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

**Part K**

**Materials**

**RULES**

**2022 AMENDMENT NO.1**

Rule No.45      30 June 2022

Resolved by Technical Committee on 26 January 2022

An asterisk (\*) after the title of a requirement indicates that there is also relevant information in the corresponding Guidance.

## 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

### Chapter 3 ROLLED STEELS

#### 3.1 Rolled Steels for Hull

##### 3.1.2 Kinds

Table K3.1 has been amended as follows.

Table K3.1 Grades, Deoxidation Practice and Chemical Composition of Steels

Kind	Grade	Deoxidation practice	Chemical composition (%) <sup>(1)</sup>														Carbon equivalent (%)
			C	Si	Mn	P	S <sup>(14)</sup>	Cu	Cr	Ni	Mo	Al <sup>(8)</sup>	Nb	V	Ti	N	
Mild Steels	KA	Any method except rimmed	0.21 max. (4)(5)	0.50 max.	2.5×C min. <sup>(4)</sup>	0.035 max.	0.035 max.	—	—	—	—	—	—	—	—	—	—
	KB		0.21 max. (4)	0.35 max.	0.80 min. (4)(6)												
	KD	Killed <sup>(2)</sup> or Killed and fine grain treated	0.18 max. (4)	0.60 min. <sup>(4)</sup>	0.015 min. (2)(3)(11)												
	KE			Killed and fine grain treated	0.70 min. <sup>(4)</sup>							0.015 min. <sup>(11)</sup>					
High Tensile Steels	KA32	Killed and fine grain treated	0.18	0.50	0.90~	0.035	0.035	0.35	0.20	0.40	0.08	0.015	0.02 ~	0.05~	0.02	—	(13)
	KD32		max.	max.	1.60 <sup>(7)</sup>	max.	max.	max.	max.	max.	max.	min. (9)	0.05 (9)(10)	0.10 (9)(10)	max. (10)		
	KE32																
	KA36																
	KD36																
	KE36																
	KA40																
	KD40																
	KE40																
	KF32															0.16 max.	
	KF36																
KF40																	

Notes:

- (1) Where additions of any other element have been made as part of the steel making practice, the content is to be indicated on the test certificate.
- (2) For steels up to 25 mm in thickness, killed steel may be accepted and the specified minimum content of aluminium is

not needed to be applied.

- (3) For steels over 25 mm in thickness, aluminium treatment is to be used as a killed and fine grain treatment.
- (4) The value of  $C + Mn / 6$  is not to exceed 0.40%.
- (5) For steels sections, maximum carbon content may be increased to 0.23%.
- (6) When an impact test is conducted or when steels contain  $Si$  not less than 0.10%, the minimum manganese content may be reduced to 0.60%.
- (7) For steels up to 12.5 mm in thickness, the minimum manganese content may be reduced to 0.70%.
- (8) Aluminium content is to be represented by the acid soluble aluminium content, but may be determined the total aluminium content. In such a case, the total aluminium content is not to be less than 0.020%.
- (9) The steel is to contain aluminium, niobium, vanadium or other suitable grain refining elements, either singly or in any combination. When used singly, the steel is to contain the specified minimum content of the grain refining element. When used in combination, the specified minimum content of each grain refining element is not applicable.
- (10) The total niobium, vanadium and titanium content is not to exceed 0.12%.
- (11) Upon the approval by the Society, grain refining elements other than aluminium may be used.
- (12) The maximum content of nitrogen may be increased to 0.012% if aluminium is present.
- (13) Carbon equivalent is to be recorded on test certificate. When any grade of higher strength steel is supplied in *TMCP* condition, the carbon equivalent is to comply with the requirements of **Table K3.2**.
- (14) For steels complying with the requirements specified in **3.11** the maximum content of sulphur is to be 0.008% determined by the ladle analysis.

## FFECTIVE DATE AND APPLICATION

1. The effective date of the amendments is 30 June 2022.