



**SLOVENSKI STANDARD**  
**kSIST-TP FprCEN ISO/TR 15608:2016**  
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**Varjenje - Smernice za razvrščanje kovinskih materialov v skupine (ISO/DTR 15608:2016)**

Welding - Guidelines for a metallic materials grouping system (ISO/DTR 15608:2016)

Schweißen - Richtlinien für eine Gruppeneinteilung von metallischen Werkstoffen (ISO/DTR 15608:2016)

Soudage - Lignes directrices pour un système de groupement des matériaux métalliques (ISO/DTR 15608:2016)

**Ta slovenski standard je istoveten z: FprCEN ISO/TR 15608**

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TECHNICAL  
REPORT

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15608

Fourth edition

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**Welding — Guidelines for a metallic  
materials grouping system**

*Soudage — Lignes directrices pour un système de groupement des  
matériaux métalliques*

**PROOF / ÉPREUVE**

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## ISO/TR 15608:2016(E)

### Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see [www.iso.org/directives](http://www.iso.org/directives)).

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received (see [www.iso.org/patents](http://www.iso.org/patents)).

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For an explanation on the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT) see the following URL: [www.iso.org/iso/foreword.html](http://www.iso.org/iso/foreword.html)

The committee responsible for this document is ISO/TC 44, *Welding and allied processes*, SC 10, *Quality management in the field of welding*.

This fourth edition cancels and replaces the third edition (ISO/TR 15608:2013), which has been revised. The main changes are

- a) the grouping systems for steels has been revised ([Clause 2](#)), and
- b) the Bibliography has been updated and document editorially revised.

Requests for official interpretations of any aspect of this document should be directed to the Secretariat of ISO/TC 44/SC 10 via your national standards body. A complete listing of these bodies can be found at [www.iso.org](http://www.iso.org).

# Welding — Guidelines for a metallic materials grouping system

## 1 Scope

This document provides guidelines for a uniform system for grouping materials for welding purposes. It can also be applied for other purposes, such as heat treatment, forming and non-destructive testing.

It covers grouping systems for the following standardized materials:

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

## 2 Normative references

There are no normative references in this document.

## 3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

- IEC Electropedia: available at <http://www.electropedia.org/>
- ISO Online browsing platform: available at <http://www.iso.org/obp>

## 4 Grouping system for steels

Steels are grouped as shown in [Table 1](#). Only those elements that are specified in material standards or specifications should be considered. Ladle (or heat) analyses should be used in preference of product analysis when both are specified. The figures given in groups:

- 1, 2, 3 and 11 refer to the chemical composition specified in the material standard (specified values);
- 4 to 10 are based on the elemental content used in the designation of the alloys.

Materials assigned to a group in ISO/TR 20172, ISO/TR 20173 and ISO/TR 20174 should be considered assigned to those groups by this document. For materials that are not assigned to a group, the criteria of this document apply.

Table 1 — Grouping system for steels

Group	Subgroup	Type of steel
1		Steels with a specified minimum yield strength $R_{eH} \leq 460 \text{ N/mm}^2$ <sup>a</sup> and with analysis in per cent (%):
		$C \leq 0,25$
		$Si \leq 0,60$
		$Mn \leq 1,8$
		$Mo \leq 0,70^b$
		$S \leq 0,045$
		$P \leq 0,045$
		$Cu \leq 0,40^b$
		$Ni \leq 0,5^b$
		$Cr \leq 0,3$ (0,4 for castings) <sup>b</sup>
		$Nb \leq 0,06$
		$V \leq 0,1^b$
		$Ti \leq 0,05$
	1.1	Steels with a specified minimum 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 in group 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 and precipitation hardened fine-grain steels except stainless steels with a specified minimum yield strength $R_{eH} > 360 \text{ N/mm}^2$
	3.1	Quenched and tempered fine-grain steels with a specified minimum yield strength $360 \text{ N/mm}^2 < R_{eH} \leq 690 \text{ N/mm}^2$
	3.2	Quenched and tempered fine-grain steels with a specified minimum yield strength $R_{eH} > 690 \text{ N/mm}^2$
	3.3	Precipitation-hardened fine-grain 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 $Ni \leq 1,5 \%$
5		Cr-Mo steels free of vanadium with $C \leq 0,35 \%$
	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 $0,7 \% < Mo \leq 1,2 \%$
Based on the actual product analysis, group 2 steels may be considered group 1 steels.		
If a material has different minimum specified yield strengths depending on the thickness, the highest yield strength shall be used for the determination of the subgroup.		
a	In accordance with the specification of the steel product standards, $R_{eH}$ may be replaced by $R_{p0,2}$ or $R_{t0,5}$ .	
b	A higher value is accepted, provided $Cr + Mo + Ni + Cu + V \leq 0,75 \%$ .	
c	A higher value is accepted, provided $Cr + Mo + Ni + Cu + V \leq 1 \%$ .	



Table 1 (continued)

Group	Subgroup	Type of steel
6		High vanadium alloyed Cr-Mo-(Ni) steels
	6.1	Steels with $0,3 \% \leq \text{Cr} \leq 0,75 \%$ , $\text{Mo} \leq 0,7 \%$ and $\text{V} \leq 0,35 \%$
	6.2	Steels with $0,75 \% < \text{Cr} \leq 3,5 \%$ , $0,7 \% < \text{Mo} \leq 1,2 \%$ and $\text{V} \leq 0,35 \%$
	6.3	Steels with $3,5 \% < \text{Cr} \leq 7,0 \%$ , $\text{Mo} \leq 0,7 \%$ and $0,45 \% \leq \text{V} \leq 0,55 \%$
	6.4	Steels with $7,0 \% < \text{Cr} \leq 12,5 \%$ , $0,7 \% < \text{Mo} \leq 1,2 \%$ and $\text{V} \leq 0,35 \%$
7		Ferritic, martensitic or precipitation-hardened stainless steels with $\text{C} \leq 0,35 \%$ and $10,5 \% \leq \text{Cr} \leq 30 \%$
	7.1	Ferritic stainless steels
	7.2	Martensitic stainless steels
	7.3	Precipitation-hardened stainless steels
8		Austenitic stainless steels, $\text{Ni} \leq 35 \%$
	8.1	Austenitic stainless steels with $\text{Cr} \leq 19 \%$
	8.2	Austenitic stainless steels with $\text{Cr} > 19 \%$
	8.3	Manganese austenitic stainless steels with $4 \% < \text{Mn} \leq 12 \%$
9		Nickel alloy steels with $\text{Ni} \leq 10,0 \%$
	9.1	Nickel alloy steels with $\text{Ni} \leq 3,0 \%$
	9.2	Nickel alloy steels with $3,0 \% < \text{Ni} \leq 8,0 \%$
	9.3	Nickel alloy steels with $8,0 \% < \text{Ni} \leq 10,0 \%$
10		Austenitic ferritic stainless steels (duplex)
	10.1	Austenitic ferritic stainless steels with $\text{Cr} \leq 24 \%$ and $\text{Ni} > 4 \%$
	10.2	Austenitic ferritic stainless steels with $\text{Cr} > 24 \%$ and $\text{Ni} > 4 \%$
	10.3	Austenitic ferritic stainless steels with $\text{Ni} \leq 4 \%$
11		Steels covered by group 1 <sup>c</sup> except $0,30 \% < \text{C} \leq 0,85 \%$
	11.1	Steels as indicated under 11 with $0,30 \% < \text{C} \leq 0,35 \%$
	11.2	Steels as indicated under 11 with $0,35 \% < \text{C} \leq 0,5 \%$
	11.3	Steels as indicated under 11 with $0,5 \% < \text{C} \leq 0,85 \%$
<p>Based on the actual product analysis, group 2 steels may be considered group 1 steels.</p> <p>If a material has different minimum specified yield strengths depending on the thickness, the highest yield strength shall be used for the determination of the subgroup.</p> <p><sup>a</sup> In accordance with the specification of the steel product standards, <math>R_{eH}</math> may be replaced by <math>R_{p0,2}</math> or <math>R_{t0,5}</math>.</p> <p><sup>b</sup> A higher value is accepted, provided <math>\text{Cr} + \text{Mo} + \text{Ni} + \text{Cu} + \text{V} \leq 0,75 \%</math>.</p> <p><sup>c</sup> A higher value is accepted, provided <math>\text{Cr} + \text{Mo} + \text{Ni} + \text{Cu} + \text{V} \leq 1 \%</math>.</p>		