Amendments of the Rules

(External Development Review-External Opinion Inquiry)

Part 4 Hull Equipment

2022.09.

Hull Rule Development Team

Main Amendments

(1) Background of Amendment

1) Deleted of Grade 1/2 for fibre rope and amended to apply the breaking test loads for fibre ropes as an industry standard according to request for establishment/revision of Classification Technical Rules(MET4600-289-2022[(1)])

[(1)] The grade of 1 and 2 of synthetic fibre ropes is not used in the industry and manufacturer' specifications are higher than the KR Rules for breaking test load for fibre ropes. Therefore, requested to delete the grade 1/2 of the fibre rope and breaking test load for fibre ropes to follow the industry standard.

(2) Effective Date : 1 July 2023 (based on contracted date for construction)

Present	Amendment	Note
CHAPTER 8 EQUIPMENT NUMBER AND EQUIPMENT Section 1 <omitted> Section 2 Equipment Number	**CHAPTER 8 EQUIPMENT NUMBER AND EQUIPMENT** Section 1 <same as present> Section 2 Equipment Number	
201. Equipment number (2022) 【See Guidance】 <omitted>	**201. Equipment number (2022) 【See Guidance】 <same as present>**	
202. Mass of anchors <omitted>	**202. Mass of anchors <same as present>**	
203. Chain cables and stream lines <omitted>	**203. Chain cables and stream lines <same as present>**	
204. Tow lines and mooring lines	**204. Tow lines and mooring lines**	
1. ~ 2. <omitted>	**1. ~ 2. <same as present>**	
3. The requirements for synthetic fibre ropes used as tow lines or mooring lines are to be as stipulated elsewhere.	~~3. The requirements for synthetic fibre ropes used as tow lines or mooring lines are to be as stipulated elsewhere.~~<Deleted>	– deleted because synthetic fibre ropes are also included in fiber rope and there is no other specific requirements except Section 6.
4. The length of individual mooring lines may be reduced up to 7 % of the length given in Table 4.8.1 provided that total length of the stipulated number of mooring lines is not less than obtained from multiplying the length by the number given in Table 4.8.1.	3. The length of individual mooring lines may be reduced up to 7 % of the length given in Table 4.8.1 provided that total length of the stipulated number of mooring lines is not less than obtained from multiplying the length by the number given in Table 4.8.1.	
5. For mooring lines connected with powered winches where the rope is stored on the drum, steel cored wire ropes of suitable flexible construction may be used instead of fibre cored wire ropes subject to the approval by the Society.	4. For mooring lines connected with powered winches where the rope is stored on the drum, steel cored wire ropes of suitable flexible construction may be used instead of fibre cored wire ropes subject to the approval by the Society.	– renumbering due to deletion of paragraph 204.3
205. Emergency towing arrangements on tankers	**205. Emergency towing arrangements on tankers <same as present>**	

Present

Section 3 ~ Section 5 <omitted>

Section 6 Fibre Ropes

601. Application

1. Hemp ropes and synthetic fibre ropes used for tow lines and mooring lines to be equipped on ships in accordance with the provisions in Sec 2 (hereinafter referred to as "fibre rope") are to comply with the requirements in this Section.
2. Filaments and fibre ropes having characteristics differing from those specified in this Section are to comply with the requirements in 101. 3.

602. Kinds of fibre ropes

Fibre ropes are classified into 9 kinds as shown in **Table 4.8.17.**

Table 4.8.17 Kinds of fibre rope

Kind of fibre rope			Filament (material)
Hemp rope			Manila hemp
Synthetic fibre rope	Vinylon rope	Grade 1 Grade 2	Vinylon
	Polyethylene rope	Grade 1 Grade 2	Polyethylene
	Polyester rope		Polyester
	Polypropylene rope	Grade 1 Grade 2	Polypropylene
	Polyamide rope		Polyamide

603. Processes of manufacture <omitted>

Amendment

Section 3 ~ Section 5 <same as present>

Section 6 Fibre Ropes

601. Application

1. Hemp ropes and synthetic fibre ropes used for tow lines and mooring lines to be equipped on ships in accordance with the provisions in Sec 2 (hereinafter referred to as "fibre rope") are to comply with the requirements in this Section.
2. Filaments and fibre ropes having characteristics differing from those specified in this Section are to comply with the requirements in 101. 3.

602. Kinds of fibre ropes

Fibre ropes are classified into 9 kinds as shown in **Table 4.8.17.** However, fibre ropes not included in Table 4.8.17 may be in accordance with the relevant industry standard.

Table 4.8.17 Kinds of fibre rope

Kind of fibre rope			Filament (material)
Hemp rope			Manila hemp
Synthetic fibre rope	Vinylon rope	~~Grade 1 Grade 2~~	Vinylon
	Polyethylene rope	~~Grade 1 Grade 2~~	Polyethylene
	Polyester rope		Polyester
	Polypropylene rope	~~Grade 1 Grade 2~~	Polypropylene
	Polyamide rope		Polyamide

603. Processes of manufacture <same as present>

Note

- reflecting Request for establishment/revision of Classification Technical Rules (MET46000-289-2022)

Present	Amendment	Note
604. Materials <omitted> **605. Construction of fibre ropes and others <omitted>** **606. Diameter** The diameter of fibre ropes is to be measured on circumscribed circle of the ropes under the load equal to 5 % of the breaking test load specified in **Table 4.8.18** Its tolerance is to be ±3 % of its nominal diameter. **607. Breaking tests** Breaking tests for fibre ropes are to be carried out in accordance with the following requirements: (1)One specimen is to be taken from each coil of the fibre ropes. Where fibre ropes are continuously manufactured by the same machine with the yarns of the same type and divided into several coils, one specimen may be taken from one coil of the ropes selected by the Surveyor at random. (2)The length of the specimen is not to be less than 30 times the diameter of the hemp rope, but need not exceed one *metre*. (3)Specimens for polyethylene and polypropylene ropes are to be subjected to breaking tests in as wet condition immediately after having been immersed in warm water at 35 ± 2 °C for more than 30 *minutes*. For other fibre ropes than the above ropes, specimens are to be subjected to breaking tests in as dry condition at room temperature. (4)The load at the time of breaking is not to be less than given in **Table 4.8.18.**	**604. Materials <same as present>** **605. Construction of fibre ropes and others <same as present>** **606. Diameter** The diameter of fibre ropes is to be measured on circumscribed circle of the ropes under the load equal to 5 % of the breaking test load specified in 607. Its tolerance is to be ±3 % of its nominal diameter. **607. Breaking tests 【See Guidance】** Breaking tests for fibre ropes are to be carried out in accordance with the following requirements. However, relevant industry standards may be followed if the breaking test required by industry standard is different from these requirements. Industry standard means international standard(ISO etc.) or standards issued by national association(KS, DIN, JMSA etc.) which are recognized in the country where the ship is built. (1)One specimen is to be taken from each coil of the fibre ropes. Where fibre ropes are continuously manufactured by the same machine with the yarns of the same type and divided into several coils, one specimen may be taken from one coil of the ropes selected by the Surveyor at random. (2)The length of the specimen is not to be less than 30 times the diameter of the hemp rope, but need not exceed one *metre*. (3)Specimens for polyethylene and polypropylene ropes are to be subjected to breaking tests in as wet condition immediately after having been immersed in warm water at 35 ± 2 °C for more than 30 *minutes*. For other fibre ropes than the above ropes, specimens are to be subjected to breaking tests in as dry condition at room temperature. (4)The load at the time of breaking is not to be less than given in industry standard. And breaking test loads of different from industry standards are to be specially considered by the Society.	- reflecting Request for establishment/revision of Classification Technical Rules (MET46000-289-2022)

Present	Amendment	Note
608. Inspection of appearance and dimensions <omitted> **609. Marking <omitted>**	**608. Inspection of appearance and dimensions <same as present>** **609. Marking <same as present>**	– reflecting Request for establishment/revision of Classification Technical Rules (MET46000-289-2022)

Table 4.8.18 Breaking test loads for fibre ropes (kN)

Diameter of rope (mm)	Hemp rope(1)	Synthetic fibre rope							Polyamide(1)
		Vinylon(1)		Polyethylene(2)		Polyester(1)	Polypropylene(2)		
		Grade 1	Grade 2	Grade 1	Grade 2		Grade 1	Grade 2	
10	7.06	9.32	15.7	9.71	12.7	15.6	10.8	12.7	18.1
12	9.90	13.4	21.8	13.9	17.7	22.0	15.7	17.7	27.5
14	13.1	17.9	28.4	18.6	23.5	29.2	20.6	23.5	36.6
16	16.9	22.9	36.3	23.8	29.4	37.5	26.5	29.4	46.9
18	21.0	28.6	45.1	29.7	37.3	46.7	32.4	37.3	58.3
<omitted>									
75	307	407	635	422	525	663	453	525	829
80	346	459	716	476	593	747	511	593	935
85	387	514	801	533	667	837	572	667	1050
90	431	571	895	592	735	931	635	735	1170
95	477	632	981	655	814	1030	702	814	1280
100	525	694	1080	721	897	1140	772	897	1410

(Note)
(1) Breaking load at room temperature in dried condition.
(2) Breaking load at room temperature after having been immersed in warm water at 35 ± 2 °C for more than 30 minutes.

~~Table 4.8.18 Breaking test loads for fibre ropes (kN)~~ <deleted>

~~Diameter of rope (mm)~~	~~Hemp rope(1)~~	~~Synthetic fibre rope~~							~~Polyamide(1)~~
		~~Vinylon(1)~~		~~Polyethylene(2)~~		~~Polyester(1)~~	~~Polypropylene(2)~~		
		~~Grade 1~~	~~Grade 2~~	~~Grade 1~~	~~Grade 2~~		~~Grade 1~~	~~Grade 2~~	
~~10~~	~~7.06~~	~~9.32~~	~~15.7~~	~~9.71~~	~~12.7~~	~~15.6~~	~~10.8~~	~~12.7~~	~~18.1~~
~~12~~	~~9.90~~	~~13.4~~	~~21.8~~	~~13.9~~	~~17.7~~	~~22.0~~	~~15.7~~	~~17.7~~	~~27.5~~
~~14~~	~~13.1~~	~~17.9~~	~~28.4~~	~~18.6~~	~~23.5~~	~~29.2~~	~~20.6~~	~~23.5~~	~~36.6~~
~~16~~	~~16.9~~	~~22.9~~	~~36.3~~	~~23.8~~	~~29.4~~	~~37.5~~	~~26.5~~	~~29.4~~	~~46.9~~
~~18~~	~~21.0~~	~~28.6~~	~~45.1~~	~~29.7~~	~~37.3~~	~~46.7~~	~~32.4~~	~~37.3~~	~~58.3~~
~~<omitted>~~									
~~75~~	~~307~~	~~407~~	~~635~~	~~422~~	~~525~~	~~663~~	~~453~~	~~525~~	~~829~~
~~80~~	~~346~~	~~459~~	~~716~~	~~476~~	~~593~~	~~747~~	~~511~~	~~593~~	~~935~~
~~85~~	~~387~~	~~514~~	~~801~~	~~533~~	~~667~~	~~837~~	~~572~~	~~667~~	~~1050~~
~~90~~	~~431~~	~~571~~	~~895~~	~~592~~	~~735~~	~~931~~	~~635~~	~~735~~	~~1170~~
~~95~~	~~477~~	~~632~~	~~981~~	~~655~~	~~814~~	~~1030~~	~~702~~	~~814~~	~~1280~~
~~100~~	~~525~~	~~694~~	~~1080~~	~~721~~	~~897~~	~~1140~~	~~772~~	~~897~~	~~1410~~

~~(Note)~~
~~(1) Breaking load at room temperature in dried condition.~~
~~(2) Breaking load at room temperature after having been immersed in warm water at 35 ± 2 °C for more than 30 minutes.~~

Amendments of the Guidance relating to the Rules

(External Development Review-External Opinion Inquiry)

Part 4 Hull Equipment

2022.09.

Hull Rule Development Team

Main Amendments

(1) Background of Amendment

1) Reflected of examples of industrial standards for fibre rope breaking test loads in accordance with the amendments to Ch. 8, Sec. 6 of the Rules, and cases permitted except for industrial standards are added.

(2) Effective Date : 1 July 2023 (based on contracted date for construction)

<table>
<tr><th>Present</th><th>Amendment</th><th>Note</th></tr>
<tr>
<td>

CHAPTER 8 EQUIPMENT NUMBER AND EQUIPMENT

Section 1 ~ Section 5 <omitted>

</td>
<td>

CHAPTER 8 EQUIPMENT NUMBER AND EQUIPMENT

Section 1 ~ Section 5 <same as present>

Section 6 Fibre Ropes <Newly>

607. Breaking tests

(4) For example, the breaking test loads of the fibre ropes are in accordance with the following industry standards.

Industry Standard	Fibre Rope
KS K ISO1140	Fibre ropes — Polyamide — 3-, 4-, 8- and 12-strand ropes
KS K ISO1141	Fibre ropes — Polyester — 3-, 4-, 8- and 12-strand ropes
KS K ISO 1346	Fibre ropes — Polypropylene split film, monofilament and multifilament (PP2) and polypropylene high-tenacity multifilament (PP3) — 3-, 4-, 8- and 12-strand ropes
KS K ISO10556	Fibre ropes of polyester/polyolefin dual fibres— 3-, 4-, 8- and 12-strand ropes
KS K ISO10572	Mixed polyolefin fibre ropes — 3-, 4-, 8- and 12-strand ropes
ISO 1969	Fibre ropes — Polyethylene — 3- and 4-strand ropes

In 607. (4) of the Rules, the term “specially considered” means the cases as follows.

(1) Guidelines from Oil Companies International Marine Forum(OCIMF)

(2) Manufacturer’s specifications

</td>
<td>- reflecting Request for establishment/revision of Classification Technical Rules (MET46000-289-2022)</td>
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</table>

Amendments of the Rules

(External Development Review-External Opinion Inquiry)

Guidance for Approval of Manufacturing Process and Type Approval, Etc.

2022.09.

Hull Rule Development Team

Main Amendments

(1) Background of Amendment

1) The raw textiles test for the synthetic fibre ropes was deleted.

- According to the amendment of Pt 4, the synthetic fibre ropes are to comply with the industrial standard, but the industrial standard does not require the testing of fiber rope raw textiles. So deleted test process for raw textiles.

(2) Effective Date : 1 July 2023 (based on contracted date for construction)

Present	Amendment	Note
CHAPTER 2 APPROVAL OF MANUFACTURING PROCESS Section 1 ~ Section 11 <omitted> **Section 12 Synthetic Fibre Ropes**	**CHAPTER 2 APPROVAL OF MANUFACTURING PROCESS** Section 1 ~ Section 11 <same as present> **Section 12 Synthetic Fibre Ropes**	
1201. Application <omitted>	**1201. Application** <same as present>	
1202. Data to be submitted <omitted>	**1202. Data to be submitted** <same as present>	
1203. Approval tests **1. Selection of test samples** Test pieces are to be taken suitable length from end of each length of synthetic fibre ropes. The number of rope to be taken for tests is to be as specified in **Table 2.12.1.** **2. Approval tests and acceptance criteria** (1) The approval test is to be carried out on each kind of ropes under application for each manufacturing factory. The details of approval test are to be as indicated in **Table 2.12.1** and the test is to be carried out in the presence of the Surveyor. Provided, however, approval test is carried out in the presence of inspector of the organization authorized by the Society (officially recognized establishment), the test witnessed by the Surveyor of the Society may be omitted. (2) The procedures of the test for raw textiles for synthetic fibre ropes refer to the **Table 2.12.2**	**1203. Approval tests** **1. Selection of test samples** Test pieces are to be taken suitable length from end of each length of synthetic fibre ropes. The number of rope to be taken for tests is to be as specified in **Table 2.12.1.** **2. Approval tests and acceptance criteria** ~~(1)~~ The approval test is to be carried out on each kind of ropes under application for each manufacturing factory. The details of approval test are to be as indicated in **Table 2.12.1** and the test is to be carried out in the presence of the Surveyor. Provided, however, approval test is carried out in the presence of inspector of the organization authorized by the Society (officially recognized establishment), the test witnessed by the Surveyor of the Society may be omitted. ~~(2) The procedures of the test for raw textiles for synthetic fibre ropes refer to the **Table 2.12.2**~~	- deleted the test for raw textiles
1204. Yarn test <omitted>	**1204. Yarn test** <same as present>	
Table 2.12.1 Approval Test Items and Acceptance Criteria for synthetic fibre ropes <omitted>	**Table 2.12.1 Approval Test Items and Acceptance Criteria for synthetic fibre ropes** <same as present>	

Present	Amendment	Note

Table 2.12.2 Approval Test Items and Acceptance Criteria for raw textiles for synthetic fibre ropes

Test item	Test method	Acceptance criteria
Linear strength and elongation tests	(1) The test procedures of filament and split are to be in accordance with KS K 0412, and those of span are to be correspondingly on accordance with KS K 0475 (Testing Method for Tensile Strength of Spun Yarns). (2) The number of test specimens used in the test is to be 10 and average value of the linear strength and elongation on these test specimens are to be obtained.	The average value of linear strength and elongation obtained are to comply with the requirements given in Table 2.12.3.
Chemical resistance test	(1) The chemical resistance tests are to comprise alkali-resistance test and acid-resistance test. (2) In alkali-resistance test, the test specimen is to be socked in 10% caustic soda solution at a temperature 20±2°C for a period of 24 hours, whereas in acid-resistance test, the test specimen is to be socked in 10% acid solution at a temperature 20±2°C for a period of 24 hours, and then rinsed with water, and the linear strength is to be measured by the same method as in (1) above. (3) The number of test specimens are to be 10 for each chemical solution. The linear strength is to be converted into the value of residual strength ratio of chemical resistance by following equation. $\text{Residual chemical resistance strength ratio} = \frac{\text{linear strength(g) after chemical processing}}{\text{linear strength(g) before chemical processing}} \times 100$	These average values are to satisfy the values given in Table 2.12.3.

~~**Table 2.12.2 Approval Test Items and Acceptance Criteria for raw textiles for synthetic fibre ropes <deleted>**~~

~~Test item~~	~~Test method~~	~~Acceptance criteria~~
~~Linear strength and elongation tests~~	~~(1) The test procedures of filament and split are to be in accordance with KS K 0412, and those of span are to be correspondingly on accordance with KS K 0475 (Testing Method for Tensile Strength of Spun Yarns).~~ ~~(2) The number of test specimens used in the test is to be 10 and average value of the linear strength and elongation on these test specimens are to be obtained.~~	~~The average value of linear strength and elongation obtained are to comply with the requirements given in Table 2.12.3.~~
~~Chemical resistance test~~	~~(1) The chemical resistance tests are to comprise alkali-resistance test and acid-resistance test.~~ ~~(2) In alkali-resistance test, the test specimen is to be socked in 10% caustic soda solution at a temperature 20±2°C for a period of 24 hours, whereas in acid-resistance test, the test specimen is to be socked in 10% acid solution at a temperature 20±2°C for a period of 24 hours, and then rinsed with water, and the linear strength is to be measured by the same method as in (1) above.~~ ~~(3) The number of test specimens are to be 10 for each chemical solution. The linear strength is to be converted into the value of residual strength ratio of chemical resistance by following equation.~~ ~~$\text{Residual chemical resistance strength ratio} = \frac{\text{linear strength(g) after chemical processing}}{\text{linear strength(g) before chemical processing}} \times 100$~~	~~These average values are to satisfy the values given in Table 2.12.3.~~

- deleted the test for raw textiles

Present	Amendment	Note

Table 2.12.3 Standard Tensile Strength Values for Raw Textiles

Kind of raw textiles			Mechanical properties		Residual chemical resistance strength ratio(%)	
			Linear strength(g/D)	Linear elongation (%)	10% sulphuric acid	10% caustic soda
Vinylon	for Grade 1	Span, mono-filament	4.0 min.	9 ~ 18	90 min.	90 min.
	for Grade 2	Multi-filament	6.0 min.	9 ~ 18	90 min.	90 min.
Polyethylene	for Grade 1	Mono-filament	6.5 min.	5 ~ 25	90 min.	90 min.
	for Grade 2	Mono-filament	8.5 min.	5 ~ 15	95 min.	95 min.
Polyester		Multi-filament	5.5 min.	10 ~ 20	90 min.	90 min.
Polypropylene	for Grade 1	Span	4.5 min.	10 ~ 20	90 min.	90 min.
		Mono-filament	6.0 min.	10 ~ 20	90 min.	90 min.
	for Grade 2	Multi-filament	6.5 min.	15 ~ 25	90 min.	90 min.
		Special mono-filament	6.0 min.	5 ~ 15	90 min.	90 min.
		Special multi-filament	5.5 min.	5 ~ 15	90 min.	90 min.
		Split	4.0 min.	5 ~ 15	90 min.	90 min.
Nylon		Multi-filament	6.5 min.	15 ~ 30	80 min.	80 min.
NOTE: g/D signifies gram/denier						

~~Table 2.12.3 Standard Tensile Strength Values for Raw Textiles <deleted>~~

~~Kind of raw textiles~~			~~Mechanical properties~~		~~Residual chemical resistance strength ratio(%)~~	
			~~Linear strength(g/D)~~	~~Linear elongation (%)~~	~~10% sulphuric acid~~	~~10% caustic soda~~
~~Vinylon~~	~~for Grade 1~~	~~Span, mono-filament~~	~~4.0 min.~~	~~9 ~ 18~~	~~90 min.~~	~~90 min.~~
	~~for Grade 2~~	~~Multi-filament~~	~~6.0 min.~~	~~9 ~ 18~~	~~90 min.~~	~~90 min.~~
~~Polyethylene~~	~~for Grade 1~~	~~Mono-filament~~	~~6.5 min.~~	~~5 ~ 25~~	~~90 min.~~	~~90 min.~~
	~~for Grade 2~~	~~Mono-filament~~	~~8.5 min.~~	~~5 ~ 15~~	~~95 min.~~	~~95 min.~~
~~Polyester~~		~~Multi-filament~~	~~5.5 min.~~	~~10 ~ 20~~	~~90 min.~~	~~90 min.~~
~~Polypropylene~~	~~for Grade 1~~	~~Span~~	~~4.5 min.~~	~~10 ~ 20~~	~~90 min.~~	~~90 min.~~
		~~Mono-filament~~	~~6.0 min.~~	~~10 ~ 20~~	~~90 min.~~	~~90 min.~~
	~~for Grade 2~~	~~Multi-filament~~	~~6.5 min.~~	~~15 ~ 25~~	~~90 min.~~	~~90 min.~~
		~~Special mono-filament~~	~~6.0 min.~~	~~5 ~ 15~~	~~90 min.~~	~~90 min.~~
		~~Special multi-filament~~	~~5.5 min.~~	~~5 ~ 15~~	~~90 min.~~	~~90 min.~~
		~~Split~~	~~4.0 min.~~	~~5 ~ 15~~	~~90 min.~~	~~90 min.~~
~~Nylon~~		~~Multi-filament~~	~~6.5 min.~~	~~15 ~ 30~~	~~80 min.~~	~~80 min.~~
~~NOTE: g/D signifies gram/denier~~						

- deleted the test for raw textiles