



# RUSSIAN MARITIME REGISTER OF SHIPPING

**CIRCULAR LETTER**

**No. 314-04-1585c**

dated 18.06.2021

Re:

amendments to the Rules for the Classification and Construction of Sea-Going Ships, the Rules for Technical Supervision during Construction of Ships and Manufacture of Materials and Products for Ships and the Rules for the Manufacture of Containers

Item(s) of supervision:

tank containers

Entry-into-force date:

**21.07.2021**

~~Valid till:~~

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~~dated~~

Number of pages:

1 + 7

Appendices:

Appendix 1: information on amendments introduced by the Circular Letter

Appendix 2: text of amendments to Part XIV "Welding" of the Rules for the Classification and Construction of Sea-Going Ships, Part III "Technical Supervision during Manufacture of Materials" of the Rules for the Technical Supervision during Construction of Ships and Manufacture of Materials and Products for Ships and Parts I "Basic Requirements" and IV "Tank Containers" of the Rules for the Manufacture of Containers

Director General

Konstantin G. Palnikov

Text of CL:

We hereby inform that the Rules for the Classification and Construction of Sea-Going Ships, the Rules for Technical Supervision during Construction of Ships and Manufacture of Materials and Products for Ships and the Rules for the Manufacture of Containers shall be amended as specified in the Appendices to the Circular Letter.

It is necessary to do the following:

1. Bring the content of the Circular Letter to the notice of the RS surveyors, as well as interested organizations and persons in the area of the RS Branch Offices' activity.
2. Apply the provisions of the Circular Letter during review and approval of the technical documentation on tank containers requested for review on or after 21.07.2021.

List of the amended and/or introduced paras/chapters/sections:

Rules for the Classification and Construction of Sea-Going Ships:

Part XIV: paras 1.2.1, 2.10.10, 3.3.9, 3.5.5 and 5.1.3

Rules for Technical Supervision during Construction of Ships and Manufacture of Materials and Products for Ships:

Part III: paras 4.1.5 and 4.3.2.1, Table 4.3.2.2, paras 4.4.7, 4.5.10 and 7.2.2 and Chapter 7.6

Rules for the Manufacture of Containers:

Part I: para 3.7.2

Part IV: Chapter 2.6

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**Information on amendments introduced by the Circular Letter  
(for inclusion in the Revision History to the RS Publication)**

Nos.	Amended paras/chapters/sections	Information on amendments	Number and date of the Circular Letter	Entry-into-force date
1	Rules for the Classification and Construction of Sea-Going Ships, Part XIV, para 1.2.1	New definition "Friction Stir Welding (FSW)" has been introduced	314-04-1585c of 18.06.2021	21.07.2021
2	Rules for the Classification and Construction of Sea-Going Ships, Part XIV, para 2.10.10	New para with the requirements for FSW application has been introduced	314-04-1585c of 18.06.2021	21.07.2021
3	Rules for the Classification and Construction of Sea-Going Ships, Part XIV, para 3.3.9	New para with the requirements for NDT scope of FSW has been introduced	314-04-1585c of 18.06.2021	21.07.2021
4	Rules for the Classification and Construction of Sea Going Ships, Part XIV, para 3.5.5	New para with the requirements for assessment of FSW quality has been introduced	314-04-1585c of 18.06.2021	21.07.2021
5	Rules for the Classification and Construction of Sea-Going Ships, Part XIV, para 5.1.3	Requirements for certification and approval of welding operators with regard to FSW equipment have been specified	314-04-1585c of 18.06.2021	21.07.2021
6	Rules for Technical Supervision during Construction of Ships and Manufacture of Materials and Products for Ships, Part III, para 4.1.5	Requirements for certification and approval of welding operators with regard to FSW equipment have been specified	314-04-1585c of 18.06.2021	21.07.2021
7	Rules for Technical Supervision during Construction of Ships and Manufacture of Materials and Products for Ships, Part III, para 4.3.2.1	Designation for FSW has been introduced	314-04-1585c of 18.06.2021	21.07.2021
8	Rules for Technical Supervision during Construction of Ships and Manufacture of Materials and Products for Ships, Part III, Table 4.3.2.2	Designation for FSW has been introduced	314-04-1585c of 18.06.2021	21.07.2021

Nos.	Amended paras/chapters/sections	Information on amendments	Number and date of the Circular Letter	Entry-into-force date
9	Rules for Technical Supervision during Construction of Ships and Manufacture of Materials and Products for Ships, Part III, para 4.4.7	New para with the requirements for certification and approval of welding operators for FWS equipment has been introduced	314-04-1585c of 18.06.2021	21.07.2021
10	Rules for Technical Supervision during Construction of Ships and Manufacture of Materials and Products for Ships, Part III, para 4.5.10	New para with the requirements for the range of approval based on certification results of welding operators of FSW equipment has been introduced	314-04-1585c of 18.06.2021	21.07.2021
11	Rules for Technical Supervision during Construction of Ships and Manufacture of Materials and Products for Ships, Part III, Chapter 7.2, para 7.2.2	Designation of FSW 4063 has been introduced considering ISO 4063	314-04-1585c of 18.06.2021	21.07.2021
12	Rules for Technical Supervision during Construction of Ships and Manufacture of Materials and Products for Ships, Part III, Chapter 7.6	New Chapter with requirements for approval of FSW production process has been introduced	314-04-1585c of 18.06.2021	21.07.2021
13	Rules for the Manufacture of Containers, Part I, para 3.7.2	Reference to Section 7, 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 has been introduced	314-04-1585c of 18.06.2021	21.07.2021
14	Rules for the Manufacture of Containers, Part IV, Chapter 2.6	New Chapter with the requirements for the application of FSW for welding of aluminum shell has been introduced	314-04-1585c of 18.06.2021	21.07.2021

## **RULES FOR THE CLASSIFICATION AND CONSTRUCTION OF SEA-GOING SHIPS, 2021,**

### **ND No. 2-020101-138-E**

#### **PART XIV. WELDING**

##### **1 GENERAL**

1 **Para 1.2.1.** After the definition "Penetration" a new definition is introduced reading as follows:

"Friction stir welding (FSW) is a joining process producing a weld by the friction heating and mixing of material in the plastic state caused by a rotating tool that traverses along the tool path (refer to ISO 25239-1:2011).".

##### **2 TECHNOLOGICAL REQUIREMENTS FOR WELDING**

2 **New para 2.10.10** is introduced reading as follows:

###### **"2.10.10 Application of friction stir welding.**

Friction stir welding (FSW) may be applied for items of technical supervision by the Register made of aluminium alloys. In addition, relevant Parts of the RS rules regulating the structure of these items shall specify the possibility to use this type of welding as applied to the particular type of welded joint. FSW procedure shall be based on the requirements of ISO 25239:2011. Requirements for certification of welding operators and approval of FSW production process are given in 4.1, 4.4.7, 4.5.10 and 7.6, 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.

###### **2.10.10.1 Shells for tank-containers.**

FSW may be applied only for butt welds produced by double-sided welding.".

##### **3 TESTING OF WELDED JOINTS**

3 **New para 3.3.9** is introduced reading as follows:

###### **"3.3.9 Non-destructive testing of the friction stir welded joints of structures made of aluminium alloys.**

**3.3.9.1** Non-destructive testing of the friction stir welded joints of structures made of aluminium alloys shall be performed by visual and measuring testing (in accordance with ISO 17637:2003), radiographic testing (in accordance with ISO 17636:2013) and ultrasonic testing (in accordance with ISO 17640:2010).

**3.3.9.2** Non-destructive testing of the friction stir welded joints of structures made of aluminium alloys shall be carried out in scope:

visual (VT) and measuring testing — 100% of length of the welded joint;

radiographic testing (RT) or ultrasonic testing (UT) for the thickness of 8 mm and more or by advanced non-destructive testing (ANDT) — 100% of length of the welded joint.

**3.3.9.3** When applying advanced non-destructive testing (ANDT), for example, phased array ultrasonic testing (PAUT) the range of controlled thicknesses of the friction stir welded joints

shall be defined in accordance with the approved specifications (procedures) for this testing method.

**3.3.9.4** In case of doubt in the results of visual testing, penetrant testing (in accordance with ISO 3452-1:2008) may be applied."

4 **New para 3.5.5** is introduced reading as follows:

**3.5.5** Assessment of the quality of friction stir welded joints of structures made of aluminium alloys shall be carried out in accordance with ISO 25239-5:2011.

All inadmissible imperfections detected on NDT results shall be removed and the location of corrections shall be tested again in compliance with the applicable provisions of 3.2.1."

## 5 APPROVAL TEST FOR WELDERS

5 **Para 5.1.3** is supplemented with the following text:

"Certification and approval of welding operators for equipment of aluminium alloy friction stir welding shall be carried out based on the provisions of ISO 25239-3:2011 and 4.1.5 and 4.4.7, 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."

# RULES FOR TECHNICAL SUPERVISION DURING CONSTRUCTION OF SHIPS AND MANUFACTURE OF MATERIALS AND PRODUCTS FOR SHIPS, 2021,

ND No. 2-020101-139-E

## PART III. TECHNICAL SUPERVISION DURING MANUFACTURE OF MATERIALS

### 4 WELDING. REGULATIONS FOR WELDERS' CERTIFICATION

6 **Para 4.1.5** is replaced by the following text:

**4.1.5** The welding operators responsible for setting up and/or adjustment of fully mechanized and automatic equipment, such as submerged arc welding, gravity welding, electro gas welding, MAG welding with auto-carriage, friction stir welding (FSW), etc. must be qualified whether they operate the equipment or not. However welding operators, who solely operates the equipment without responsibility for setting up and/or adjustment, do not need qualification provided that they have experience in specific welding work concerned and the production welds made by the operators are of the required quality."

### 4.3 DEFINITIONS, TERMS AND SYMBOLS USED IN WELDERS' APPROVAL TESTING

7 **Para 4.3.2.1.** The para is supplemented with the new fifth welding procedure as follows:

"FSW — friction stir welding".

8 **Table 4.3.2.2.** After item "TIG" a new item is introduced reading as follows:

"

FSW	Friction stir welding (FSW)	Refer to 1.2.1	43
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"

9      **New para 4.4.7** is introduced reading as follows:

**"4.4.7      Welding operators of friction stir welding (FSW) equipment for aluminium alloys.**

**4.4.7.1** Welding operators shall be qualified and certified in accordance with ISO 25239-3:2011.

**4.4.7.2** The scope of non-destructive testing of friction stir welded test pieces for certification of welding operators includes:

visual and measuring testing, 100%;

radiographic or ultrasonic testing (for thickness of 8 mm and over);

**4.4.7.3** The scope of mechanical tests of welded test pieces for certification of welding operators based on the standard test procedure for the welders, dimensions of welded test pieces shall comply with Section 4.3 of ISO 25239-3:2011.

**4.4.7.4** Certification of FSW operators may be carried out by a standing commission on certification the members of which are approved by the order for the firm.

**4.4.7.5** The commission shall include:

chief welder of the firm (or equivalent position) — chairman of the commission;

welding engineer — deputy chairman (Secretary);

head of the Quality Control Department or Inspection Department;

head (supervisor) of the production site;

NDT supervisor;

representative of the Register.

**4.4.7.6** Schedule of work of the commission on certification. Issue of documents.

**4.4.7.6.1** The commission shall check the theoretical knowledge of welding operators, shall be present during welding of samples, and consider the test results in order to make a decision regarding these results.

**4.4.7.6.2** All the members of the commission shall be notified of the date of its meeting:

employees of the firm — not less than 3 days before the date;

employees of other organizations — not less than 10 days before the date.

**4.4.7.6.3** The following documents shall be submitted to the commission:

program of welding operators certification;

list of welding operators to be certified with indication of education, rate and professional experience;

certificates of welding operators;

conclusion based on the results of testing of test assemblies;

reference of the quality of welders' works signed by the Quality Control Department (Inspection Department) in order to exempt the welder from retests.

**4.4.7.6.4** When practical tests are performed, presence of the following members of the commission shall be sufficient:

head of the Quality Control Department/Inspection Department and Welding Engineer to supervise performance of welding and assess the quality of samples visually;

representative of the Register.

**4.4.7.6.5** Proceeding from the results of the practical and theoretical examinations of welders, the certifying commission draws up and issues a Welding Operators Approval Test Certificates for Friction Stir Welding (form 7.1.30 FSW).

**4.4.7.6.6** Terms of validity, endorsement and prolongation of the Certificate are established in accordance with 5.2 of ISO 25239-3:2011."

10      **New para 4.5.10** is introduced reading as follows:

**"4.5.10** Range of approval based on certification test results of FSW operators is determined in accordance with the requirements of Section 4.2 of ISO 25239-3:2011."

## 7 APPROVAL OF WELDING PROCEDURES FOR ALUMINIUM ALLOYS

11 **Para 7.2.2.** After the sentence "15 = plasma arc welding." The following text is introduced:

"43 — friction stir welding".

12 New **Chapter 7.6** is introduced reading as follows:

### "7.6 APPROVAL OF FRICTION STIR WELDING PROCEDURES FOR ALUMINIUM ALLOYS

**7.6.1** The requirements of this Section refer to friction stir welding (FSW) for aluminium alloys. These requirements shall cover testing of welding equipment, approval of welding procedure and certification of welding procedure.

#### **7.6.2 Welding equipment.**

**7.6.2.1** Welding equipment and FSW tools shall be capable of producing welds that meet the specified requirements for acceptance level.

**7.6.2.2** Welding equipment shall be maintained in good condition and, where necessary, be repaired or adjusted that shall be stated in the firm's documents.

**7.6.2.3** After installation of new or refurbished equipment appropriate tests shall be performed in order to verify the equipment functions correctly that shall be stated in the firm's documents.

#### **7.6.3 Certification of welding production process.**

**7.6.3.1** Manufacturers shall prepare preliminary welding procedure specification (pWPS) for FSW method.

**7.6.3.2** Specification (pWPS) shall comply with the requirements of ISO 25239-4:2011.

**7.6.3.3** Certification of welding procedure shall be obtained by qualification tests for welding procedure in accordance with ISO 25239-4:2011.

Qualification test reports shall comply with ISO 25239-4:2011.

**7.6.3.4** Welding procedure specification (WPS) shall be prepared after the qualification test report on the Register approved procedure has been drawn up.

**7.6.3.5** Range of approval shall be limited by the following:

**.1** manufacturer. Welding procedure approved for the specified firm is only valid for this firm this the same technical conditions and quality system;

**.2** types of materials. Certification is limited by the type of aluminium alloy used during certification: pure aluminium, non-heat-treatable alloys, heat-treatable alloys;

**.3** thickness. Testing for welding procedure approval shall be carried out on test pieces corresponding to the minimum and maximum thickness of semi-products of welded batch. Certification is limited by the range of thicknesses from minimum to maximum;

**.4** types of joints. Certification is only limited by those joints that have been produced during welding procedure testing;

**.5** welding equipment. Certification is limited by the specified welding equipment used during qualification tests;

**.6** welding tool. Certification is limited by the specified type of welding tool used during qualification tests:

tool with adjustable probe;

tool with fixed probe;

bobbin tool with shoulders separated by a fixed length probe;

bobbin tool with shoulders separated by an adjustable length probe;

**.7** range of welding parameters. Certification covers only those welding parameters that have been present during tests: rotational speed of tool, tilt angle, clamping force. Standard for deviations from these parameters shall be indicated in the RS-approved documentation;

**.8** requirements for assembly. Certification covers only those conditions that have been present during tests: gaps, vertical misalignment of edges to be butted. Standard for deviations from these parameters shall be indicated in the RS-approved documentation."

# COLLECTION OF THE RULES FOR CONTAINERS, 2021,

ND No. 2-090201-012-E

## RULES FOR THE MANUFACTURE OF CONTAINERS

### PART I. BASIC REQUIREMENTS

#### 3 MATERIALS AND WELDING

13 **Para 3.7.2** is replaced by the following text:

**3.7.2** The production process of welding used during manufacture of containers shall comply with the requirements of Sections 6 and 7, 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 as applicable to containers."

### PART IV. TANK CONTAINERS

#### 2 TECHNICAL REQUIREMENTS

14 **New Chapter 2.6** is introduced reading as follows:

#### "2.6 WELDING

**2.6.1** Welding shall be carried out in accordance with the requirements of 3.7, Part I "Basic Requirements" taking into account the requirements of this Chapter.

**2.6.2** When welding the shell made of aluminium and its alloys it is possible to apply friction stir welding (FSW) complying with the requirements of 2.10.10, Part XIV "Welding" of the Rules for the Classification and Construction of Sea-Going Ships.

**2.6.3** Scope and assessment of quality of friction stir welded joints shall comply with the requirements of 3.3.9 and 3.5.5, Part XIV "Welding" of the Rules for the Classification and Construction of Sea-Going Ships."