
**Welding — Grouping systems for
materials — European materials**

*Soudage — Systèmes de groupement des matériaux — Matériaux
européens*

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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.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 2.

The main task of technical committees is to prepare International Standards. Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

In exceptional circumstances, when a technical committee has collected data of a different kind from that which is normally published as an International Standard ("state of the art", for example), it may decide by a simple majority vote of its participating members to publish a Technical Report. A Technical Report is entirely informative in nature and does not have to be reviewed until the data it provides are considered to be no longer valid or useful.

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.

ISO/TR 20172 was prepared by the European Committee for Standardization (CEN) Technical Committee CEN/TC 121, *Welding*, in collaboration with Technical Committee ISO/TC 44, *Welding and allied processes*, Subcommittee SC 10, *Unification of requirements in the field of metal welding*, in accordance with the Agreement on technical cooperation between ISO and CEN (Vienna Agreement).

This second edition cancels and replaces the first edition (ISO/TR 20172:2006), which has been technically revised.

Introduction

This Technical Report reflects the situation in November 2007. Changes in European material standards will be taken into account in the next revision of this Technical Report.

Lists of former designations can be found in the relevant European materials standards.

For the materials not listed in this Technical Report, ISO/TR 20173:2005 and ISO/TR 20174:2005 are applicable.

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Welding — Grouping systems for materials — European materials

1 Scope

This Technical Report establishes a European grouping system for materials for welding purposes, classified in accordance with the grouping system of ISO/TR 15608.

It is also applicable for other purposes such as heat treatment, forming and non-destructive testing.

This Technical Report covers grouping systems for the following standardized materials:

- a) steel;
- b) aluminium and its alloys;
- c) copper and its alloys;
- d) cast irons.

In case of dispute, for example where variations in properties such as thickness and yield strength occur, ISO/TR 15608 applies.

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2 International grouping system for European materials

2.1 Types of steel in accordance with the grouping system of ISO/TR 15608:2005, Table 1

See Table 1.

Table 1 — Steel materials, classification according to the grouping of material

Designation		Group	Standard(s)
Name	Number		
10CrMo5-5	1.7338	5.1	EN 10216-2
10CrMo9-10	1.7380	5.2	EN 10028-2, EN 10216-2, EN 10273
11CrMo9-10	1.7383	5.2	EN 10028-2, EN 10216-2, EN 10222-2, EN 10273
11MnNi5-3	1.6212	9.1	EN 10028-4, EN 10216-4
12Ni14	1.5637	9.2	EN 10028-4, EN 10216-4, EN 10222-3
12Ni19	1.5680	9.2	EN 10028-4
13CrMo4-5	1.7335	5.1	EN 10028-2, EN 10216-2, EN 10222-2, EN 10273
13MnNi6-3	1.6217	9.1	EN 10028-4, EN 10216-4, EN 10222-3
14MoV6-3	1.7715	6.1	EN 10216-2, EN 10222-2
15MnCrMoNiV5-3	1.6920	4.1	EN 10222-2
15MnMoV4-5	1.5402	1.2	EN 10222-2
15NiCuMoNb5-64	1.6368	4.2	EN 10216-2
15NiMn6	1.6228	9.1	EN 10028-4, EN 10222-3
16MnCr5	1.7131	1.4	EN 10132-2
16Mo3	1.5415	1.1	EN 10222-2, EN 10216-2, EN 10217-2, EN 10217-5, EN 10273, EN 10028-2
17Cr3	1.7016	1.4	EN 10132-2
18MnMoNi5-5	1.6308	4.1	EN 10222-2
20CrMoV13-5-5	1.7779	6.3	EN 10216-2
20Mn5	1.1133	1.4	EN 10250-2
20MnB5	1.5353	3.2	EN 10083-3
20MnNb6	1.0471	1.2	EN 10216-2
20NiCrMo2-2	1.6523	4.1	EN 10297-1
20NiCrMoS2-2	1.6526	4.1	EN 10297-1
24CrMo13-6	1.8516	5.2	EN 10085
25CrMo4	1.7218	5.1	EN 10083-3, EN 10132-2, EN 10216-2, EN 10297-1
25CrMoS4	1.7213	5.1	EN 10083-3, EN 10277-5
25Mn4	1.1177	1.3	EN 10132-2

Table 1 (continued)

Designation		Group	Standard(s)
Name	Number		
26CrMo4-2	1.7219	5.1	EN 10216-4
27MnCrB5-2	1.7182	11.1	EN 10083-3
28Mn6	1.1170	1.4	EN 10083-2, EN 10250-2
30CrMo4	1.7216	5.1	EN 10297-1
30MnB5	1.5531	11.1	EN 10083-3
30NiCrMo16-6	1.6747	9.2	EN 10083-3
31CrMo12	1.8515	5.2	EN 10085
31CrMoV9	1.8519	6.2	EN 10085
32CrAlMo7-10	1.8505	5.1	EN 10085
33CrMoV12-9	1.8522	6.2	EN 10085
34Cr4	1.7033	5.2	EN 10083-3
34CrAlMo5-10	1.8507	5.1	EN 10085
34CrAlNi7-10	1.8550	5.1	EN 10085
34CrMo4	1.7220	5.1	EN 10083-3, EN 10132-2, EN 10297-1
34CrMoS4	1.7226	11.2	EN 10083-3
34CrNiMo6	1.6582	4.2	EN 10277-5
34CrS4	1.7037	5.1	EN 10083-3
35NiCr6	1.5815	9.1	EN 10083-3
36NiCrMo16	1.6773	9.2	EN 10083-3
37Cr4	1.7034	5.1	EN 10083-3
37CrS4	1.7038	5.1	EN 10083-3
38Cr2	1.7003	5.1	EN 10083-3
38Mn6	1.1127	11.2	EN 10297-1
39MnCrB6-2	1.7189	5.1	EN 10083-3
39NiCrMo3	1.6510	9.2	EN 10083-3
40CrMoV13-9	1.8523	6.2	EN 10085
41Cr4	1.7035	11.2	EN 10083-3
41CrAlMo7-10	1.8509	5.1	EN 10085
41CrS4	1.7039	11.2	EN 10083-3
42CrMo4	1.7225	5.1	EN 10083-3, EN 10132-2, EN 10297-1
42CrMoS4	1.7227	5.1	EN 10083-3, EN 10277-5
46Cr2	1.7006	5.1	EN 10083-3
50CrMo4	1.7228	5.1	EN 10083-3
51CrV4	1.8159	6.1	EN 10083-3
8MoB5-4	1.5450	1.3	EN 10216-2

Table 1 (continued)

Designation		Group	Standard(s)
Name	Number		
C10	1.0301	1.1	EN 10277-2
C10E	1.1121	1.1	EN 10132-2, EN 10297-1
C15	1.0401	1.1	EN 10277-2
C15E	1.1141	1.1	EN 10132-2, EN 10297-1
C15R	1.1114	1.1	EN 10297-1
C16	1.0407	1.1	EN 10277-2
C22	1.0402	1.2	EN 10250-2
C22E	1.1151	1.1	EN 10132-2, EN 10083-2, EN 10297-1
C22R	1.1149	1.1	EN 10083-2
C25	1.0406	1.2	EN 10250-2
C25E	1.1158	1.2	EN 10250-2
C30	1.0528	11.1	EN 10250-2
C30E	1.1178	11.1	EN 10132-2
C35	1.0501	11.1	EN 10083-2, EN 10250-2, EN 10277-2
C35E	1.1181	11.1	EN 10083-2, EN 10250-2, EN 10297-1, EN 10132-2, EN 10277-5
C35R	1.1180	11.1	EN 10277-5
C35R	1.1180	11.2	EN 10083-2
C40	1.0511	11.2	EN 10083-2, EN 10250-2, EN 10277-2
C40E	1.1186	11.2	EN 10083-2, EN 10132-2, EN 10277-5
C40R	1.1189	11.2	EN 10083-2, EN 10277-5
C45	1.0503	11.2	EN 10083-2, EN 10250-2, EN 10277-2
C45E	1.1191	11.2	EN 10083-2, EN 10250-2, EN 10297-1, EN 10132-2
C45R	1.1201	11.2	EN 10083-2, EN 10277-5
C50	1.0540	11.2	EN 10250-2, EN 10277-2
C50E	1.1206	11.2	EN 10132-2, EN 10277-5
C50E	1.1206	11.3	EN 10083-2
C50R	1.1241	11.2	EN 10083-2, EN 10277-5
C55	1.0535	11.3	EN 10250-2, EN 10083-2
C55E	1.1203	11.3	EN 10083-2, EN 10250-2, EN 10132-2
C55R	1.1209	11.3	EN 10083-2

Table 1 (continued)

Designation		Group	Standard(s)
Name	Number		
C60	1.0601	11.3	EN 10083-2, EN 10277-2, EN 10250-2
C60E	1.1221	11.3	EN 10083-2, EN 10132-2, EN 10250-2, EN 10297-1, EN 10277-5
C60R	1.1223	11.3	EN 10083-2, EN 10277-5
E155	1.0033	1.1	EN 10296-1, EN 10305-2, EN 10305-3, EN 10305-6
E190	1.0031	1.1	EN 10296-1, EN 10305-3
E195	1.0034	1.1	EN 10296-1, EN 10305-3, EN 10305-6, EN 10305-2
E215	1.0212	1.1	EN 10305-1, EN 10305-4
E220	1.0215	1.1	EN 10296-1, EN 10305-3, EN 10305-5
E235	1.0308	1.1	EN 10296-1, EN 10297-1, EN 10305-1, EN 10305-2, EN 10305-3, EN 10305-4, EN 10305-6
E260	1.0220	1.1	EN 10296-1, EN 10305-3
E260	1.0221	1.1	EN 10305-3
E275	1.0225	1.1	EN 10296-1, EN 10297-1, EN 10305-2, EN 10305-3, EN 10305-5, EN 10305-6
E275K2	1.0456	1.1	EN 10296-1, EN 10297-1
E275M	1.8895	1.1	EN 10296-1
E295GC	1.0533	1.2	EN 10277-2
E315	1.0236	1.2	EN 10297-1
E320	1.0237	1.2	EN 10296-1, EN 10305-3, EN 10305-5
E335GC	1.0543	1.2	EN 10277-2
E355	1.0580	1.2	EN 10296-1, EN 10305-2, EN 10305-3, EN 10305-4, EN 10305-6, EN 10305-1, EN 10297-1
E355K2	1.0599	1.2	EN 10297-1
E355K2	1.0920	1.2	EN 10296-1
E355M	1.8896	1.2	EN 10296-1
E370	1.0261	1.3	EN 10296-1, EN 10305-3, EN 10305-5
E420	1.0575	1.3	EN 10305-3, EN 10305-5
E420J2	1.0920	1.3	EN 10297-1
E420M	1.8897	1.3	EN 10296-1

Table 1 (continued)

Designation		Group	Standard(s)
Name	Number		
E460K2	1.8891	1.3	EN 10296-1, EN 10297-1
E460M	1.8898	1.3	EN 10296-1
E470	1.0536	1.3	EN 10297-1
E590K2	1.0644	1.3	EN 10297-1
E730K2	1.8893	1.3	EN 10297-1
G12MoCrV5-2	1.7720	6.1	EN 10213
G17CrMo5-5	1.7357	5.1	EN 10213
G17CrMo9-10	1.7379	5.2	EN 10213
G17CrMoV5-10	1.7706	6.2	EN 10213
G17Mn5	1.1131	1.1	EN 10213
G17NiCrMo13-6	1.6781	9.2	EN 10213
G18Mo5	1.5422	1.2	EN 10213
G20Mn5	1.6220	1.2	EN 10213
G20Mo5	1.5419	3.1	EN 10213-2
G9Ni10	1.5636	9.1	EN 10213
G9Ni14	1.5638	9.2	EN 10213
GP240GH	1.0619	1.1	EN 10213
GP240GR	1.0621	1.1	EN 10213
GP280GH	1.0625	1.2	EN 10213
GX15CrMo5	1.7365	5.3	EN 10213
GX23CrMoV12-1	1.4931	6.4	EN 10213
GX2CrNi19-11	1.4309	8.1	EN 10213
GX2CrNiMo19-11-2	1.4409	8.1	EN 10213
GX2CrNiMoCuN25-6-3-3	1.4517	10.2	EN 10213
GX2CrNiMoN22-5-3	1.4470	10.1	EN 10213
GX2CrNiMoN26-7-4	1.4469	10.2	EN 10213
GX2NiCrMo28-20-2	1.4458	8.1	EN 10213
GX3CrNi13-4	1.6982	7.2	EN 10213
GX4CrNi13-4	1.4317	7.2	EN 10213
GX4CrNiMo16-5-1	1.4405	8.1	EN 10132-2
GX5CrNi19-10	1.4308	8.1	EN 10213
GX5CrNiMo19-11-2	1.4408	8.1	EN 10213
GX5CrNiMoNb19-11-2	1.4581	8.1	EN 10213
GX5CrNiNb19-11	1.4552	8.1	EN 10213
GX8CrNi12	1.4107	7.2	EN 10213
HC180B	1.0395	1.1	EN 10268

Table 1 (continued)

Designation		Group	Standard(s)
Name	Number		
HC180P	1.0342	1.1	EN 10268
HC180Y	1.0922	1.1	EN 10268
HC220B	1.0396	1.1	EN 10268
HC220I	1.0346	1.1	EN 10268
HC220P	1.0397	1.1	EN 10268
HC220Y	1.0925	1.1	EN 10268
HC260B	1.0400	1.1	EN 10268
HC260I	1.0349	1.1	EN 10268
HC260LA	1.0480	1.1	EN 10268
HC260P	1.0417	1.1	EN 10268
HC260Y	1.0928	1.1	EN 10268
HC300B	1.0444	1.2	EN 10268
HC300I	1.0447	1.2	EN 10268
HC300LA	1.0489	1.2	EN 10268
HC300P	1.0448	1.2	EN 10268
HC340LA	1.0548	1.2	EN 10268
HC380LA	1.0550	1.3	EN 10268
HC420LA	1.0556	1.3	EN 10268
L210GA	1.0319	1.1	EN 10208-1
L235	1.0252	1.1	EN 10224
L235GA	1.0458	1.1	EN 10208-1
L245GA	1.0459	1.1	EN 10208-1
L245MB	1.0418	1.1	EN 10208-2
L245NB	1.0457	1.1	EN 10208-2
L275	1.0260	1.1	EN 10224
L290GA	1.0483	1.2	EN 10208-1
L290MB	1.0429	1.2	EN 10208-2
L290NB	1.0484	1.2	EN 10208-2
L355	1.0419	1.2	EN 10224
L360GA	1.0499	1.2	EN 10208-1
L360MB	1.0578	1.2	EN 10208-2
L360NB	1.0582	1.2	EN 10208-2
L360QB	1.8948	1.2	EN 10208-2
L415MB	1.8973	2.1	EN 10208-2
L415NB	1.8972	1.3	EN 10208-2
L415QB	1.8947	3.1	EN 10208-2