RUSSIAN MARITIME REGISTER OF SHIPPING

CIRCULAR LETTER **No. 314-56-1179c** dated 18.12.2018

Re:

amendments to the Rules for Classification and Construction of Sea-Going Ships, 2018, ND No 2-020101-104-E, and the Rules for Classification and Construction of Sea-Going Ships, 2019, ND No 2-020101-114-E

Item(s) of supervision:

ships during construction and in service, materials for manufacture of hull structures

Implementation: **from the date of publication**

Valid till:

Validity period extended till:

Cancels / amends / adds Circular Letter No. dated

Number of pages: 1+5

Appendix(ces):

text of amendments to Part II “Hull”, Part XIII “Materials” and Part XVII “Distinguishing Marks and Descriptive Notations in the Class Notation Specifying Structural and Operational Particulars of Ships”

Director General Konstantin G. Palnikov

Text of CL:

We hereby inform that Part II “Hull”, Part XIII “Materials” and Part XVII “Distinguishing Marks and Descriptive Notations in the Class Notation Specifying Structural and Operational Particulars of Ships” of the Rules for Classification and Construction of Sea-Going Ships shall be amended as specified in the Appendix to the Circular Letter.

It is necessary to do the following:

1. Familiarize the RS Surveyors with the content of the Circular Letter.

2. Bring the content of the Circular Letter to the notice of the interested organizations in the area of the RS Branch Offices’ activity.

3. Apply the provisions of the Circular Letter.

List of ND amended and introduced paras/chapters/sections (to specify in the List of Circular Letters (form 8.3.36)):

Part II: para and Table 3.10.4.1;

Part XIII: para 2.5.7, para and Table 6.5.3.1;

Part XVII: para 7.12.6.1

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“Thesis” System No. 18-305187

Appendix
To Circular Letter
No 314-56-1179c
dated 18.12.2018

RULES FOR CLASSIFICATION AND CONSTRUCTION OF SEA-GOING SHIPS, 2018, ND No 2-020101-104-E
RULES FOR CLASSIFICATION AND CONSTRUCTION OF SEA-GOING SHIPS, 2019, ND No 2-020101-114-E

PART II. HULL

3 REQUIREMENTS FOR STRUCTURES OF SHIPS OF SPECIAL DESIGN

Para 3.10.4.1. The explanation of variable *u* in the explication to Formula (3.10.4.1) shall be replaced with the following text**:**

"*u* – annual reduction of shell plating as a result of corrosion wear and abrasion, in mm per year, to be taken from Table 3.10.4.1. When taking measures to protect the shell plating from corrosion wear and abrasion complying with 6.5.3, Part XIII "Materials" and 3.5.1, Part III "Technical Supervision during Manufacture of Materials" of the Rules for Technical Supervision during Construction of Ships and Manufacture of Materials and Products for Ships, the value *u* may be reduced by 25 % when applying Class I protective coatings and by 50 % when applying protective coatings of Class II. In this case the value Δs_{sp0} shall not be taken less than determined in 1.1.5.2. In the drawings of hull structures the scantlings determined at *u* according to Table 3.10.4.1 shall be additionally indicated. A special entry shall be made in the Classification Certificate of such ships (refer to 2.3.1, Part I "Classification").".

Table 3.10.4.1 shall be amended to read:

"Table 3.10.4.1

Ice class	*u*, in mm per year	
	Region lengthwise	
	forward and intermediate (A and A_1)	midship and after (B and C)
Ice1	0,17	In accordance with 1.1.5.2
Ice2	0,22	
Ice3	0,25	
Arc4	0,30	0,20
Arc5, Arc6	0,35	0,24
Arc7, Arc8, Arc9	0,40	0,28
Icebreaker6	0,40	0,30
Icebreaker7	0,50	0,35
Icebreaker8	0,60	0,40
Icebreaker9	0,70	0,40

"

PART XIII. MATERIALS

2 PROCEDURES OF TESTING

2.5 TESTING OF ICE-RESISTANT COATINGS

The Chapter shall be supplemented with a **new para 2.5.7** reading as follows:

"**2.5.7 Test for determining coefficient of friction for ice.**

2.5.7.1 Preparation of test specimens.

Metal specimens dimensioned (250×130×3 (±0,5)) mm shall be prepared for testing. The specimen surface preparation and coating application shall be carried out in accordance with a process instruction of the coating manufacturer.

2.5.7.2 Description of the device recommended for testing.

Examples of mechanical devices are shown in Fig. 2.5.7.2.

The following symbolic notations are used in Fig. 2.5.7.2: *A* - specimen; *B* - bearing plane with recess for ice; *C* – supporting base; *D* - force gauge; *E* - spring gauge, *F* – constant speed chain drive; *G* – constant speed tensile tester crosshead; *H* – constant speed drive rolls; *I* - nylon monofilament; *J* - low-friction pulley; *K* - worm screw; *L* - half-coupling; *M* -synchronous motor

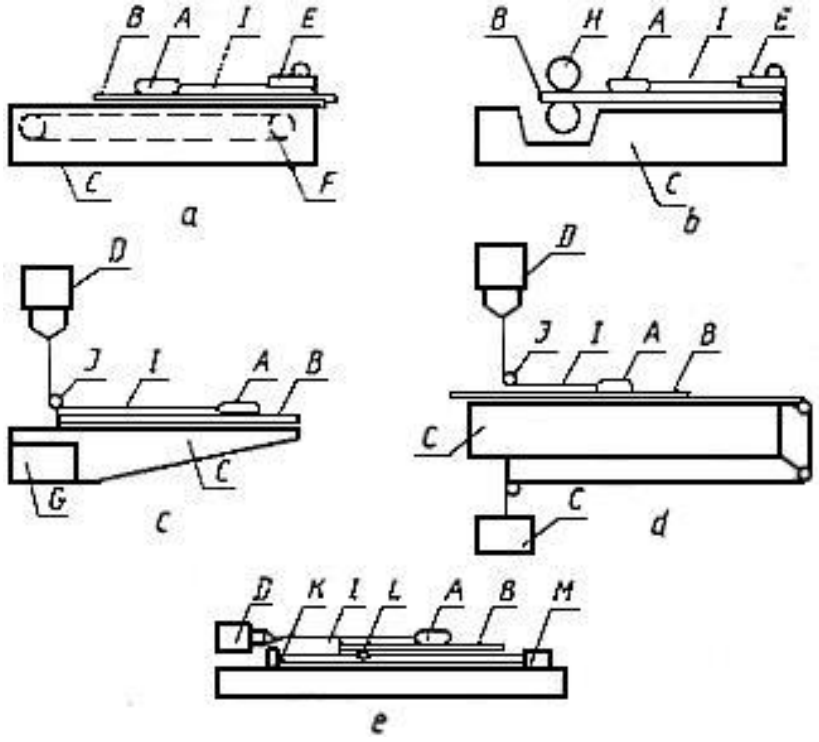

Рис. 2.5.7.2 Devices for determining the coefficient of friction of the protective coating on ice

2.5.7.3 Test procedure.

Panels for tests shall be rectangular dimensioned (250×130×3 (±0,5)) mm. Tests shall be carried out under standard conditions at the temperature of -20 °C. For testing purposes, the specimen shall be conditioned at a temperature of - 20 °C for at least 15 minutes. While performing tests, the bearing plane recess *B* (see Fig. 2.5.10.2-1) shall be filled with distilled water cooled to minus 2°C.

A panel with applied coating shall be fixed in the device. The tested specimen shall be placed on the bearing plane *B* of the device. Then the travel mechanism pre-adjusted to a speed of (150 ± 30) mm/min shall be switched on. Due to the frictional loads between the adjoining surfaces of the specimen and ice, they can remain fixed relative to each other until the force shifting the sample becomes equal to or exceeds the static friction force between the surfaces. That maximum initial force value shall be marked as a force, which is a component of the initial (static) coefficient of friction.

The average force value shall be visually marked, as read on the indicator scale with a uniform movement of the surfaces relative to each other at a distance of 130 mm. This force is equal to the kinetic sliding friction force, which is necessary to maintain the surfaces movement relative to each other.

Tests are carried out at least three times.

2.5.7.4 Assessment of the test results.

The coefficient of initial (static) friction is calculated as follows:

$$\mu_S = \frac{A_s}{m},$$

where A_S – initial motion scale reading , in g;

m - specimen weight, in g.

The (kinetic) coefficient of sliding friction is calculated as follows:

$$\mu_K = \frac{A_K}{m},$$

where A_K - average scale reading obtained during uniform sliding of surfaces, in g.

The accuracy algorithm for test results when using the device is approved in accordance with ISO 5725. "Accuracy (correctness and precision) of measurement methods and results".".

6 PLASTICS AND MATERIALS OF ORGANIC ORIGIN

Para 6.5.3.1 shall be amended to read:

"**6.5.3.1** A coating is considered ice-resistant if it provides the protection of the ship's hull shell against the external actions under the ice navigation conditions demonstrating the performance, which meets the requirements in Table 6.5.3.1.

Ice-resistant coatings shall be applied for ships with distinguishing mark **WINTERIZATION(DAT)** in the class notation in accordance with 7.12.6.1 of Part XVII "Distinguishing Marks and Descriptive Notations in the Class Notation Specifying Structural and Operational Particulars of Ships" and for ice class ships and icebreakers in accordance with 3.10.4.1, Part II "Hull". Coatings shall be divided into groups and classes in accordance with Table 6.5.3.1. For ships with distinguishing mark **WINTERIZATION(DAT)** in the class notation, the coatings shall be divided only into groups depending on the ice class. For ice class ships complying with 3.10 of Part II "Hull" the ice-resistant coatings are additionally divided into Classes I and II.".

Table 6.5.3.1 shall be amended to read:

"Table 6.5.3.1

Nos.	Characteristic	Value			
		Group 1 for icebreakers of all ice classes		Group 2 for **Arc4** and above ice class ships	
		Class I	Class II	Class I	Class II
1	Durability as per ISO 12944-6 for a corrosivity category Im2 in compliance with ISO 12944-2 (refer to 2.5.1)	High		High	
2	Adhesion by a cross-cut test method as per ISO 2409 or X-cut test method as per ISO16276-2 after testing for resistance to low temperature exposure (refer to 2.5.2.3) depending on the thickness and type of ice-resistant coating.	not more than 3		not more than 3	
3	Adhesion strength as per ISO 4624 (refer to 2.5.3.4)	above 16 MPa	above 10 MPa	above 10 MPa	above 8 MPa
4	Abrasive wear after 1000 cycle tests on the Taber's abrader (wheel CS-17) (refer to 2.5.4)	not more than 80 mg	not more than 120 mg	not more than 120 mg	not more than 160 mg
5	Impact resistance as per ISO 6272 (refer to 2.5.5)	not less than 5 J		not less than 5 J	
6	Cathode disbondment as per ISO 15711 (method A) (refer to 2.5.6) for coatings compatible with cathode protection	less than 5 mm after three month testing, less than 8 mm after six month testing		less than 5 mm after three month testing, less than 10 mm after six month testing	
8	Coefficient of sliding friction for ice (refer to 2.5.7)	not exceeding 0,03	not exceeding 0,08	not exceeding 0,03	not exceeding 0,08
Note. Tests shall be carried out in compliance with 2.5.					

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PART XVII. DISTINGUISHING MARKS AND DESCRIPTIVE NOTATIONS IN THE CLASS NOTATION SPECIFYING STRUCTURAL AND OPERATIONAL PARTICULARS OF SHIPS

7 REQUIREMENTS FOR SHIP EQUIPMENT TO ENSURE LONG-TERM OPERATION AT LOW TEMPERATURE

Para 7.12.6.1 shall be amended to read:

"**7.12.6.1** The underwater hull and sides of at least 1,0 m above the upper boundary of the ice strake shall have an ice resistant coating (unless clad steel is used for ice strake plating where the appropriate electrochemical protection is provided). The coating supply documentation shall be agreed between the shipowner, the shipyard and the coating manufacturer and shall be submitted to the Register for review.

When applying several layers of protective ice resistant coating for ice class ships and icebreakers, using of different colour for each layer is recommended.".