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# **RULES FOR THE SURVEY AND CONSTRUCTION OF STEEL SHIPS**

## **Part K    Materials**

### **2010    AMENDMENT NO.1**

Rule No.24      15th April 2010

Resolved by Technical Committee on 5th February 2010

Approved by Board of Directors on 23rd February 2010

Rule No.24 15th April 2010

## AMENDMENT TO THE RULES FOR THE SURVEY AND CONSTRUCTION OF STEEL SHIPS

“Rules for the survey and construction of steel ships” has been partly amended as follows:

### **Part K MATERIALS**

#### **Amendment 1-1**

### **Chapter 3 ROLLED STEELS**

#### **3.1 Rolled Steels for Hull**

Paragraph 3.1.1 has been amended as follows.

##### **3.1.1 Application**

**1** The requirements of this chapter are to apply to hull structural rolled steels (including those manufactured as steel coils and those manufactured from steel coils, hereinafter referred to as “steels” in **3.1**) not exceeding 50 *mm* in thickness.

**2** Steels having thickness over 50 *mm* up to 100 *mm* are to comply with the requirements of **3.10**. The requirements for steels having thickness exceeding 100 *mm* are to the discretion of the society.

**3** In cases where steel coils are uncoiled and cut to manufacture steel plates by a manufacturer different from the one which manufactured the steel coils, the steel coils and the steel plates from steel coils are to be as deemed appropriate by the Society in addition to satisfying the requirements given in this Chapter.

~~**34**~~ Steels having characteristics differing from those specified in **3.1** are to comply with the requirements in **1.1.1-2**.

#### **EFFECTIVE DATE AND APPLICATION (Amendment 1-1)**

- 1.** The effective date of the amendments is 15 April 2010.
- 2.** Notwithstanding the amendments to the Rules, the current requirements may apply to materials other than those for which the application for survey is submitted to the Society on and after the effective date.

## Chapter 4 STEEL PIPES

### 4.2 Steel Pipes for Pressure Piping

Paragraph 4.2.5 has been amended as follows.

#### 4.2.5 Mechanical Properties

The steel pipes are to conform to the following requirements as to mechanical properties:

(1) Tensile test

The steel pipes are to be subjected to tensile test and to conform to the requirements in **Table K4.13**.

~~(2) Bend test~~

~~A test specimen of tubular section which is taken from the end of the pipe and has sufficient length is to stand being bent cold, up to the specified value in **Table K4.14**, without cracking or showing flaw on the wall. But, for Grade 4, this test need not be carried out.~~

~~(3)~~(2) Flattening test

A tubular section of pipe which is taken from the end of the pipe, is to stand being flattened cold between parallel plates, without cracking or showing flaw, until the distance between the plates becomes less than the value of  $H$  calculated by the following formula. In this case, the length of test specimen is to comply with the requirements specified in **4.1.5(2)**. For pipes, however, of 15% of outside diameter and above in thickness, C-type test specimen may be used, having a part of its circumference discarded as shown in **Fig. K4.3**.

(a) Pipes other than Grade 1 of electric-resistance welded pipe

$$H = \frac{(1 + e)t}{e + t/D}$$

where:

$H$ : Distance between flattening plates ( $mm$ )

$t$ : Thickness of pipe ( $mm$ )

$D$ : Outside diameter of pipe ( $mm$ )

$e$ : Constant given in **Table K4.15**.

(b) Electric-resistance welded pipes Grade 1

$$H = 2D/3 \text{ for welded line,}$$

$$H = D/3 \text{ for elsewhere}$$

In case of electric-resistance welded pipes, the welded line is to be placed at right angle to the direction of the applied force, as in **Fig. K4.1**. Where C-type test specimen is used, it is to be placed as in **Fig. K4.2**.

For steel pipes of 50 mm and smaller in outside diameter (except for Grade 4 pipes), the bend test specified in below may be substituted for a flattening test.

Bend test: Test specimen of tubular section which is taken from the end of the pipe and has sufficient length is to stand being bent cold, up to the specified value given in **Table K4.15**.

~~(4)~~(3) Hydraulic test

- (a) (omitted)
- (b) (omitted)
- (c) (omitted)
- (d) (omitted)

Table K4.14 and K4.15 has been renumbered as follows.

**Table K4.1415 Bend Test**

Grade	Degree of bending	Inside bend radius
1,2 and 3	90°	6 times the outside diameter of pipe

Note:

Electric-resistance welded pipes are to be so bent as the welded line is placed widest.

**Table K4.1514 Value of  $e$**

Grade	Grade 1 No.3, Grade 2 No.3, Grade 3 No.3, Grade 2 No.4, Grade 3 No.4,	Grade 1 No.2, Grade 2 No.2, Grade 3 No.2, Grade 4 all Nos.
$e$	0.07	0.08

### 4.3 Stainless Steel Pipes

#### 4.3.5 Mechanical Properties

Sub-paragraph -1(2) has been amended as follows.

**1** The mechanical properties of stainless steel pipes are to comply with the following requirements:

(1) (omitted)

(2) Flattening test:

Flattening tests are to be carried out in accordance with the requirements in ~~4.2.5(3)(2)~~. Where the requirement is applied, the value of  $e$  is to be taken as 0.09. For automatic arc welded steel pipes, laser beam welded steel pipes and electric-resistance welded steel pipes of 200 mm and over in outside diameter, The guide bend test for welded zone deemed appropriate by the Society may be carried out, instead of flattening test.

(3) (omitted)

### 4.5 Steel Pipes for Low Temperature Service

#### 4.5.5 Mechanical Properties

Sub-paragraph -1(3) has been amended as follows.

**1** The steel pipes are to comply with the following requirements as to mechanical properties:

(3) Flattening test

Flattening test is to be carried out in accordance with the requirement given in ~~4.2.5(3)(2)~~. Where this requirement is applied, the value of  $e$  is to be taken as 0.08.

For steel pipes of 50 mm and under in outside diameter, bend test specified in below may be substituted for flattening test.

Bend test: Test specimen of tubular section which is taken from the end of the pipe and has

sufficient length is to stand being bent cold, up to the specified value in **Table K4.28**, without flaw and cracking on the wall.

Moreover, electric resistance welded pipes are to be bent in such a way that the welded line is placed on the outside of bent portion.

#### EFFECTIVE DATE AND APPLICATION (Amendment 1-2)

1. The effective date of the amendments is 15 April 2010.
2. Notwithstanding the amendments to the Rules, the current requirements apply to steel pipes for which the application for surveys is submitted to the Society before the effective date.
3. Notwithstanding the provision of preceding **2.**, the amendments to the Rules may apply to steel pipes for which the application for surveys is submitted to the Society before the effective date upon request by the owner.

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# **GUIDANCE FOR THE SURVEY AND CONSTRUCTION OF STEEL SHIPS**

**Part K**    **Materials**

**GUIDANCE**

**2010    AMENDMENT NO.1**

Notice No.42    15th April 2010

Resolved by Technical Committee on 5th February 2010

Notice No.42 15th April 2010

## AMENDMENT TO THE GUIDANCE FOR THE SURVEY AND CONSTRUCTION OF STEEL SHIPS

“Guidance for the survey and construction of steel ships” has been partly amended as follows:

### **Part K MATERIALS**

#### Amendment 1-1

### **K6 STEEL FORGINGS**

#### **K6.1 Steel Forgings**

##### **K6.1.13 Additional Requirements for Crankshafts**

Sub-paragraph -3 has been amended as follows.

**3** The wording “the special forging processes” in **6.1.13-2** and **-3, Part K of the Rules** means continuous grain flow forging methods (*e.g.* RR forging, TR forging or stamp forging), other than the free forging methods (block forging, upset & twisting forging and upsetting forging) used for the manufacture of solid crankshafts ~~and~~ block forging methods used for the manufacture of semi-built-up crankshafts and bend forging methods.

#### EFFECTIVE DATE AND APPLICATION (Amendment 1-1)

1. The effective date of the amendments is 15 April 2010.

## K1 GENERAL

### K1.5 Marking and Test Certificate

#### K1.5.2 Test Certificate

Sub-paragraph -3 has been added as follows.

3 In principle, chemical composition and mechanical test results for materials are to be measured until the next digit of the least significant digit of required significant figures. Then, such measurements are to be rounded off in accordance with Rule A of ISO 31-0 Annex B or Rule A of JIS Z8401, and to be indicated in the same number of significant figures as the specified value. In cases where other methods are used, they are subject to preliminary Society approval.

## K3 ROLLED STEELS

### K3.1 Rolled Steels for Hull

Paragraph K3.1.1 has been added as follows.

#### **K3.1.1 Application**

**1** The wording “to be as deemed appropriate by the Society” in **3.1.1-3, Part K of the Rules** means to comply with the following with respect to the provisions of **3.1, Part K of the Rules**.

#### **(1) Approval of Manufacturing Process**

Manufacturers of steel coils and manufacturers of steel plates from steel coils are to obtain the approval of the Society in advance with regard to the manufacturing process of such materials. However, manufacturers of steel plates from steel coils which are subject to the quality control management of the manufacturer of steel coils are to be according to the discretion of the Society.

#### **(2) Testing and Inspection**

**(a)** Manufacturers of steel coils are to have their steel coils inspected in the presence of Society Surveyors and are to issue a test certificate certifying the results of such inspections.

**(b)** Manufacturers of steel plates from steel coils are to carry out tensile tests for each coil except KA and KB. On such occasions, in cases where one coiled material is not greater in weight than 50 tons, one test sample is to be cut from the coiled material; however, in cases where one coiled material is greater in weight than 50 tons then one test sample each is to be cut from beginning and end of the coiled material.

#### **(3) Test Certificates**

Test certificates are to comply with the following in addition to requirements given in **1.5.2, Part K of the Rules**:

**(a)** Manufacturers of steel coils are to indicate on test certificates that the steel coils need to be uncoiled and cut by a manufacturer approved by the Society.

**(b)** Manufacturers of steel plates from steel coils are to indicate on test certificates that the steel plates are cut and made from steel coils prepared by a manufacturer approved by the Society. In addition, test certificates of the steel coils are to be attached to the test certificates of the steel plates made from such steel coils.

#### EFFECTIVE DATE AND APPLICATION (Amendment 1-2)

1. The effective date of the amendments is 15 April 2010.
2. Notwithstanding the amendments to the Guidance, the current requirements may apply to materials other than those for which the application for survey is submitted to the Society on and after the effective date.

## **K4 STEEL PIPES**

### **K4.2 Steel Pipes for Pressure Piping**

Paragraph K4.2.5 has been amended as follows.

#### **K4.2.5 Mechanical Properties**

The non-destructive tests substituted for the hydraulic tests specified in ~~4.2.5(4)(3)~~, **Part K of the Rules** are dealt with according to the provisions in **K4.1.5**.

#### EFFECTIVE DATE AND APPLICATION (Amendment 1-3)

1. The effective date of the amendments is 15 April 2010
2. Notwithstanding the amendments to the Guidance, the current requirements apply to steel pipes for which the application for surveys is submitted to the Society before the effective date.
3. Notwithstanding the provision of preceding **2.**, the amendments to the Guidance may apply to steel pipes for which the application for surveys is submitted to the Society before the effective date upon request by the owner.