

# GUIDANCE FOR THE APPROVAL AND TYPE APPROVAL OF MATERIALS AND EQUIPMENT FOR MARINE USE

**Guidance for the Approval and Type Approval of Materials and Equipment for  
Marine Use** **2017 AMENDMENT NO.3**

Notice No.102      25 December 2017

Resolved by Technical Committee on 26 July 2017

**ClassNK**  
NIPPON KAIJI KYOKAI

Notice No.102 25 December 2017

AMENDMENT TO THE GUIDANCE FOR THE APPROVAL AND TYPE APPROVAL OF MATERIALS AND EQUIPMENT FOR MARINE USE

“Guidance for the approval and type approval of materials and equipment for marine use” has been partly amended as follows:

Amendment 3-1

**Part 1 METALLIC MATERIALS**

**Chapter 1 APPROVAL OF MANUFACTURING PROCESS OF ROLLED STEELS**

**1.4 Approval Test**

**1.4.3 Details of Test**

Table 1.1-2 has been amended as follows.

Table 1.1-2 Approval Test Items for Rolled Steels

Rolled steels			Kind of test (See Note <sup>(1)</sup> )																										
			(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)	(j)	(k)	(l)	(m)	(n)	(o)	(p)	(q)	(r)	(s)	(t)	(u)	(v)	(w)	(x)			
(Omitted)																													
Rolled stainless steels	Base metal	<del>KSUS304~KSUS347</del> <u>KSUS821L1</u>	○	○				○	○	○	○	○															○		○
	(Omitted)																												
Stainless clad steels	Base metal	<u>KA~KF40</u>																											
	Cladding metal	<del>KSUS304~KSUS347</del> <u>KSUS821L1</u>	○	○	○	○	○	○	○	○	○	○	○	○														○	○

Notes:  
(Omitted)

EFFECTIVE DATE AND APPLICATION (Amendment 3-1)

1. The effective date of the amendments is 25 December 2017.
2. Notwithstanding the amendments to the Guidance, the current requirements apply to rolled stainless steels for which the application for approval is submitted to the Society before the effective date.

## **Part 1 METALLIC MATERIALS**

Chapter 7 has been added as follows.

### **CHAPTER 7 APPROVAL OF MANUFACTURING PROCESS OF ALUMINIUM ALLOY SEAMLESS PIPES**

#### **7.1 General**

##### **7.1.1 Scope**

**1** In accordance with the requirements in **1.2, Part K of the Rules for the Survey and Construction of Steel Ships** (hereinafter referred as “the Rules”), the requirements in this chapter apply to tests and inspections, etc. for the approval of manufacturing process of aluminium alloy seamless pipes specified in **Chapter 8, Part K of the Rules**.

**2** Of the materials required to be approved by the Society by the requirements in **1.1.1-3, Part K of the Rules**, the requirements of this chapter correspondingly apply to the tests and inspections, etc. related to the approval of the manufacturing process of aluminium alloy seamless pipes.

#### **7.2 Approval Application**

##### **7.2.1 Approval Application Form**

**Manufacturers who apply for approval of the manufacturing process of aluminium alloy seamless pipes are to submit a single copy of an application form filled in with the required data and information to the Society.**

##### **7.2.2 Data to be Submitted**

**1** Three copies each of the drawings and documents given in **(1) through (8)** are to be submitted together with the appropriate application form specified in **7.2.1**.

- (1) Approval test plan**
- (2) Data on outline of manufacturing plant**
- (3) Data on major manufacturing facilities**
- (4) Data on manufacturing process**
- (5) Data on system of codes and standards**
- (6) Data on quality control system**
- (7) Data on mechanical properties and weldability, etc.**
- (8) Other data deemed necessary by the Society**

**2** Notwithstanding the requirements in the preceding **-1**, part or all of the data may be exempted from submission, except for test plans for the approval of manufacturing process, for materials having other grade material marks, heat treatment, etc. whose approval of manufacturing process has already been granted by the Society in cases where the data required to be submitted duplicates previously submitted data.

**3** Where part of the manufacturing process is shared by other companies or other manufacturing

plants, documents related to the manufacturing process showing the names and addresses of the other companies and plants together with the organization and method of inspection for purchasing semi-final products are to be included.

### **7.3 Preliminary Examination**

#### **7.3.1 Test Plan Approval**

The Society examines the test plan for approval submitted in accordance with the requirements in 7.2.2-1, and where deemed appropriate, the plan is approved and returned to the manufacture.

#### **7.3.2 Confirmation of Manufacturing and Quality Control Procedures**

1 The Society may carry out surveys of the actual situation of the manufacturing plant on the basis of the data submitted according to 7.2.2-1(2) through (6) as deemed necessary. In this case, the manufacturer is to provide the necessary information related to this survey.

2 The time of survey, in accordance with the preceding -1, is to correspond, as a rule, to either the time of manufacturing of the aluminium alloy seamless pipes or the time when the approval test is carried out.

### **7.4 Approval Tests**

#### **7.4.1 Selection of Test Samples**

1 Test samples used for approval tests are to be selected, as a rule, from aluminium alloy seamless pipes with the same conditions of material manufacturing process, pipe fabrication method and heat treatment method.

2 As a rule, the dimensions of test sample are standardized according to the maximum manufactured outer diameter and the maximum manufactured thickness.

#### **7.4.2 Test Details**

Approval tests for each of aluminium alloy seamless pipes are to be performed for each test item given in Table 1.7-1 and the test procedure and judgement standard are to be accordance with Table 1.7-2. However, additional test pieces and test items as well as the submission of proper technical information may be requested when deemed necessary by Society.

#### **7.4.3 Attendance of Society Surveyor at Test**

As a rule, a Society Surveyor is to be present when test samples for approval tests are being identified and when approval tests are being carried out.

#### **7.4.4 Test Reports**

1 Upon completion of approval test, the manufacturer is to produce a record of the approval test, have the record verified by the Society surveyor and then submit three copies to the Society.

2 The record of the approval test in the preceding -1 is to be appended with work records for the production process and heat treatment process of test samples.

## 7.5 Approval

### 7.5.1 Notification and Announcement of Approval

1 The Society grants approval of the manufacturing process of aluminium alloy seamless pipes which have been deemed appropriate on the basis of the reports of the Surveyor and documents submitted in accordance with requirements in 7.2 through 7.4. In this case, a “Certificate of Approval” is published including the name of works, kind of aluminium alloy seamless pipes, term of validity of approval, etc. and the approved content, etc. is described in “Particulars of Approval Conditions”.

2 Among those data submitted in accordance with the requirements in 7.2.2 and 7.4.4 which the Society deems necessary, a seal of approval is stamped and returned to the applicant.

3 The Society announces aluminium alloy seamless pipes which have been granted approval.

### 7.5.2 Validity of Approval

Valid term of the “Certificate of Approval” specified in 7.5.1-1 is 5 years from the date of approval. In cases where the renewal of approval is carried out in accordance with the requirements in 7.5.3, valid term is 5 years from the next day after the expiry date of the previous validity (hereinafter referred to as “date of renewal”).

Table 1.7-1 Approval Test Items for Aluminium Alloy Seamless Pipes

<u>Products</u>	<u>Material grade</u>	<u>Temper condition</u>	<u>Kind of Test<sup>(1)</sup></u>								
			<u>Chemical analysis</u>	<u>Macrostructure</u>	<u>Microstructure</u>	<u>Tensile test at room temperature</u>	<u>Tensile test at low temperature</u>	<u>Flattening test</u>	<u>Hydraulic test</u>	<u>Visual inspection</u>	<u>Dimension inspection</u>
<u>Seamless extruded pipes</u>	<u>5083TE</u>	<u>O</u>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<u>Seamless drawn pipes</u>	<u>5083TD</u>	<u>O</u>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Note:

(1) Each test item indicated with a  mark in the Table is to be performed for approval tests for each aluminium alloy seamless pipes.

**Table 1.7-2 Approval Testing Method and Acceptance Criteria**

<u>Approval test items</u>	<u>Selection of test specimen<sup>(1)</sup></u>		<u>Testing method</u>	<u>Acceptance criteria</u>
	<u>Location</u>	<u>Direction</u>		
<u>Chemical analysis</u>	<u>Both side</u>	-	<u>Ladle analysis and product analysis<sup>(2)</sup> are to be performed. JIS H 1305, H 1306 or equivalent method.</u>	<u>Chemical composition by ladle analysis is to comply with the requirements in <b>Chapter 8 of Part K of the Rules</b><sup>(3)</sup>.</u>
<u>Macrostructure</u>	<u>Both side</u>	-	<u>To be as deemed appropriate by the Society.</u>	<u>To be as deemed appropriate by the Society.</u>
<u>Microstructure</u>	<u>Both side</u>	-	<u>To be as deemed appropriate by the Society.</u>	<u>To be as deemed appropriate by the Society.</u>
<u>Tensile test at room temperature</u>	<u>Both side</u>	<u>Parallel</u>	<u>Tensile tests at room temperature are to be carried out in accordance with <b>Chapter 8 of Part K of the Rules</b>.</u>	<u>In accordance with <b>Chapter 8 of Part K of the Rules</b>.</u>
<u>Tensile test at low temperature</u>	<u>Both side</u>	<u>Parallel</u>	<u>The tensile tests at low temperature are to be carried out at -196°C using of the tensile test specimens of the same shape as the specimens used in tensile tests at room temperature.</u>	<u>To be as deemed appropriate by the Society.</u>
<u>Flattening test</u>	<u>Both side</u>	-	<u>Test specimens of at least 50 mm are to be flattened between parallel plates until the distance between the plates becomes three times the thickness of the pipe.</u>	<u>No cracks and flaws are to be accepted.</u>
<u>Hydraulic test</u>	-	-	<u>Hydraulic tests are to be carried out for at least 10 minutes at pressures of at least 1.5 times manufacturer specified maximum working pressures.</u>	<u>To be as deemed appropriate by the Society.</u>
<u>Dimension inspection</u>	-	-	<u>Dimension measurements are to be carried out.</u>	<u>In accordance with <b>Chapter 8 of Part K of the Rules</b>.</u>
<u>Visual inspection</u>	-	-	<u>Visual inspections are to be carried out.</u>	<u>To be as deemed appropriate by the Society.</u>

Notes:

- (1) When the test specimens used for the approval test cannot be taken from the test samples because of their dimensions or shapes, the direction of the selection of the specimens is to be determined on a case-by-case basis through consultation with the Society.
- (2) The test specimen is to be selected from a tensile test specimen.
- (3) Excess difference in the chemical composition between ladle analysis and product analysis is not to be accepted.

**7.5.3 Renewal of Approval**

**1** In case of application for renewal of approval, the applicant is to submit a “Certificate of Approval” (copy) and three copies of the data showing actual manufacturing records (for example, chemical composition, mechanical properties, outer diameter and thickness expressed in the form of histogram or statistics for each heat treatment) of the aluminium alloy seamless pipes within the specific period together with the appropriate application form.

2 The Society conducts the factory inspection. However, the Society may omit the factory inspection when actual manufacturing records are found to be satisfactory.

3 The factory inspection specified in -2 is to be completed within the valid term of “Certificate of Approval” in principle. However, for unavoidable circumstance, the factory inspection may be completed within a period of 3 months after the valid term upon the approval by the Society.

4 The Society is to examine the data showing actual manufacturing records specified in -1 and the result of factory inspection specified in -2, and if the Society considers them appropriate, is to approve the renewal of validity.

5 In case there is no data showing actual manufacturing records of aluminium alloy seamless pipes from the previous date of renewal (date of approval in case of the first renewal) or the Society deems it necessary, the Society may renew the approval considering following (1) or (2) in addition to the result of factory inspection specified in -2.

(1) Data of similar grade products

(2) Result of approval test which newly carried out in accordance with the requirements in 7.2 through 7.4

#### **7.5.4 Changes in the Approved Content**

1 In case of changes in the approved content such as those given in the following (1) through (7) is occurred, in response to the content of changes, three copies of documents corresponding to the requirements in 7.2.2 are to be submitted to the Society, in addition to a copy of the “Certificate of Approval”.

(1) In cases where materials grades different from materials originally approved for the pipes are added.

(2) Addition to or changes in the manufacturing process

(3) Changes in the limits of outer diameter or thickness

(4) Changes in the heat treatment process

(5) Changes in the chemical composition, added element, etc.

(6) In case of a part of manufacturing process is assigned to other manufacturers

(7) Use of semi-final products manufactured by other manufacturers

2 Upon studying the items of changes in approved content specified in -1, the Society requests the factory inspection and approval test in accordance with the requirement in 7.4 as necessary.

3 The Society is to examine the submitted data specified in -1 and reports of factory inspection and approval test specified in -2, and if the Society considers them appropriate, is to approve the changes in the approved content. In such case, as a rule, the validity of the “Certificate of Approval” specified in -1 is not changed.

#### **7.5.5 Revocation of Approval**

In case any of the following (1) through (5) is relevant, the Society may revoke approval of the manufacturing process based on the requirements in this Chapter and give notice of the revocation to the manufacturer. The manufacturer which noticed the approval is withdrawn is to return “Certificate of Approval” and “Particulars of Approval Conditions” in question to the Society.

(1) When the manufacturer does not pay the approval fees.

(2) When the aluminium alloy seamless pipes, whose manufacturing process has previously been granted approval, no longer conform to the given requirements due to amendments or implementation of conventions, law, regulations, etc.

(3) In one case of following (a) through (e), when the manufacturer does not take a proper action in spite of the Society requests the investigation and improvement, etc.

- (a) When the unstable quality is recognized at tests or inspections
- (b) When the harmful defects caused by the material in the process of being worked after shipment are recognized
- (c) When the damages caused by the material at working condition are recognized
- (d) When the shortcomings are recognized on the quality system or manufacturing control system
- (e) When the approved content described on the “Particulars of Approval Conditions” specified in 7.5.1-1 were changed without the permission of the Society
- (4) When manufacturers have not been carried out the renewal of approval according to the requirements in 7.5.3.
- (5) When a request for revocation is made by the manufacturer.

## **7.6 Dealing after Approval**

### **7.6.1 General**

Aluminium alloy seamless pipes which conform to the requirements in this chapter are to be dealt with as “an approved case” in the requirements in 2.2.1-1, Part K of the Rules, unless otherwise specified by the Society.

#### EFFECTIVE DATE AND APPLICATION (Amendment 3-2)

1. The effective date of the amendments is 25 June 2018.