in the preceding -3(3).	
th	he omission of the impact test given in Note 8 of is Table are to be in accordance with the requireents in the preceding -5(4).	(5)	The omission of the impact test given in Note 8 of this Table are to be in accordance with the requirements in the preceding -3(4).	
	mitted)	<u>5</u>	(Omitted)	

	ments of fart of and fart in (Equipment Related))	-
Amended	Original	Remarks
GF16 MANUFACTURE, WORKMANSHIP AND	GF16 MANUFACTURE, WORKMANSHIP AND	
TESTING	TESTING	
	TESTI (G	
GF16.7 Testing	GF16.7 Testing	
51100 1000mg	01 100/mg	
GF16.7.3 System Testing	GF16.7.3 System Testing	
, c	(Newly added)	Outline of Amendment
	(For reference: N5.13.2)	(4)
1 For the purpose of 16.7.3-3, Part GF of the Rules,	For the purpose of 5.13.2-3 , Part N of the Rules, the	
leak tests of piping systems are to be conducted at pressures	leak test of piping systems are to be conducted at a pressure	Clarifies according to
which are 90 % of the design pressure of the piping. Test	which are 90% of the design pressure of the piping. Test	N5.13.2-1
pressures, however, may be modified when the test is con-	pressures, however, may be modified when the test is con-	
ducted using a liquid which has high leak detecting ability.	ducted using a liquid which has high leak detecting ability.	
sweets them a majora with the major restriction were majorated with the majorated with th	(Newly added)	Outline of Amendment
	(For reference: N5.13.2)	(4)
2 The wording "maximum pressure at pipe rupture" in	2 The wording "maximum pressure at gas pipe rupture"	
16.7.3-4, Part GF of the Rules means the maximum pres-	specified in 5.13.2-4, Part N of the Rules is the maximum	Clarifies according to
sure to which the outer pipe or duct is subjected after inner	pressure to which the outer pipe or duct is subjected after the	N5.13.2-2
pipe rupture. For testing purposes, it is the same as the design	inner pipe rupture. For testing purposes, it is the same as the	
pressure specified in 9.8.1 or 9.8.2, Part GF of the Rules.	design pressure specified in 5.4.4, Part N of the Rules.	
	C 1	
	In applying 16.7.3-7, Part GF of the Rules, func-	
tional testing is to be carried out to confirm the closing time.	tional testing is to be carried out to confirm the closing time.	

Amended-Original Requirements Comparison Table

(Review of	f Exis	sting	Requ	irements	of Part	GF and	l Part N	[Eq	uipment R	(elated)

Amended	Original	Remarks
Annex 1 GUIDANCE FOR EQUIPMENT AND FITTINGS OF SHIPS USING LOW-FLASHPOINT	Annex 1 GUIDANCE FOR EQUIPMENT AND FITTINGS OF SHIPS USING LOW-FLASHPOINT	
FUELS	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	1 Materials used for the main pressure-bearing parts of valves are to be in accordance with the following (1) and (2):	Outline of Amendment (3)
Guidance.	(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 pip-	Refer to GF7.4.1
	ing specified in the following (a) to (c) may be those which meet the JIS or other standards deemed ap-	
	propriate 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-	

Amended	Original	Remarks
2 (Omitted)	(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)	Remarks
Chapter 6 RELIEF VALVES 6.2 Materials, Construction and Strength	Chapter 6 RELIEF VALVES 6.2 Materials, Construction and Strength	Part GF
6.2.1 Materials1 Materials used for the main structural parts of relief	6.2.1 Materials1 Materials used for the main structural parts of relief	Outline of Amendment
valves whose design temperatures are not below 0 °C are to	valves whose design temperatures are not below 0°C are to	(3)
be in accordance with GF7.4.1, Part GF of the Guidance.	be in accordance with <u>relevant requirements in Part K of</u> <u>the Rules</u> . 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	Refer to GF7.4.1
	which satisfy the JIS or other standards deemed appropriate	

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	Outline of Amendment (3) Refer to GF7.4.1
	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.	

(Review of Existing Requirements of Part GF and Part N (Equipment Related))				
Amended	Original	Remarks		
Chapter 8 INERT GAS GENERA- TOR/STORAGE SYSTEM AND LIQUID NITRO- GEN TANK	Chapter 8 INERT GAS GENERA- TOR/STORAGE SYSTEM AND LIQUID NITRO- GEN TANK	Part GF		
8.1 General	8.1 General			
8.1.1 Application 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.	8.1.1 Application 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)	Outline of Amendment (2) Moved from GF6		
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.	 (Newly added) (For reference GF6.14.1-1) (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. 	(Refer to GF6.14.1)		
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".	(Newly added) (For reference GF6.14.1-1) (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	Moved from GF6 Refer <u>GF6.14.1</u>		

Amended	Original	Remarks
	EQUIPMENT AND FITTINGS OF SHIPS	T T T T T T T T T T T T T T T T T T T
	USING LOW-FLASHPOINT FUELS" are to	
	apply.	
4 Inert gas systems using boiler flue gases are to com-	2 The requirements in this Chapter do not apply to the	Moved from GF6
ply with Chapter 35, Part R of the Rules under the follow-	inert gas generating system utilizing the exhaust gas from	Refer to GF6.14.1
ing conditions.	boilers and the system of generating nitrogen gas by separat-	Refer to Granni
(1) The requirements of 8.2.2-11 in the Annex 1	ing from the atmospheric air. These systems are to be	
"Guidance for Equipment and Fittings of Ships	deemed appropriate by the Society.	
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.		
<u>5</u> (Omitted)	<u>3</u> (Omitted)	
Chapter 12 INSULATION MATERIALS	Chapter 12 INSULATION MATERIALS	Part GF
12.1 G	12.1 0	
12.1 General	12.1 General	
		Outling of Amandment
12.1.1 Application	12.1.1 Application	Outline of Amendment (1)
1 The requirements in this Chapter apply to the insula-	1 The requirements in this Chapter apply to the insula-	Correction of reference
1 The requirements in this Chapter apply to the insula-	The requirements in this Chapter apply to the histia-	Correction of reference

(Review of Existing Requirements of Part GF and Part N (Equipment Related))				
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. (Deleted)	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. 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 <u>GF6.4.13</u>		
12.3 Tests and Inspections	12.3 Tests and Inspections			
12.3.1 Tests and Inspections	12.3.1 Tests and Inspections			
1 Tooks and immediate and the condense of	(Newly added) (For reference: GF6.4.13-5)	Moved from GF6 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.	(1) (Omitted) In the above, tests and <u>inspection</u> are to be conducted according to the procedures on the manufacture, storage, handling and product quality control established by <u>the manufacturer</u> .			
<u>2</u> By using the test specimens taken with due regard	By using the test specimens taken with due regard			
paid to the actual application procedures, tests to verify the	paid to the actual application procedures, tests to verify the			
test items given in Table 12.1 are to be conducted by the	test items given in Table 12.1 are to be conducted by the			

(Review of Existing Requirements of Part GF and Part N (Equipment Related))				
Amended	Original	Remarks		
test procedure as specified in the same <u>table</u> or suitable oth-	test procedure as specified in the same <u>Table</u> or suitable			
er procedure as approved by the Society, and it is to be veri-	other procedure as approved by the Society, and it is to be			
fied that the specifications and physical properties estab-	verified that the specifications and physical properties estab-			
lished by the manufacturer are complied with.	lished by the manufacturer are complied with.			
	(Newly added)	Moved from GF6		
	(For reference: GF6.4.13)			
3 The properties of insulation materials are, in princi-	For the purpose of the requirements in 6.4.13-3(2),	Refer to <u>GF6.4.13</u>		
ple, to be verified by the tests given in Table 12.2.	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.			
	(Newly added)	Moved from GF6		
	(For reference: GF6.4.13)			
4 In addition to complying with the preceding -3,	7 In addition to complying with the requirements in	Refer to <u>GF6.4.13</u>		
property verification tests may be requested by the Society	the preceding <u>-6</u> , property verification test may be requested			
depending on the type of insulation system.	by the Society depending on the insulation system.			
	(Newly added)	Moved from GF6		
	(For reference: GF6.4.13)	D. C		
5 For insulation materials to which Table 12.2 does not	9 For insulation materials to which the requirements in	Refer to GF6.4.13		
apply, the following (1) and (2) are to be complied with:	the preceding -6 to -8 do not apply, the following require-			
	ments (1) and (2) are to be complied with:			
(1) For insulation materials used for supports of inde-	(1) For insulation materials used for supports of inde-			
pendent tanks, the column for membrane tanks in	pendent tanks, the requirements given in the column			
Table 12.2 applies.	of membrane tank in Table GF6.4.13-2 apply.			
(2) For insulation materials provided for fuel tanks to	(2) For insulation materials provided in fuel tanks to			
which no insulation is required according to 6.4.8,	which no provision of insulation is required accord-			
Part GF of the Rules, data on the necessary proper-	ing to the requirements in 6.4.8, Part GF of the			
ties of those materials in 6.4.13-3(2), Part GF of the	Rules, data on the necessary properties of those			
Rules (depending on the type of insulation system)	specified in 6.4.13-3(2), Part GF of the Rules de-			
is to be submitted to the Society.	pending on the insulation system is to be submitted			
	to the Society.			

	Amended Tah	Original ole 12.1 Test Items for Insulation Materials	Remark
No.		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 (<i>DIN 53428</i>)	
4	Shrinkage	ISO 2796, ASTM D 2126	
5	Aging	ASTM D756	
6	Closed cell content	ISO 4590, ASTM D2856, ASTM D6226	
7	Density	ISO 845, ISO 2781, ASTM D1622	
8	Mechanical properties	ISO 1209, ASTM C 203, ASTM D790 ASTM D 695, ASTM D 1621 ISO 1926, EN 1607, ASTM D412, ASTM D638, ASTM D1623 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		

	Amended Original						Remarks
Table 12.2 Properties of Insulation Material for Fuel Tank Types						(Newly added)	
	No.	Verified items	Membrane tank	Type A or B independent tank	Type C independent tank	Note	Moved from GF6 Refer to GF6.4.13
	<u>1</u>	Compatibility with the fuel	<u>O1)</u>	<u>O1)</u>			
	<u>2</u>	Solubility in the fuel	<u>O1)</u>	<u>O1)</u>			
	<u>3</u>	Absorption of the fuel	<u>O1)</u>	<u>O</u> 1)			
	<u>4</u>	Shrinkage	<u>O1)</u>	<u>O1)</u>			
	<u>5</u>	Ageing	<u>O</u>	<u>O1)</u>			
	<u>6</u>	Closed cell content	\triangle	\triangle	<u> </u>	Applies only to closed cell materials	
	<u>7</u>	<u>Density</u>	<u>O</u>	<u>O</u>	<u>O</u>		
		Bending strength	<u>O</u>	<u>O</u>	0		
	<u>8</u>	Compress strength	0				
	<u>o</u>	Compress strength Tensile strength Shearing strength	<u>O</u>	<u>O</u>	<u>O</u>		
	9	Thermal expansion	0	<u></u>	O ²⁾		
	10	Abrasion	0				
	11	Cohesion	\triangle	<u> </u>		Applies to cohered material	
	12	Thermal conductivity	<u>O</u>	<u>O</u>	<u>O</u>		
	<u>13</u>	Resistance to vibration	\triangle	<u>\(\(\lambda \) \) \</u>		Refer to 6.4.13-3(7), Part GF of the Rules	
	<u>14</u>	Resistance to fire and flame spread	<u>O</u>	<u>O</u>	<u>O</u>		
	<u>15</u>	Resistance to fatigue failure	<u>O</u>				
	<u>16</u>	Resistance to crack propagation	\triangle				

Amended	Original	Remarks
Symbols		
O: Items to be verified through verification test to	for properties.	
\triangle : Items to be verified through verification test v	where deemed necessary depending on the insulation material.	
☐: Items for which preparation of data on the pro	operties is desirable.	
Notes:		
1) Necessary when the insulation material acts a	s the spray shield specified in 6.4.5-1, Part GF of the Rules	<u>.</u>
In other cases, data on the properties is to be prep		
2) Not generally required for fuel tanks where the	e design temperature exceeds -10 °C.	

Amended-Original Requirements Comparison Table

(Review of Existing	Requirement	s of Part GF and	l Part N (Ec	uipment Related))
•	<i>-</i>	1		(1 1 //

\	ments of Part GF and Part N (Equipment Related))	
Amended	Original	Remarks
GUIDANCE FOR THE SURVEY AND CON-	GUIDANCE FOR THE SURVEY AND CON-	
STRUCTION OF STEEL SHIPS	STRUCTION OF STEEL SHIPS	
STRUCTION OF STEEL SHIPS	STREETION OF STEEL SHIPS	
Part N SHIPS CARRYING LIQUEFIED GASES	Part N SHIPS CARRYING LIQUEFIED GASES	
IN BULK	IN BULK	
NA CARCO CONTAINMENT	NIA CARCO CONTRAINMENTE	
N4 CARGO CONTAINMENT	N4 CARGO CONTAINMENT	
N4.19 Materials	N4.19 Materials	
N4.19 Waterials	N4.19 Materiais	
N4.19.3 Thermal Insulation and Other Materials Used	N4.19.3 Thermal Insulation and Other Materials Used	
in Cargo Containment Systems	in Cargo Containment Systems	Outline of Amendment
3 For the purpose of 4.19.3-2, Part N of the Rules,	3 For the purpose of the requirements in 4.19.3-2, Part	(1)
tests and inspections specified in the following (1) \underline{to} (3) are	N of the Rules, tests and inspection specified in the follow-	(1)
to be carried out.	ing (1) and (2) are to be carried out.	
(1) The insulation materials are to be approved in ac-	(1) The insulation materials are to be approved in ac-	
cordance with the Annex 1 "Guidance for Survey	cordance with the Annex 1 "GUIDANCE FOR	(1): Requirements for
and Construction of Equipment and Fittings for	EQUIPMENT AND FITTINGS OF SHIPS CAR-	material manufacturer
Ships Carrying Liquefied Gases in Bulk" accord-	RYING LIQUEFIED GASES IN BULK". In the	moved to 12.3.1 of Annex
ing to the type or member of tank on which the in-	above, tests and inspection are to be conducted ac-	<u>1</u>
sulation materials are applied.	cording to the procedures on the manufacture, stor-	
11	age, handling and product quality control established	
	by the manufacturer.	(2): Requirement for in-
(2) In the application of insulation materials for ships,	(Newly added)	dividual ships moved
detailed application procedures for each ship are to	(110111) uddou)	from <u>12.2.2 of Annex 1</u>
be submitted to the Society for approval.		
(3) The inspection for insulation work is to include the	(2) The inspection for insulation work is to include the	
following (a) to (c):	following items of tests and inspections (a) to (c):	
Tollowing (a) to (c).	tonowing tiems of tests and inspections (a) to (c):	

Amended	Original	Remarks
(a) Insulation procedure test	(a) Insulation procedure test	
(Omitted)	(Omitted)	
(b) Insulation production test	(b) Insulation production test	
(Omitted)	(Omitted)	
(c) Completion inspection	(c) Completion inspection	
(Omitted)	(Omitted)	
(Deleted)	4 For the purpose of the requirements in 4.19.3-2, Part	Moved to <u>12.3.1 of An-</u>
	N of the Rules, the properties of insulation materials are, in	<u>nex 1</u>
	general, to be verified by the tests given in Table N4.19.3.	
(Deleted)	5 In addition to complying with the requirements in	Moved to <u>12.3.1 of An-</u>
	the preceding -4, property verification test may be requested	nex 1
	by the Society depending on the insulation system.	
(Deleted)	6 If the material, which has been approved according to	Deleted due to duplica-
	the Annex 1 "GUIDANCE FOR EQUIPMENT AND	tion with the preceding -3
	FITTINGS OF SHIPS CARRYING LIQUEFIED GASES	
	IN BULK", satisfies the performance requirements and such	
	performance is considered to serve the purpose, the tests re-	
(D.1.1)	ferred to in the preceding -4 may be omitted.	M14- 12.2.1 -£4
(Deleted)	7 For insulation materials to which the requirements in	Moved to <u>12.3.1 of Annex 1</u>
	the preceding -4 to -6 do not apply, the following require-	<u>IICX 1</u>
	ments (1) and (2) are to be complied with: (1) For insulation materials used for supports of inde-	
	(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 accord-	
	ing 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 depend-	
	ing on the insulation system is to be submitted to the	
	Society.	

Amended	Original	Remarks
(Deleted)	Table N4.19.3 Properties of Insulation Material for Cargo Tank Types	Moved to 12.3.1 of An- nex 1
	(Omitted)	
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 °C 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 °C or more as well as nominal diameters less than 100 mm.	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°C 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. (3) (Omitted)	Correction Revises the unit of nominal diameter (A(JIS) to mm) Outline of Amendment (6) (4): Clarifies that pipe

(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 °C 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°C or higher. (5) (Omitted) 	fittings are included in (4)	
N5.12.2 Materials Having a Lower Melting Point For the purpose of 5.12.2, Part N of the Rules, the insulation applied to short pipes with a melting point lower than 925 which are fitted to cargo tanks, excluding the minimum range of area necessary for the inspection and maintenance of pipe flanges, is to be protected according to 4.19.3-4, Part N of the Rules. Furthermore, insulation materials for cargo piping and other piping are to conform to the requirements in 12.3.1-5(2), Part 6 of the Guidance for the Approval and Type Approval of Materials and Equipment for Marine Use as well as 5.12.3-2, Part N of the Rules.	N5.12.2 Materials Having a Lower Melting Point For the purpose of 5.12.2, Part N of the Rules, the insulation applied to short pipes with a melting point lower than 925 which are fitted to cargo tanks, excluding the minimum range of area necessary for the inspection and maintenance of pipe flanges, is to be protected according to 4.19.3-4, Part N of the Rules. Furthermore, insulation materials for cargo piping and other piping are to conform to the requirements in N4.19.3-6(2) as well as 5.12.3-2, Part N of the Rules.		
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)	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)		

	(Review of Existing Requirements of Part GF and Part N (Equipment Related))			
Amended	Original	Remarks		
 (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) 	 (2) Fittings of <u>Type</u> 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<u>A</u>. (3) (Omitted) 	Correction Revises the unit of nominal diameter (A(JIS) to mm)		
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. Olympia and the distance of the vent outlet is to be measured horizontally.	Outline of Amendment (7) Deleted in consideration of industry practice Outline of Amendment		
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)	(8)		
N8.2.12 Arrangement of All Other Cargo Vent Outlets	N8.2.12 Arrangement of All Other Cargo Vent Outlets			
For the purpose of 8.2.12, Part N of the Rules, <u>outlets</u> 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.	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): (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	Outline of Amendment (8)		
(Deleted)	Rules. (a) The vent outlets of <i>PRV</i> or rupture disc of interbarrier spaces of type <i>A</i> independent tank. However, when both <i>PRV</i> and rupture disc are			

	\	Original	Remarks
	Amended		Remarks
		provided in combination, only the vent dis-	
		charge 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 <i>PRV</i> s or rupture discs of interbar-	
		rier spaces are to be installed in gas dangerous zones.	
N9	CARGO CONTAINMENT SYSTEM AT-	N9 CARGO CONTAINMENT SYSTEM AT-	
	MOSPHERE CONTROL	MOSPHERE CONTROL	
	WOOTHERE CONTROL	MOST HERE CONTROL	
N9.4	Inerting	N9.4 Inerting	
	9	8	
N9.4	.1 Properties of Inert Gas and Its Supply	N9.4.1 Properties of Inert Gas and Its Supply	
	For the purpose of 9.4.1, Part N of the Rules, the	For the purpose of the requirements in 9.4.1, Part N	
followi	ing (1) through (4) are to be complied with:	of the Rules, the following requirements (1) through (4) are	
		to be complied with:	
(1)	(Omitted)	(1) (Omitted)	
(2)	Where the inert gas is stored in inert gas bottles, the	(2) Where the inert gas is stored in inert gas bottles, the	
	following (a) through (d) are to be complied with:	following requirements (a) through (d) are to be	
	tonowing (a) anough (a) are to be complied with.	complied with:	
	(a) The inert gas bottles and piping are to be dealt	(a) The inert gas bottles and piping are to be dealt	
		, ,	
	with according to the following i) and ii):	with according to the following <u>requirements</u> i)	
	i) Matariala antiafrina atandanda dagar d	to iii): The metarial of the mining may be to the	
	i) Materials satisfying standards deemed ap-	i) The material of the piping may be to the	
	propriate by the Society may be used.	requirements of the standard as deemed ap-	
		propriate by the Society.	Deleted due to duplica-
	(Deleted)	ii) The gas bottle may be to the requirements	tion with the relevant
		of the National Standards notwithstanding	requirements of Annex 1
		the requirements in Chapter 10, Part D of	
		the Rules.	

	nents of Part GF and Part N (Equipment Related))	
Amended	Original	Remarks
ii) Hydraulic tests for pipes, valves and pipe fittings may be omitted. ((b) to (d) are omitted.) (3) (Omitted) (4) (Omitted)	iii) The hydraulic tests for pipes, valves and pipe fittings may be omitted. ((b) to (d) are omitted.) (3) (Omitted) (4) (Omitted)	
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)
 Materials used in inert gas systems are to be suitable for their intended purpose. Each system component of the inert gas systems, 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". 	 Materials used in inert gas systems are to be suitable for their intended purpose. 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. 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), 	Moved to 8.1.1 of Annex 1

(Review of Existing Require	ments of Part GF and Part N (Equipment Related))	
Amended	Original	Remarks
	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	
	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 re-	
	quired 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 CON-	
	STRUCTION OF EQUIPMENT AND FIT-	
	TINGS FOR SHIPS CARRYING LIQUE-	
	FIED 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	

Amended	Original	Remarks
	apply.	
	(d) Where the systems are fitted for the purposes of	
	9.2 and 9.3, Part N of the Rules, the require-	
	ments 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.	
	(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	Remarks
		Kemarks
AND FITTINGS OF SHIPS CARRYING LIQUE-	AND FITTINGS OF SHIPS CARRYING LIQUE-	
FIED GASES IN BULK	FIED GASES IN BULK	
Chapter 1 GENERAL	Chapter 1 GENERAL	Part N
Chapter 1 GENERAL	Chapter 1 GENERAL	
1.1 Application	1.1 Application	
3 In applying this guidance, the "design temperature"	(Newly added)	Outline of Amendment (5)
specified in Chapter 2 to Chapter 7 means the design tem-		Clarifies "design temper-
perature of piping systems in which the equipment is used.		ature"
Chapter 6 RELIEF VALVES	Chapter 6 RELIEF VALVES	Part N
Chapter of REELET VILLYES	Chapter of REELET VILLYES	
6.2 Materials, Construction and Strength	6.2 Materials, Construction and Strength	
6.2.1 Materials	6.2.1 Materials	
1 The materials of principal structural members of re-	1 The materials of principal structural members of re-	Revises the unit of nomi-
lief valve with the design temperature not less than 0 °C are	lief valve with the design temperature not less than 0°C are	nal diameter (A(JIS) to
to be in accordance with the requirements in the relevant	to be in accordance with the requirements in the relevant	mm)
Chapters of Part K of the Rules. However, when the design	Chapters of Part K of the Rules . However, when the design	
pressure is below 3 <i>MPa</i> and nominal diameter is below 100	pressure is below 3 MPa and nominal diameter is below	
mm, the materials of structural members may be such as to	$100\underline{A}$, the materials of structural members may be such as to	
conform to the requirements of JIS or recognised standards.	conform to the requirements of JIS or recognized standards.	
1	1	<u> </u>

(Review of Existing Requirements of Part GF and Part N (Equipment Related))		
Amended	Original	Remarks
Chapter 8 INERT GAS GENERA- TOR/STORAGE SYSTEM AND LIQUID NITRO- GEN TANK	Chapter 8 INERT GAS GENERA- TOR/STORAGE SYSTEM AND LIQUID NITRO- GEN TANK	Part N
8.1 General	8.1 General	
8.1.1 Application 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.	8.1.1 Application 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.	Outline of Amendment (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.	(Newly added) (For reference: N9.5.1) (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)	Moved from N9 (Refer to 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). (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".	(For reference: N9.5.1) (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"	(Refer to <u>N9.5.1</u>)

Amended	Original and Construction of Equipment and Fittings	Remarks
	and Construction of Equipment and Fittings	1
ply with Chapter 35, Part R of the Rules under the following conditions.	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. 2 The requirements in this Chapter do not apply to the nert gas generating system utilizing the exhaust gas from oilers and the system of generating nitrogen gas by separating from the atmospheric air.	Moved from N9 (Refer to N9.5.1)

	ments of Part GF and Part N (Equipment Related))	D 1
Amended	Original	Remarks
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.		
<u>5</u> (Omitted)	<u>3</u> (Omitted)	
<u>5</u> (Onnitical)	<u>5</u> (Ommaca)	
Charter 12 INCHI ATION MATERIALS	Charter 12 INCH ATION MATERIALS	Part N
Chapter 12 INSULATION MATERIALS	Chapter 12 INSULATION MATERIALS	1 art IV
12.2 Insulation Application Dyggodungs	12.2 Insulation Application Procedures	
12.2 Insulation Application Procedures	12.2 Insulation Application Procedures	
		Outline of Amendment
12.2.1 General	12.2.1 General	(1)
12.2.1 Ocherai	12.2.1 General	
For the approval application of insulation materials, in	1 For the approval application of insulation materials,	
addition to those general procedures, all precautions at time	in addition to those general procedures, all precautions at	
of application and test items are to be specified.	time of application and test items are to be specified.	
(Deleted)	2 In the application of insulation materials in each ship,	Moved to N4
(Deleted)		(Refer to N4.19.3)
	detailed application procedures for each ship are to be sub-	(Refer to 144.17.5)
	mitted to the Society for approval.	
40.0 Th	40.2 %	
12.3 Tests and Inspections	12.3 Tests and Inspections	
12.2.1 Tosts and Inspections	12.2.1 Tosts and Inspections	
12.3.1 Tests and Inspections	12.3.1 Tests and Inspections	Moved from N4
	(Newly added)	
	(For reference: N4.19.3-3)	(Refer to <u>N4.19.3</u>)
1 Tests and inspections are to be conducted according	(1) (Omitted) In the above, tests and <u>inspection</u> are to be	
to the procedures on manufacture, storage, handling and	conducted according to the procedures on the manu-	

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

Amended-Original Requirements Comparison Table

	(Review of E	Existing Requirer	ments of Part GF and Part N (Equipment Relate	ed))
	Amended		Original	Remarks
	pending on the type of inbmitted to the Society.	nsulation system)	specified in 4.19.3-2, Part N of the Rules ing on the insulation system is to be submitt Society.	*
No.	Test item	Procedure of test Test p		
1	Compatibility with the cargo	Tensile, compression, sl		
2	Solubility in the cargo	Changes in the size and		

(DIN 53428) Comparison of weight of test specimen or test of water absorbing properties before and Absorption of the cargo after dipping in the cargo (DIN 53428) Shrinkage ISO 2796, ASTM D 2126 Aging ASTM D756 Closed cell content ISO 4590, ASTM D2856, ASTM D6226 Density ISO 845, ISO 2781, ASTM D1622 Mechanical properties · Bending strength ISO 1209, ASTM C 203, ASTM D790 Compression strength ASTM D 695, ASTM D 1621 · Tensile strength ISO 1926, EN 1607, ASTM D412, ASTM D638, ASTM D1623 · Shearing strength ISO 1922, ASTM C 273 Thermal expansion ASTM D696, ASTM E228, ASTM E831 10 Abrasion Cohesion ASTM D 1623 Thermal conductivity ISO 8302, JIS A 1412, ASTM C 177, ASTM C 518 Resistance to vibration ISO 10055 Resistance to fire and flame JIS A 9511, DIN 4102 spread 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 N4.19.3 412.3.1-3 to -7-5 of the Guidance.

	Amended				Origina	equipment Related))	Remarks
	Table 12.2 P	roperties	of Insulation Material f	or Cargo Ta	ank Types		(Newly added)
No.	Verified items	Integral tank	Membrane/Semi-membrane tank	Type A/B independent tank	Type C independent tank	<u>Note</u>	Moved from N4 (Refer to N4.19.3)
1	Compatibility with the cargo		<u></u> (1)	O ¹⁾			
<u>2</u>	Solubility in the cargo		<u></u>	<u></u>			
<u>3</u>	Absorption of the cargo		<u>O1)</u>	<u>O1)</u>			
<u>4</u>	Shrinkage		<u>O1)</u>	<u>O1)</u>			
<u>5</u>	Ageing		<u>O</u>	<u>O</u> 1)			
<u>6</u>	Closed cell content	\triangle	<u> </u>	\triangle	\triangle	Applied only to closed cell material	
<u>7</u>	<u>Density</u>	<u>O</u>	<u>O</u>	0	<u>O</u>		
	Bending strength	<u>O</u>	<u>O</u>	0	<u>O</u>		
o	Compress strength		<u>O</u>				
<u>8</u>	Compress strength Tensile strength	<u>O</u>	<u>O</u>	<u>O</u>	<u>O</u>		
	Shearing strength	<u>O</u>	<u>O</u>				
<u>9</u>	Thermal expansion		<u>O</u>	<u>O</u> 2)	<u>O</u> 2)		
<u>10</u>	Abrasion		<u>O</u>				
<u>11</u>	Cohesion		△	<u>\(\lambda 1 \) </u>		Applied to cohered material	
<u>12</u>	Thermal conductivity	<u>O</u>	<u>O</u>	<u>O</u>	<u>O</u>		
<u>13</u>	Resistance to vibration	\triangle	\triangle	<u></u>		Refer to 4.19.3-7, Part N of the Rule	
<u>14</u>	Resistance to fire and flame spread	<u>O</u>	<u>O</u>	<u>O</u>	<u>O</u>		
<u>15</u>	Resistance to fatigue failure		<u>O</u>				
<u>16</u>	Resistance to crack propagation		\triangle				
	Symbols: ○: Items to be verified through ver Δ: Items to be verified through ver □: Items for which preparation of one of the series of th	ification test w lata on the prop material acts a	here deemed necessary depending perties is desirable. s the spray shield specified in 4.7.	1, Part N of the		ases, data on the properties	

Amended	Original	Remarks
EFFECTIVE DATE A		
1. The effective date of the amendments is 1 January 202		