
**Welding — Grouping systems for
materials — American materials**

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

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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is entirely informative in nature and does not have to be reviewed until the data it provides are considered to be no longer valid or useful.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 20173 was prepared by Technical Committee ISO/TC 44, *Welding and allied processes*, Subcommittee SC 10, *Unification of requirements in the field of metal welding*.

This second edition cancels and replaces the first edition (ISO/TR 20173:2005), which has been technically revised.

Requests for official interpretations of any aspect of this Technical Report 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 <http://www.iso.org>.

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 15608:2005^[1].

It may also apply for other purposes, such as heat treatment, forming, and non-destructive testing. Types of steels are listed in accordance with the grouping system of ISO/TR 15608:2005^[1], 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 Tables 1 and 2.

Table 1 — American grouping system for ferrous material

ASTM/ASME		Type or grade	UNS No.	ASME/AWS		ISO/TR 15608:2005 ^[1] group	Nominal composition
Specification	No.			P or M No.	Group No.		
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
A/SA	36	—	K02600	1	1	11.1	C-Mn-Si
A/SA	36	—	K02600	1	1	11.1	C-Mn-Si
A/SA	53	Type E, Gr. A	K02504	1	1	11.1	C

Table 1 (continued)

ASTM/ASME		Type or grade	UNS No.	ASME/AWS		ISO/TR 15608:2005 ^[1] group	Nominal composition
Specification	No.			P or M No.	Group No.		
A/SA	53	Type E, Gr. B	K03005	1	1	11.1	C-Mn
A/SA	53	Type F	—	1	1	11.1	C
A/SA	53	Type S, Gr. A	K02504	1	1	11.1	C
A/SA	53	Type S, Gr. B	K03005	1	1	11.1	C-Mn
A/SA	105	—	K03504	1	2	11.1	C
A/SA	106	A	K02501	1	1	1.1	C-Si
A/SA	106	B	K03006	1	1	11.1	C-Mn-Si
A/SA	106	C	K03501	1	2	11.1	C-Mn-Si
A	108	1015 CW	G10150	1	1	1.1	C
A	108	1018 CW	G10180	1	1	1.1	C
A	108	1020 CW	G10200	1	1	1.1	C
A	108	8620 CW	G86200	3	3	4.1	0.5Ni-0.5Cr-Mo
A	131	A	—	1	1	1.1	C
A	131	AH32	—	1	2	1.2	C-Mn-Si
A	131	AH36	—	1	2	1.2	C-Mn-Si
A	131	B	—	1	1	1.1	C-Mn-Si
A	131	C	—	1	1	1.1	C-Mn-Si
A	131	D	—	1	1	1.1	C-Mn-Si
A	131	DH32	—	1	2	1.2	C-Mn-Si
A	131	DH36	—	1	2	1.2	C-Mn-Si
A	131	DS	—	1	1	1.1	C-Mn-Si
A	131	E	—	1	2	1.1	C-Mn-Si
A	131	EH32	—	1	2	1.2	C-Mn-Si
A	131	EH36	—	1	2	1.2	C-Mn-Si
A/SA	134	SA283, Gr. A	—	1	1	1.1	C
A/SA	134	SA283, Gr. B	—	1	1	1.1	C
A/SA	134	SA283, Gr. C	K02401	1	1	1.1	C
A/SA	134	SA283, Gr. D	K02702	1	1	1.1	C
A/SA	134	SA285, Gr. A	K01700	1	1	1.1	C
A/SA	134	SA285, Gr. B	K02200	1	1	1.1	C
A/SA	134	SA285, Gr. C	K02801	1	1	11.1	C
A/SA	135	A	—	1	1	1.1	C
A/SA	135	B	—	1	1	11.1	C
A	139	A	—	1	1	1.1	C
A	139	B	K03003	1	1	1.1	C

Table 1 (continued)

ASTM/ASME		Type or grade	UNS No.	ASME/AWS		ISO/TR 15608:2005 ^[1] group	Nominal composition
Specification	No.			P or M No.	Group No.		
A	139	C	K03004	1	1	11.1	C
A	139	D	K03010	1	1	11.1	C
A	139	E	K03012	1	1	11.1	C
A	167	Type 302B	S30215	8	1	8.1	18Cr-8Ni-2Si
A	167	Type 308	S30800	8	2	8.2	20Cr-10Ni
A	167	Type 309	S30900	8	2	8.2	23Cr-12Ni
A	167	Type 309S	S30908	8	2	8.2	23Cr-12Ni
A	167	Type 310	S31000	8	2	8.2	25Cr-20Ni
A	167	Type 310S	S31008	8	2	8.2	25Cr-20Ni
A/SA	178	A	K01200	1	1	1.1	C
A/SA	178	C	K03503	1	1	11.1	C
A/SA	178	D	—	1	2	11.1	C-Mn-Si
A/SA	179	—	K01200	1	1	1.1	C
A/SA	181	Cl. 60	K03502	1	1	11.1	C-Si
A/SA	181	Cl. 70	K03502	1	2	11.1	C-Si
A	182	F60	S32205	10H	1	10.1	22Cr-5Ni-3Mo-N
A	182	F6a, Cl. 3	S41000	6	3	7.2	13Cr
A	182	F6a, Cl. 4	S41000	6	3	7.2	13Cr
A	182	S34565	S34565	8	4	8.2	24Cr-17Ni-6Mn-4.5Mo-N
A/SA	182	F1	K12822	3	2	1.1	C-0.5Mo
A/SA	182	F10	S33100	8	2	8.1	20Ni-8Cr
A/SA	182	F11, Cl. 1	K11597	4	1	5.1	1.25Cr-0.5Mo-Si
A/SA	182	F11, Cl. 2	K11572	4	1	5.1	1.25Cr-0.5Mo-Si
A/SA	182	F11, Cl. 3	K11572	4	1	5.1	1.25Cr-0.5Mo-Si
A/SA	182	F12, Cl. 1	K11562	4	1	5.1	1Cr-0.5Mo
A/SA	182	F12, Cl. 2	K11564	4	1	5.1	1Cr-0.5Mo
A/SA	182	F2	K12122	3	2	4.2	0.5Cr-0.5Mo
A/SA	182	F21	K31545	5°	1	5.2	3Cr-1Mo
A/SA	182	F22, Cl. 1	K21590	5°	1	5.2	2.25Cr-1Mo
A/SA	182	F22, Cl. 3	K21590	5°	1	5.2	2.25Cr-1Mo
A/SA	182	F22V	K31835	5C	1	6.2	2.25Cr-1Mo-V
A/SA	182	F304	S30400	8	1	8.1	18Cr-8Ni
A/SA	182	F304H	S30409	8	1	8.1	18Cr-8Ni
A/SA	182	F304L	S30403	8	1	8.1	18Cr-8Ni
A/SA	182	F304LN	S30453	8	1	8.1	18Cr-8Ni-N

Table 1 (continued)

ASTM/ASME		Type or grade	UNS No.	ASME/AWS		ISO/TR 15608:2005 ^[1] group	Nominal composition
Specification	No.			P or M No.	Group No.		
A/SA	182	F304N	S30451	8	1	8.1	18Cr-8Ni-N
A/SA	182	F310	S31000	8	2	8.2	25Cr-20Ni
A/SA	182	F310MoLN	S31050	8	2	8.2	25Cr-22Ni-2Mo-N
A/SA	182	F316	S31600	8	1	8.1	16Cr-12Ni-2Mo
A/SA	182	F316H	S31609	8	1	8.1	16Cr-12Ni-2Mo
A/SA	182	F316L	S31603	8	1	8.1	16Cr-12Ni-2Mo
A/SA	182	F316LN	S31653	8	1	8.1	16Cr-12Ni-2Mo-N
A/SA	182	F316N	S31651	8	1	8.1	16Cr-12Ni-2Mo-N
A/SA	182	F317	S31700	8	1	8.1	18Cr-13Ni-3Mo
A/SA	182	F317L	S31703	8	1	8.1	18Cr-13Ni-3Mo
A/SA	182	F321	S32100	8	1	8.1	18Cr-10Ni-Ti
A/SA	182	F321H	S32109	8	1	8.1	18Cr-10Ni-Ti
A/SA	182	F347	S34700	8	1	8.1	18Cr-10Ni-Cb
A/SA	182	F347H	S34709	8	1	8.1	18Cr-10Ni-Cb
A/SA	182	F348	S34800	8	1	8.1	18Cr-10Ni-Cb
A/SA	182	F348H	S34809	8	1	8.1	18Cr-10Ni-Cb
A/SA	182	F3V	K31830	5C	1	6.2	3Cr-1Mo-V-Ti-B
A/SA	182	F3VCb	—	5C	1	6.2	3Cr-1Mo-0.25V-Cb-Ca
A/SA	182	F429	S42900	6	2	7.2	15Cr
A/SA	182	F430	S43000	7	2	7.1	17Cr
A/SA	182	F44	S31254	8	4	8.2	20Cr-18Ni-6Mo
A/SA	182	F45	S30815	8	2	8.2	21Cr-11Ni-N
A/SA	182	F46	S30600	8	1	8.1	18Cr-15Ni-4Si
A/SA	182	F5	K41545	5B	1	5.3	5Cr-0.5Mo
A/SA	182	F50	S31200	10H	1	10.2	25Cr-6Ni-Mo-N
A/SA	182	F51	S31803	10H	1	10.1	22Cr-5Ni-3Mo-N
A/SA	182	F53	S32750	10H	1	10.2	25Cr-7Ni-4Mo-N
A/SA	182	F54	S39274	10H	1	10.2	25Cr-7Ni-3Mo-2W-Cu-N
A/SA	182	F55	S32760	10H	1	10.1	25Cr-8Ni-3Mo-W-Cu-N
A/SA	182	F5a	K42544	5B	1	5.3	5Cr-0.5Mo
A/SA	182	F6a, Cl. 1	S41000	6	1	7.2	13Cr
A/SA	182	F6a, Cl. 2	S41000	6	3	7.2	13Cr
A/SA	182	F6b	S41026	6	3	7.2	13Cr-0.5Mo
A/SA	182	F6NM	S41500	6	4	7.2	13Cr-4.5Ni-Mo

Table 1 (continued)

ASTM/ASME		Type or grade	UNS No.	ASME/AWS		ISO/TR 15608:2005 ^[1] group	Nominal composition
Specification	No.			P or M No.	Group No.		
A/SA	182	F9	K90941	5B	1	5.4	9Cr-1Mo
A/SA	182	F91	K90901	5B	2	6.4	9Cr-1Mo-V
A/SA	182	FR	K22035	9A	1	9.1	2Ni-1Cu
A/SA	182	FXM-11	S21904	8	3	8.3	21Cr-6Ni-9Mn
A/SA	182	FXM-19	S20910	8	3	8.3	22Cr-13Ni-5Mn
A/SA	182	FXM-27Cb	S44627	10I	1	7.1	27Cr-1Mo
A/SA	192	—	K01201	1	1	1.1	C-Si
A/SA	202	A	K11742	4	1	4.2	0.5Cr-1.25Mn-Si
A/SA	202	B	K12542	4	1	4.2	0.5Cr-1.25Mn-Si
A/SA	203	A	K21703	9A	1	9.1	2.5Ni
A/SA	203	B	K22103	9A	1	9.1	2.5Ni
A/SA	203	D	K31718	9B	1	9.2	3.5Ni
A/SA	203	E	K32018	9B	1	9.2	3.5Ni
A/SA	203	F	—	9B	1	9.2	3.5Ni
A/SA	204	A	K11820	3	1	1.1	C-0.5Mo
A/SA	204	B	K12020	3	2	1.1	C-0.5Mo
A/SA	204	C	K12320	3	2	1.2	C-0.5Mo
A/SA	209	T1	K11522	3	1	1.1	C-0.5Mo
A/SA	209	T1a	K12023	3	1	1.1	C-0.5Mo
A/SA	209	T1b	K11422	3	1	1.1	C-0.5Mo
A/SA	210	A-1	K02707	1	1	11.1	C-Si
A/SA	210	C	K03501	1	2	11.1	C-Mn-Si
A	211	A570-30	K02502	1	1	1.1	C
A	211	A570-33	K02502	1	1	1.1	C
A	211	A570-40	K02502	1	1	1.1	C
A/SA	213	—	S31277	45	—	8.2	27Ni-22Cr-7Mo-Mn-Cu
A/SA	213	S30600	S30600	8	1	8.1	17Cr-14Ni-4Si
A/SA	213	S30601	S30601	8	1	8.1	17.5Cr-17.5Ni-5.3Si
A/SA	213	S30815	S30815	8	2	8.2	21Cr-11Ni-N
A/SA	213	S31277	S31277	45	—	8.2	27Ni-22Cr-7Mo-Mn-Cu
A/SA	213	S31725	S31725	8	4	8.1	19Cr-15Ni-4Mo
A/SA	213	S31726	S31726	8	4	8.1	19Cr-15.5Ni-4Mo
A/SA	213	S32615	S32615	8	1	8.1	18Cr-20Ni-5.5Si
A/SA	213	T11	K11597	4	1	5.1	1.25Cr-0.5Mo-Si

Table 1 (continued)

ASTM/ASME		Type or grade	UNS No.	ASME/AWS		ISO/TR 15608:2005 ^[1] group	Nominal composition
Specification	No.			P or M No.	Group No.		
A/SA	213	T12	K11562	4	1	5.1	1Cr-0.5Mo
A/SA	213	T17	K12047	10B	1	4.1	1Cr-V
A/SA	213	T2	K11547	3	1	4.2	0.5Cr-0.5Mo
A/SA	213	T21	K31545	5A	1	5.2	3Cr-1Mo
A/SA	213	T22	K21590	5A	1	5.2	2.25Cr-1Mo
A/SA	213	T5	K41545	5B	1	5.3	5Cr-0.5Mo
A/SA	213	T5b	K51545	5B	1	5.3	5Cr-0.5Mo-Si
A/SA	213	T5c	K41245	5B	1	5.3	5Cr-0.5Mo-Ti
A/SA	213	T9	K90941	5B	1	5.4	9Cr-1Mo
A/SA	213	T91	K90901	5B	2	6.4	9Cr-1Mo-V
A/SA	213	TP201	S20100	8	3	8.3	17Cr-4Ni-6Mn
A/SA	213	TP202	S20200	8	3	8.3	18Cr-5Ni-9Mn
A/SA	213	TP304	S30400	8	1	8.1	18Cr-8Ni
A/SA	213	TP304H	S30409	8	1	8.1	18Cr-8Ni
A/SA	213	TP304L	S30403	8	1	8.1	18Cr-8Ni
A/SA	213	TP304LN	S30453	8	1	8.1	18Cr-8Ni-N
A/SA	213	TP304N	S30451	8	1	8.1	18Cr-8Ni-N
A/SA	213	TP309Cb	S30940	8	2	8.2	23Cr-12Ni-Cb
A/SA	213	TP309H	S30909	8	2	8.2	23Cr-12Ni
A/SA	213	TP309HCb	S30941	8	2	8.2	23Cr-12Ni-Cb
A/SA	213	TP309S	S30908	8	2	8.2	23Cr-12Ni
A/SA	213	TP310Cb	S31040	8	2	8.2	25Cr-20Ni-Cb
A/SA	213	TP310H	S31009	8	2	8.2	25Cr-20Ni
A/SA	213	TP310HCb	S31041	8	2	8.2	25Cr-20Ni-Cb
A/SA	213	TP310MoLN	S31050	8	2	8.2	25Cr-22Ni-2Mo-N
A/SA	213	TP310MoLN	S31050	8	2	8.2	25Cr-22Ni-2Mo-N
A/SA	213	TP310S	S31008	8	2	8.2	25Cr-20Ni
A/SA	213	TP316	S31600	8	1	8.1	16Cr-12Ni-2Mo
A/SA	213	TP316H	S31609	8	1	8.1	16Cr-12Ni-2Mo
A/SA	213	TP316L	S31603	8	1	8.1	16Cr-12Ni-2Mo
A/SA	213	TP316LN	S31653	8	1	8.1	16Cr-12Ni-2Mo-N
A/SA	213	TP316N	S31651	8	1	8.1	16Cr-12Ni-2Mo-N
A/SA	213	TP321	S32100	8	1	8.1	18Cr-10Ni-Ti
A/SA	213	TP321H	S32109	8	1	8.1	18Cr-10Ni-Ti

Table 1 (continued)

ASTM/ASME		Type or grade	UNS No.	ASME/AWS		ISO/TR 15608:2005 ^[1] group	Nominal composition
Specification	No.			P or M No.	Group No.		
A/SA	213	TP347	S34700	8	1	8.1	18Cr-10Ni-Cb
A/SA	213	TP347H	S34709	8	1	8.1	18Cr-10Ni-Cb
A/SA	213	TP347HFG	S34710	8	1	8.1	18Cr-10Ni-Cb
A/SA	213	TP348	S34800	8	1	8.1	18Cr-10Ni-Cb
A/SA	213	TP348H	S34809	8	1	8.1	18Cr-10Ni-Cb
A/SA	213	XM-15	S38100	8	1	8.1	18Cr-18Ni-2Si
A/SA	213	XM-19	S20910	8	3	8.3	22Cr-13Ni-5Mn
A/SA	214	—	K01807	1	1	1.1	C
A/SA	216	WCA	J02502	1	1	1.1	C-Si
A/SA	216	WCB	J03002	1	2	1.1	C-Si
A/SA	216	WCC	J02503	1	2	1.1	C-Mn-Si
A	217	C12A	J84090	5B	2	6.4	9Cr-1Mo-V
A/SA	217	C12	J82090	5B	1	5.4	9Cr-1Mo
A/SA	217	C5	J42045	5B	1	5.3	5Cr-0.5Mo
A/SA	217	CA15	J91150	6	3	7.2	13Cr
A/SA	217	WC1	J12524	3	1	1.1	C-0.5Mo
A/SA	217	WC4	J12082	4	1	9.1	1Ni-0.5Cr-0.5Mo
A/SA	217	WC5	J22000	4	1	4.2	0.75Ni-1Mo-0.75Cr
A/SA	217	WC6	J12072	4	1	5.1	1.25Cr-0.5Mo
A/SA	217	WC9	J21890	5A	1	5.2	2.25Cr-1Mo
A/SA	225	C	K12524	10A	1	4.1	Mn-0.5Ni-V
A/SA	225	D	K12004	10A	1	2.1	Mn-0.5Ni-V
A/SA	234	WP1	K12821	3	1	11.2	C-0.5Mo
A/SA	234	WP11, Cl. 1	—	4	1	5.1	1.25Cr-0.5Mo-Si
A/SA	234	WP12, Cl. 1	K12062	4	1	5.1	1Cr-0.5Mo
A/SA	234	WP22, Cl. 1	K21590	5A	1	5.2	2.25Cr-1Mo
A/SA	234	WP5	K41545	5B	1	5.3	5Cr-0.5Mo
A/SA	234	WP91	K90901	5B	2	6.4	9Cr-1Mo-V
A/SA	234	WPB	K03006	1	1	11.1	C-Mn-Si
A/SA	234	WPC	K03501	1	2	11.1	C-Mn-Si
A/SA	234	WPR	K22035	9A	1	9.1	2Ni-1Cu
A	240	S32205	S32205	10H	1	10.1	22Cr-5Ni-3Mo-N
A	240	S34565	S34565	8	4	8.2	24Cr-17Ni-6Mn-4.5Mo-N
A/SA	240	—	S20400	8	3	8.3	16Cr-9Mn-2Ni-N

Table 1 (continued)

ASTM/ASME		Type or grade	UNS No.	ASME/AWS		ISO/TR 15608:2005 ^[1] group	Nominal composition
Specification	No.			P or M No.	Group No.		
A/SA	240	—	S31277	45	—	8.2	27Ni-22Cr-7Mo-Mn-Cu
A/SA	240	S21800	S21800	8	3	8.1	18Cr-8Ni-4Si-N
A/SA	240	S30600	S30600	8	1	8.1	18Cr-15Ni-4Si
A/SA	240	S30601	S30601	8	1	8.1	17.5Cr-17.5Ni-5.3Si
A/SA	240	S30815	S30815	8	2	8.2	21Cr-11Ni-N
A/SA	240	S31200	S31200	10H	1	10.2	25Cr-6Ni-Mo-N
A/SA	240	S31254	S31254	8	4	8.2	20Cr-18Ni-6Mo
A/SA	240	S31260	S31260	10H	1	10.2	25Cr-6.5Ni-3Mo-N
A/SA	240	S31277	S31277	45	—	8.2	27Ni-22Cr-7Mo-Mn-Cu
A/SA	240	S31725	S31725	8	4	8.1	19Cr-15Ni-4Mo
A/SA	240	S31726	S31726	8	4	8.1	19Cr-15.5Ni-4Mo
A/SA	240	S31753	S31753	8	1	8.1	18Cr-13Ni-3Mo-N
A/SA	240	S31803	S31803	10H	1	10.1	22Cr-5Ni-3Mo-N
A/SA	240	S32550	S32550	10H	1	10.2	25Cr-5Ni-3Mo-2Cu
A/SA	240	S32615	S32615	8	1	8.1	18Cr-20Ni-5.5Si
A/SA	240	S32750	S32750	10H	1	10.2	25Cr-7Ni-4Mo-N
A/SA	240	S32760	S32760	10H	1	10.2	25Cr-8Ni-3Mo-W-Cu-N
A/SA	240	S32906	S32906	10H	1	10.2	29Cr-6.5Ni-2Mo-N
A/SA	240	S32950	S32950	10H	1	10.2	26Cr-4Ni-Mo-N
A/SA	240	S41500	S41500	6	4	7.2	13Cr-4.5Ni-Mo
A/SA	240	S44400	S44400	7	2	7.1	18Cr-2Mo
A/SA	240	S44635	S44635	10I	1	7.1	25Cr-4Ni-4Mo-Ti
A/SA	240	S44660	S44660	10K	1	7.1	26Cr-3Ni-3Mo
A/SA	240	S44700	S44700	10J	1	7.1	29Cr-4Mo
A/SA	240	S44800	S44800	10K	1	7.1	29Cr-4Mo-2Ni
A/SA	240	Type 201-1	S20100	8	3	8.3	17Cr-4Ni-6Mn
A/SA	240	Type 201-2	S20100	8	3	8.3	17Cr-4Ni-6Mn
A/SA	240	Type 201LN	S20153	8	3	8.3	16Cr-4Ni-6Mn
A/SA	240	Type 202	S20200	8	3	8.3	18Cr-5Ni-9Mn
A/SA	240	Type 301	S30100	8	1	8.1	17Cr-7Ni
A/SA	240	Type 302	S30200	8	1	8.1	18Cr-8Ni
A/SA	240	Type 304	S30400	8	1	8.1	18Cr-8Ni
A/SA	240	Type 304H	S30409	8	1	8.1	18Cr-8Ni
A/SA	240	Type 304L	S30403	8	1	8.1	18Cr-8Ni

Table 1 (continued)

ASTM/ASME		Type or grade	UNS No.	ASME/AWS		ISO/TR 15608:2005 ^[1] group	Nominal composition
Specification	No.			P or M No.	Group No.		
A/SA	240	Type 304LN	S30453	8	1	8.1	18Cr-8Ni-N
A/SA	240	Type 304N	S30451	8	1	8.1	18Cr-8Ni-N
A/SA	240	Type 305	S30500	8	1	8.1	18Cr-11Ni
A/SA	240	Type 309Cb	S30940	8	2	8.2	23Cr-12Ni-Cb
A/SA	240	Type 309H	S30909	8	2	8.2	23Cr-12Ni
A/SA	240	Type 309HCb	S30941	8	2	8.2	23Cr-12Ni-Cb
A/SA	240	Type 309S	S30908	8	2	8.2	23Cr-12Ni
A/SA	240	Type 310Cb	S31040	8	2	8.2	25Cr-20Ni-Cb
A/SA	240	Type 310H	S31009	8	2	8.2	25Cr-20Ni
A/SA	240	Type 310HCb	S31041	8	2	8.2	25Cr-20Ni-Cb
A/SA	240	Type 310MoLN	S31050	8	2	8.2	25Cr-22Ni-2Mo-N
A/SA	240	Type 310S	S31008	8	2	8.2	25Cr-20Ni
A/SA	240	Type 316	S31600	8	1	8.1	16Cr-12Ni-2Mo
A/SA	240	Type 316Cb	S31640	8	1	8.1	16Cr-12Ni-2Mo-Cb
A/SA	240	Type 316H	S31609	8	1	8.1	16Cr-12Ni-2Mo
A/SA	240	Type 316L	S31603	8	1	8.1	16Cr-12Ni-2Mo
A/SA	240	Type 316LN	S31653	8	1	8.1	16Cr-12Ni-2Mo-N
A/SA	240	Type 316N	S31651	8	1	8.1	16Cr-12Ni-2Mo-N
A/SA	240	Type 316Ti	S31635	8	1	8.1	16Cr-12Ni-2Mo-Ti
A/SA	240	Type 317	S31700	8	1	8.1	18Cr-13Ni-3Mo
A/SA	240	Type 317L	S31703	8	1	8.1	18Cr-13Ni-3Mo
A/SA	240	Type 321	S32100	8	1	8.1	18Cr-10Ni-Ti
A/SA	240	Type 321H	S32109	8	1	8.1	18Cr-10Ni-Ti
A/SA	240	Type 347H	S34709	8	1	8.1	18Cr-10Ni-Cb
A/SA	240	Type 348	S34800	8	1	8.1	18Cr-10Ni-Cb
A/SA	240	Type 348H	S34809	8	1	8.1	18Cr-10Ni-Cb
A/SA	240	Type 405	S40500	7	1	7.1	12Cr-1Al
A/SA	240	Type 409	S40910	7	1	7.1	11Cr-Ti
A/SA	240	Type 409	S40930	7	1	7.1	11Cr-Ti
A/SA	240	Type 409	S40920	7	1	7.1	11Cr-Ti
A/SA	240	Type 410	S41000	6	1	7.2	13Cr
A/SA	240	Type 410S	S41008	7	1	7.1	13Cr
A/SA	240	Type 429	S42900	6	2	7.2	15Cr
A/SA	240	Type 430	S43000	7	2	7.1	17Cr

Table 1 (continued)

ASTM/ASME		Type or grade	UNS No.	ASME/AWS		ISO/TR 15608:2005 ^[1] group	Nominal composition
Specification	No.			P or M No.	Group No.		
A/SA	240	Type 439	S43035	7	2	7.1	18Cr-Ti
A/SA	240	Type XM-15	S38100	8	1	8.1	18Cr-18Ni-2Si
A/SA	240	Type XM-17	S21600	8	3	8.3	19Cr-8Mn-6Ni-Mo-N
A/SA	240	Type XM-18	S21603	8	3	8.3	19Cr-8Mn-6Ni-Mo-N
A/SA	240	Type XM-19	S20910	8	3	8.3	22Cr-13Ni-5Mn
A/SA	240	Type XM-21	S30452	8	1	8.1	18Cr-8Ni-N
A/SA	240	Type XM-27	S44627	10I	1	7.1	27Cr-1Mo
A/SA	240	Type XM-29	S24000	8	3	8.3	18Cr-3Ni-12Mn
A/SA	240	Type XM-33	S44626	10I	1	7.1	27Cr-1Mo-Ti
A/SA	249	—	S31277	45	—	8.2	27Ni-22Cr-7Mo-Mn-Cu
A/SA	249	S30815	S30815	8	2	8.2	21Cr-11Ni-N
A/SA	249	S31254	S31254	8	4	8.2	20Cr-18Ni-6Mo
A/SA	249	S31277	S31277	45	—	8.2	27Ni-22Cr-7Mo-Mn-Cu
A/SA	249	S31725	S31725	8	4	8.1	19Cr-15Ni-4Mo
A/SA	249	S31726	S31726	8	4	8.1	19Cr-15.5Ni-4Mo
A/SA	249	TP 201	S20100	8	3	8.3	17Cr-4Ni-6Mn
A/SA	249	TP 202	S20200	8	3	8.3	18Cr-5Ni-9Mn
A/SA	249	TP XM-15	S38100	8	1	8.1	18Cr-18Ni-2Si
A/SA	249	TP XM-19	S20910	8	3	8.3	22Cr-13Ni-5Mn
A/SA	249	TP XM-29	S24000	8	3	8.3	18Cr-3Ni-12Mn
A/SA	249	TP304H	S30409	8	1	8.1	18Cr-8Ni
A/SA	249	TP304L	S30403	8	1	8.1	18Cr-8Ni
A/SA	249	TP304LN	S30453	8	1	8.1	18Cr-8Ni-N
A/SA	249	TP304N	S30451	8	1	8.1	18Cr-8Ni-N
A/SA	249	TP309Cb	S30940	8	2	8.2	23Cr-12Ni-Cb
A/SA	249	TP309H	S30909	8	2	8.2	23Cr-12Ni
A/SA	249	TP309Hcb	S30941	8	2	8.2	23Cr-12Ni-Cb
A/SA	249	TP309S	S30908	8	2	8.2	23Cr-12Ni
A/SA	249	TP310Cb	S31040	8	2	8.2	25Cr-20Ni-Cb
A/SA	249	TP310H	S31009	8	2	8.2	25Cr-20Ni
A/SA	249	TP310Hcb	S31041	8	2	8.2	25Cr-20Ni-Cb
A/SA	249	TP310MoLN	S31050	8	2	8.2	25Cr-22Ni-2Mo-N
A/SA	249	TP310S	S31008	8	2	8.2	25Cr-20Ni
A/SA	249	TP316	S31600	8	1	8.1	16Cr-12Ni-2Mo

Table 1 (continued)

ASTM/ASME		Type or grade	UNS No.	ASME/AWS		ISO/TR 15608:2005 ^[1] group	Nominal composition
Specification	No.			P or M No.	Group No.		
A/SA	249	TP316H	S31609	8	1	8.1	16Cr-12Ni-2Mo
A/SA	249	TP316L	S31603	8	1	8.1	16Cr-12Ni-2Mo
A/SA	249	TP316LN	S31653	8	1	8.1	16Cr-12Ni-2Mo-N
A/SA	249	TP316N	S31651	8	1	8.1	16Cr-12Ni-2Mo-N
A/SA	249	TP317	S31700	8	1	8.1	18Cr-13Ni-3Mo
A/SA	249	TP317L	S31703	8	1	8.1	18Cr-13Ni-3Mo
A/SA	249	TP321	S32100	8	1	8.1	18Cr-10Ni-Ti
A/SA	249	TP321H	S32109	8	1	8.1	18Cr-10Ni-Ti
A/SA	249	TP347	S34700	8	1	8.1	18Cr-10Ni-Cb
A/SA	249	TP347H	S34709	8	1	8.1	18Cr-10Ni-Cb
A/SA	249	TP348	S34800	8	1	8.1	18Cr-10Ni-Cb
A/SA	249	TP348H	S34809	8	1	8.1	18Cr-10Ni-Cb
A/SA	250	T1	K11522	3	1	1.1	C-0.5Mo
A/SA	250	T11	K11597	4	1	5.1	1.25Cr-0.5Mo-Si
A/SA	250	T12	K11564	4	1	5.1	1Cr-0.5Mo
A/SA	250	T1a	K12023	3	1	1.1	C-0.5Mo
A/SA	250	T1b	K11422	3	1	1.1	C-0.5Mo
A/SA	250	T2	K11547	3	1	4.2	0.5Cr-0.5Mo
A/SA	250	T22	K21590	5A	1	5.2	2.25Cr-1Mo
A/SA	266	1	K03506	1	1	11.1	C-Si
A/SA	266	2	K03506	1	2	11.1	C-Si
A/SA	266	3	K05001	1	2	11.2	C-Si
A/SA	266	4	K03017	1	2	11.1	C-Mn-Si
A/SA	268	18Cr-2Mo	S44400	7	2	7.1	18Cr-2Mo
A/SA	268	25-4-4	S44635	10I	1	7.1	25Cr-4Ni-4Mo-Ti
A/SA	268	26-3-3	S44660	10K	1	7.1	26Cr-3Ni-3Mo
A/SA	268	29-4	S44700	10J	1	7.1	29Cr-4Mo
A/SA	268	29-4-2	S44800	10K	1	7.1	29Cr-4Mo-2Ni
A/SA	268	S40800	S40800	7	1	7.1	12Cr-Ti
A/SA	268	S41500	S41500	6	4	7.2	13Cr-4.5Ni-Mo
A/SA	268	S44735	S44735	10J	1	7.1	29Cr-4Mo-Ti
A/SA	268	TP 446-1	S44600	10I	1	7.1	27Cr
A/SA	268	TP 446-2	S44600	10I	1	7.1	27Cr
A/SA	268	TP XM-27	S44627	10I	1	7.1	27Cr-1Mo