

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



Sep. 2020

Hull Rule Development Team

- Main Amendments -

(1) Effective date : 1 July 2021 (Contracts for construction are signed on or after 1 July 2021)

- Since the overall requirements of IACS UR [L5 \(Computer Software for Onboard Stability Calculations\)](#) have been reflected in Annex 1-10 of the Guidance Pt 1, among the requirements of Ch 4, Sec. 2 “Loading Instrument Program”, stability calculation program have been deleted and mentioned to refer to Annex 1-10 of the Guidances of Pt 1.

(1) Effective date : 1 July 2021

(Contracts for construction are signed on or after 1 July 2021)

Present	Amendment	Note
<p>CHAPTER 4 DESIGN APPROVAL</p> <p>Section 1 General <omitted></p> <p>Section 2 Loading Instrument Program</p> <p>201. Application <omitted></p> <p>202. Data to be submitted <omitted></p> <p>203. Requirements</p> <p>1. System <omitted></p> <p>2. Longitudinal strength calculation program <omitted></p> <p>3. Stability calculation program</p> <p>The system is to comply with the following requirements.</p> <p>(1) <u>The numerical/graphic indications of calculation results such as calculation of mass and moment, GM, GZ, area below GZ curve and range of GZ are demonstrated.</u></p> <p>(2) <u>The function which may decide compliance of all applicable requirements such as intact, grain and/or damage stability and minimize work and analysis of the operator is to be provided.</u></p> <p>(3) <u>If applicable, damage stability is to be calculated by displacement constant method (bouyancy loss method) and the function which may evaluate damage stability at middle stage of flooding is to be provided.</u></p> <p>(4) <u>If there exist applicable requirements not reviewed by instrument, proper measure is to be taken to the operator to recognize that such requirements are to be reviewed by other methods.</u></p> <p>(5) <u>Software and supporting data are to be clear and easy for use.</u></p> <p>(6) <u>The final test conditions and results of approval test are to be reflected.</u></p> <p>(7) <u>All pre-programmed data for applicable ship are to be stored as to avoid accidental alteration or deletion by the user or deletion by power surge/failure.</u></p>	<p>CHAPTER 4 DESIGN APPROVAL</p> <p>Section 1 General <omitted></p> <p>Section 2 Loading Instrument Program</p> <p>201. Application <Same as the current Guidance></p> <p>202. Data to be submitted <omitted></p> <p>203. Requirements</p> <p>1. System <omitted></p> <p>2. Longitudinal strength calculation program <omitted></p> <p>3. Stability calculation program <i>(2021)</i></p> <p><u>The relevant requirements are in accordance with 3. "Computer Software for Onboard Stability Calculations" in Annex 1-10 of the Guidance Pt 1.</u></p>	<p>- Since the overall requirements of IACS UR L5(Computer Software for Onboard Stability Calculations) have been reflected in 3, Annex 1-10 of the Guidance Pt 1, the same requirements are not reflected in the Guidance for Approval of Manufacturing Process and Type Approval, Etc., but only for referrals to reduce additional work in future revisions.</p>

Present	Amendment	Note
<p>4. User's manual (2017)</p> <p>(1) The operating manual for all longitudinal strength and/or stability calculation is to be included.</p> <p>(2) The user's manual is to be reviewed in accordance with Part 1, Annex 2-10, 4. of the Guidance and found satisfactory. (2017)</p> <p>204. Tests and inspection</p> <p>1. Confirmation for accuracy of longitudinal strength calculation program (omitted)</p> <p>2. Stability program</p> <p>(1) Accuracy between test conditions and output results of stability is to be confirmed.</p> <p>(2) If applicable, the number and definition of damage cases pre-programmed in software are to be considered adequate in demonstrating compliance with the relevant International Code/Convention or National requirement in any cargo loading condition.</p> <p>(3) Technical content and format of supporting documentation are to be satisfied.</p> <p>(4) Results of sensitive test for one or more model ships (carried out by alteration of section modulus used for hull form definition) are to be confirmed.</p> <p>(5) Saved requirements are to be compared with calculated results.</p> <p>205. Change of approved program (omitted)</p>	<p>4. User's manual (2017)</p> <p>(1) The operating manual for all longitudinal strength and/or stability calculation is to be included.</p> <p>(2) The user's manual is to be reviewed in accordance with Pt 1, Annex 1-10, 3. (8) of the Guidance and found satisfactory. (2021)</p> <p>204. Tests and inspection</p> <p>1. Confirmation for accuracy of longitudinal strength calculation program (same as the current Guidance)</p> <p>2. Stability program (2021)</p> <p><u>The relevant requirements are in accordance with 3. "Computer Software for Onboard Stability Calculations" in Annex 1-10 of the Guidance Pt 1.</u></p> <p>205. Change of approved program (same as the current Guidance)</p>	

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

(Development Review : For internal opinion inquiry)

2021. 1.



Machinery Rule Development Team

Effective Date : 1 July 2021

(The contract date for ship construction)

Present	Amendment	Remark
<p style="text-align: center;">CHAPTER 3 Type Approval</p> <p style="text-align: center;">Section 1 - Section 19 <same as the Rules></p> <p style="text-align: center;">Section 20 Level Indicators</p> <p>2001. - 2002. <same as the present Rules></p> <p>2003. Type tests</p> <p>1. The type tests are to include the following (1) through (5) depending on application and type of level indicators.</p> <p>(1) - (4) <same as the present Rules></p> <p>(5) For the electrical parts of the devices, <u>testing as given in the following (A) through (E). However the type tests are to comply with the requirements in 2304. 2</u> and, in case the explosion-protected construction is required, type tests also are to comply with the requirements in 2107. of the Guidance.</p> <p>(A) <u>Dry heat test</u> (B) <u>Damp heat test</u> (C) <u>Vibration test</u> (D) <u>Inclination test</u> (E) <u>Electrical power supply variation test</u></p> <p>2. <same as the present Rules></p> <p style="text-align: center;">Section 21 - 37 <same as the present Rules></p>	<p style="text-align: center;">CHAPTER 3 Type Approval</p> <p style="text-align: center;">Section 1 - Section 19 <same as the Rules></p> <p style="text-align: center;">Section 20 Level Indicators</p> <p>2001. - 2002. <same as the present Rules></p> <p>2003. Type tests</p> <p>1. The type tests are to include the following (1) through (5) depending on application and type of level indicators.</p> <p>(1) - (4) <same as the present Rules></p> <p>(5) For the electrical parts of the devices, testing as given in the following (A) through (E). However the type tests are to comply with the requirements in 2304. 2 <u>1 (2)</u> and, in case the explosion-protected construction is required, type tests also are to comply with the requirements in 2107. of the Guidance. <i>(2021)</i></p> <p>(A) Dry heat test (B) Damp heat test (C) Vibration test (D) Inclination test (E) Electrical power supply variation test</p> <p>2. <same as the present Rules></p> <p style="text-align: center;">Section 21 - 37 <same as the present Rules></p>	<p>(Amended)</p> <p>- In order to unify the test requirements for electrical parts of the devices, the requirements for environmental test of level indicators have been amended to comply with the environmental test requirements of Sec 23 of automatic and remote control systems.</p>

RULES FOR CLASSIFICATION(STEEL SHIPS)

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

- External Opinion Inquiry -

2021.1.



Hull Rule Development Team

- Main Amendments -

(1) Enter into force on 1 July 2021 (The application date for certification of type approval)

● To reflect Request for Establishment/Revision of Classification Technical Rules

Present	Amendment	Reason
<p style="text-align: center;">Chapter 1 ~ Chapter 2 <Omitted></p> <p style="text-align: center;">Chapter 3 Type Approval</p> <p style="text-align: center;">Section 1 ~ Section 26 <Omitted></p> <p>Section 27 Materials for Refrigerated Chambers and Oil-imperious Composition</p> <p>2701. ~ 2702. <Omitted></p> <p>2703. Type tests</p> <p>1. <Omitted></p> <p>2. Insulation materials</p> <p>(1) The items represented by mark O in Table 3.27.1 are to be tested for the insulation materials. However, materials not given in the table are to be considered in each case.</p> <p style="text-align: center;">Table 3.27.1 Type Test Items of Insulation Materials</p> <p>(2) Testing procedure and acceptance criteria The testing procedures are to be in accordance with the requirements of KS or other recognizant standards, and acceptance criteria are to be as belows.</p> <p>(A) <Omitted></p> <p>(B) Acceptance criteria for glass wool is to be as specified in Table 3.27.3.</p> <p style="text-align: center;">Table 3.27.3 Test items and acceptance criteria for glass wool</p> <p>(C) <Omitted></p> <p>(D) Acceptance criteria for foam polystyrene is to be as specified in Table 3.27.5 and 3.27.6.</p> <p>(a) Insulation board and pipe cover made by polystyrene bead</p> <p>Table 3.27.5 Test items and acceptance criteria for polystyrene bead</p>	<p style="text-align: center;">Chapter 1 ~ Chapter 2 <Same as the present guidance></p> <p style="text-align: center;">Chapter 3 Type Approval</p> <p style="text-align: center;">Section 1 ~ Section 26 <Same as the present guidance></p> <p>Section 27 Materials for Refrigerated Chambers and Oil-imperious Composition</p> <p>2701. ~ 2702. <Same as the present guidance></p> <p>2703. Type tests</p> <p>1. <Same as the present guidance></p> <p>2. Insulation materials</p> <p>(1) The items represented by mark O in Table 3.27.1 are to be tested for the insulation materials. <u>Tests of calcium silicate is to follow the manufacturer's method.</u> However, materials not given in the table are to be considered in each case.</p> <p style="text-align: center;">Table 3.27.1 Type Test Items of Insulation Materials</p> <p>(2) Testing procedure and acceptance criteria The testing procedures are to be in accordance with the requirements of KS or other recognizant standards, and acceptance criteria are to be as belows.</p> <p>(A) <Same as the present guidance></p> <p>(B) Acceptance criteria for glass wool is to be as specified in Table 3.27.3.</p> <p style="text-align: center;">Table 3.27.3 Test items and acceptance criteria for glass wool</p> <p>(C) <Same as the present guidance></p> <p>(D) Acceptance criteria for foam polystyrene is to be as specified in Table 3.27.5 and 3.27.7.</p> <p>(a) Insulation board and pipe cover made by polystyrene bead</p> <p style="text-align: center;">Table 3.27.5 Test items and acceptance criteria for Insulation board</p> <p style="text-align: center;">Table 3.27.6 Test items and acceptance criteria for Insulation pipe cover</p>	

Present	Amendment	Reason
<p>(b) Insulation board and pipe cover made by polystyrene extrusion</p> <p>Table 3.27.6 Test items and acceptance criteria for polystyrene extrusion</p> <p>(E) Acceptance criteria for Pearlite is to be as specified in Table 3.27.7.</p> <p>Table 3.27.7 Test items and acceptance criteria for pearlite</p> <p>(F) Acceptance criteria for Rigid foam urethane is to be as specified in Table 3.27.8.</p> <p>Table 3.27.8 Test items and acceptance criteria for rigid foam urethane</p> <p>(3) ~ (4) <Omitted></p> <p>3. Oil-impervious covering</p> <p>(1) Tank top covering The test items and testing procedure given in Table 3.27.9 are to be carried out for the tank top covering.</p> <p>(2) Additional tests The tests are to be carried out in accordance with requirements specified in Table 3.27.9. In addition to these tests, the tests given in Table 3.27.10 are to be carried out for the tank side covering.</p> <p>Table 3.27.9 Type Test Items and Testing Procedure for Tank Top Covering for Oil Tanks</p> <p>Table 3.27.10 Approval Test Items and Testing Procedure for Tank Side Covering</p> <p><Below Omitted></p>	<p>(b) Insulation board and pipe cover made by polystyrene extrusion</p> <p>Table 3.27.7 Test items and acceptance criteria for polystyrene extrusion</p> <p>(E) Acceptance criteria for Pearlite is to be as specified in Table 3.27.8.</p> <p>Table 3.27.8 Test items and acceptance criteria for pearlite</p> <p>(F) Acceptance criteria for Rigid foam urethane is to be as specified in Table 3.27.9.</p> <p>Table 3.27.9 Test items and acceptance criteria for rigid foam urethane</p> <p>(3) ~ (4) <Same as the present guidance></p> <p>3. Oil-impervious covering</p> <p>(1) Tank top covering The test items and testing procedure given in Table 3.27.10 are to be carried out for the tank top covering.</p> <p>(2) Additional tests The tests are to be carried out in accordance with requirements specified in Table 3.27.10. In addition to these tests, the tests given in Table 3.27.11 are to be carried out for the tank side covering.</p> <p>Table 3.27.10 Type Test Items and Testing Procedure for Tank Top Covering for Oil Tanks</p> <p>Table 3.27.11 Approval Test Items and Testing Procedure for Tank Side Covering</p> <p><Below Same as the present guidance></p>	

[Present]

Table 3.27.1 Type Test Items of Insulation Materials

Main materials	Thermal conductivity	Density	Bending strength	Compressive strength	Water absorption	Water content	Combustion test	Others	KS
Mineral wool	○	○						Heat shrinkage Particle content	L 9102
Glass wool	○	○						Heat shrinkage	L 9102
Calcium silicate	○	○	○					Water repellency and shrinkage	L 9101
Foam polystyrene	○	○	○	○	○		○	Water vapor permeability	M 3808
Pearlite	○	○	○					Water repellency and shrinkage	F 3701
Rigid foam urethane	○	○	○	○	○		○	Water vapor permeability and rust test	M 3809

Table 3.27.3 Test items and acceptance criteria for glass wool

Kind		Density		Thermal conductivity (W/m · K) (Ave. temperature 70±5℃)	Heat shrinkage ℃	
		kg/m ³	allowance			
Glass wool	No. 2	-	-	Max. 0.042	Min. 400	
	No. 3	-	-	Max. 0.049		
Insulation board	No. 2	24k	24	+3, -2	Max. 0.049	Min. 300
		32k	32	±4	Max. 0.046	
		40k	40	+4, -3	Max. 0.044	Min. 350
		48k	48	+4, -3	Max. 0.043	
		64k	64	±6	Max. 0.042	Min. 400
		80k	80	±7		
		96k	96	+9, -8		
	120k	120	±12			
	No. 3	80k	80	±7	Max. 0.047	
		96k	96	+9, -8		
		120k	120	±12		
Blanket	No. 2	a	24~40		Max. 0.048	Min. 350
		b	41~120		Max. 0.043	Min. 400
Insulation band	No. 2	a	22~36		Max. 0.052	Min. 300
		b	37~52			Min. 350
		c	58~132			Min. 400
Insulation pipe cover		40~90		Max. 0.043	Min. 350	

Table 3.27.5 Test items and acceptance criteria for polystyrene bead

Kind	Density kg/m ³	Thermal conductivity (W/m.K) (Ave. temperature 20±5°C)		Bending strength N/cm ²	Compressive strength N/cm ²	Water absorption g/100cm ³	Combustion test	Water Vapor Permeability ⁽¹⁾ ng/m ² .s.Pa	
		Class 1	Class 2						
Insulation board	No. 1	Min. 30	Max. 0.036	Max. 0.031	Min. 35	Min. 16	Max. 1	Flame is to be extinguished without remains within 3 minutes. And not to burn over the combustion limit line	Max. 146
	No. 2	Min. 25	Max. 0.037	Max. 0.032	Min. 30	Min. 12			Max. 208
	No. 3	Min. 20	Max. 0.040	Max. 0.033	Min. 22	Min. 8			Max. 250
	No. 4	Min. 15	Max. 0.043	Max. 0.034	Min. 15	Min. 5	Max. 1.5		Max. 292
Insulation board	No. 1	Min. 35	Max. 0.036	Max. 0.031	Min. 30	-	t < 30 mm : Max. 2, t ≥ 30 mm : Max. 1	-	-
	No. 2	Min. 30	Max. 0.036	Max. 0.032	Min. 25				
	No. 3	Min. 25	Max. 0.037	Max. 0.033	Min. 20				

Note
1. To be measured per 25mm in thickness for reference.

Table 3.27.6 Test items and acceptance criteria for polystyrene extrusion.

Kind	Pressure test N/cm ²	Bending strength N/cm ²	Thermal conductivity (W/m · K) (Ave. temperature 70±5°C)	Combustion test	Water Vapor Permeability ⁽¹⁾ ng/m ² .s.Pa	
Insulation board	Special	Min. 25	Min. 45	Max. 0.027	Flame is to be extinguished without remains within 3 minutes. And not to burn over the combustion limit line.	Max. 146
	No.1	Min. 18	Min. 35	Max. 0.028		
	No.2	Min. 14	Min. 30	Max. 0.029		
	No.3	Min. 10	Min. 25	Max. 0.031		

Note
1. To be measured per 25 mm in thickness for reference.

Table 3.27.8 Test items and acceptance criteria for rigid foam urethane

Kind		Density kg/m ³	Thermal conductivity (W/m · K) (Ave. temp. 20±5°C)	Bending strength N/cm ²	Pressure test N/cm ²	Water absorption g/100 cm ²	Combustion test	Water Vapor Permeability ⁽¹⁾ ng/m ² ·s·Pa	Rust test	
Insulation board	Grade 1	No.1	Min.45	Max. 0.024	Min. 35	Min. 30	Max. 3.0	Burning time is to be within 120 sec. and length is not more than 60mm.	(2)	
		No.2	Min.35	Max. 0.024	Min. 25	Min. 20				Max. 145
		No.3	Min.25	Max. 0.025	Min. 15	Min. 10				Max. 185
	Grade 2	No.1	Min.45	Max. 0.023	Min. 35	Min. 15		-		Max. 40
		No.2	Min.35	Max. 0.023	Min. 25	Min. 10		-		Max. 40
		No.3	Min.25	Max. 0.024	Min. 15	Min. 8		-		Max. 40
Insulation pipe cover	No.1	Min.45	Max. 0.024	Min. 35	Min. 30	-	Max. 145			
	No.2	Min.35	Max. 0.024	Min. 25	Min. 20		Max. 185			
	No.3	Min.25	Max. 0.025	Min. 15	Min. 10		Max. 225			
<p>Note</p> <ol style="list-style-type: none"> To be measured per 25 mm in thickness for reference. Weight loss is to be not more than the weight loss of specimen without flame retardant. However this value is used as for reference. 										

[Amendment]

Table 3.27.1 Type Test Items of Insulation Materials

Main materials	Thermal conductivity	Density	Bending strength	Compressive strength	Water absorption	Water content	Combustion test	Others	KS
Mineral wool	○	○						Heat shrinkage, Particle content	L 9102
Glass wool	○	○	○					Heat shrinkage	L 9102
Calcium silicate	○	○	○					Water repellency and shrinkage	
Foam polystyrene	○	○	○	○	○		○	Water vapor permeability	M 3808
Pearlite	○	○	○					Water repellency and shrinkage	F 4714
Rigid foam urethane	○	○	○	○	○		○	Water vapor permeability and rust test	M 3809

Table 3.27.3 Test items and acceptance criteria for glass wool

Kind		Density		Thermal conductivity (W/m · K) (Ave. temperature 70℃)	Heat shrinkage ℃	
		kg/m ³	allowance			
glass wool	No. 2	-	-	Max. 0.042	Min. 400	
	No. 3	-	-	Max. 0.049		
Insulation board	No. 2	24k	24	+3, -2	Max. <u>0.048</u>	Min. 300
		32k	32	±4	Max. <u>0.045</u>	
		40k	40	+4 -3	Max. <u>0.043</u>	Min. 350
		48k	48	+4, -3	Max. <u>0.042</u>	
		64k	64	±6		
		80k	80	±7		
		96k	96	+9, -8		
	120k	120	±12	Min. 400		
	No. 3	80k	80		±7	Max. 0.047
		96k	96		+9, -8	
120k		120	±12			
blanket	No. 2	a	24~40		Max. 0.048	Min. 350
		b	41~120		Max. 0.043	Min. 400
Insulation band	No. 2	a	22~36		Max. 0.052	Min. 300
		b	37~52			Min. 350
		c	58~132			Min. 400
Insulation pipe cover		40~90		Max. 0.043	Min. 350	

Table 3.27.5 Test items and acceptance criteria for Insulation board

Kind	Density kg/m ³	Thermal conductivity (W/m · K) (Ave. temperature 23±2°C)		<u>Bending failure load, N</u>	Compressive strength N/cm ²	Water absorption g/100 cm ²	Combustion test	Water Vapor Permeability ⁽¹⁾ ng/m ² .s.Pa.	
		Class 1	Class 2						
Insulation board	No.1	Min. 30	Max. 0.036	Max. 0.031	Min. 35	Min. 16	Max. 1	<u>Burning time is to be within 120 sec. and length is not more than 60mm.</u>	Max. 146
	No.2	Min. 25	Max. 0.037	Max. 0.032	Min. 30	Min. 12			Max. 208
	No.3	Min. 20	Max. 0.040	Max. 0.033	Min. 22	Min. 8			Max. 250
	No.4	Min. 15	Max. 0.043	Max. 0.034	Min. 15	Min. 5	Max. 1.5		Max. 292

Note
1. To be measured per 25 mm in thickness for reference.

Table 3.27.6 Test items and acceptance criteria for Insulation pipe cover

Kind	Density kg/m ³	Thermal conductivity (W/m · K) (Ave. temperature 23±2°C)		Bending strength N/cm ²	Water absorption g/100 cm ²	Combustion test	
		Class 1	Class 2				
Insulation pipe cover	No.1	Min. 35	Max. 0.036	Max. 0.031	Min. 30	t < 30 mm : Max. 2, t ≥ 30 mm : Max. 1	<u>Burning time is to be within 120 sec. and length is not more than 60mm.</u>
	No.2	Min. 30	Max. 0.036	Max. 0.032	Min. 25		
	No.3	Min. 25	Max. 0.037	Max. 0.033	Min. 20		

Table 3.27.7 Test items and acceptance criteria for polystyrene extrusion.

Kind		Pressure test N/cm ²	<u>Bending failure load,</u> N	Thermal conductivity (W/m · K) (Ave. temperature <u>23±2</u> °C)	Combustion test	Water Vapor Permeability ⁽¹⁾ ng/m ² ·s.Pa
Insulation board	Special	Min. 25	Min. 45	Max. 0.027	<u>Burning time is to be within 120 sec. and length is not more than 60mm.</u>	Max. 146
	No.1	Min. 18	Min. 35	Max. 0.028		
	No.2	Min. 14	Min. <u>35</u>	Max. 0.029		
	No.3	Min. 10	Min. <u>35</u>	Max. 0.031		
Note 1. To be measured per 25 mm in thickness for reference.						

Table 3.27.9 Test items and acceptance criteria for rigid foam urethane

Kind		Density kg/m ³	Thermal conductivity (W/m · K) (Ave. temp. 20±5°C)	<u>Bending failure load, N</u>	Pressure test N/cm ²	Water absorption g/100 cm ²	Combustion test	Water Vapor Permeability ⁽¹⁾ ng/m ² ·s·Pa	Rust test
Insulation board	Grade 1	No.1	Min.45	Max. 0.024	Min. 35	Min. 30	Burning time is to be within 120 sec. and length is not more than 60mm.	Max. 145	(2)
		No.2	Min.35	Max. 0.024	Min. 25	Min. 20		Max. 185	
		No.3	Min.25	Max. 0.025	Min. 15	Min. 10		Max. 225	
	Grade 2	No.1	Min.45	Max. 0.023	Min. 35	Min. 15	-	Max. 40	
		No.2	Min.35	Max. 0.023	Min. 25	Min. 10		Max. 40	
		No.3	Min.25	Max. 0.024	Min. 15	Min. 8		Max. 40	
Insulation pipe cover	No.1	Min.45	Max. 0.024	Min. 35	Min. 30	<u>Burning time is to be within 120 sec. and length is not more than 60mm.</u>	Max. 145		
	No.2	Min.35	Max. 0.024	Min. 25	Min. 20		Max. 185		
	No.3	Min.25	Max. 0.025	Min. 15	Min. 10		Max. 225		
Note 1. To be measured per 25 mm in thickness for reference. 2. Weight loss is to be not more than the weight loss of specimen without flame retardant. However this value is used as for reference.									

AMENDMENTS FOR OTHER GUIDANCE

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

- For external opinion -

2020.10.



Machinery Rule Development Team

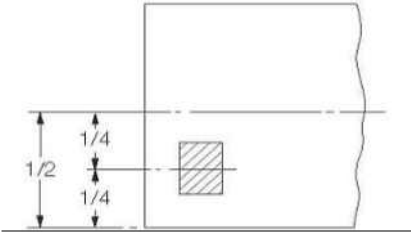
- Main Amendments -

(1) Enter into force on 1 January 2021 (the date of application for certification of material & welding or the contract date for ship construction)

- Circular -

● To reflect IACS UR W31(Rev.2 Dec 2019 CR)

Present	Amendment	reason
<p style="text-align: center;">CHAPTER 1 <Omitted></p> <p style="text-align: center;">CHAPTER 2 APPROVAL OF MANUFACTURING PROCESS</p> <p style="text-align: center;">Section 1 ~ Section 2-4 <Omitted></p> <p style="text-align: center;">Section 2-5 <u>YP47 Steel Plates</u></p> <p>241. Application</p> <ol style="list-style-type: none"> The requirements in this Section apply to tests and inspection for the approval of manufacturing process of YP47 Steel Plates for longitudinal structural members in the upper deck region of container carriers as specified in Pt 2, Ch 1, 311. of the Rules. Requirements other than those specified in this Section are to be in accordance with the requirements of Section 2-1. <p>242. Data to be submitted</p> <p>The following reference data in addition to those specified in 102. are to be submitted to the Society.</p> <ol style="list-style-type: none"> Data to be submitted are to be as given in 202. In addition to (1) above, aim maximum P_{cm} content <p>243. Approval tests</p> <ol style="list-style-type: none"> General Approval test items, test methods and acceptance criteria not specified in this Requirements are to be in accordance with Section 2-1. (2) <New> Approval range <u>One test product with the maximum thickness to be approved is to be selected provided the approved target chemical composition range remains unchanged.</u> 	<p style="text-align: center;">CHAPTER 1 <Same as the present Guidance></p> <p style="text-align: center;">CHAPTER 2 APPROVAL OF MANUFACTURING PROCESS</p> <p style="text-align: center;">Section 1 ~ Section 2-4 <Same as the present Guidance></p> <p style="text-align: center;">Section 2-5 <u>YP47 Steels</u></p> <p>241. Application</p> <ol style="list-style-type: none"> The requirements in this Section apply to tests and inspection for the approval of manufacturing process of <u>YP47 Steels</u> for longitudinal structural members in the upper deck region of container carriers as specified in Pt 2, Ch 1, 311. of the Rules. Requirements other than those specified in this Section are to be in accordance with the requirements of Section 2-1. <p>242. Data to be submitted</p> <p>The following reference data in addition to those specified in 102. are to be submitted to the Society.</p> <ol style="list-style-type: none"> Data to be submitted are to be as given in 202. In addition to (1) above, aim maximum P_{cm} content <p>243. Approval tests</p> <ol style="list-style-type: none"> General (1) Approval test items, test methods and acceptance criteria not specified in this Requirements are to be in accordance with Section 2-1. (2) <u>Additional tests other than this Section and Sec 2-1 may be required when deemed necessary by the Society. (2021)</u> Approval range <u>Except for 203. 4. (1) and (2), approval range is to be in accordance with Sec 2-1. (2021)</u> 	<p>* It is reflected Request for Establishment/Revision of Classification Technical Rules(MET4800-71-20 20)</p> <p>- To reflect IACS UR W31(Rev.2 CR)</p>

Present	Amendment	reason
<p>3. Base Metal test</p> <p>(1) Charpy V-notch Impact Tests</p> <p>(A) Test samples are to be taken from the plate corresponding to the top of the ingot, unless otherwise agreed. In the case of continuous castings, test samples are to be taken from a randomly selected plate.</p> <p>(B) The location of the test sample is to be at the square cut end of the plate, approximately one-quarter width from an edge, as shown Fig. 2.2.1.</p>  <p>Fig 2.2.1 Plates and flats</p> <p>(C) Samples are to be taken with respect to the principal rolling direction of the plate at locations representing the top and bottom of the plate as follows:</p> <ul style="list-style-type: none"> - Longitudinal Charpy V-notch impact tests : Top and bottom; - Transverse Charpy V-notch impact tests : Top only; - Strain aged longitudinal Charpy V-notch impact test : Top only; <p>(D) Charpy V-notch impact tests are required from both the quarter and mid thickness locations of the test samples. One set of 3 Charpy V-notch impact specimens is required for each impact test.</p> <p>(E) The Charpy V-notch impact test temperature is to be -40°C.</p> <p>(F) In addition to the determination of the energy value, the lateral expansion and the percentage crystallinity are also to be reported.</p>	<p>3. Base Metal test</p> <p>(1) <Deleted></p>	<p>* It is reflected Request for Establishment/Revision of Classification Technical Rules(MET4800-71-20.20)</p> <p>- To reflect IACS UR W31(Rev.2 CR)</p>

Present	Amendment	reason
<p>(G) The strain aged samples are to be strained to 5% followed by heating to 250°C for 1 hour prior to testing.</p> <p>(H) Additionally at each location, Charpy V-notch impact tests are to be carried out with appropriate temperature intervals to properly define the full transition range.</p> <p>(2) Brittle fracture initiation test</p> <p>(A) Deep notch test or Crack Tip Opening Displacement (CTOD) test is to be carried out and the result is to be reported.</p> <p>(B) CTOD test is to be carried out in accordance with BS 7448 or equivalent.</p> <p>(C) When performing the deep notch test, manufacturer is to submit the detailed test procedure to the Society.</p> <p>(D) Manufacturer is to be consulted with the Society the dimension of test specimen, test condition, etc.</p> <p>(3) Naval Research Laboratory (NRL) drop weight test</p> <p>(A) The test method is to comply with ASTM E208 or equivalent method.</p> <p>(B) Nil Ductility Test Temperature (NDTT) is to be reported for reference and photographs of the tested specimens are to be taken and enclosed with the test report. And NDTT may be used in the qualification of production test methods.</p> <p>(4) Brittle crack arrest test</p> <p>(A) Standard ESSO test described in Pt 2, Ch 1, 311. 3 of the Guidance or other alternative test (e.g. double tension test etc.) is to be carried out in order to obtain the brittle crack arrest toughness for reference.</p> <p>(B) In case of other alternative test, manufacturer is to submit the detailed test procedure to the Society and to be consulted with the Society the dimension of test specimen, test condition, etc.</p>	<p>(1) Brittle fracture initiation test</p> <p>(A) Deep notch test or Crack Tip Opening Displacement (CTOD) test is to be carried out and the result is to be reported.</p> <p>(B) CTOD test is to be carried out in accordance with BS 7448 or equivalent.</p> <p>(C) When performing the deep notch test, manufacturer is to submit the detailed test procedure to the Society.</p> <p>(D) Manufacturer is to be consulted with the Society the dimension of test specimen, test condition, etc.</p> <p><u>(3) ~ (4) <Deleted></u></p>	<p>* It is reflected</p> <p>Request for Establishment/Revision of Classification Technical Rules(MET4800-71-2020)</p> <p>- To reflect IACS UR W31(Rev.2 CR)</p>

Present	Amendment	reason
<p>4. Weldability test</p> <p>(1) Charpy V-notch Impact Test</p> <p>(A) Charpy V-notch impact tests are to be taken at a position of 1/4 thickness from the plate surface on the face side of the weld with the notch perpendicular to the plate surface.</p> <p>(B) One set of the specimens transverse to the weld is to be taken with the notch located at the fusion line and at a distance 2, 5 and minimum 20 mm from the fusion line.</p> <p>(C) The fusion boundary is to be identified by etching the specimens with a suitable reagent.</p> <p>(D) One additional set of the specimens is to be taken from the root side of the weld with the notch located at the same position and at the same depth as for the face side.</p> <p>(E) The impact test temperature is -40°C.</p> <p>(F) Additionally at each location, impact tests are to be carried out with appropriate temperature intervals to properly define the full transition range.</p> <p>(2) Y-shape weld crack test (Hydrogen crack test)</p> <p>(A) The test method is to be in accordance with recognized national standards such as <u>JIS Z 3158 or GB 4675.1. (2019)</u></p> <p>(B) Acceptance criteria are to be as deemed appropriate by the Society.</p> <p>(3) Brittle fracture initiation test</p> <p>(A) Deep notch test or CTOD test is to be carried out.</p> <p>(B) Test method and results are to be in accordance with 3. (2) of this requirements.</p>	<p>4. Weldability test</p> <p><u>(1) <Deleted></u></p> <p>(1) Y-shape weld crack test (Hydrogen crack test)</p> <p>(A) The test method is to be in accordance with recognized national standards such as <u>JIS Z 3158-2016 or CB/T 4364-2013. (2019) (2021)</u></p> <p>(B) Acceptance criteria are to be as deemed appropriate by the Society.</p> <p>(2) Brittle fracture initiation test</p> <p>(A) Deep notch test or CTOD test is to be carried out.</p> <p>(B) Test method and results are to be in accordance with 3. (1) of this requirements.</p>	<p>* It is reflected Request for Establishment/Revision of Classification Technical Rules(MET4800-71-20 20)</p> <p>- To reflect IACS UR W31(Rev.2 CR)</p>

Present	Amendment	reason
<p>Section 2-6 ~ Section 2-7 <Omitted></p> <p><u>Section 2-8</u> <New></p>	<p>Section 2-6 ~ Section 2-7 <Same as the present Guidance></p> <p><u>Section 2-8 Brittle crack arrest steels (2021)</u></p> <p>271. Application</p> <p><u>1. The requirements in this Section apply to tests and inspection for the approval of manufacturing process of brittle crack arrest steels for longitudinal structural members in the upper deck region of container carriers as specified in Pt 2, Ch 1, 312. of the Rules.</u></p> <p><u>2. Requirements other than those specified in this Section are to be in accordance with the requirements of Section 2-1.</u></p> <p>272. Data to be submitted</p> <p><u>The following reference data in addition to those specified in 102. are to be submitted to the Society.</u></p> <p><u>(1) Data to be submitted are to be as given in 202.</u></p> <p><u>(2) In addition to (1) above, the following data is to be submitted.</u></p> <p><u>(A) Aim maximum P_{cm} content</u></p> <p><u>(B) In-house test reports of the brittle crack arrest properties of the steels intended for approval</u></p> <p><u>(C) Approval test program for the brittle crack arrest properties (see 273.)</u></p> <p><u>(D) Production test procedure for the brittle crack arrest properties.</u></p> <p>273. Approval tests</p> <p>1. Extent of the approval tests</p> <p><u>(1) If the manufacturing process and mechanism to ensure the brittle crack arrest properties for the steels intended for approval are same, 203. of Sec 2-1 is to be followed for the extent of the approval tests.</u></p> <p><u>(2) The number of test samples and test specimens may be increased when deemed necessary by the Society, based on the in-house test reports of the brittle crack arrest properties of the steels intended for approval specified in 272. (2) (B).</u></p>	<p>* It is reflected</p> <p>Request for Establishment/Revision of Classification Technical Rules(MET4800-71-20 20)</p> <p>- To reflect IACS UR W31(Rev.2 CR)</p>

Present	Amendment	reason
	<p>2. Type of tests</p> <p>(1) <u>Brittle crack arrest tests are to be carried out in accordance with 3. in addition to the approval tests specified in Sec 2-1 and/or Sec 2-5.</u></p> <p>(2) <u>In the case of applying for addition of the specified brittle crack arrest properties for YP36, YP40 and YP47 steels of which, manufacturing process has been approved by the Society (i.e. The aim analyses, method of manufacture and condition of supply are similar and the steelmaking process, deoxidation and fine grain practice, casting method and condition of supply are the same), brittle crack arrest tests, chemical analyses, tensile test and Charpy V-notch impact test are to be carried out in accordance with this Section and Sec 2-1.</u></p> <p>3. Approval tests and acceptance criteria</p> <p>(1) <u>Test specimens and testing procedure of brittle crack arrest tests</u></p> <p>(A) <u>The test specimens of the brittle crack arrest tests are to be taken with their longitudinal axis parallel to the final rolling direction of the test plates.</u></p> <p>(B) <u>The loading direction of brittle crack tests is to be parallel to the final rolling direction of the test plates.</u></p> <p>(C) <u>The thickness of the test specimens of the brittle crack arrest tests is to be the full thickness of the test plates.</u></p> <p>(D) <u>The test specimens and repeat test specimens are to be taken from the same steel plate.</u></p> <p>(E) <u>The thickness of the test specimen is to be the maximum thickness of the steel plate requested for approval.</u></p> <p>(F) <u>In the case where the brittle crack arrest properties are evaluated by K_{IC}, the brittle crack arrest test method is to be in accordance with Pt 2, Ch 1, 203. 1. of the Guidance. In the case where the brittle crack arrest properties are evaluated by CAT, the test method is to be in accordance with Pt 2, Ch 1, 203. 4. of the Guidance.</u></p>	<p>* It is reflected</p> <p>Request for Establishment/Revision of Classification Technical Rules(MET4800-71-20 20)</p> <p>- To reflect IACS UR W31(Rev.2 CR)</p>

Present	Amendment	reason
	<p>(2) <u>Other tests</u> <u>Additional tests may be required when deemed necessary by the Society.</u></p> <p>(3) <u>Acceptance criteria</u> <u>(A) When the approval test is carried out in accordance with Sec 2-1 and/or Sec 2-5, the acceptance criteria is also in accordance with the relevant requirements.</u> <u>(B) Other than above (A), results of test items and the procedures shall comply with the test program approved by the Society. In the case where the brittle crack arrest properties are evaluated by K_{IC} or CAT, the manufacturer also is to submit to the Society the brittle crack arrest test reports in accordance with Pt 2, Ch 1, 203. 1. of the Guidance for K_{IC} and Pt 2, Ch 1, 203. 4. of the Guidance for CAT.</u></p> <p>4. Grade designation <u>Upon satisfactory completion of the survey and tests, approval is granted by the Society with the grade designation having the suffix “BCA1” or “BCA2” (e.g. <i>EH40-BCA1</i>, <i>EH47-H-BCA1</i>, <i>EH47-H-BCA2</i>, etc.).</u></p> <p>5. Renewal of approval <u>(1) With respect to 108., the manufacturer is also to submit to the Society actual manufacturing records of the approved brittle crack arrest steels within the term of validity of the manufacturing approval certificate.</u> <u>(2) Chemical composition, mechanical properties, brittle crack arrest properties (e.g. brittle crack arrest test results or small-scale alternative test results) and nominal thickness are to be described in the form of histogram or statistics.</u></p>	<p>* It is reflected</p> <p>Request for Establishment/Revision of Classification Technical Rules(MET4800-71-2020)</p> <p>- To reflect IACS UR W31(Rev.2 CR)</p>

AMENDMENTS FOR OTHER GUIDANCE

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

- For external opinion inquiries -

2021.01.



Machinery Rule Development Team

- Main Amendments -

(1) Enter into force on 1 July 2021 (the date of application for certification of products)

● To reflect Request for Establishment/Revision of Classification Technical Rules

Present	Amendment	reason
<p style="text-align: center;">CHAPTER 1 <Omitted></p> <p style="text-align: center;">CHAPTER 2 APPROVAL OF MANUFACTURING PROCESS</p> <p style="text-align: center;">Section 1 General</p> <p>101. ~ 107. <Omitted></p> <p>108. Validity and renewal of approval certificate</p> <p>1. <Omitted></p> <p>2. The manufacturer who intends to have a continuation of the approval is to submit an application to the Society three months before the due date together with following data.</p> <p>(1) Data related to the corrective action for approved product, if any</p> <p>(2) Alteration to the approved manufacturing process or specification</p> <p>(3) Service records of approved products or similar products which are approved by this Society (minimum 6 months and over)</p> <p>3. ~ 5. <Omitted></p> <p>109. Suspension or withdrawal of approval</p> <p>1. Concerning the product quality, during the period of validity, the Society can withdraw the approval of manufacturing process in case any of following cases:</p> <p>(1) When the materials no longer conform to the given requirements due to amendments or establishment of conventions, laws, rules and regulations.</p> <p>(2) In service failures traceable to product quality and/or non conformity of the product revealed during test, fabrication and construction.</p> <p>(3) <u>When the products are produced in breach of the approval conditions or when the test results have been improperly reported.</u></p>	<p style="text-align: center;">CHAPTER 1 <Same as the present Guidance></p> <p style="text-align: center;">CHAPTER 2 APPROVAL OF MANUFACTURING PROCESS</p> <p style="text-align: center;">Section 1 General</p> <p>101. ~ 107. <Same as the present Guidance></p> <p>108. Validity and renewal of approval certificate</p> <p>1. <Same as the present Guidance></p> <p>2. The manufacturer who intends to have a continuation of the approval is to submit an application to the Society three months before the due date together with following data.</p> <p>(1) Data related to the corrective action for approved product, if any</p> <p>(2) Alteration to the approved manufacturing process or specification, if any <i>(2021)</i></p> <p>(3) Service records of approved products or similar products which are approved by this Society (minimum 6 months and over)</p> <p>3. ~ 5. <Same as the present Guidance></p> <p>109. Suspension or withdrawal of approval</p> <p>1. Concerning the product quality, during the period of validity, the Society can <u>suspend or withdraw</u> the approval of manufacturing process in case any of following cases: <i>(2021)</i></p> <p>(1) When the materials no longer conform to the given requirements due to amendments or establishment of conventions, laws, rules and regulations.</p> <p>(2) In service failures traceable to product quality and/or non conformity of the product revealed during test, fabrication and construction.</p> <p>(3) <u>When the products are produced in breach of the approval conditions</u></p> <p>(4) <u>when the test results have been improperly reported</u></p>	<p>* It is reflected</p> <p>Request for Establishment/Revision of Classification Technical Rules(MET4800-611-2020)</p> <p>- This is to make decisions by proactively processing and judging "suspension" and "withdrawal" according to the situation.</p>

Present	Amendment	reason
<p>(4) Changes brought by the Manufacturer without preliminary agreement of the Society to the extent of the approval defined at the time of the approval</p> <p>(5) In case where forged or falsified stamps or certificates are used. (2019)</p> <p>(6) When the materials and equipment failed to pass the confirmation test and/or occasional plant audit specified in 110.</p> <p>(7) <u>In case where a serious failure of the manufacturer's quality system has been identified or where the manufacturer has failed to inform any changes which will affect the approved quality system to this Society.</u></p> <p>(8) <u>In case where the manufacturer has not undergone a renewal plant audit or where the manufacturer is refusing to undergo occasional plant audit requested by this Society.</u></p> <p>2. In renewal or occasional audit for approved products, where non-conformities in the approved quality system are found, or where conditions for the issuance of the certificate or for its maintenance have deteriorated, the manufacturer is to correct the non-conformities. Such corrections are to be verified by the Society. In case where corrective actions are not taken within the specified period, the Society may suspend the approved certificate for a given period. In case where the corrective actions are not taken for the suspended period, the Society may withdraw the approval.</p> <p>3. Having no concern with the product quality the Society can withdraw, during the period of validity, the approval of manufacturing process in the following cases:</p> <p>(1) When a request for withdrawal is made by the manufacturer.</p> <p>(2) When the approval fees are not paid.</p> <p>(3) When considered inappropriate for approved condition by the Society.</p> <p>4. ~ 5. <Omitted></p> <p>110. <Omitted></p>	<p>(5) Changes brought by the Manufacturer without preliminary agreement of the Society to the extent of the approval defined at the time of the approval</p> <p>(6) In case where forged or falsified stamps or certificates are used. (2019)</p> <p>(7) When the materials and equipment failed to pass the confirmation test and/or occasional plant audit specified in 110.</p> <p>(8) <u>In case where a serious failure of the manufacturer's quality system has been identified</u></p> <p>(9) <u>In case where the manufacturer has failed to inform any changes which will affect the approved quality system to this Society.</u></p> <p>(10) <u>In case where the manufacturer has not undergone a renewal plant audit</u></p> <p>(11) <u>In case where the manufacturer is refusing to undergo occasional plant audit, confirmation test, etc. requested by this Society.</u></p> <p>2. In renewal or occasional audit for approved products, where non-conformities in the approved quality system are found, or where conditions for the issuance of the certificate or for its maintenance have deteriorated, the manufacturer is to correct the non-conformities. Such corrections are to be verified by the Society. In case where corrective actions are not taken within the specified period, the Society may suspend the approved certificate. In case where the corrective actions are not taken for the suspended period, the Society may withdraw the approval.</p> <p>3. Having no concern with the product quality, the Society can withdraw the approval of manufacturing process in the following cases:</p> <p>(1) When a request for withdrawal is made by the manufacturer.</p> <p>(2) When the approval fees are not paid.</p> <p>(3) When considered inappropriate for approved condition by the Society.</p> <p>4. ~ 5. <Same as the present Guidance></p> <p>110. <Same as the present Guidance></p>	

Present	Amendment	reason
<p style="text-align: center;">Section 2-1 ~ Section 3 <Omitted></p> <p style="text-align: center;">Section 4-1 Castings (2018)</p> <p>401. <Omitted></p> <p>402. Data to be submitted</p> <p>The following reference data in addition to those specified in 102. are to be submitted to the Society.</p> <p>(1) Approval Range(Table 2.4.1)</p> <p>(A) Kinds of material</p> <p>(B) Melting process</p> <p>(C) Casting procedure</p> <p>(D) Max. mass of one castings(excluding riser, etc.)</p> <p>(E) The products required the separate approval tests, if applicable</p> <p>(2) ~ (5) <Omitted></p> <p>403. Approval tests</p> <p>1. Test samples and specimen</p> <p>(1) Test samples <u>from product to be approved are to be selected for each type of material and each casting procedure. The type of material and casting procedure are to be in accordance with Table 2.4.1.</u></p>	<p style="text-align: center;">Section 2-1 ~ Section 3 <Same as the present Guidance></p> <p style="text-align: center;">Section 4-1 Castings (2018)</p> <p>401. <Same as the present Guidance></p> <p>402. Data to be submitted</p> <p>The following reference data in addition to those specified in 102. are to be submitted to the Society.</p> <p>(1) Approval Range(Table 2.4.1)</p> <p>(A) Kinds of material</p> <p>(B) Melting process</p> <p>(C) Casting method <i>(2021)</i></p> <p>(D) Max. mass of one castings(excluding riser, etc.)</p> <p>(E) The products required the separate approval tests, if applicable</p> <p>(2) ~ (5) <Same as the present Guidance></p> <p>403. Approval tests</p> <p>1. Test samples and specimen <i>(2021)</i></p> <p>(1) Test samples <u>are to be representative of material types and casting methods for which approval is requested. The typical type of material and casting method are to be in accordance with Table 2.4.1.</u></p>	<p>* It is reflected Request for Establishment/Revision of Classification of Technical Rules(MET4800-721-2020)</p> <p>- It is a revision to adjust the universal test quantity.</p>

Present			Amendment			reason																																																			
Table 2.4.1 The type of material and casting procedure			Table 2.4.1 The type of material and casting method				- It is a revision to adjust the universal test quantity.																																																		
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<p>(2) Selection of test samples and approval tests, in principle, are to be carried out in the presence of the Surveyor. However ladle analysis, micro structure or in case the Society deems the test unnecessary may be omitted.</p> <p>(3) For each grade of material and for each casting procedure, minimum 2 test samples are to be selected for each heat or cast. In case of approval for a large number of material groups and casting procedure, the number may be reduced by the approval of the Society.</p> <p>(4) At least one of the products from which the test samples are to be taken is to be the mass closest to the maximum.</p> <p>2. The semi-built-up crank throw for diesel engines and the crank throw to reduce the size are to be as deemed appropriate by the Society.</p> <p>3. Approval test and acceptance criteria</p> <p>Kinds of tests, test methods and acceptance criteria are to be as given in Table 2.4.2. However, where accordance with these requirements are difficult, it may be changed with the approval of the Society. (2019)</p> <p>404. Certification</p> <p>On the approval certificate the following information is to be stated:</p> <p>(1) ~ (2) <Omitted></p> <p>(3) Casting procedure</p> <p>(4) ~ (5) <Omitted></p> <p>405. Changes in the manufacturing process</p> <p>1. In case changes occur in the approval content among manufacturing process of castings which have been granted approval beforehand, such as those given in the followings, the manufacturer is to submit the application of alteration to the Society together with the documents in response to the content of changes. In this case, plant audit and approval test are to be carried out.</p> <p>(1) ~ (2) <Omitted></p> <p>(3) Casting procedure</p> <p>(4) ~ (5) <Omitted></p> <p>406. <Omitted></p>	<p>(2) For initial approval, at least two test samples are to be selected.</p> <p>(3) In case of approval for various material groups and casting methods, test samples may be reduced to one per material type by the approval of the Society.</p> <p>(4) All test samples are to be from different heats or casts.</p> <p>(5) One of test samples should be close to the maximum mass for which approval is requested.</p> <p>2. Selection of test specimens and approval tests, in principle, are to be carried out in the presence of the Surveyor. However ladle analysis, micro structure or in case the Society deems the test unnecessary may be omitted. (2021)</p> <p>3. The semi-built-up crank throw for diesel engines and the crank throw to reduce the size are to be as deemed appropriate by the Society.</p> <p>4. Approval test and acceptance criteria</p> <p>Kinds of tests, test methods and acceptance criteria are to be as given in Table 2.4.2. However, where accordance with these requirements are difficult, it may be changed with the approval of the Society. (2019)</p> <p>404. Certification</p> <p>On the approval certificate the following information is to be stated:</p> <p>(1) ~ (2) <Same as the present Guidance></p> <p>(3) Casting method (2021)</p> <p>(4) ~ (5) <Same as the present Guidance></p> <p>405. Changes in the manufacturing process</p> <p>1. In case changes occur in the approval content among manufacturing process of castings which have been granted approval beforehand, such as those given in the followings, the manufacturer is to submit the application of alteration to the Society together with the documents in response to the content of changes. In this case, plant audit and approval test are to be carried out.</p> <p>(1) ~ (2) <Same as the present Guidance></p> <p>(3) Casting method (2021)</p> <p>(4) ~ (5) <Same as the present Guidance></p> <p>406. <Same as the present Guidance></p>	<p>- It is a revision to adjust the universal test quantity.</p>

Present	Amendment	reason
<p style="text-align: center;">Section 4-2 Steel forgings (2018)</p> <p>411. <Omitted></p> <p>412. Data to be submitted</p> <p>The following reference data in addition to those specified in 102. are to be submitted to the Society.</p> <p>(1) Approval Range(Table 2.4.3)</p> <p>(A) Type of steel</p> <p>(B) Melting process, if applicable</p> <p>(C) Casting procedure, if applicable</p> <p>(D) Forging process</p> <p>(E) <u>Max. mass of one forgings</u></p> <p>(F) The products required the separate approval tests, if applicable</p> <p>(2) ~ (5) <Omitted></p> <p>413. Approval tests</p> <p>1. Test samples and specimen</p> <p>(1) <u>Test samples from product to be approved are to be selected for each type of steel and each forging process. The type of steel and forging process are to be in accordance with Table 2.4.3.</u></p>	<p style="text-align: center;">Section 4-2 Steel forgings (2018)</p> <p>411. <Same as the present Guidance></p> <p>412. Data to be submitted</p> <p>The following reference data in addition to those specified in 102. are to be submitted to the Society.</p> <p>(1) Approval Range(Table 2.4.3)</p> <p>(A) Type of steel</p> <p>(B) Melting process, if applicable</p> <p>(C) Casting method, if applicable (2021)</p> <p>(D) Forging process</p> <p>(E) <u>Max. forging weight (2021)</u></p> <p>(F) The products required the separate approval tests, if applicable</p> <p>(2) ~ (5) <Same as the present Guidance></p> <p>413. Approval tests</p> <p>1. Test samples and specimen (2021)</p> <p>(1) <u>Test samples are to be representative of types of steel and forging processes for which approval is requested. The typical type of steel and forging process are to be in accordance with Table 2.4.3.</u></p>	<p>* It is reflected</p> <p>Request for Establishment/Revision of Classification Technical Rules(MET4800-721-2020)</p> <p>- It is a revision to adjust the universal test quantity.</p>

Present			Amendment			reason	
Table 2.4.3 The type of steel and forging process			Table 2.4.3 The type of steel and forging process			- It is a revision to adjust the universal test quantity.	
Kinds	Grade	Forging process	Kinds	Grade	Forging process		
Carbon steel	<i>RSF 400H ~ RSF 600H RSF 400M ~ RSF 760M</i>	- Free forging - Die forging - Ring forging - Others	Carbon steel ⁽¹⁾	<i>RSF 400H ~ RSF 600H RSF 400M ~ RSF 760M</i>	- Open die forging - Closed die forging - Ring forging - Others		
Alloy steel	<i>RSF 550AH ~ RSF 650AH RSF 600AM ~ RSF 1100AM</i>		Alloy steel	<i>RSF 550AH ~ RSF 650AH RSF 600AM ~ RSF 1100AM</i>			
Stainless steel	<i>RSSF 304 ~ RSSF 347</i>		Stainless steel	<i>RSSF 304 ~ RSSF 347</i>			
22Cr duplex stainless steel ⁽¹⁾	Applicable standards, codes, etc.		22Cr duplex stainless steel ⁽²⁾	Applicable standards, codes, etc.			
25Cr duplex stainless steel ⁽¹⁾	Applicable standards, codes, etc.		25Cr duplex stainless steel ⁽²⁾	Applicable standards, codes, etc.			
Carbon steel for low temperature service	<i>RLFA ~ RLFC</i>		Carbon steel for low temperature service ⁽¹⁾	<i>RLFA ~ RLFC</i>			
Nickel alloy steel for low temperature service	<i>RLF 3 ~ RLF 9</i>		Nickel alloy steel for low temperature service	<i>RLF 3 ~ RLF 9</i>			
Others	Applicable standards, codes, etc.		Others	Applicable standards, codes, etc.			
Notes : (1) <New>			Notes : (1) Where carbon steel for low temperature service has passed the tests, the tests for carbon steel may be omitted. (2021)				
(1) Where 25Cr duplex stainless steel has passed the tests, the tests for 22Cr duplex stainless steel may be omitted.			(2) Where 25Cr duplex stainless steel has passed the tests, the tests for 22Cr duplex stainless steel may be omitted.				

Present	Amendment	reason
<p>(2) Selection of test samples and approval tests, in principle, are to be carried out in the presence of the Surveyor. However ladle analysis, micro structure or in case the Society deems the test unnecessary may be omitted.</p> <p>(3) For each grade of steel and for each forging process, minimum 2 test samples are to be selected for each heat or cast. In case of approval for a large number of material groups and forging process, the number may be reduced by the approval of the Society.</p> <p>(4) At least one of the products from which the test samples are to be taken is to be the mass closest to the maximum.</p> <p>(5) The test samples of semibuilt-up crank throws and solid crank shafts are to be from the products with max. diameter for bore of cylinder.</p> <p>2. ~ 4. <Omitted></p> <p>414. ~ 416. <Omitted></p> <p>Section 5 ~ Section 14 <Omitted></p>	<p>(2) For initial approval, at least two test samples are to be selected.</p> <p>(3) In case of approval for various steel types and forging processes, test samples may be reduced one per steel type by the approval of the Society.</p> <p>(4) All test samples are to be from different heats or casts.</p> <p>(5) One of test samples should be close to the maximum forging weight and/or maximum dimension for which approval is requested.</p> <p>2. Selection of test specimens and approval tests, in principle, are to be carried out in the presence of the Surveyor. However ladle analysis, micro structure or in case the Society deems the test unnecessary may be omitted. (2021)</p> <p>3. ~ 5. <Same as the present Guidance></p> <p>414. ~ 416. <Same as the present Guidance></p> <p>Section 5 ~ Section 14 <Same as the present Guidance></p>	<p>- It is a revision to adjust the universal test quantity.</p>

Present	Amendment	reason
<p style="text-align: center;">CHAPTER 3 TYPE APPROVAL</p> <p style="text-align: center;">Section 1 General</p> <p>101. ~ 109. <Omitted></p> <p>110. Suspension or withdrawal of approval</p> <p>1. The Society can withdraw the type approval in case any of the following cases.</p> <p>(1) When the materials and equipment no longer confirm to the given requirements due to amendments or establishment of conventions, laws, rules and regulations.</p> <p>(2) When serious shortcoming is found in structure or quality of the materials and equipment already approved after being installed in ships.</p> <p>(3) <u>When the products are produced in breach of the approval conditions or when the test results have been improperly reported.</u></p> <p>(4) <u>Changes brought by the Manufacturer without preliminary agreement of the Society to the extent of the approval defined at the time of the approval</u></p> <p>(5) <u>In case where forged or falsified stamps or certificates are used. (2019)</u></p> <p>(6) <u>When the materials and equipment failed to pass the confirmation test and/or occasional plant audit specified in 109.</u></p> <p>(7) <u>In case where a serious failure of the manufacturer's quality system has been identified or where the manufacturer has failed to inform any changes which will affect the approved quality system to this Society.</u></p> <p>(8) <u>In case where the manufacturer has not undergone a renewal plant audit or where the manufacturer is refusing to undergo occasional plant audit requested by this Society.</u></p> <p>2. <Omitted></p>	<p style="text-align: center;">CHAPTER 3 TYPE APPROVAL</p> <p style="text-align: center;">Section 1 General</p> <p>101. ~ 109. <Same as the present Guidance></p> <p>110. Suspension or withdrawal of approval</p> <p>1. The Society can <u>suspend or</u> withdraw the type approval in case any of the following cases. <i>(2021)</i></p> <p>(1) When the materials and equipment no longer confirm to the given requirements due to amendments or establishment of conventions, laws, rules and regulations.</p> <p>(2) When serious shortcoming is found in structure or quality of the materials and equipment already approved after being installed in ships.</p> <p>(3) <u>When the products are produced in breach of the approval conditions</u></p> <p>(4) <u>when the test results have been improperly reported.</u></p> <p>(5) <u>Changes brought by the Manufacturer without preliminary agreement of the Society to the extent of the approval defined at the time of the approval</u></p> <p>(6) <u>In case where forged or falsified stamps or certificates are used. (2019)</u></p> <p>(7) <u>When the materials and equipment failed to pass the confirmation test and/or occasional plant audit specified in 109.</u></p> <p>(8) <u>In case where a serious failure of the manufacturer's quality system has been identified</u></p> <p>(9) <u>In case where the manufacturer has failed to inform any changes which will affect the approved quality system to this Society.</u></p> <p>(10) <u>In case where the manufacturer has not undergone a renewal plant audit</u></p> <p>(11) <u>In case where the manufacturer is refusing to undergo occasional plant audit, confirmation test, etc. requested by this Society.</u></p> <p>2. <Same as the present Guidance></p>	<p>* It is reflected</p> <p>Request for Establishment/Revision of Classification Technical Rules(MET4800-611-2020)</p> <p>- This is to make decisions by proactively processing and judging "suspension" and "withdrawal" according to the situation.</p>

Present	Amendment	reason
<p>3. Having no concern with the product quality the Society can withdraw, during the period of validity, the type approval in the following cases:</p> <p>(1) When a request for withdrawal is made by the manufacturer. (2) When the approval fees are not paid. (3) When considered inappropriate for approved condition by the Society.</p> <p>4. ~ 5. <Omitted></p> <p>111. ~ 112. <Omitted></p>	<p>3. Having no concern with the product quality the Society can withdraw the type approval in the following cases: <u>(2021)</u></p> <p>(1) When a request for withdrawal is made by the manufacturer. (2) When the approval fees are not paid. (3) When considered inappropriate for approved condition by the Society.</p> <p>4. ~ 5. <Same as the present Guidance></p> <p>111. ~ 112. <Same as the present Guidance></p>	

Present	Amendment	reason
<p style="text-align: center;">Section 2 <Omitted></p> <p style="text-align: center;">Section 3-1 Anti-corrosive Paints</p> <p>301. ~ 302. <Omitted></p> <p>303. Type tests</p> <p>1. Test coupons</p> <p>(1) Number of test coupons Three each test coupons for each test item specified in Table 3.3.1 are to be prepared.</p> <p>(2) Shape of test coupon (A) Test coupon for physical properties test To conform to the requirements specified in Table 3.3.1.</p> <p style="text-align: center;"><hereafter in Section 3-1, omitted></p>	<p style="text-align: center;">Section 2 <Same as the present Guidance></p> <p style="text-align: center;">Section 3-1 Anti-corrosive Paints</p> <p>301. ~ 302. <Same as the present Guidance></p> <p>303. Type tests</p> <p>1. Test coupons</p> <p>(1) Number of test coupons Three each test coupons for each test item specified in Table 3.3.1 are to be prepared.</p> <p>(2) Shape of test coupon (A) Test coupon for physical properties test To conform to the requirements specified in Table 3.3.1.</p> <p style="text-align: center;"><hereafter in Section 3-1, same as the present Guidance></p>	<p>* It is reflected Request for Establishment/Revision of Classification Technical Rules(MET4800-490-2020)</p> <p>- Typo found and corrected in previous revision</p>

<Present>

Table 3.3.1 Test details and acceptance criteria of anti-corrosive paints

Kind	Test item	Testing procedures	acceptance criteria
Physical properties test	<Omitted>		
	Erichsen test (KS B 0812, 5529)	A mild steel test coupon of approximately 100 mm × 90 mm × 0.8 mm coated on a single side is to be subjected to the Erichsen test with a punch diameter of 20 mm, pushing speed 0.1 mm/sec, and pushing distance 6 mm.	For a successful test, peeling-off area of at least two out of three test coupons are to be within 1.0 cm ² .
	<Omitted>		
Corrosion resistance test	Salt water immersion test	The test coupon is to be immersed in a 5% salt water kept at a temperature of 50 ± 5 °C over a period of 360 hours or more. At such times as before immersion, 1,000th hour from the initiation of immersion (taking photographs only) ; and on completion of immersion, the film thickness of paint is to be measured and colour photographs are to be taken at each such time.	The acceptance criteria for the corrosion resistance tests are to be as given in Table 3.3.2 .
	Gasoline immersion test	The test coupon is to be immersed in gasoline for 360 hours or more under room temperature. At such time as before immersion; 1,000th hour from the initiation of immersion (taking photographs only) ; and on completion of immersion, the film thickness of paint is to be measured and colour photographs are to be taken at each such time.	

Table 3.3.1 Test details and acceptance criteria of anti-corrosive paints (continued)

Kind	Test item	Testing procedures	acceptance criteria
Corrosion resistance test	Hot water immersion test	Fill a container with tap water and heat it to a temperature 80 ± 5 °C and keep the test coupon immersed in it continuously for 168 hours and then take it out and examine the condition of the paint. If there is no abnormality, the test coupon is to be examined after being left for 2 hours. The film thicknesses of paint before and after immersion are to be measured with colour photographs taken.	The acceptance criteria for the corrosion resistance tests are to be as given in Table 3.3.2 .
	Alternate salt water immersion test	After immersing in a 3% salt water solution under room temperature for a period of 168 hours (7 days), the test coupon is to be taken out and left in air for 168 hours. Taking this as one cycle, the test coupon is to be subjected to 2 such cycles consecutively. <u>The paint film thickness is to be measured and colour photographs of the test coupon are to be taken on completion of the 5th cycle and before immersion of the next attempt.</u>	
	Alternate gasoline/salt water immersion test	Two tanks respectively filled with 3% salt water solution and gasoline are to be prepared and the test coupon is to be immersed in either of them for a period of 168 hours (7 days) and then taken out and immersed in the other tank for another 168 hours. Considering this as one cycle, the process is to be repeated for 2 cycles. Colour photographs and paint film thickness measurements before immersion, on the 5th cycle , and on completion of the test are to be taken.	
	Alternate salt water/crude oil immersion test	Tests similar to (c) above are to be carried out with 3% salt water solution and crude oil. Colour photographs and paint film thickness measurements before immersion, on the 5th cycle (only photograph is to be taken) , and on completion of the test are to be taken.	
	Salt water spray test (KS D 9502)	Continuous test with salt water spray is to be carried out for a period of 360 hours or more. Colour photographs and paint film thickness measurements before immersion, on the 1,000th hour , and on completion of the test are to be taken.	
Real ship tests	<Omitted>		

<Amendment>

Table 3.3.1 Test details and acceptance criteria of anti-corrosive paints

Kind	Test item	Testing procedures	acceptance criteria
Physical properties test	<Same as the present Guidance>		
	Erichsen test (KS B 0812, 5529 or the equivalent International Standards)	A mild steel test coupon of approximately 100 mm × 90 mm × 0.8 mm coated on a single side is to be subjected to the Erichsen test with a punch diameter of 20 mm, pushing speed 0.1 mm/sec, and pushing distance 6 mm.	For a successful test, peeling-off area of at least two out of three test coupons are to be within 1.0 cm ² .
	<Same as the present Guidance>		
Corrosion resistance test	Salt water immersion test	The test coupon is to be immersed in a 5 % salt water kept at a temperature of 50 ± 5 °C over a period of 360 hours or more. At such times as before immersion and on completion of immersion, the film thickness of paint is to be measured and colour photographs are to be taken at each such time.	The acceptance criteria for the corrosion resistance tests are to be as given in Table 3.3.2 .
	Gasoline immersion test	The test coupon is to be immersed in gasoline for 360 hours or more under room temperature. At such time as before immersion and on completion of immersion, the film thickness of paint is to be measured and colour photographs are to be taken at each such time.	

Table 3.3.1 Test details and acceptance criteria of anti-corrosive paints (continued)

Kind	Test item	Testing procedures	acceptance criteria
Corrosion resistance test	Hot water immersion test	Fill a container with tap water and heat it to a temperature 80 ± 5 °C and keep the test coupon immersed in it continuously for 168 hours and then take it out and examine the condition of the paint. If there is no abnormality, the test coupon is to be examined after being left for 2 hours. The film thicknesses of paint before and after immersion are to be measured with colour photographs taken.	The acceptance criteria for the corrosion resistance tests are to be as given in Table 3.3.2 .
	Alternate salt water immersion test	After immersing in a 3 % salt water solution under room temperature for a period of 168 hours (7 days), the test coupon is to be taken out and left in air for 168 hours. Taking this as one cycle, the test coupon is to be subjected to 2 such cycles consecutively. <u>Colour photographs and paint film thickness measurements before immersion and on completion of the test are to be taken. (2021)</u>	
	Alternate gasoline/salt water immersion test	Two tanks respectively filled with 3 % salt water solution and gasoline are to be prepared and the test coupon is to be immersed in either of them for a period of 168 hours (7 days) and then taken out and immersed in the other tank for another 168 hours. Considering this as one cycle, the process is to be repeated for 2 cycles. Colour photographs and paint film thickness measurements before immersion and on completion of the test are to be taken.	
	Alternate salt water/crude oil immersion test	Tests similar to <u>gasoline/salt water immersion test</u> are to be carried out with 3 % salt water solution and crude oil. Colour photographs and paint film thickness measurements before immersion and on completion of the test are to be taken. (2021)	
	Salt water spray test (KS D 9502 or the equivalent International Standards)	Continuous test with salt water spray is to be carried out for a period of 360 hours or more. Colour photographs and paint film thickness measurements before immersion and on completion of the test are to be taken.	
Real ship tests	<Same as the present Guidance>		

Present	Amendment	reason
<p style="text-align: center;">Section 3-2 ~ Section 29 <Omitted></p> <p>Section 3-1 Protective Coating Systems for Ballast Tanks</p> <p>3001. ~ 3002. <Omitted></p> <p>3003. Data review and plant audit</p> <p>1. The Society shall performed the data review and plant audit specified in Pt. 1, Annex 1-11, 2. and 3. of the Guidance Relating to the Rules for the Classification of Steel Ships to assure the manufacturing process (including that of subcontractor's works) and quality assurance of the protective coating systems.</p> <p>2. ~ 12. <Omitted></p> <p>3004. <Omitted></p> <p>3005. Test Laboratory</p> <p>The test laboratory where testing is carried out in accordance with the requirements in 3004. 3. are to equip the test facilities so that they can perform the testing in accordance with the requirements in this Instruction and are to be data reviewed and audited in accordance with the requirements in Pt 1, Annex 1-11, 2.(except for (3) (A) (b)) and 3. of the Guidance Relating to the Rules for the Classification of Steel Ships by the Society.</p> <p>3006. ~ 3010. <Omitted></p>	<p style="text-align: center;">Section 3-2 ~ Section 29 <Same as the present Guidance></p> <p>Section 3-1 Protective Coating Systems for Ballast Tanks</p> <p>3001. ~ 3002. <Same as the present Guidance></p> <p>3003. Data review and plant audit</p> <p>1. The Society shall performed the data review and plant audit specified in Appendix Part A, 11. of Guidance for Approval of Service Suppliers to assure the manufacturing process (including that of subcontractor's works) and quality assurance of the protective coating systems. <i>(2021)</i></p> <p>2. ~ 12. <Same as the present Guidance></p> <p>3004. <Same as the present Guidance></p> <p>3005. Test Laboratory</p> <p>The test laboratory where testing is carried out in accordance with the requirements in 3004. 3. are to equip the test facilities so that they can perform the testing in accordance with the requirements in this Instruction and are to be data reviewed and audited in accordance with the requirements in Appendix Part A, 11. of Guidance for Approval of Service Suppliers by the Society. <i>(2021)</i></p> <p>3006. ~ 3010. <Same as the present Guidance></p>	<p>* It is reflected</p> <p>Request for Establishment/Revision of Classification Technical Rules(MET4800-490-2020)</p> <p>- Typo found and corrected in previous revision</p>

Present	Amendment	reason
<p style="text-align: center;">Section 31 ~ Section 32 <Omitted></p> <p>Section 33 Protective Coating Systems for Cargo Oil Tanks</p> <p>3301. Application</p> <p>The requirements of this Section apply to tests and inspection for the type approval of protective coating systems in accordance with the requirements in Pt 3, Ch 1, 801. 2. of the Guidance.</p> <p>3302. <Omitted></p> <p>3303. Data review and plant audit</p> <p>1. The Society shall performed the data review and plant audit specified in Pt. 1, Annex 1-11, 2. and 3. of the Guidance Relating to the Rules for the Classification of Steel Ships to assure the manufacturing process (including that of subcontractor's works) and quality assurance of the protective coating systems.</p> <p>2. ~ 12. <Omitted></p> <p>3304. ~ 3305. <Omitted></p> <p>3306. Type test</p> <p>1. General</p> <p>(1) Application of protective coating system</p> <p>(A) ~ (E) <Omitted></p> <p>(F) ~ (G) <New></p>	<p style="text-align: center;">Section 31 ~ Section 32 <Same as the present Guidance></p> <p>Section 33 Protective Coating Systems for Cargo Oil Tanks</p> <p>3301. Application</p> <p>1. The requirements of this Section apply to tests and inspection for the type approval of protective coating systems in accordance with the requirements in Pt 3, Ch 1, 801. 2. of the Guidance.</p> <p>2. <u>Winter and summer type coating are considered different unless infrared (IR) identification and specific gravity (SG) demonstrates that they are the same. Winter type epoxy is required separate prequalification test including shop primer compatibility test according to 3306. (2021)</u></p> <p>3302. <Same as the present Guidance></p> <p>3303. Data review and plant audit</p> <p>1. The Society shall performed the data review and plant audit specified in Appendix Part A, 11. of Guidance for Approval of Service Suppliers to assure the manufacturing process (including that of subcontractor's works) and quality assurance of the protective coating systems. (2021)</p> <p>2. ~ 12. <Same as the present Guidance></p> <p>3304. ~ 3305. <Same as the present Guidance></p> <p>3306. Type test</p> <p>1. General</p> <p>(1) Application of protective coating system</p> <p>(A) ~ (E) <Same as the present Guidance></p> <p>(F) <u>For the coating pre-qualification test, the measured average DFT(dry film thickness) on each prepared test panels shall not exceed NDFT(nominal dry film thickness) of 320 μm plus 20 % unless a paint manufacturer specified a NDFT greater than 320 μm. (2021)</u></p>	<p>* It is reflected</p> <p>Request for Establishment/Revision of Classification Technical Rules(MET4800-490-2020)</p> <p>- Typo found and corrected in previous revision</p>

Present	Amendment	reason
<p>(F) ~ (H) <Omitted></p> <p><hereafter in Ch 3, omitted></p>	<p>(G) <u>In the case that a paint manufacturer specified a NDFT greater than 320 μm, the average DFT shall not exceed the specified NDFT plus 20% and the coating system shall be certified to the specified NDFT if the system passes the tests according to 3304. 3. The measured DFT shall meet the "90/10" rule and the maximum DFT shall be below the maximum DFT value specified by the manufacturer. (2021)</u></p> <p>(H) ~ (I) <Same as the present Guidance></p> <p><hereafter in Ch 3, same as the present Guidance></p>	

Present	Amendment	reason
<p style="text-align: center;">CHAPTER 4 DESIGN APPROVAL</p> <p style="text-align: center;">Section 1 General</p> <p>101. ~ 105. <Omitted></p> <p>106. Suspension or withdrawal of approval</p> <p>1. The Society can withdraw the design approval, in case any of the following cases.</p> <p>(1) When the machinery and equipment no longer conform to the given requirements due to amendments or establishment of conventions, laws, rules and regulations.</p> <p>(2) When serious shortcomings are found in structure or quality of the machinery and equipment already approved after being installed in ships.</p> <p>(3) When a request for withdrawal is made by the manufacturer.</p> <p>(4) When the approval fees are not paid.</p> <p>(5) When request for renewal of certificate is not made by the manufacturer.</p> <p>(6) In case where forged or falsified stamps or certificates are used. (2019)</p> <p>(7) When considered inappropriate for approved condition by the Society.</p> <p style="text-align: center;"><hereafter in Ch 4, omitted></p>	<p style="text-align: center;">CHAPTER 4 DESIGN APPROVAL</p> <p style="text-align: center;">Section 1 General</p> <p>101. ~ 105. <Same as the present Guidance></p> <p>106. Suspension or withdrawal of approval</p> <p>1. The Society can <u>suspend or withdraw</u> the design approval, in case any of the following cases. (2021)</p> <p>(1) When the machinery and equipment no longer conform to the given requirements due to amendments or establishment of conventions, laws, rules and regulations.</p> <p>(2) When serious shortcomings are found in structure or quality of the machinery and equipment already approved after being installed in ships.</p> <p>(3) When a request for withdrawal is made by the manufacturer.</p> <p>(4) When the approval fees are not paid.</p> <p>(5) When request for renewal of certificate is not made by the manufacturer.</p> <p>(6) In case where forged or falsified stamps or certificates are used. (2019)</p> <p>(7) When considered inappropriate for approved condition by the Society.</p> <p style="text-align: center;"><hereafter in Ch 4, same as the present Guidance></p>	<p>* It is reflected</p> <p>Request for Establishment/Revision of Classification of Technical Rules(MET4800-611-2020)</p> <p>- This is to make decisions by proactively processing and judging "suspension" and "withdrawal" according to the situation.</p>

Present	Amendment	reason
<p style="text-align: center;">CHAPTER 5 APPROVAL OF QUALITY ASSURANCE SYSTEM</p> <p style="text-align: center;">Section 1 ~ Section 2 <Omitted></p> <p style="text-align: center;">Section 3 Approval</p> <p>301. ~ 302. <Omitted></p> <p>303. Suspension and withdrawal of certification</p> <p>1. <Omitted></p> <p>2. The Society can withdraw the approval of a quality assurance system if any of the following conditions happens:</p> <p>(1) When important changes having significant effect on the quality system is not communicated to the Society.</p> <p>(2) When the periodical, occasional or renewal audit is not carried out in the relevant period.</p> <p>(3) When a request for withdrawal is made by the manufacturer.</p> <p>(4) When the approval fees are not paid.</p> <p>(5) In case where forged or falsified stamps or certificates are used. (2019)</p> <p>(6) When the manufacturer's quality is questionable in accordance with 305. 5 (2020)</p> <p>(7) When considered inappropriate for approved condition by the Society.</p> <p>3. ~ 5. <Omitted></p> <p>304. <Omitted></p> <p>305. Handling after approval (permission of manufacturer's tests and inspection)</p> <p>1. ~ 4. <Omitted></p>	<p style="text-align: center;">CHAPTER 5 APPROVAL OF QUALITY ASSURANCE SYSTEM</p> <p style="text-align: center;">Section 1 ~ Section 2 <Same as the present Guidance></p> <p style="text-align: center;">Section 3 Approval</p> <p>301. ~ 302. <Same as the present Guidance></p> <p>303. Suspension and withdrawal of certification</p> <p>1. <Same as the present Guidance></p> <p>2. The Society can <u>suspend or</u> withdraw the approval of a quality assurance system if any of the following conditions happens: (2021)</p> <p>(1) When important changes having significant effect on the quality system is not communicated to the Society.</p> <p>(2) When the periodical, occasional or renewal audit is not carried out in the relevant period.</p> <p>(3) When a request for withdrawal is made by the manufacturer.</p> <p>(4) When the approval fees are not paid.</p> <p>(5) In case where forged or falsified stamps or certificates are used. (2019)</p> <p>(6) When the manufacturer's quality is questionable in accordance with 305. 5 (2020)</p> <p>(7) When considered inappropriate for approved condition by the Society.</p> <p>3. ~ 5. <Same as the present Guidance></p> <p>304. <Same as the present Guidance></p> <p>305. Handling after approval (permission of manufacturer's tests and inspection)</p> <p>1. ~ 4. <Same as the present Guidance></p>	<p>* It is reflected</p> <p>Request for Establishment/Revision of Classification Technical Rules(MET4800-611-2020)</p> <p>- This is to make decisions by proactively processing and judging "suspension" and "withdrawal" according to the situation.</p>

Present	Amendment	reason
<p>5. For material manufacturers (rolled steels, castings, forgings, etc.) with the approval of fully entrusted quality assurance system, the Surveyor may unexpectedly request witnessing of tests even after submitting the self-test reports. For this purpose, the manufacturer is to <u>keep</u> enough specimens or samples for at least one week after the application date. Chemical composition and mechanical properties are to be verified in the presence of the Surveyor and the results are not to show a significant deviation from those already submitted. If the results are suspicious or do not meet the requirements, the Surveyor may request re-tests and, if necessary, suspend or withdraw the approval. (2020)</p> <p>6. ~ 7. <Omitted></p> <p style="text-align: center;">Section 4 <Omitted></p>	<p>5. For material manufacturers (rolled steels, castings, forgings, etc.) with the approval of fully entrusted quality assurance system, the Surveyor may unexpectedly request witnessing of tests even after submitting the self-test reports. For this purpose, the manufacturer is to <u>store</u> enough specimens or samples for at least one week after the application date <u>unless otherwise approved by the Society</u>. Chemical composition and mechanical properties are to be verified in the presence of the Surveyor and the results are not to show a significant deviation from those already submitted. If the results are suspicious or do not meet the requirements, the Surveyor may request re-tests and, if necessary, suspend or withdraw the approval. (2020) (2021)</p> <p>6. ~ 7. <Same as the present Guidance></p> <p style="text-align: center;">Section 4 <Same as the present Guidance></p>	<p>* It is reflected Request for Establishment/Revision of Classification Technical Rules(MET4800-240-2 020)</p> <p>It is a regulation to cope with various situations.</p>

Present	Amendment	reason
<p style="text-align: center;">CHAPTER 6 MANUFACTURER APPROVAL</p> <p style="text-align: center;">Section 1 ~ Section 2 <Omitted></p> <p style="text-align: center;">Section 3 Approval</p> <p>301. ~ 302. <Omitted></p> <p>303. Suspension and withdrawal of certification</p> <p>1. <Omitted></p> <p>2. The Society can withdraw the Manufacturer Approval and Type Approval of products if any of the following conditions happens:</p> <p>(1) When important changes having significant effect on the quality system is not communicated to the Society.</p> <p>(2) When the periodical, occasional or renewal audit is not carried out in the relevant period.</p> <p>(3) When a request for withdrawal is made by the manufacturer.</p> <p>(4) When the approval fees are not paid.</p> <p>(5) In case where forged or falsified stamps or certificates are used. (2019)</p> <p>(6) When considered inappropriate for approved condition by the Society.</p> <p>3. ~ 4. <Omitted></p> <p style="text-align: center;"><hereafter, omitted></p>	<p style="text-align: center;">CHAPTER 6 MANUFACTURER APPROVAL</p> <p style="text-align: center;">Section 1 ~ Section 2 <Same as the present Guidance></p> <p style="text-align: center;">Section 3 Approval</p> <p>301. ~ 302. <Same as the present Guidance></p> <p>303. Suspension and withdrawal of certification</p> <p>1. <Same as the present Guidance></p> <p>2. The Society can <u>suspend or</u> withdraw the Manufacturer Approval and Type Approval of products if any of the following conditions happens: (2021)</p> <p>(1) When important changes having significant effect on the quality system is not communicated to the Society.</p> <p>(2) When the periodical, occasional or renewal audit is not carried out in the relevant period.</p> <p>(3) When a request for withdrawal is made by the manufacturer.</p> <p>(4) When the approval fees are not paid.</p> <p>(5) In case where forged or falsified stamps or certificates are used. (2019)</p> <p>(6) When considered inappropriate for approved condition by the Society.</p> <p>3. ~ 4. <Same as the present Guidance></p> <p style="text-align: center;"><hereafter, omitted></p>	<p>* It is reflected</p> <p>Request for Establishment/Revision of Classification Technical Rules(MET4800-611-2020)</p> <p>- This is to make decisions by proactively processing and judging "suspension" and "withdrawal" according to the situation.</p>

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

(Development Review : For external opinion inquiry)

2020. 9.



Machinery Rule Development Team

- Main Amendments -

(1) Effective date : 1 Jul. 2021 (Date of the application for certification)

● Manufacturer approval as a prerequisite for accreditation of Work's certificate has been deleted.

Present	Amendment	Reason
<p style="text-align: center;">CHAPTER 1 GENERAL</p> <p style="text-align: center;">Section 2 Definitions</p> <p>201. ~ 204. <omitted></p> <p>205. Manufacturer approval</p> <p>Manufacturer approval is to certify for the manufacturer who carry out a plant audit and being satisfied, in relation to manufacturing process and their quality system for the manufacturers of products (paints, fire protection materials, etc.) which are type approved but not subject to individual product inspection, <u>or for the engine manufacturer, or for the manufacturer who intend to issue Work's certificate (W) in accordance with Pt 5 of the Rules. (2017) ↓</u></p> <p>(hereafter, omitted)</p>	<p style="text-align: center;">CHAPTER 1 GENERAL</p> <p style="text-align: center;">Section 2 Definitions</p> <p>201. ~ 204. <same as the present></p> <p>205. Manufacturer approval</p> <p>Manufacturer approval is to certify for the manufacturer who carry out a plant audit and being satisfied, in relation to manufacturing process and their quality system for the manufacturers of products (paints, fire protection materials, etc.) which are type approved but not subject to individual product inspection, or for the engine manufacturer, or for the manufacturer who intend to issue Work's certificate (W) in accordance with Pt 5 of the Rules. (2017) ↓ <u>(2021) ↓</u></p> <p>(hereafter, same as the present)</p>	<p><Guidance for Approval of Manufacturing Process and Type Approval, Etc.></p> <p>(Amendment) Deletion of manufacturer approval as a prerequisite for accreditation of Work's certificate for engine components. <application date: the date of application for certification on or after 1 July 2021></p> <p>- Deleted because manufacturer approval as a prerequisite for accreditation of Work's certificate for engine components has been deleted in Pt 5 of the Rules.</p>

Present	Amendment	Reason
<p style="text-align: center;">CHAPTER 6 MANUFACTURER APPROVAL</p> <p style="text-align: center;">Section 1 General</p> <p>101. Application</p> <p>1. The requirements in this Chapter apply to the procedures for manufacturer approval of product (paints and fire protection materials, etc.) having no individual product inspection after type approval in accordance with the requirements in this Guidance. <i>(2017)</i></p> <p>2. Also, the requirements in this Chapter apply to the procedures of the manufacturer approval for the manufacturer who intend to issue Work's certificate(W), or for the engine manufacturer in accordance with Pt 5 of the Rules. <i>(2017)</i></p> <p>3. The manufacturers wishing to obtain the approval of the Society for items other than those in Par 1, Par 2 above are to comply with the requirements of this Chapter.</p> <p>(hereafter, omitted)</p>	<p style="text-align: center;">CHAPTER 6 MANUFACTURER APPROVAL</p> <p style="text-align: center;">Section 1 General</p> <p>101. Application</p> <p>1. The requirements in this Chapter apply to the procedures for manufacturer approval of product (paints and fire protection materials, etc.) having no individual product inspection after type approval in accordance with the requirements in this Guidance. <i>(2017)</i></p> <p>2. Also, the requirements in this Chapter apply to the procedures of the manufacturer approval for the manufacturer who intend to issue Work's certificate(W), or for the engine manufacturer in accordance with Pt 5 of the Rules. <i>(2017)</i></p> <p>2. The manufacturers wishing to obtain the approval of the Society for items other than those in Par 1, Par 2 above are to comply with the requirements of this Chapter.</p> <p>(hereafter, same as the present)</p>	<p><Guidance for Approval of Manufacturing Process and Type Approval, Etc.></p> <p>- Deleted because manufacturer approval as a prerequisite for accreditation of Work's certificate for engine components has been deleted in Pt 5 of the Rules.</p>

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

2021. 02.



Machinery Rule Development Team

- Main Amendments -

(1) Effective date : 1 Jul. 2021 (Date of the application for certification)

- The seizure critical load test has been deleted from the type test items of the stern tube bearing.

Present	Amendment	Note												
<p style="text-align: center;">Section 15 Machinery and Equipment for Ships</p> <p>1503. Type tests</p> <p>Table 3.15.1 Type test item of machinery and equipment of ship (continued)</p> <table border="1" data-bbox="94 472 967 1401"> <thead> <tr> <th data-bbox="94 472 206 510">Kinds</th> <th data-bbox="206 472 967 510">Type test item</th> </tr> </thead> <tbody> <tr> <td colspan="2" data-bbox="94 510 967 549" style="text-align: center;"><omitted></td> </tr> <tr> <td data-bbox="94 549 206 1401" style="vertical-align: top;">Stern tube bearings</td> <td data-bbox="206 549 967 1401"> <p>(A) Confirmation tests for the characteristics of materials (a) In the case of vulcanized rubber, the following tests specified in KS M 6518 (i) Tensile test (ii) Hardness test (iii) Tension set test (iv) Adhesion test (v) Test for adhesion to metals (except those not to be adhered to metals) (vi) Tear test (vii) Compression set test (viii) Dipping test (in the case of a water-lubricated system, tests are to be carried out using sea water) (ix) Aging test (b) In the case of materials other than those specified above in (a), tests according to pertinent national standards or other equivalent standards concerning the contents of (a) according to the materials.</p> <p>(B) Abrasion test (C) Seizure critical load test (D) Running test (In this case, confirm that the bearing pressures during the tests are to be verified are not less than 0.8 MPa for an oil-lubricated system, and are not less than 0.2 MPa for a water-lubricated system respectively.) (E) "Type test program" submitted according to 102. 3 (1) (A) is to include the following items: (a) Drawing of the test rig (b) Drawing of the product (specified the materials, dimensions, etc.) (c) Condition of tests (lubrication system, shaft speed, bearing load, hydraulic pressure, test time, etc.)</p> </td> </tr> </tbody> </table> <p>(hereafter, omitted)</p>	Kinds	Type test item	<omitted>		Stern tube bearings	<p>(A) Confirmation tests for the characteristics of materials (a) In the case of vulcanized rubber, the following tests specified in KS M 6518 (i) Tensile test (ii) Hardness test (iii) Tension set test (iv) Adhesion test (v) Test for adhesion to metals (except those not to be adhered to metals) (vi) Tear test (vii) Compression set test (viii) Dipping test (in the case of a water-lubricated system, tests are to be carried out using sea water) (ix) Aging test (b) In the case of materials other than those specified above in (a), tests according to pertinent national standards or other equivalent standards concerning the contents of (a) according to the materials.</p> <p>(B) Abrasion test (C) Seizure critical load test (D) Running test (In this case, confirm that the bearing pressures during the tests are to be verified are not less than 0.8 MPa for an oil-lubricated system, and are not less than 0.2 MPa for a water-lubricated system respectively.) 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Type tests</p> <p>Table 3.15.1 Type test item of machinery and equipment of ship (continued)</p> <table border="1" data-bbox="990 472 1863 1401"> <thead> <tr> <th data-bbox="990 472 1102 510">Kinds</th> <th data-bbox="1102 472 1863 510">Type test item</th> </tr> </thead> <tbody> <tr> <td colspan="2" data-bbox="990 510 1863 549" style="text-align: center;"><omitted></td> </tr> <tr> <td data-bbox="990 549 1102 1401" style="vertical-align: top;">Stern tube bearings</td> <td data-bbox="1102 549 1863 1401"> <p>(A) Confirmation tests for the characteristics of materials (a) In the case of vulcanized rubber, the following tests specified in KS M 6518 (i) Tensile test (ii) Hardness test (iii) Tension set test (iv) Adhesion test (v) Test for adhesion to metals (except those not to be adhered to metals) (vi) Tear test (vii) Compression set test (viii) Dipping test (in the case of a water-lubricated system, tests are to be carried out using sea water) (ix) Aging test (b) In the case of materials other than those specified above in (a), tests according to pertinent national standards or other equivalent standards concerning the contents of (a) according to the materials.</p> <p>(B) Abrasion test (C) Seizure critical load test (C) Running test (In this case, confirm that the bearing pressures during the tests are to be verified are not less than 0.8 MPa for an oil-lubricated system, and are not less than 0.2 MPa for a water-lubricated system respectively.) (D) "Type test program" submitted according to 102. 3 (1) (A) is to include the following items: (a) Drawing of the test rig (b) Drawing of the product (specified the materials, dimensions, etc.) (c) Condition of tests (lubrication system, shaft speed, bearing load, hydraulic pressure, test time, etc.)</p> </td> </tr> </tbody> </table> <p>(hereafter, same as the present Rules)</p>	Kinds	Type test item	<omitted>		Stern tube bearings	<p>(A) Confirmation tests for the characteristics of materials (a) In the case of vulcanized rubber, the following tests specified in KS M 6518 (i) Tensile test (ii) Hardness test (iii) Tension set test (iv) Adhesion test (v) Test for adhesion to metals (except those not to be adhered to metals) (vi) Tear test (vii) Compression set test (viii) Dipping test (in the case of a water-lubricated system, tests are to be carried out using sea water) (ix) Aging test (b) In the case of materials other than those specified above in (a), tests according to pertinent national standards or other equivalent standards concerning the contents of (a) according to the materials.</p> <p>(B) Abrasion test (C) Seizure critical load test (C) Running test (In this case, confirm that the bearing pressures during the tests are to be verified are not less than 0.8 MPa for an oil-lubricated system, and are not less than 0.2 MPa for a water-lubricated system respectively.) (D) "Type test program" submitted according to 102. 3 (1) (A) is to include the following items: (a) Drawing of the test rig (b) Drawing of the product (specified the materials, dimensions, etc.) (c) Condition of tests (lubrication system, shaft speed, bearing load, hydraulic pressure, test time, etc.)</p>	<p><Guidance for Approval of Manufacturing Process and Type Approval, Etc.></p> <p>(Amendment) Deletion of seizure critical load test <application date: the date of application for certification on or after 1 July 2021></p> <p>- "Seizure critical load test" is deleted Because it is not commonly used in the related industry and a test under severe conditions.</p>
Kinds	Type test item													
<omitted>														
Stern tube bearings	<p>(A) Confirmation tests for the characteristics of materials (a) In the case of vulcanized rubber, the following tests specified in KS M 6518 (i) Tensile test (ii) Hardness test (iii) Tension set test (iv) Adhesion test (v) Test for adhesion to metals (except those not to be adhered to metals) (vi) Tear test (vii) Compression set test (viii) Dipping test (in the case of a water-lubricated system, tests are to be carried out using sea water) (ix) Aging test (b) In the case of materials other than those specified above in (a), tests according to pertinent national standards or other equivalent standards concerning the contents of (a) according to the materials.</p> <p>(B) Abrasion test (C) Seizure critical load test (D) Running test (In this case, confirm that the bearing pressures during the tests are to be verified are not less than 0.8 MPa for an oil-lubricated system, and are not less than 0.2 MPa for a water-lubricated system respectively.) (E) "Type test program" submitted according to 102. 3 (1) (A) is to include the following items: (a) Drawing of the test rig (b) Drawing of the product (specified the materials, dimensions, etc.) (c) Condition of tests (lubrication system, shaft speed, bearing load, hydraulic pressure, test time, etc.)</p>													
Kinds	Type test item													
<omitted>														
Stern tube bearings	<p>(A) Confirmation tests for the characteristics of materials (a) In the case of vulcanized rubber, the following tests specified in KS M 6518 (i) Tensile test (ii) Hardness test (iii) Tension set test (iv) Adhesion test (v) Test for adhesion to metals (except those not to be adhered to metals) (vi) Tear test (vii) Compression set test (viii) Dipping test (in the case of a water-lubricated system, tests are to be carried out using sea water) (ix) Aging test (b) In the case of materials other than those specified above in (a), tests according to pertinent national standards or other equivalent standards concerning the contents of (a) according to the materials.</p> <p>(B) Abrasion test (C) Seizure critical load test (C) Running test (In this case, confirm that the bearing pressures during the tests are to be verified are not less than 0.8 MPa for an oil-lubricated system, and are not less than 0.2 MPa for a water-lubricated system respectively.) (D) "Type test program" submitted according to 102. 3 (1) (A) is to include the following items: (a) Drawing of the test rig (b) Drawing of the product (specified the materials, dimensions, etc.) (c) Condition of tests (lubrication system, shaft speed, bearing load, hydraulic pressure, test time, etc.)</p>													

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

(External opinion inquiry)



2020.12.

Machinery Rule Development Team

- Main Amendments -

(1) Effective date : 1 January 2021 (The application date for certification)

- Has been reflected the latest amendments of Convention (Refer to MET4600-539-2020)

Present	Amendment	Note
<p style="text-align: center;">Section 35 Ballast Water Management System</p> <p>3501. General</p> <p>1. Purpose</p> <p>The requirements in this Section apply to design, construction, operation, function and verification testing including land-based, shipboard and component testing of ballast water management system (hereinafter referred to as “BWMS”), when the BWMS manufacturer makes an application for type approval of this Society or <u>the Administration</u>.</p> <p>2. Reference</p> <p>(1) The section is applied to the BWMS to be approved in accordance with KR’s Quality Assurance Project Plan (QAPP) for each verification testing (BWMS-USCG-VT and BWMS-USCG-CT), IMO Resolution <u>MEPC.279(70)</u> (hereinafter referred to as “G8”), related Guidance (IMO Resolution <u>MEPC.173(58)</u> (hereinafter referred to as “G2”), IMO Resolution <u>MEPC.169(57)</u> (hereinafter referred to as “G9”), BWM.2/Circ.33 and BWM.2/Circ.42/Rev.1, etc.) or any regulation of the respective Administration where applicable. However, the latest requirements of international organizations <u>and</u> the Administrations are to be applied, regardless of whether or not they are specified in this Guidance. In case where IMO Resolution and relative circular are amended, the latest version is to be applied.</p> <p>(2) <omitted></p>	<p style="text-align: center;">Section 35 Ballast Water Management System</p> <p>3501. General</p> <p>1. Purpose</p> <p>The requirements in this Section apply to design, construction, operation, function and verification testing including land-based, shipboard and component testing of ballast water management system (hereinafter referred to as “BWMS”), when the BWMS manufacturer makes an application for type approval of this Society or <u>USCG</u>. <i>(2021)</i></p> <p>2. Reference</p> <p>(1) The section is applied to the BWMS to be approved in accordance with KR’s Quality Assurance Project Plan (QAPP) for each verification testing (BWMS-USCG-VT and BWMS-USCG-CT), IMO Resolution <u>MEPC.300(72)</u> (hereinafter referred to as “<u>BWMS Code</u>”), related Guidance (IMO Resolution <u>MEPC.173(58)</u> (hereinafter referred to as “G2”), IMO Resolution <u>MEPC.169(57)</u> (hereinafter referred to as “G9”), BWM.2/Circ.33 and BWM.2/Circ.42/Rev.1, etc.) or any regulation of the respective Administration <u>or USCG</u> where applicable. However, the latest requirements of international organizations, <u>and</u> the Administrations <u>and USCG</u> are to be applied, regardless of whether or not they are specified in this Guidance. In case where IMO Resolution and relative circular are amended, the latest version is to be applied. <i>(2021)</i></p> <p>(2) <same as the present></p>	<p>(amendment) –Has been reflected the latest amendments of Convention</p>

Present	Amendment	Note
<p>3502. Definition</p> <p>1. omitted</p> <p>2. Land-based testing</p> <p>Land-based testing of BWMS is a process of confirming that BWMS meets the standard described in regulation D-2 of the IMO Convention or U.S. Ballast Water Discharge Standards by carrying out BWMS in a test facility, equipment factory or pilot plant including a moored test barge or test ship according to the <u>G8</u> and 46 CFR 162.060-26.</p> <p>3. Shipboard testing</p> <p>Shipboard testing of BWMS is a process of confirming that BWMS meets the standard described in regulation D-2 of the IMO Convention or U.S. Ballast Water Discharge Standards by carrying out on board a ship according to the <u>G8</u> and 46 CFR 162.060-28.</p> <p>hereafter, omitted</p> <p>3503. BWMS Design Requirements</p> <p>1. Documents to be submitted</p> <p>Unless specially specified by the Administration, the applicant is to submit required documents as below.</p> <p>(1) Documents to be submitted for readiness evaluation <u>for land-based testing and shipboard testing</u></p> <p>(A) ~ (J) omitted</p> <p>(K) <u>Test report (the documents approved by International Maritime Organization, land-based testing, Ship-board testing, and component testing, if applicable)</u></p> <p>(L) ~ (O) omitted</p> <p>(2) Documents to be submitted <u>for readiness evaluation</u> for component testing</p> <p>hereafter, omitted</p>	<p>3502. Definition</p> <p>1. same as the present</p> <p>2. Land-based testing</p> <p>Land-based testing of BWMS is a process of confirming that BWMS meets the standard described in regulation D-2 of the IMO Convention or U.S. Ballast Water Discharge Standards by carrying out BWMS in a test facility, equipment factory or pilot plant including a moored test barge or test ship according to the <u>BWMS Code</u> and 46 CFR 162.060-26. <i>(2021)</i></p> <p>3. Shipboard testing</p> <p>Shipboard testing of BWMS is a process of confirming that BWMS meets the standard described in regulation D-2 of the IMO Convention or U.S. Ballast Water Discharge Standards by carrying out on board a ship according to the <u>BWMS Code</u> and 46 CFR 162.060-28. <i>(2021)</i></p> <p>hereafter, same as the present</p> <p>3503. BWMS Design Requirements</p> <p>1. Documents to be submitted</p> <p>Unless specially specified by the Administration, the applicant is to submit required documents as below.</p> <p>(1) Documents to be submitted for readiness evaluation <u>for land-based testing and shipboard testing</u> <i>(2021)</i></p> <p>(A) ~ (J) same as the present</p> <p>(K) <u>Type approval certificate of Administration, Test result (the documents approved by International Maritime Organization, land-based testing, ship-board testing, and component testing, if applicable) and Test report (land-based testing, ship-board testing)</u></p> <p>(L) ~ (O) same as the present</p> <p>(2) Documents to be submitted <u>for readiness evaluation</u> for component testing <i>(2021)</i></p> <p>hereafter, same as the present</p>	<p>(amendment)</p> <p>-Has been reflected the latest amendments of Convention</p>

Present			Amendment			Note
Table 3.35.3 Operational and functional test items			Table 3.35.3 Operational and functional test items (2021)			(amendment) -Has been reflected the latest amendments of Convention
Test item	Test requirements and test time	Remark	Test item	Test requirements and test time	Remark	
Requirement regarding alarm and stopping	Refer to Table 3.35.1	<omitted>	Requirement regarding alarm and stopping	Refer to Table 3.35.1	<omitted>	
Operation test	TRC (100%)	60 minutes	Operation test	TRC (100%)	60 minutes	
	Minimum Treatment Capacity	30 minutes		Minimum Treatment Capacity	30 minutes	
Flow variation test (ballast/de-ballast mode, each carried)	TRC(100%) → Minimum treatment capacity→ TRC(100%)	(1) Flow variation test is to be applied for land-based testing only. (2) Alarm is to be allowed only one time when measurement is done by DPD type sensor and TRO concentration exceeds the permissible range. Alarm or shutdown is not allowed for any other operational parameters. (3) Flow variation is to be carried out as quickly as possible. (4) Each flow test is to be sustained for at least 10 minutes. (5) Alarm and shutdown due to flow rate can be overridden for minimum treatment capacity.	Flow variation test (ballast/de-ballast mode, each carried)	TRC(100%) → Minimum treatment capacity→ TRC(100%)	(1) Flow variation test is to be applied for land-based testing only. (2) Alarm is to be allowed only one time when measurement is done by DPD type sensor and TRO concentration exceeds the permissible range. Alarm or shutdown is not allowed for any other operational parameters. (3) Flow variation is to be carried out as quickly as possible. (4) Each flow test is to be sustained for at least 10 minutes. (5) Alarm and shutdown due to flow rate can be overridden for minimum treatment capacity.	
<hereafter, omitted>	<hereafter, omitted>	<hereafter, omitted>	<hereafter, omitted>	<hereafter, omitted>	<hereafter, omitted>	
Note) Where necessary, Load test which excess TRC (100 %) may be required to verify the performance of the BWMS.			Note) 1. Where necessary, Load test which excess TRC (100 %) may be required to verify the performance of the BWMS. 2. The land-based and shipboard testing may be partly or entirely omitted, subject to the approval by the Society, in case where the manufacturer has been approved by other Classification Society or a test organization recognized by the Society.			

Present	Amendment	Note
<p>3506. Requirements of Land-based and Shipboard testing for BWMS</p> <p>1. General</p> <p>(1) The manufacturer which intends to attain type approval of the Society should demonstrate that the results of land-based and shipboard testing for given BWMS are in compliance with the standards shown in the Table 3.35.4 and requirements specified in this guidance (refer to <u>G8</u>, G9, 46 CFR 162.060 as well as US ETV Protocol (hereinafter referred to as “ETV protocol”).</p> <p>(2) ~ (3) <omitted></p> <p>(4) Notwithstanding the requirements in (1) and (2), the land-based and shipboard testing may be partly or entirely omitted, subject to the approval by the Society, in case where the manufacturer has been approved <u>by other Classification Society or a test organization recognized by the Society.</u></p> <p>2. Documents to be submitted</p> <p><omitted></p> <p>3. Sampling and analysis methods</p> <p>Sampling and analysis method for biological efficacy test during land-based and shipboard testing should be applied as follows;</p> <p>(1) Sampling methods (A) ~ (B) <omitted></p>	<p>3506. Requirements of Land-based and Shipboard testing for BWMS</p> <p>1. General</p> <p>(1) The manufacturer which intends to attain type approval of the Society should demonstrate that the results of land-based and shipboard testing for given BWMS are in compliance with the standards shown in the Table 3.35.4 and requirements specified in this guidance (refer to <u>BWMS Code</u>, G9, 46 CFR 162.060 as well as US ETV Protocol (hereinafter referred to as “ETV protocol”). <i>(2021)</i></p> <p>(2) ~ (3) <same as the present></p> <p>(4) Notwithstanding the requirements in (1), (2) above, 3507. and 3508., the land-based and shipboard testing may be partly or entirely omitted, subject to the approval by the Society, in case where the manufacturer has been approved <u>by Administration including Retrofit Approval. Also, the land-based and shipboard testing may be partly or entirely omitted, subject to the approval by the Society, in case where the manufacturer has been approved by other Classification Society or a test organization recognized by the Society according to (K) and (o) of 3503. 1 (1), even though the manufacturer has not been approved by Administration including Retrofit Approval. (2021)</u></p> <p>2. Documents to be submitted</p> <p><deleted></p> <p>2. Sampling and analysis methods</p> <p>Sampling and analysis method for biological efficacy test during land-based and shipboard testing should be applied as follows;</p> <p>(1) Sampling methods (A) ~ (B) <same as the present></p>	<p>(amendment) -Has been reflected the latest amendments of Convention</p>

Present	Amendment	Note																								
<p>(C) Sample volume and handling Sample volume and handling are to be applied by paragraph <u>2.3.3.7</u>, annex of <u>G8 guidelines</u> for shipboard testing and paragraph <u>2.4.34</u>, annex of <u>G8 guidelines</u> for land-based testing. In case of concentrating biological samples for 10µm to 50µm and greater than 50µm, however, the validation data that the concentration methods do not have any negative effect on enumeration of living organisms. In case of pertaining to USCG type approval, sampling volume and handling are to be applied in ETV protocol, section 5.4.6.3 to 5.4.6.7.</p> <p>(2) <omitted></p> <p>4. Evaluation of regrowth</p> <p>(1) ~ (3) <omitted></p> <p>(4) A report is to be submitted to this society containing all documentation (including procedures, methods, data, models, results, explanations and remarks) associated with the evaluation of regrowth.</p> <p>5. Temperature</p> <p>(1) ~ (3) <omitted></p> <p>(4) <u>Where the report on temperature limitation is separately submitted to this society, the test report is to contain the information described in 2 (2) (however, TOAP, QA/QC records, any other information provided by the manufacturer, calibration method and frequency for all measuring instruments listed in 2 (2) (J)).</u></p> <p><hereafter, omitted></p> <p>Table 3.35.5 Criteria of water characteristics for challenge water in Land-based testing</p> <table border="1" data-bbox="125 1169 983 1319"> <thead> <tr> <th>Salinity</th> <th>Challenge water characteristics</th> <th>G8 (mg/L)</th> <th>ETV Protocol (mg/L)</th> <th>Harmonized requirements</th> <th>Remarks</th> </tr> </thead> <tbody> <tr> <td colspan="6" style="text-align: center;"><hereafter, omitted></td> </tr> </tbody> </table>	Salinity	Challenge water characteristics	G8 (mg/L)	ETV Protocol (mg/L)	Harmonized requirements	Remarks	<hereafter, omitted>						<p>(C) Sample volume and handling Sample volume and handling are to be applied by paragraph <u>2.8.6</u> annex of <u>BWMS Code</u> for shipboard testing and paragraph <u>2.43</u> annex of <u>BWMS Code</u> for land-based testing. In case of concentrating biological samples for 10µm to 50µm and greater than 50µm, however, the validation data that the concentration methods do not have any negative effect on enumeration of living organisms. In case of pertaining to USCG type approval, sampling volume and handling are to be applied in ETV protocol, section 5.4.6.3 to 5.4.6.7. <u>(2021)</u></p> <p>(2) <same as the present></p> <p>3. Evaluation of regrowth</p> <p>(1) ~ (3) <same as the present></p> <p>(4) A report is to be submitted to this society containing all documentation (including procedures, methods, data, models, results, explanations and remarks) associated with the evaluation of regrowth according to (K) and (o) of 3503. 1 (1). <u>(2021)</u></p> <p>5. Temperature</p> <p>(1) ~ (3) <omitted></p> <p>(4) <u>Where the report on temperature limitation is separately submitted to this society, refer to para 6.2 to 6.6 of BWMS Code. (2021)</u></p> <p><hereafter, same as the present></p> <p>Table 3.35.5 Criteria of water characteristics for challenge water in Land-based testing (2021)</p> <table border="1" data-bbox="1032 1185 1892 1335"> <thead> <tr> <th>Salinity</th> <th>Challenge water characteristics</th> <th>BWMS Code (mg/L)</th> <th>ETV Protocol (mg/L)</th> <th>Harmonized requirements</th> <th>Remarks</th> </tr> </thead> <tbody> <tr> <td colspan="6" style="text-align: center;"><hereafter, omitted></td> </tr> </tbody> </table>	Salinity	Challenge water characteristics	BWMS Code (mg/L)	ETV Protocol (mg/L)	Harmonized requirements	Remarks	<hereafter, omitted>						<p>(amendment) -Has been reflected the latest amendments of Convention</p>
Salinity	Challenge water characteristics	G8 (mg/L)	ETV Protocol (mg/L)	Harmonized requirements	Remarks																					
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Salinity	Challenge water characteristics	BWMS Code (mg/L)	ETV Protocol (mg/L)	Harmonized requirements	Remarks																					
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Present							Amendment							Note																										
<p>Table 3.35.6 Criteria of living organisms for challenge water in Land-based testing</p> <table border="1"> <thead> <tr> <th rowspan="2">Organism size</th> <th colspan="2">G8</th> <th colspan="2">ETV Protocol</th> <th colspan="2">Harmonized requirements</th> </tr> <tr> <th>Minimum concentration</th> <th>Diversity</th> <th>Minimum concentration</th> <th>Diversity</th> <th>Minimum concentration</th> <th>Diversity</th> </tr> </thead> </table> <p><hereafter, omitted></p> <p>3508. Shipboard testing</p> <p>1. <omitted></p> <p>2. Validity criteria for Shipboard testing</p> <p>(3) The source water must be taken from the harbor or coastal waters and the ballast water treatment system should include the successful results of ballast water taken from at least two of the temperate, semi-tropical or tropical location. Also, successful treatment of ballast water taken from at least two sites based on the marine area of the Large Marine Ecosystem set by the US Oceanographic and Atmospheric Administration (NOAA) should be included.</p> <p>3509. Operation and Maintenance Verification test</p> <p>1. <newly added></p> <p>1. General</p> <p>(1) ~ (3) <omitted></p> <p>2. O&M performance indicators</p> <p>(1) ~ (4) <omitted></p>							Organism size	G8		ETV Protocol		Harmonized requirements		Minimum concentration	Diversity	Minimum concentration	Diversity	Minimum concentration	Diversity	<p>Table 3.35.6 Criteria of living organisms for challenge water in Land-based testing (2021)</p> <table border="1"> <thead> <tr> <th rowspan="2">Organism size</th> <th colspan="2">BWMS Code</th> <th colspan="2">ETV Protocol</th> <th colspan="2">Harmonized requirements</th> </tr> <tr> <th>Minimum concentration</th> <th>Diversity</th> <th>Minimum concentration</th> <th>Diversity</th> <th>Minimum concentration</th> <th>Diversity</th> </tr> </thead> </table> <p><hereafter, same as the present></p> <p>3508. Shipboard testing</p> <p>1. <same as the present></p> <p>2. Validity criteria for Shipboard testing</p> <p>(3) <u>In case of USCG Type approval</u>, the source water must be taken from the harbor or coastal waters and the ballast water treatment system should include the successful results of ballast water taken from at least two of the temperate, semi-tropical or tropical location. Also, successful treatment of ballast water taken from at least two sites based on the marine area of the Large Marine Ecosystem set by the US Oceanographic and Atmospheric Administration (NOAA) should be included. (2021)</p> <p>3509. Operation and Maintenance Verification test</p> <p>1. Application (2021)</p> <p>(1) The requirements of this article apply to the USCG Type approval.</p> <p>2. General</p> <p>(1) ~ (3) <same as the present></p> <p>3. O&M performance indicators</p> <p>(1) ~ (4) <same as the present></p>							Organism size	BWMS Code		ETV Protocol		Harmonized requirements		Minimum concentration	Diversity	Minimum concentration	Diversity	Minimum concentration	Diversity	<p>(amendment) -Has been reflected the latest amendments of Convention</p>
Organism size	G8		ETV Protocol		Harmonized requirements																																			
	Minimum concentration	Diversity	Minimum concentration	Diversity	Minimum concentration	Diversity																																		
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	Minimum concentration	Diversity	Minimum concentration	Diversity	Minimum concentration	Diversity																																		

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

2020. 7.



Machinery Rule Development Team

Effective Date : 1 August 2020

Present	Amendment	Remark
<p style="text-align: center;">CHAPTER 3 TYPE APPROVAL</p> <p>Section 1 - 22 <same as the present Rules></p> <p>Section 23 Automatic and Remote Control Systems</p> <p>2301. - 2302. <same as the present Rules></p> <p>2303. Type test report Upon completion of the type test, the manufacturer is to submit to the Society the complete test report including test conditions, test results and required information.</p> <p>2304. Type test <same as the present Rules></p> <p style="text-align: center;">Section 24 - 37 <same as the present Rules></p>	<p style="text-align: center;">CHAPTER 3 TYPE APPROVAL</p> <p>Section 1 - 22 <same as the present Rules></p> <p>Section 23 Automatic and Remote Control Systems</p> <p>2301. - 2302. <same as the present Rules></p> <p>2303. Type test report</p> <p>1. In application to 104. 1, upon completion of the type test, the manufacturer is to submit to the Society the complete test report including test conditions, test results and required information.</p> <p>2. In application to 104. 4, test result may be accepted in cases where test has been carried out as follows.</p> <p>(1) At a laboratory accredited for all the required tests by an accreditation body being member of KOLAS in accordance with KS Q ISO/IEC 17025</p> <p>(2) At a laboratory accredited for all the required tests by an accreditation body being member of ILAC in accordance with ISO/IEC 17025</p> <p>(3) At a laboratory having the quality system audited by the Society.</p> <p>(4) At any suitable laboratory when testing is witnessed by a Society surveyor.</p> <p>2304. Type test <same as the present Rules></p> <p style="text-align: center;">Section 24 - 37 <same as the present Rules></p>	<p>(Amended)</p> <p>- According to Circular 2017-1-E, the guidelines for the approval of the test institute are prepared and the accreditation system for the institute is operated, but in the case of overseas test institutes, the requirements have been revised since there is no place registered as an accreditation body in the Society related to the automation system.</p>