



SLOVENSKI STANDARD
SIST-TP CEN ISO/TR 20173:2006
01-marec-2006

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Welding - Grouping systems for materials - American materials (ISO/TR 20173:2005)

Schweißen - Werkstoffgruppeneinteilung - Amerikanische Werkstoffe (ISO/TR 20173:2005)

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Soudage - Systemes de groupement des matériaux - Matériaux américains (ISO/TR 20173:2005)

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Ta slovenski standard je istoveten z: CEN ISO/TR 20173:2005

ICS:

25.160.20 Potrošni material pri varjenju Welding consumables

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TECHNICAL REPORT
RAPPORT TECHNIQUE
TECHNISCHER BERICHT

CEN ISO/TR 20173

December 2005

ICS 25.160.20

English Version

**Welding - Grouping systems for materials - American materials
(ISO/TR 20173:2005)**

Soudage - Systèmes de groupement des matériaux -
Matériaux américains (ISO/TR 20173:2005)

Schweißen - Werkstoffgruppeneinteilung - Amerikanische
Werkstoffe (ISO/TR 20173:2005)

This Technical Report was approved by CEN on 29 November 2005. It has been drawn up by the Technical Committee CEN/TC 121.

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CEN ISO/TR 20173:2005 (E)

Foreword

This document (CEN ISO/TR 20173:2005) has been prepared by Technical Committee CEN/TC 121 "Welding", the secretariat of which is held by DIN, in collaboration with Technical Committee ISO/TC 44 "Welding and allied processes".

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TECHNICAL REPORT

ISO/TR 20173

First edition
2005-12-15

Welding — Grouping systems for materials — American materials

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

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ISO/TR 20173:2005(E)

Foreword

(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 20173 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).

Welding — Grouping systems for materials — American materials

1 Scope

This Technical Report provides an American grouping system for materials for welding purposes, classified in accordance with the grouping system of ISO/TR 15608.

It may also apply for other purposes, such as heat treatment, forming and non-destructive testing. The types of steels are in accordance with the grouping system of ISO/TR 15608:2000, Table 1.

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.

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2 American grouping system for materials

See Table 1 for ferrous material and Table 2 for non-ferrous material.

ISO/TR 20173:2005(E)

Table 1 — American grouping system for ferrous material

ASTM/ASME Specification number		Type or Grade	ASME/AWS P, S or M number	UNS number	ISO/TR 15608 group	Nominal Composition
AS	15	5-490	1	—	1,1	C
AS	15	7-430	1	—	1,1	C
AS	15	7-460	1	—	1,1	C
AS	15	7-490	1	—	1,1	C
SA	36	—	1	K02600	11,1	C-Mn-Si
SA	53	Type E,Gr.A	1	K02504	11,1	C
SA	53	Type E,Gr.B	1	K03005	11,1	C-Mn
SA	53	Type F	1	—	11,1	C
SA	53	Type S,Gr.A	1	K02504	11,1	C
SA	53	Type S,Gr.B	1	K03005	11,1	C-Mn
SA	105	—	1	K03504	11,1	C-Si
SA	106	A	1	K02501	1,1	C-Si
SA	106	B	1	K03006	11,1	C-Si
SA	106	C	1	K03501	11,1	C-Si
A	108	1015 CW	1	G10150	1,1	C
A	108	1018 CW	1	G10180	1,1	C
A	108	1020 CW	1	G10200	1,1	C
SA	134	A283 Gr. A	1	—	1,1	C
SA	134	A283 Gr. B	1	—	1,1	C
SA	134	A283 Gr. C	1	K02401	1,1	C
SA	134	A283 Gr. D	1	K02702	1,1	C
SA	134	A285 Gr. A	1	K01700	1,1	C
SA	134	A285 Gr. B	1	K02200	1,1	C
SA	134	A285 Gr. C	1	K02801	11,1	C
SA	135	A	1	—	1,1	C
SA	135	B	1	—	11,1	C
A	139	A	1	—	1,1	C
A	139	B	1	K03003	1,1	C
A	139	C	1	K03004	11,1	C
A	139	D	1	K03010	11,1	C
A	139	E	1	K03012	11,1	C
A	167	Type 301	8	S30100	8,1	17Cr-7Ni
A	167	Type 302	8	S30200	8,1	18Cr-8Ni

Table 1 (continued)

ASTM/ASME Specification number		Type or Grade	ASME/AWS P, S or M number	UNS number	ISO/TR 15608 group	Nominal Composition
A	167	Type 302B	8	S30215	8,1	18Cr-8Ni-2Si
A	167	Type 304	8	S30400	8,1	18Cr-8Ni
A	167	Type 304L	8	S30403	8,1	18Cr-8Ni
A	167	Type 305	8	S30500	8,1	18Cr-11Ni
A	167	Type 308	8	S30800	8,2	20Cr-10Ni
A	167	Type 309	8	S30900	8,2	23Cr-12Ni
A	167	Type 309S	8	S30908	8,2	23Cr-12Ni
A	167	Type 310	8	S31000	8,2	25Cr-20Ni
A	167	Type 310S	8	S31008	8,2	25Cr-20Ni
A	167	Type 316L	8	S31603	8,1	16Cr-12Ni-2Mo
A	167	Type 317	8	S31700	8,1	18Cr-13Ni-3Mo
A	167	Type 317	8	S31703	8,1	18Cr-13Ni-3Mo
A	167	Type 321	8	S32100	8,1	18Cr-10Ni-Ti
A	167	Type 347	8	S34700	8,1	18Cr-10Ni-Cb
A	167	Type 348	8	S34800	8,1	18Cr-10Ni-Cb
SA	178	A	1	K01200	1,1	C
SA	178	C	1	K03503	11,1	C
SA	178	D	1	—	11,1	C-Mn-Si
SA	179	—	1	K01200	1,1	C
SA	181	Cl. 60	1	K03502	11,1	C-Si
SA	181	Cl. 70	1	K03502	11,1	C-Si
A	182	F60	10H	S32205	10,1	22Cr-5Ni-3Mo-N
A	182	F6a, Cl. 3	6	S41000	7,2	13Cr
A	182	F6a, Cl. 4	6	S41000	7,2	13Cr
A	182	S34565	8	S34565	8,2	24Cr-17Ni-6Mn-4.5Mo-N
SA	182	F1	1	K12822	1,1	C-0.5Mo
SA	182	F11, Cl. 1	4	K11597	5,1	1.25Cr-0.5Mo-Si
SA	182	F11, Cl. 2	4	K11572	5,1	1.25Cr-0.5Mo-Si
SA	182	F11, Cl. 3	4	K11572	5,1	1.25Cr-0.5Mo-Si
SA	182	F12, Cl. 1	4	K11562	5,1	1Cr-0.5Mo
SA	182	F12, Cl. 2	4	K11564	5,1	1Cr-0.5Mo
SA	182	F2	3	K12122	4,1	0.5Cr-0.5Mo
SA	182	F21	5A	K31545	5,2	3Cr-1Mo

Table 1 (continued)

ASTM/ASME Specification number		Type or Grade	ASME/AWS P, S or M number	UNS number	ISO/TR 15608 group	Nominal Composition
SA	182	F22, Cl. 1	5A	K21590	5,2	2.25Cr-1Mo
SA	182	F22, Cl. 3	5A	K21590	5,2	2.25Cr-1Mo
SA	182	F22V	5A	K31835	6,2	2.25Cr-1Mo-V
SA	182	F304	8	S30400	8,1	18Cr-8Ni
SA	182	F304	8	S30400	8,1	18Cr-8Ni
SA	182	F304H	8	S30409	8,1	18Cr-8Ni
SA	182	F304H	8	S30409	8,1	18Cr-8Ni
SA	182	F304L	8	S30403	8,1	18Cr-8Ni
SA	182	F304L	8	S30403	8,1	18Cr-8Ni
SA	182	F304LN	8	S30453	8,1	18Cr-8Ni-N
SA	182	F304LN	8	S30453	8,1	18Cr-8Ni-N
SA	182	F304N	8	S30451	8,1	18Cr-8Ni-N
SA	182	F310	8	S31000	8,2	25Cr-20Ni
SA	182	F310	8	S31000	8,2	25Cr-20Ni
SA	182	F316	8	S31600	8,1	16Cr-12Ni-2Mo
SA	182	F316	8	S31600	8,1	16Cr-12Ni-2Mo
SA	182	F316H	8	S31609	8,1	16Cr-12Ni-2Mo
SA	182	F316H	8	S31609	8,1	16Cr-12Ni-2Mo
SA	182	F316L	8	S31603	8,1	16Cr-12Ni-2Mo
SA	182	F316L	8	S31603	8,1	16Cr-12Ni-2Mo
SA	182	F316LN	8	S31653	8,1	16Cr-12Ni-2Mo-N
SA	182	F316LN	8	S31653	8,1	16Cr-12Ni-2Mo-N
SA	182	F316N	8	S31651	8,1	16Cr-12Ni-2Mo-N
SA	182	F317	8	S31700	8,1	18Cr-13Ni-3Mo
SA	182	F317	8	S31700	8,1	18Cr-13Ni-3Mo
SA	182	F317L	8	S31703	8,1	18Cr-13Ni-3Mo
SA	182	F317L	8	S31703	8,1	18Cr-13Ni-3Mo
SA	182	F321	8	S32100	8,1	18Cr-10Ni-Ti
SA	182	F321	8	S32100	8,1	18Cr-10Ni-Ti
SA	182	F321H	8	S32109	8,1	18Cr-10Ni-Ti
SA	182	F321H	8	S32109	8,1	18Cr-10Ni-Ti
SA	182	F347	8	S34700	8,1	18Cr-10Ni-Cb
SA	182	F347	8	S34700	8,1	18Cr-10Ni-Cb

Table 1 (continued)

ASTM/ASME Specification number		Type or Grade	ASME/ AWS P, S or M number	UNS number	ISO/TR 15608 group	Nominal Composition
SA	182	F347H	8	S34709	8,1	18Cr-10Ni-Cb
SA	182	F347H	8	S34709	8,1	18Cr-10Ni-Cb
SA	182	F348	8	S34800	8,1	18Cr-10Ni-Cb
SA	182	F348	8	S34800	8,1	18Cr-10Ni-Cb
SA	182	F348H	8	S34809	8,1	18Cr-10Ni-Cb
SA	182	F348H	8	S34809	8,1	18Cr-10Ni-Cb
SA	182	F3V	5C	K31830	6,2	3Cr-1Mo-V-Ti-B
SA	182	F429	6	S42900	7,2	15Cr
SA	182	F430	7	S43000	7,1	17Cr
SA	182	F44	8	S31254	8,2	20Cr-18Ni-6Mo
SA	182	F45	8	S30815	8,2	21Cr-11Ni-N
SA	182	F46	8	S30600	8,1	18Cr-15Ni-4Si
SA	182	F5	5B	K41545	5,3	5Cr-0.5Mo
SA	182	F50	10H	S31200	10,2	25Cr-6Ni-Mo-N
SA	182	F51	10H	S31803	10,1	22Cr-5Ni-3Mo-N
SA	182	F55	10H	S32760	10,1	25Cr-8Ni-3Mo-W-Cu-N
SA	182	F5a	5B	K42544	5,3	5Cr-0.5Mo
SA	182	F6a, Cl. 1	6	K91151	7,2	13Cr
SA	182	F6a, Cl. 2	6	K91151	7,2	13Cr
SA	182	F6b	6	S41026	7,2	13Cr-0.5Mo
SA	182	F6NM	6	S41500	7,2	13Cr-4.5Ni-Mo
SA	182	F9	5B	K90941	5,4	9Cr-1Mo
SA	182	F91	5B	K90901	6,4	9Cr-1Mo-V
SA	182	FR	9A	K22035	9,1	2Ni-1Cu
SA	182	FXM-11	8	S21904	8,3	21Cr-6Ni-9Mn
SA	182	FXM-19	8	S20910	8,3	22Cr-13Ni-5Mn
SA	182	FXM-27Cb	10H	S44627	7,1	27Cr-1Mo
SA	192	—	1	K01201	1,1	C-Si
SA	199	T11	4	K11597	5,1	1.25Cr-0.5Mo-Si
SA	199	T21	5A	K31545	5,2	3Cr-1Mo
SA	199	T22	5A	K21590	5,2	2.25Cr-1Mo
SA	199	T4	5A	K31509	5,2	2.25Cr-0.5Mo-0.75Si
SA	199	T5	5B	K41545	5,3	5Cr-0.5Mo

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Table 1 (continued)

ASTM/ASME Specification number		Type or Grade	ASME/AWS P, S or M number	UNS number	ISO/TR 15608 group	Nominal Composition
SA	199	T9	5B	K90941	5,4	9Cr-1Mo
SA	199	T91	5B	K90901	6,4	9Cr-1Mo-V
SA	203	A	9A	K21703	9,1	2.5Ni
SA	203	B	9A	K22103	9,1	2.5Ni
SA	203	D	9B	K31718	9,2	3.5Ni
SA	203	E	9B	K32018	9,2	3.5Ni
SA	203	F	9B	K31718	9,2	3.5Ni
SA	204	A	3	K11820	1,1	C-0.5Mo
SA	204	B	3	K12020	1,1	C-0.5Mo
SA	204	C	3	K12320	1,2	C-0.5Mo
SA	209	T1	3	K11522	1,1	C-0.5Mo
SA	209	T1a	3	K12023	1,1	C-0.5Mo
SA	209	T1b	3	K11422	1,1	C-0.5Mo
SA	210	A-1	1	K02707	11,1	C-Si
SA	210	C	1	K03501	11,1	C-Mn-Si
A	211	A570 Gr 30	1	K02502	1,1	C
A	211	A570 Gr 33	1	K02502	1,1	C
A	211	A570 Gr 40	1	K02502	1,1	C
SA	213	S30815	8	S30815	8,2	21Cr-11Ni-N
SA	213	S31725	8	S31725	8,1	19Cr-15Ni-4Mo
SA	213	S31726	8	S31726	8,1	19Cr-15.5Ni-4Mo
SA	213	T11	4	K11597	5,1	1.25Cr-0.5Mo-Si
SA	213	T12	4	K11562	5,1	1Cr-0.5Mo
SA	213	T17	10B	K12047	4.1	1Cr-V
SA	213	T2	3	K11547	1,1	0.5Cr-0.5Mo
SA	213	T21	5A	K31545	5,2	3Cr-1Mo
SA	213	T22	5A	K21590	5,2	2.25Cr-1Mo
SA	213	T5	5B	K41545	5,3	5Cr-0.5Mo
SA	213	T5b	5B	K51545	5,3	5Cr-0.5Mo-Si
SA	213	T5c	5B	K41245	5,3	5Cr-0.5Mo-Ti
SA	213	T9	5B	K90941	5,4	9Cr-1Mo
SA	213	T91	5B	K90901	6,4	9Cr-1Mo-V
SA	213	TP 310H	8	S31009	8,2	25Cr-20Ni

Table 1 (continued)

ASTM/ASME Specification number		Type or Grade	ASME/ AWS P, S or M number	UNS number	ISO/TR 15608 group	Nominal Composition
SA	213	TP 310HCb	8	S31041	8,2	25Cr-20Ni-Cb
SA	213	TP201	8	S20100	8,3	17Cr-4Ni-6Mn
SA	213	TP202	8	S20200	8,3	18Cr-5Ni-9Mn
SA	213	TP304	8	S30400	8,1	18Cr-8Ni
SA	213	TP304H	8	S30409	8,1	18Cr-8Ni
SA	213	TP304L	8	S30403	8,1	18Cr-8Ni
SA	213	TP304LN	8	S30453	8,1	18Cr-8Ni-N
SA	213	TP304N	8	S30451	8,1	18Cr-8Ni-N
SA	213	TP309Cb	8	S30940	8,2	23Cr-12Ni-Cb
SA	213	TP309H	8	S30909	8,2	23Cr-12Ni
SA	213	TP309HCb	8	S30941	8,2	23Cr-12Ni-Cb
SA	213	TP309S	8	S30908	8,2	23Cr-12Ni
SA	213	TP310Cb	8	S31040	8,2	25Cr-20Ni-Cb
SA	213	TP310MoLN	8	S31050	8,2	25Cr-22Ni-2Mo-N
SA	213	TP310MoLN	8	S31050	8,2	25Cr-22Ni-2Mo-N
SA	213	TP310S	8	S31008	8,2	25Cr-20Ni
SA	213	TP316	8	S31600	8,1	16Cr-12Ni-2Mo
SA	213	TP316H	8	S31609	8,1	16Cr-12Ni-2Mo
SA	213	TP316L	8	S31603	8,1	16Cr-12Ni-2Mo
SA	213	TP316LN	8	S31653	8,1	16Cr-12Ni-2Mo-N
SA	213	TP316N	8	S31651	8,1	16Cr-12Ni-2Mo-N
SA	213	TP321	8	S32100	8,1	18Cr-10Ni-Ti
SA	213	TP321H	8	S32109	8,1	18Cr-10Ni-Ti
SA	213	TP347	8	S34700	8,1	18Cr-10Ni-Cb
SA	213	TP347H	8	S34709	8,1	18Cr-10Ni-Cb
SA	213	TP347HFG	8	—	8,1	18Cr-10Ni-Cb
SA	213	TP348	8	S34800	8,1	18Cr-10Ni-Cb
SA	213	TP348H	8	S34809	8,1	18Cr-10Ni-Cb
SA	213	XM-15	8	S38100	8,1	18Cr-18Ni-2Si
SA	213	XM-19	8	S20910	8,3	23Cr-13Ni-5Mn
SA	214	—	1	K01807	1,1	C
SA	216	WCA	1	J02502	1,1	C-Si
SA	216	WCB	1	J03002	1,1	C-Si