



SLOVENSKI STANDARD
SIST CR ISO 15608:2001
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Welding - Guidelines for a metallic material grouping system (ISO/TR 15608:2000)

iTeh STANDARD PREVIEW

Soudage - Lignes directrices pour un système de groupement des matériaux métalliques
(ISO/TR 15608:2000)

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Ta slovenski standard je istoveten z: CR ISO 15608:2000
SIST CR ISO 15608:2001
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ICS:

25.160.10 Varilni postopki in varjenje Welding processes

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CEN REPORT
RAPPORT CEN
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CR ISO 15608

April 2000

ICS

Supersedes CR 12187:1995

English version

Welding - Guidelines for a metallic material grouping system
(ISO/TR 15608:2000)

Soudage - Lignes directrices pour un système de
groupement des matériaux métalliques (ISO/TR
15608:2000)

Schweißen - Richtlinien für eine Gruppeneinteilung von
metallischen Werkstoffen (ISO/TR 15608:2000)

This CEN Report was approved by CEN on 12 January 2000. It has been drawn up by the Technical Committee CEN/TC 121.

CEN members are the national standards bodies of Austria, Belgium, Czech Republic, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and United Kingdom.

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EUROPEAN COMMITTEE FOR STANDARDIZATION
COMITÉ EUROPÉEN DE NORMALISATION
EUROPÄISCHES KOMITEE FÜR NORMUNG

Central Secretariat: rue de Stassart, 36 B-1050 Brussels

Foreword

The text of CR ISO 15608:2000 has been prepared by Technical Committee CEN/TC 121 "Welding", the secretariat of which is held by DS, in collaboration with Technical Committee ISO/TC 44 "Welding and allied processes".

This CEN Report supersedes CR 12187:1995.

According to the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Czech Republic, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and the United Kingdom.

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1 Scope

This technical report provides a uniform system for grouping of materials for welding purposes. It may also apply for other purposes as heat treatment, forming, non destructive testing, ...

This technical report covers grouping systems for the following standardized materials :

- steel ;
- aluminium and its alloys;
- nickel and its alloys;
- copper and its alloys;
- titanium and its alloys;
- zirconium and its alloys;
- cast irons.

This technical report is part of a series of standards. Annex A gives details of this series of standards.

2 Grouping system for steels

Steels are grouped as shown in Table 1. Only those elements that are specified in material standards or specifications shall be considered. The figures given in group 1 and 11 are referring to the ladle analysis of the materials. The figures given in groups 4 to 10 are based on the element content used in the designation of the alloys.

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Table 1 — Grouping system for steels

Group	Sub-group	Type of steel
1		Steels with a specified minimum yield strength $R_{eH} \leq 460 \text{ N/mm}^2$ ^a and with analysis in % : C $\leq 0,25$ Si $\leq 0,60$ Mn $\leq 1,70$ Mo $\leq 0,70$ ^b S $\leq 0,045$ P $\leq 0,045$ Cu $\leq 0,40$ ^b Ni $\leq 0,5$ ^b Cr $\leq 0,3$ (0,4 for castings) ^b Nb $\leq 0,05$ V $\leq 0,12$ ^b Ti $\leq 0,05$
	1.1	Steels with a specified minimum specified yield strength $R_{eH} \leq 275 \text{ N/mm}^2$
	1.2	Steels with a specified minimum yield strength $275 \text{ N/mm}^2 < R_{eH} \leq 360 \text{ N/mm}^2$
	1.3	Normalized fine grain steels with a specified minimum yield strength $R_{eH} > 360 \text{ N/mm}^2$
	1.4	Steels with improved atmospheric corrosion resistance whose analysis may exceed the requirements for the single elements as indicated under 1
2		Thermomechanically treated fine grain steels and cast steels with a specified minimum yield strength $R_{eH} > 360 \text{ N/mm}^2$
	2.1	Thermomechanically treated fine grain steels and cast steels with a specified minimum yield strength $360 \text{ N/mm}^2 < R_{eH} \leq 460 \text{ N/mm}^2$
	2.2	Thermomechanically treated fine grain steels and cast steels with a specified minimum yield strength $R_{eH} > 460 \text{ N/mm}^2$
3		Quenched and tempered steels and precipitation hardened steels except stainless steels with a specified minimum yield strength $R_{eH} > 360 \text{ N/mm}^2$
	3.1	Quenched and tempered steels with a specified minimum yield strength $360 \text{ N/mm} < R_{eH} \leq 690 \text{ N/mm}^2$
	3.2	Quenched and tempered steels with a specified minimum yield strength $R_{eH} > 690 \text{ N/mm}^2$
	3.3	Precipitation hardened steels except stainless steels
4		Low vanadium alloyed Cr-Mo-(Ni) steels with Mo $\leq 0,7 \%$ and V $\leq 0,1 \%$
	4.1	Steels with Cr $\leq 0,3 \%$ and Ni $\leq 0,7 \%$
	4.2	Steels with Cr $\leq 0,7 \%$ and Ni $\leq 1,5 \%$

(to be continued)

Table 1 (end)

Group	Sub-group	Type of steel
5		Cr-Mo steels free of vanadium with $C \leq 0,35 \% ^c$
	5.1	Steels with $0,75 \% \leq Cr \leq 1,5 \%$ and $Mo \leq 0,7 \%$
	5.2	Steels with $1,5 \% < Cr \leq 3,5 \%$ and $0,7 \% < Mo \leq 1,2 \%$
	5.3	Steels with $3,5 \% < Cr \leq 7,0 \%$ and $0,4 \% < Mo \leq 0,7 \%$
	5.4	Steels with $7,0 \% < Cr \leq 10,0 \%$ and $0,7 \% < Mo \leq 1,2 \%$
6		High vanadium alloyed Cr-Mo-(Ni) steels
	6.1	Steels with $0,3 \% \leq Cr \leq 0,75 \%$, $Mo \leq 0,7 \%$ and $V \leq 0,35 \%$
	6.2	Steels with $0,75 \% < Cr \leq 3,5 \%$, $0,7 \% < Mo \leq 1,2 \%$ and $V \leq 0,35 \%$
	6.3	Steels with $3,5 \% < Cr \leq 7,0 \%$, $Mo \leq 0,7 \%$ and $0,45 \% \leq V \leq 0,55 \%$
	6.4	Steels with $7,0 \% < Cr \leq 12,5 \%$, $0,7 \% < Mo \leq 1,2 \%$ and $V \leq 0,35 \%$
7		Ferritic, martensitic or precipitation hardened stainless steels with $C \leq 0,35 \%$ and $10,5 \% \leq Cr \leq 30 \%$
	7.1	Ferritic stainless steels
	7.2	Martensitic stainless steels
	7.3	Precipitation hardened stainless steels
8		Austenitic stainless steels
	8.1	Austenitic stainless steels with $Cr \leq 19 \%$
	8.2	Austenitic stainless steels with $Cr > 19 \%$
	8.3	Manganese austenitic stainless steels with $4,0 \% < Mn \leq 12,0 \%$
9		Nickel alloy steels with $Ni \leq 10,0 \%$
	9.1	Nickel alloy steels with $Ni \leq 3,0 \%$
	9.2	Nickel alloy steels with $3,0 \% < Ni \leq 8,0 \%$
	9.3	Nickel alloy steels with $8,0 \% < Ni \leq 10,0 \%$
10		Austenitic ferritic stainless steels (duplex)
	10.1	Austenitic ferritic stainless steels with $Cr \leq 24,0 \%$
	10.2	Austenitic ferritic stainless steels with $Cr > 24,0 \%$
11		Steels covered by group 1 ^d except $0,25 \% < C \leq 0,5 \%$
	11.1	Steels as indicated under 11 with $0,25 \% < C \leq 0,35 \%$
	11.2	Steels as indicated under 11 with $0,35 \% < C \leq 0,5 \%$

^a In accordance with the specification of the steel product standards, R_{eH} may be replaced by $R_{p0,2}$ or $R_{10,5}$.

^b A higher value is accepted provided that $Cr + Mo + Ni + Cu + V \leq 0,75 \%$.

^c "Free of vanadium" means not deliberately added to the material.

^d A higher value is accepted provided that $Cr + Mo + Ni + Cu + V \leq 1 \%$.

3 Grouping system for aluminium and aluminium alloys

Aluminium and aluminium alloys are grouped as shown in Table 2. The figures given are based on the element content used in the designation of the alloys.

Table 2 — Grouping system for aluminium and aluminium alloys

Group	Sub-group	Type of aluminium and aluminium alloys
21		Pure aluminium ≤ 1 % impurities or alloy content
22		Non heat treatable alloys
	22.1	Aluminium-manganese alloys
	22.2	Aluminium-magnesium alloys with Mg $\leq 1,5$ %
	22.3	Aluminium-magnesium alloys with $1,5\% < \text{Mg} \leq 3,5$ %
	22.4	Aluminium-magnesium alloys with Mg $> 3,5$ %
23		Heat treatable alloys
	23.1	Aluminium-magnesium-silicon alloys
	23.2	Aluminium-zinc-magnesium alloys
24		Aluminium-silicon alloys with Cu ≤ 1 %
	24.1	Aluminium-silicon alloys with Cu ≤ 1 % and $5\% < \text{Si} \leq 15$ %
	24.2	Aluminium-silicon-magnesium alloys with Cu ≤ 1 % ; $5\% < \text{Si} \leq 15$ % and $0,1\% < \text{Mg} \leq 0,80$ %
25		Aluminium-silicon-copper alloys with $5,0\% < \text{Si} \leq 14,0$ % ; $1,0\% < \text{Cu} \leq 5,0$ % and Mg $\leq 0,8$ %
26		Aluminium-copper alloys with $2\% < \text{Cu} \leq 6$ %
Groups 21 to 23 are generally for wrought materials and groups 24 to 26 are generally for cast materials.		

4 Grouping system for copper and copper alloys

Copper and copper alloys are grouped as indicated in Table 3.

Table 3 — Grouping system for copper and copper alloys

Group	Sub-group	Type of copper and copper alloys
31		Pure copper
32		Copper-zinc alloys
	32.1	Copper-zinc alloys, binary
	32.2	Copper-zinc alloys, complex
33		Copper-tin alloys
34		Copper-nickel alloys
35		Copper-aluminium alloys
36		Copper-nickel-zinc alloys
37		Copper alloys, low alloyed (less than 5 % other elements) not covered by groups 31 to 36
38		Other copper alloys (5 % or more other elements) not covered by groups 31 to 36