



BSI Standards Publication

Welding - Grouping systems for materials - American materials

National foreword

This Published Document is the UK implementation of CEN ISO/TR 20173:2018. It is identical to ISO/TR 20173:2018. It supersedes PD CEN ISO/TR 20173:2009, which is withdrawn.

The UK participation in its preparation was entrusted to Technical Committee WEE/36, Qualification of welding personnel and welding procedures.

A list of organizations represented on this committee can be obtained on request to its secretary.

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English Version

Welding - Grouping systems for materials - American materials (ISO 20173:2018)

Soudage - Systèmes de groupement des matériaux -
Matériaux américains (ISO 20173:2018)

Schweißen - Werkstoffgruppeneinteilung -
Amerikanische Werkstoffe (ISO 20173:2018)

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European foreword

This document (CEN ISO/TR 20173:2018) has been prepared by Technical Committee ISO/TC 44 "Welding and allied processes" in collaboration with Technical Committee CEN/TC 121 "Welding and allied processes" the secretariat of which is held by DIN.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CEN shall not be held responsible for identifying any or all such patent rights.

This document supersedes CEN ISO/TR 20173:2009.

Endorsement notice

The text of ISO/TR 20173:2018 has been approved by CEN as CEN ISO/TR 20173:2018 without any modification.

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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.

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).

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This document was prepared by Technical Committee ISO/TC 44, *Welding and allied processes*, Subcommittee SC 10, *Quality management in the field of welding*.

Any feedback, question or request for official interpretation related to 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/members.html. Official interpretations, where they exist, are available from this page: <https://committee.iso.org/sites/tc44/home/interpretation.html>.

This third edition cancels and replaces the second edition (ISO/TR 20173:2009), which has been technically revised. The main changes compared to the previous edition are as follows:

- [Table 1](#) and [Table 2](#) have been completely revised;
- the layout has been editorially revised.

Welding — Grouping systems for materials — American materials

1 Scope

This document provides an American grouping system for materials for welding purposes, classified in accordance with the grouping system of ISO/TR 15608. A number of Canadian, Australian and New Zealand materials commonly used in North America are also included.

It can 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 15608:2017, Table 1.

This document 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.

2 Normative references

There are no normative references in this document.

3 Terms and definitions

No terms and definitions are listed in this document.

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

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

4 American grouping system for materials

[Tables 1](#) and [2](#) give American grouping systems for ferrous and non-ferrous materials, respectively.

Materials from the following organizations are listed:

- AAR (Association of American Railroads);
- ABS (American Bureau of Shipping);
- API (American Petroleum Institute);
- AS/NZS (Australia. New Zealand Standards);

- ASTM (ASTM International, formerly the American Society for Testing of Materials);
- ASME (American Society of Mechanical Engineers);
- CSA (Canadian Standards Association);
- MSS (Manufacturers Standardization Society);
- NACE (NACE International, formerly the National Association of Corrosion Engineers).

Table 1 — American grouping system for ferrous materials

Standard	Specification	No.	UNS	Type/Grade	ASME/AWS P/M-No.	Group No.	ISO/TR 15608:2017 Group	Nominal composition
AAR	AAR	TC-128		B	10C	1	11.1	C-Mn-Si
AAR	AAR	M-201		A	1	1	11.1	C-Mn-Si
AAR	AAR	M-201		B	1	2	11.1	C-Mn-Si
AAR	AAR	M-201		B+	1	3	11.1	C-Mn-Si
AAR	AAR	M-201		C	1	4	11.1	C-Mn-Si
ABS	ABS	ABS		CS	1	1	1.1	C-Mn-Si
ABS	ABS	ABS		DS	1	1	1.1	C-Mn-Si
ABS	ABS	ABS	K01801	E	1	1	1.1	C-Si
ABS	ABS	ABS	K02101	D	1	1	1.1	C-Si
ABS	ABS	ABS	K02102	B	1	1	1.1	C
ABS	ABS	ABS	K02300	A	1	1	1.1	C
ABS	ABS	ABS	K11846	AH32	1	1	1.2	C-Mn-Si
ABS	ABS	ABS	K11846	DH32	1	1	1.2	C-Mn-Si
ABS	ABS	ABS	K11846	EH32	1	1	1.2	C-Mn-Si
ABS	ABS	ABS	K11846	FH32	1	1	1.2	C-Mn-Si
ABS	ABS	ABS	K11852	AH36	1	2	1.2	C-Mn-Si
ABS	ABS	ABS	K11852	DH36	1	2	1.2	C-Mn-Si
ABS	ABS	ABS	K11852	EH36	1	2	1.2	C-Mn-Si
ABS	ABS	ABS	K11852	FH36	1	2	1.2	C-Mn-Si
ABS	ABS	ABS	K11857	AH40	1	2	1.3	C-Mn-Si
ABS	ABS	ABS	K11857	DH40	1	2	1.3	C-Mn-Si
ABS	ABS	ABS	K11857	EH40	1	2	1.3	C-Mn-Si
ABS	ABS	ABS	K11857	FH40	1	2	1.3	C-Mn-Si
API	API	2H		42	1	1	1.2	C-Mn
API	API	2H		50	1	2	1.2	C-Mn
API	API	2MT1		50	1	1	1.2	C-Mn
API	API	2W		50	1	1	1.2	C-Mn
API	API	2W		60	1	2	1.3	C-Mn
API	API	2Y		42	1	1	1.2	C-Mn

Table 1 (continued)

Standard	Specification	No.	UNS	Type/Grade	ASME/AWS P/M-No.	Group No.	ISO/TR 15608:2017 Group	Nominal composition
API	API	2Y		50	1	1	1.2	C-Mn
API	API	2Y		50T	1	2	1.2	C-Mn
API	API	2Y		60	1	2	1.3	C-Mn
API	API	5L		A	1	1	1.1	C-Mn
API	API	5L		A25	1	1	1.1	C-Mn
API	API	5L		A25, Cl. I	1	1	1.1	C-Mn
API	API	5L		A25, Cl. II	1	1	1.1	C-Mn
API	API	5L		A25P	1	1	1.1	C-Mn
API	API	5L		B	1	1	1.1.1	C-Mn
API	API	5L		BM	1	1	1.1	C-Mn
API	API	5L		BMO	1	1	1.1	C-Mn
API	API	5L		BMS	1	1	1.1	C-Mn
API	API	5L		BN	1	1	1.1	C-Mn
API	API	5L		BNO	1	1	1.1	C-Mn
API	API	5L		BNS	1	1	1.1	C-Mn
API	API	5L		BQ	1	1	1.1	C-Mn
API	API	5L		BQO	1	1	1.1	C-Mn
API	API	5L		BQS	1	1	1.1	C-Mn
API	API	5L		BR	1	1	1.1	C-Mn
API	API	5L		X42	1	1	1.1.1	C-Mn
API	API	5L		X42M	1	1	1.2	C-Mn
API	API	5L		X42MO	1	1	1.2	C-Mn
API	API	5L		X42MS	1	1	1.2	C-Mn
API	API	5L		X42N	1	1	1.2	C-Mn
API	API	5L		X42NO	1	1	1.2	C-Mn
API	API	5L		X42NS	1	1	1.2	C-Mn
API	API	5L		X42Q	1	1	1.2	C-Mn
API	API	5L		X42QO	1	1	1.2	C-Mn
API	API	5L		X42QS	1	1	1.2	C-Mn

Table 1 (continued)

Standard	Specification	No.	UNS	Type/Grade	ASME/AWS P/M-No.	Group No.	ISO/TR 15608:2017 Group	Nominal composition
API	API	5L		X42R	1	1	1.2	C-Mn
API	API	5L		X46	1	1	11.1	C-Mn
API	API	5L		X46M	1	1	1.2	C-Mn
API	API	5L		X46MO	1	1	1.2	C-Mn
API	API	5L		X46MS	1	1	1.2	C-Mn
API	API	5L		X46N	1	1	1.2	C-Mn
API	API	5L		X46NO	1	1	1.2	C-Mn
API	API	5L		X46NS	1	1	1.2	C-Mn
API	API	5L		X46Q	1	1	1.2	C-Mn
API	API	5L		X46QO	1	1	1.2	C-Mn
API	API	5L		X46QS	1	1	1.2	C-Mn
API	API	5L		X52	1	1	11.1	C-Mn
API	API	5L		X52M	1	1	1.2	C-Mn
API	API	5L		X52MO	1	1	1.2	C-Mn
API	API	5L		X52MS	1	1	1.2	C-Mn
API	API	5L		X52N	1	1	1.2	C-Mn
API	API	5L		X52NO	1	1	1.2	C-Mn
API	API	5L		X52NS	1	1	1.2	C-Mn
API	API	5L		X52Q	1	1	1.2	C-Mn
API	API	5L		X52QO	1	1	1.2	C-Mn
API	API	5L		X52QS	1	1	1.2	C-Mn
API	API	5L		X56	1	2	11.1	C-Mn
API	API	5L		X56M	1	2	2.1	C-Mn
API	API	5L		X56MO	1	2	2.1	C-Mn
API	API	5L		X56MS	1	2	2.1	C-Mn
API	API	5L		X56N	1	2	1.3	C-Mn
API	API	5L		X56Q	1	2	3.1	C-Mn
API	API	5L		X56QO	1	2	3.1	C-Mn
API	API	5L		X56QS	1	2	3.1	C-Mn

Table 1 (continued)

Standard	Specification	No.	UNS	Type/Grade	ASME/AWS P/M-No.	Group No.	ISO/TR 15608:2017 Group	Nominal composition
API	API	5L		X60	1	2	11.1	C-Mn
API	API	5L		X60M	1	2	2.1	C-Mn
API	API	5L		X60MO	1	2	2.1	C-Mn
API	API	5L		X60MS	1	2	2.1	C-Mn
API	API	5L		X60N	1	2	1.3	C-Mn
API	API	5L		X60Q	1	2	3.1	C-Mn
API	API	5L		X60QO	1	2	3.1	C-Mn
API	API	5L		X60QS	1	2	3.1	C-Mn
API	API	5L		X65	1	2	11.1	C-Mn
API	API	5L		X65M	1	2	2.1	C-Mn
API	API	5L		X65MO	1	2	2.1	C-Mn
API	API	5L		X65MS	1	2	2.1	C-Mn
API	API	5L		X65Q	1	2	3.1	C-Mn
API	API	5L		X65QO	1	2	3.1	C-Mn
API	API	5L		X65QS	1	2	3.1	C-Mn
API	API	5L		X70	1	3	11.1	C-Mn
API	API	5L		X70M	1	3	2.2	C-Mn
API	API	5L		X70MO	1	3	2.2	C-Mn
API	API	5L		X70MS	1	3	2.2	C-Mn
API	API	5L		X70Q	1	3	3.1	C-Mn
API	API	5L		X70QO	1	3	3.1	C-Mn
API	API	5L		X70QS	1	3	3.1	C-Mn
API	API	5L		X80M	1	4	2.2	C-Mn
API	API	5L		X80MO	1	4	2.2	C-Mn
API	API	5L		X80Q	1	4	3.1	C-Mn
API	API	5L		X80QO	1	4	3.1	C-Mn
API	API	5LS		X46	1	1	11.1	C-Mn
AS/ASTM	AS	945		50	1	2	1.2	C-Mn-Si
AS/ASTM	AS	945		65	1	2	1.3	C-Mn-Si-Ti

Table 1 (continued)

Standard	Specification	No.	UNS	Type/Grade	ASME/AWS P/M-No.	Group No.	ISO/TR 15608:2017 Group	Nominal composition
AS	AS	1548		5-490	1	2	1.2	C
AS	AS	1548		7-430	1	1	1.2	C
AS	AS	1548		7-460	1	1	1.2	C
AS	AS	1548		7-490	1	2	1.2	C
AS	AS	1548		PT430	1	1	1.2	C
AS	AS	1548		PT430	1	1	1.1	C
AS	AS	1548		PT460	1	1	1.1	C
AS	AS	1548		PT460	1	1	1.2	C
AS	AS	1548		PT490	1	2	1.2	C
AS	AS	1548		PT490	1	2	1.2	C
AS	AS	1548		PT540T	1	2	1.3	C-Mn
AS/NZS	AS/NZS	1594		HA200	1	1	1.1	C
AS/NZS	AS/NZS	1594		HA250	1	1	1.1	C
AS/NZS	AS/NZS	1594		HA300	1	1	1.2	C-Mn
AS/NZS	AS/NZS	1594		HA300/1	1	1	1.2	C-Mn
AS/NZS	AS/NZS	1594		HA350	1	1	1.2	C-Mn
AS/NZS	AS/NZS	1594		HA400	1	1	2.1	C-Mn
AS/NZS	AS/NZS	1594		HU250	1	1	1.1	C
AS/NZS	AS/NZS	1594		HU300	1	1	1.2	C-Mn
AS/NZS	AS/NZS	1594		HU300/1	1	1	1.2	C-Mn
AS/NZS	AS/NZS	1594		HW350	1	1	1.4	C-Mn-Cr-Ni-Cu
AS/NZS	AS/NZS	1594		XF300	1	1	1.2	C-Mn
AS/NZS	AS/NZS	1594		XF400	1	1	2.1	C-Mn
AS/NZS	AS/NZS	1594		XF500	1	3	2.2	C-Mn
AS/NZS	AS/NZS	3597		500			3.1	C-Mn-1Cr.25Mo
AS/NZS	AS/NZS	3597		600			3.1	C-Mn-1Cr.25Mo
AS/NZS	AS/NZS	3597		700			3.1	C-Mn-1Cr.25Mo
AS/NZS	AS/NZS	3597		700PV	11B		3.1	C-Mn-1Cr.25Mo
AS/NZS	AS/NZS	3678		200	1	1	1.1	C-Mn

Table 1 (continued)

Standard	Specification	No.	UNS	Type/Grade	ASME/AWS P/M-No.	Group No.	ISO/TR 15608:2017 Group	Nominal composition
AS/NZS	AS/NZS	3678		250	1	1	1.2	C-Mn
AS/NZS	AS/NZS	3678		250L15	1	1	1.2	C-Mn
AS/NZS	AS/NZS	3678		300	1	2	1.2	C-Mn
AS/NZS	AS/NZS	3678		300L15	1	2	1.2	C-Mn
AS/NZS	AS/NZS	3678		350	1	2	1.2	C-Mn
AS/NZS	AS/NZS	3678		350L15	1	2	1.2	C-Mn
AS/NZS	AS/NZS	3678		400	1	2	1.3	C-Mn
AS/NZS	AS/NZS	3678		400L15	1	2	1.3	C-Mn
AS/NZS	AS/NZS	3678		450	1	2	1.3	C-Mn
AS/NZS	AS/NZS	3678		450L15	1	2	1.3	C-Mn
AS/NZS	AS/NZS	3678		WR350	3	1	1.4	C-Mn-Cr-Ni-Cu
AS/NZS	AS/NZS	3678		WR350L0	3	1	1.4	C-Mn-Cr-Ni-Cu
AS/NZS	AS/NZS	3679.1		250	1	1	1.1	C-Mn
AS/NZS	AS/NZS	3679.1		250L0	1	1	1.1	C-Mn
AS/NZS	AS/NZS	3679.1		250L15	1	1	1.1	C-Mn
AS/NZS	AS/NZS	3679.1		300	1	2	1.2	C-Mn
AS/NZS	AS/NZS	3679.1		300L0	1	2	1.2	C-Mn
AS/NZS	AS/NZS	3679.1		300L15	1	2	1.2	C-Mn
AS/NZS	AS/NZS	3679.1		350	1	2	1.2	C-Mn
AS/NZS	AS/NZS	3679.1		350L0	1	2	1.2	C-Mn
AS/NZS	AS/NZS	3679.1		350L15	1	2	1.2	C-Mn
AS/NZS	AS/NZS	3679.1		400	1	2	1.3	C-Mn
AS/NZS	AS/NZS	3679.1		400L0	1	2	1.3	C-Mn
AS/NZS	AS/NZS	3679.1		400L15	1	2	1.3	C-Mn
ASTM	A	27	J02501	70-40	1	2	1.1	C
ASTM	A	27	J03000	60-30	1	1	11.1	C
ASTM	A	27	J03000	U-60-30	1	1	1.1	C
ASTM	A	27	J03001	65-35	1	1	11.1	C
ASTM	A	27	J03501	70-36	1	2	11.1	C

Table 1 (continued)

Standard	Specification	No.	UNS	Type/Grade	ASME/AWS P/M-No.	Group No.	ISO/TR 15608:2017 Group	Nominal composition
ASTM/ASME	A/SA	31	K03100	B	1	1	11.1	C
ASTM/ASME	A/SA	36			1	1	11.1	C-Mn-Si
ASTM/ASME	A/SA	36			1	1	11.1	C-Mn-Si
ASTM/ASME	A/SA	36	K02595		1	1	11.1	C-Mn-Si
ASTM/ASME	A/SA	36	K02596		1	1	11.1	C-Mn-Si
ASTM/ASME	A/SA	36	K02597		1	1	11.1	C-Mn-Si
ASTM/ASME	A/SA	36	K02598		1	1	11.1	C-Mn-Si
ASTM/ASME	A/SA	36	K02599		1	1	11.1	C-Mn-Si
ASTM/ASME	A/SA	36	K02600		1	1	11.1	C-Mn-Si
ASTM/ASME	A/SA	53	K02504	E, A	1	1	11.1	C
ASTM/ASME	A/SA	53	K02504	S, A	1	1	11.1	C
ASTM/ASME	A/SA	53	K03005	E, B	1	1	11.1	C-Mn
ASTM/ASME	A/SA	53	K03005	F	1	1	11.1	C
ASTM/ASME	A/SA	53	K03005	S, B	1	1	11.1	C-Mn
ASTM/ASME	A/SA	105	K03504		1	2	11.1	C
ASTM/ASME	A/SA	106	K02501	A	1	1	11.1	C-Si
ASTM/ASME	A/SA	106	K03006	B	1	1	11.1	C-Mn-Si
ASTM/ASME	A/SA	106	K03501	C	1	2	11.1	C-Mn-Si
ASTM	A	108	G10150	1015 CW	1	1	11.1	C
ASTM	A	108	G10180	1018 CW	1	1	11.1	C
ASTM	A	108	G10200	1020 CW	1	1	11.1	C
ASTM	A	108	G86200	8620 CW	3	3	4.1	0.5Ni-0.5Cr-Mo
ASTM	A	131		A	1	1	11.1	C
ASTM	A	131		AH32	1	2	1.2	C-Mn-Si
ASTM	A	131		AH36	1	2	1.2	C-Mn-Si
ASTM	A	131		B	1	1	1.1	C-Mn-Si
ASTM	A	131		CS	1	1	1.1	C-Mn-Si
ASTM	A	131		D	1	1	1.1	C-Mn-Si
ASTM	A	131		DH32	1	2	1.2	C-Mn-Si

Table 1 (continued)

Standard	Specification	No.	UNS	Type/Grade	ASME/AWS P/M-No.	Group No.	ISO/TR 15608:2017 Group	Nominal composition
ASTM	A	131		DH36	1	2	1.2	C-Mn-Si
ASTM	A	131		DS	1	1	1.1	C-Mn-Si
ASTM	A	131		E	1	2	1.1	C-Mn-Si
ASTM	A	131		EH32	1	2	1.2	C-Mn-Si
ASTM	A	131		EH36	1	2	1.2	C-Mn-Si
ASTM/ASME	A/SA	134	K01400	SA283, A	1	1	1.1	C
ASTM/ASME	A/SA	134	K01700	SA285, A	1	1	1.1	C
ASTM/ASME	A/SA	134	K01702	SA283, B	1	1	1.1	C
ASTM/ASME	A/SA	134	K02200	SA285, B	1	1	1.1	C
ASTM/ASME	A/SA	134	K02401	SA283, C	1	1	1.1	C
ASTM/ASME	A/SA	134	K02599	SA36	1	1	1.1	C
ASTM/ASME	A/SA	134	K02702	SA283, D	1	1	1.1	C
ASTM/ASME	A/SA	134	K02801	SA285, C	1	1	1.1	C
ASTM/ASME	A/SA	135	K02509	A	1	1	1.1	C
ASTM/ASME	A/SA	135	K03018	B	1	1	1.1	C
ASTM	A	139	K02508	A	1	1	1.1	C
ASTM	A	139	K03003	B	1	1	1.1	C
ASTM	A	139	K03004	C	1	1	1.1	C
ASTM	A	139	K03010	D	1	1	1.1	C
ASTM	A	139	K03012	E	1	1	1.1	C
ASTM	A	161	K11522	T1	3	1	1.1	C-0.5Mo
ASTM	A	167	S30215	302B	8	1	8.1	18Cr-8Ni-2Si
ASTM	A	167	S30800	308	8	2	8.2	20Cr-10Ni
ASTM	A	167	S30900	309	8	2	8.2	23Cr-12Ni
ASTM	A	167	S31000	310	8	2	8.2	25Cr-20Ni
ASTM/ASME	A/SA	178	K01200	A	1	1	1.1	C
ASTM/ASME	A/SA	178	K02709	D	1	2	1.1	C-Mn-Si
ASTM/ASME	A/SA	178	K03503	C	1	1	1.1	C
ASTM/ASME	A/SA	179	K01200		1	1	1.1	C

Table 1 (continued)

Standard	Specification	No.	UNS	Type/Grade	ASME/AWS P/M-No.	Group No.	ISO/TR 15608:2017 Group	Nominal composition
ASTM/ASME	A/SA	181	K03502	Cl. 60	1	1	11.1	C-Si
ASTM/ASME	A/SA	181	K03502	Cl. 70	1	2	11.1	C-Si
ASTM/ASME	A/SA	182	K11562	F12, Cl.1	4	1	5.1	1Cr-0.5Mo
ASTM/ASME	A/SA	182	K11564	F12, Cl.2	4	1	5.1	1Cr-0.5Mo
ASTM/ASME	A/SA	182	K11572	F11, Cl.2	4	1	5.1	1.25Cr-0.5Mo-Si
ASTM/ASME	A/SA	182	K11572	F11, Cl.3	4	1	5.1	1.25Cr-0.5Mo-Si
ASTM/ASME	A/SA	182	K11597	F11, Cl.1	4	1	5.1	1.25Cr-0.5Mo-Si
ASTM/ASME	A/SA	182	K12122	F2	3	2	4.2	0.5Cr-0.5Mo
ASTM/ASME	A/SA	182	K12822	F1	3	2	1.1	C-0.5Mo
ASTM/ASME	A/SA	182	K21590	F22, Cl.1	5A	1	5.2	2.25Cr-1Mo
ASTM/ASME	A/SA	182	K21590	F22, Cl.3	5A	1	5.2	2.25Cr-1Mo
ASTM/ASME	A/SA	182	K22035	FR	9A	1	9.1	2Ni-1Cu
ASTM/ASME	A/SA	182	K31390	F3VCb	5C	1	6.2	3Cr-1Mo-0.25V-Cb-Ca
ASTM/ASME	A/SA	182	K31545	F21	5A	1	5.2	3Cr-1Mo
ASTM/ASME	A/SA	182	K31830	F3V	5C	1	6.2	3Cr-1Mo-V-Ti-B
ASTM/ASME	A/SA	182	K31835	F22V	5C	1	6.2	2.25Cr-1Mo-V
ASTM/ASME	A/SA	182	K41545	F5	5B	1	5.3	5Cr-0.5Mo
ASTM/ASME	A/SA	182	K42544	F5a	5B	1	5.3	5Cr-0.5Mo
ASTM/ASME	A/SA	182	K90901	F91	15E	1	6.4	9Cr-1Mo-V
ASTM/ASME	A/SA	182	K90941	F9	5B	1	5.4	9Cr-1Mo
ASTM/ASME	A/SA	182	K92460	F92	15E	1	6.4	9Cr-2W
ASTM/ASME	A/SA	182	N08367		45		8.2	46Fe-24Ni-21Cr-6Mo-Cu-N
ASTM/ASME	A/SA	182	N08904	F904L	45		8.2	44Fe-25Ni-21Cr-Mo
ASTM/ASME	A/SA	182	S20910	FXM-19	8	3	8.3	22Cr-13Ni-5Mn
ASTM/ASME	A/SA	182	S21904	FXM-11	8	3	8.3	21Cr-6Ni-9Mn
ASTM/ASME	A/SA	182	S30400	F304	8	1	8.1	18Cr-8Ni
ASTM/ASME	A/SA	182	S30403	F304L	8	1	8.1	18Cr-8Ni
ASTM/ASME	A/SA	182	S30409	F304H	8	1	8.1	18Cr-8Ni
ASTM/ASME	A/SA	182	S30451	F304N	8	1	8.1	18Cr-8Ni-N

Table 1 (continued)

Standard	Specification	No.	UNS	Type/Grade	ASME/AWS P/M-No.	Group No.	ISO/TR 15608:2017 Group	Nominal composition
ASTM/ASME	A/SA	182	S30453	F304LN	8	1	8.1	18Cr-8Ni-N
ASTM/ASME	A/SA	182	S30600	F46	8	1	8.1	18Cr-15Ni-4Si
ASTM/ASME	A/SA	182	S30815	F45	8	2	8.2	21Cr-11Ni-N
ASTM/ASME	A/SA	182	S31000	F310	8	2	8.2	25Cr-20Ni
ASTM/ASME	A/SA	182	S31050	F310MoLN	8	2	8.2	25Cr-22Ni-2Mo-N
ASTM/ASME	A/SA	182	S31200	F50	10H	1	10.2	25Cr-6Ni-Mo-N
ASTM/ASME	A/SA	182	S31254	F44	8	4	8.2	20Cr-18Ni-6Mo
ASTM/ASME	A/SA	182	S31600	F316	8	1	8.1	16Cr-12Ni-2Mo
ASTM/ASME	A/SA	182	S31603	F316L	8	1	8.1	16Cr-12Ni-2Mo
ASTM/ASME	A/SA	182	S31609	F316H	8	1	8.1	16Cr-12Ni-2Mo
ASTM/ASME	A/SA	182	S31651	F316N	8	1	8.1	16Cr-12Ni-2Mo-N
ASTM/ASME	A/SA	182	S31653	F316LN	8	1	8.1	16Cr-12Ni-2Mo-N
ASTM/ASME	A/SA	182	S31700	F317	8	1	8.1	18Cr-13Ni-3Mo
ASTM/ASME	A/SA	182	S31703	F317L	8	1	8.1	18Cr-13Ni-3Mo
ASTM/ASME	A/SA	182	S31803	F51	10H	1	10.1	22Cr-5Ni-3Mo-N
ASTM/ASME	A/SA	182	S32053		8	4	8.2	23Cr-25Ni-5.5Mo-N
ASTM/ASME	A/SA	182	S32100	F321	8	1	8.1	18Cr-10Ni-Ti
ASTM/ASME	A/SA	182	S32109	F321H	8	1	8.1	18Cr-10Ni-Ti
ASTM/ASME	A/SA	182	S32202		10H	1	10.1	22Cr-2Ni-Mo-N
ASTM/ASME	A/SA	182	S32205	F60	10H	1	10.1	22Cr-5Ni-3Mo-N
ASTM/ASME	A/SA	182	S32550	F61	10H	1	10.2	25Cr-5Ni-3Mo-2Cu
ASTM/ASME	A/SA	182	S32750	F53	10H	1	10.2	25Cr-7Ni-4Mo-N
ASTM/ASME	A/SA	182	S32760	F55	10H	1	10.1	25Cr-8Ni-3Mo-W-Cu-N
ASTM/ASME	A/SA	182	S33100	F10	8	2	8.1	20Ni-8Cr
ASTM/ASME	A/SA	182	S34565	F49	8	4	8.3	24Cr-17Ni-6Mn-4.5Mo-N
ASTM/ASME	A/SA	182	S34700	F347	8	1	8.1	18Cr-10Ni-Cb
ASTM/ASME	A/SA	182	S34709	F347H	8	1	8.1	18Cr-10Ni-Cb
ASTM/ASME	A/SA	182	S34800	F348	8	1	8.1	18Cr-10Ni-Cb
ASTM/ASME	A/SA	182	S34809	F348H	8	1	8.1	18Cr-10Ni-Cb

Table 1 (continued)

Standard	Specification	No.	UNS	Type/Grade	ASME/AWS P/M-No.	Group No.	ISO/TR 15608:2017 Group	Nominal composition
ASTM/ASME	A/SA	182	S39274	F54	10H	1	10.2	25Cr-7Ni-3Mo-2W-Cu-N
ASTM/ASME	A/SA	182	S41000	F6a, Cl.1	6	1	7.2	13Cr
ASTM/ASME	A/SA	182	S41000	F6a, Cl.2	6	3	7.2	13Cr
ASTM/ASME	A/SA	182	S41000	F6a, Cl.3	6	3	7.2	13Cr
ASTM/ASME	A/SA	182	S41000	F6a, Cl.4	6	3	7.2	13Cr
ASTM/ASME	A/SA	182	S41026	F6b	6	3	7.2	13Cr-0.5Mo
ASTM/ASME	A/SA	182	S41500	F6NM	6	4	7.2	13Cr-4.5Ni-Mo
ASTM/ASME	A/SA	182	S42900	F429	6	2	7.2	15Cr
ASTM/ASME	A/SA	182	S43000	F430	7	2	7.1	17Cr
ASTM/ASME	A/SA	182	S44627	FXM-27Cb	10I	1	7.1	27Cr-1Mo
ASTM/ASME	A/SA	192	K01201		1	1	1.1	C-Si
ASTM	A	199	K11597	T11	4	1	5.1	1.25Cr-0.5Mo-Si
ASTM	A	199	K21590	T22	5A	1	5.2	2.25Cr-1Mo
ASTM	A	199	K41545	T5	5B	1	5.3	5Cr-0.5Mo
ASTM	A	199	K81590	T9	5B	1	5.4	9Cr-1Mo
ASTM	A	199	K90901	T91	15E	1	6.4	9Cr-1Mo-V
ASTM	A	200	K21590	T22	5A	1	5.2	2.25Cr-1Mo
ASTM/ASME	A/SA	202	K11742	A	4	1	4.2	0.5Cr-1.25Mn-Si
ASTM/ASME	A/SA	202	K12542	B	4	1	4.2	0.5Cr-1.25Mn-Si
ASTM/ASME	A/SA	203		F	9B	1	9.2	3.5Ni
ASTM/ASME	A/SA	203	K21703	A	9A	1	9.1	2.5Ni
ASTM/ASME	A/SA	203	K22103	B	9A	1	9.1	2.5Ni
ASTM/ASME	A/SA	203	K31718	D	9B	1	9.2	3.5Ni
ASTM/ASME	A/SA	203	K32018	E	9B	1	9.2	3.5Ni
ASTM/ASME	A/SA	204	K11820	A	3	1	1.1	C-0.5Mo
ASTM/ASME	A/SA	204	K12020	B	3	2	1.1	C-0.5Mo
ASTM/ASME	A/SA	204	K12320	C	3	2	1.2	C-0.5Mo
ASTM/ASME	A/SA	209	K11422	T1b	3	1	1.1	C-0.5Mo
ASTM/ASME	A/SA	209	K11522	T1	3	1	1.1	C-0.5Mo

Table 1 (continued)

Standard	Specification	No.	UNS	Type/Grade	ASME/AWS P/M-No.	Group No.	ISO/TR 15608:2017 Group	Nominal composition
ASTM/ASME	A/SA	209	K12023	T1a	3	1	1.1	C-0.5Mo
ASTM/ASME	A/SA	210	K02707	A-1	1	1	11.1	C-Si
ASTM/ASME	A/SA	210	K03501	C	1	2	11.1	C-Mn-Si
ASTM	A	211	K02502	A570-30	1	1	1.1	C
ASTM	A	211	K02502	A570-33	1	1	1.1	C
ASTM	A	211	K02502	A570-40	1	1	1.1	C
ASTM/ASME	A/SA	213	K11547	T2	3	1	4.2	0.5Cr-0.5Mo
ASTM/ASME	A/SA	213	K11562	T12	4	1	5.1	1Cr-0.5Mo
ASTM/ASME	A/SA	213	K11597	T11	4	1	5.1	1.25Cr-0.5Mo-Si
ASTM/ASME	A/SA	213	K12047	T17	10B	1	4.1	1Cr-V
ASTM/ASME	A/SA	213	K21590	T22	5A	1	5.2	2.25Cr-1Mo
ASTM/ASME	A/SA	213	K31545	T21	5A	1	5.2	3Cr-1Mo
ASTM/ASME	A/SA	213	K41245	T5c	5B	1	5.3	5Cr-0.5Mo-Ti
ASTM/ASME	A/SA	213	K41545	T5	5B	1	5.3	5Cr-0.5Mo
ASTM/ASME	A/SA	213	K51545	T5b	5B	1	5.3	5Cr-0.5Mo-Si
ASTM/ASME	A/SA	213	K90901	T91	15E	1	6.4	9Cr-1Mo-V
ASTM/ASME	A/SA	213	K90941	T9	5B	1	5.4	9Cr-1Mo
ASTM/ASME	A/SA	213	K92460	T92	15E	1	6.4	9Cr-2W
ASTM/ASME	A/SA	213	S20100	TP201	8	3	8.3	17Cr-4Ni-6Mn
ASTM/ASME	A/SA	213	S20200	TP202	8	3	8.3	18Cr-5Ni-9Mn
ASTM/ASME	A/SA	213	S20910	XM-19	8	3	8.3	22Cr-13Ni-5Mn
ASTM/ASME	A/SA	213	S30400	TP304	8	1	8.1	18Cr-8Ni
ASTM/ASME	A/SA	213	S30403	TP304L	8	1	8.1	18Cr-8Ni
ASTM/ASME	A/SA	213	S30409	TP304H	8	1	8.1	18Cr-8Ni
ASTM/ASME	A/SA	213	S30432		8	1	8.1	18Cr-9Ni-3Cu-Cb-N
ASTM/ASME	A/SA	213	S30451	TP304N	8	1	8.1	18Cr-8Ni-N
ASTM/ASME	A/SA	213	S30453	TP304LN	8	1	8.1	18Cr-8Ni-N
ASTM/ASME	A/SA	213	S30815	S30815	8	2	8.2	21Cr-11Ni-N
ASTM/ASME	A/SA	213	S30908	TP309S	8	2	8.2	23Cr-12Ni

Table 1 (continued)

Standard	Specification	No.	UNS	Type/Grade	ASME/AWS P/M-No.	Group No.	ISO/TR 15608:2017 Group	Nominal composition
ASTM/ASME	A/SA	213	S30909	TP309H	8	2	8.2	23Cr-12Ni
ASTM/ASME	A/SA	213	S30940	TP309Cb	8	2	8.2	23Cr-12Ni-Cb
ASTM/ASME	A/SA	213	S30941	TP309HCb	8	2	8.2	23Cr-12Ni-Cb
ASTM/ASME	A/SA	213	S31000	310	8	2	8.2	25Cr-20Ni
ASTM/ASME	A/SA	213	S31008	TP310S	8	2	8.2	25Cr-20Ni
ASTM/ASME	A/SA	213	S31009	TP310H	8	2	8.2	25Cr-20Ni
ASTM/ASME	A/SA	213	S31040	TP310Cb	8	2	8.2	25Cr-20Ni-Cb
ASTM/ASME	A/SA	213	S31041	TP310HCb	8	2	8.2	25Cr-20Ni-Cb
ASTM/ASME	A/SA	213	S31042	TP310HCbN	8	3	8.2	25Cr-20Ni-Cb-N
ASTM/ASME	A/SA	213	S31050	TP310MoLN	8	2	8.2	25Cr-22Ni-2Mo-N
ASTM/ASME	A/SA	213	S31600	TP316	8	1	8.1	16Cr-12Ni-2Mo
ASTM/ASME	A/SA	213	S31603	TP316L	8	1	8.1	16Cr-12Ni-2Mo
ASTM/ASME	A/SA	213	S31609	TP316H	8	1	8.1	16Cr-12Ni-2Mo
ASTM/ASME	A/SA	213	S31635	TP316Ti	8	1	8.1	16Cr-12Ni-2Mo-Ti
ASTM/ASME	A/SA	213	S31651	TP316N	8	1	8.1	16Cr-12Ni-2Mo-N
ASTM/ASME	A/SA	213	S31653	TP316LN	8	1	8.1	16Cr-12Ni-2Mo-N
ASTM/ASME	A/SA	213	S31700	TP317	8	1	8.1	18Cr-13Ni-3Mo
ASTM/ASME	A/SA	213	S31703	TP317L	8	1	8.1	18Cr-13Ni-3Mo
ASTM/ASME	A/SA	213	S31725	TP317LM	8	4	8.1	19Cr-15Ni-4Mo
ASTM/ASME	A/SA	213	S31726	TP317LMN	8	4	8.1	19Cr-15.5Ni-4Mo
ASTM/ASME	A/SA	213	S32100	TP321	8	1	8.1	18Cr-10Ni-Ti
ASTM/ASME	A/SA	213	S32109	TP321H	8	1	8.1	18Cr-10Ni-Ti
ASTM/ASME	A/SA	213	S32615	S32615	8	1	8.1	18Cr-20Ni-5.5Si
ASTM/ASME	A/SA	213	S34565	S34565	8	4	8.3	24Cr-17Ni-6Mn-4.5Mo-N
ASTM/ASME	A/SA	213	S34700	TP347	8	1	8.1	18Cr-10Ni-Cb
ASTM/ASME	A/SA	213	S34709	TP347H	8	1	8.1	18Cr-10Ni-Cb
ASTM/ASME	A/SA	213	S34710	TP347HFG	8	1	8.1	18Cr-10Ni-Cb
ASTM/ASME	A/SA	213	S34751	TP347LN	8	1	8.1	18Cr-10Ni-Cb-N
ASTM/ASME	A/SA	213	S34800	TP348	8	1	8.1	18Cr-10Ni-Cb

Table 1 (continued)

Standard	Specification	No.	UNS	Type/Grade	ASME/AWS P/M-No.	Group No.	ISO/TR 15608:2017 Group	Nominal composition
ASTM/ASME	A/SA	213	S34809	TP348H	8	1	8.1	18Cr-10Ni-Cb
ASTM/ASME	A/SA	213	S38100	XM-15	8	1	8.1	18Cr-18Ni-2Si
ASTM/ASME	A/SA	214	K01807		1	1	1.1	C
ASTM/ASME	A/SA	216	J02502	WCA	1	1	1.1	C-Si
ASTM/ASME	A/SA	216	J02503	WCC	1	2	1.1	C-Mn-Si
ASTM/ASME	A/SA	216	J03002	WCB	1	2	1.1	C-Si
ASTM/ASME	A/SA	217	J12072	WC6	4	1	5.1	1.25Cr-0.5Mo
ASTM/ASME	A/SA	217	J12082	WC4	4	1	9.1	1Ni-0.5Cr-0.5Mo
ASTM/ASME	A/SA	217	J12524	WC1	3	1	1.1	C-0.5Mo
ASTM/ASME	A/SA	217	J21890	WC9	5A	1	5.2	2.25Cr-1Mo
ASTM/ASME	A/SA	217	J22000	WC5	4	1	4.2	0.75Ni-1Mo-0.75Cr
ASTM/ASME	A/SA	217	J42045	C5	5B	1	5.3	5Cr-0.5Mo
ASTM/ASME	A/SA	217	J82090	C12	5B	1	5.4	9Cr-1Mo
ASTM/ASME	A/SA	217	J84090	C12A	15E	1	6.4	9Cr-1Mo-V
ASTM/ASME	A/SA	217	J91150	CA15	6	3	7.2	13Cr
ASTM/ASME	A/SA	225	K12004	D	10A	1	2.1	Mn-0.5Ni-V
ASTM/ASME	A/SA	225	K12524	C	10A	1	4.1	Mn-0.5Ni-V
ASTM	A	226	K01201		1	1	1.1	C-Si
ASTM/ASME	A/SA	234		WP11, Cl.1	4	1	5.1	1.25Cr-0.5Mo-Si
ASTM/ASME	A/SA	234		WP11, Cl.2	4	1	5.1	1.25Cr-0.5Mo-Si
ASTM/ASME	A/SA	234		WP11, Cl.3	4	1	5.1	1.25Cr-0.5Mo-Si
ASTM/ASME	A/SA	234	K03006	WPB	1	1	11.1	C-Mn-Si
ASTM/ASME	A/SA	234	K03501	WPC	1	2	11.1	C-Mn-Si
ASTM/ASME	A/SA	234	K12062	WP12, Cl.1	4	1	5.1	1Cr-0.5Mo
ASTM/ASME	A/SA	234	K12062	WP12, Cl.2	4	1	5.1	1Cr-0.5Mo
ASTM/ASME	A/SA	234	K12821	WP1	3	1	11.2	C-0.5Mo
ASTM/ASME	A/SA	234	K21590	WP22, Cl.1	5A	1	5.2	2.25Cr-1Mo
ASTM/ASME	A/SA	234	K21590	WP22, Cl.3	5A	1	5.2	2.25Cr-1Mo
ASTM/ASME	A/SA	234	K22035	WPR	9A	1	9.1	2Ni-1Cu

Table 1 (continued)

Standard	Specification	No.	UNS	Type/Grade	ASME/AWS P/M-No.	Group No.	ISO/TR 15608:2017 Group	Nominal composition
ASTM/ASME	A/SA	234	K41545	WP5, Cl.1	5B	1	5.3	5Cr-0.5Mo
ASTM/ASME	A/SA	234	K41545	WP5, Cl.3	5B	1	5.3	5Cr-0.5Mo
ASTM/ASME	A/SA	234	K90901	WP91	15E	1	6.4	9Cr-1Mo-V
ASTM/ASME	A/SA	234	K90941	WP9, Cl.1	5B	1	5.4	9Cr-1Mo
ASTM/ASME	A/SA	234	K90941	WP9, Cl.3	5B	1	5.4	9Cr-1Mo
ASTM/ASME	A/SA	240	N08367		45		8.2	46Fe-24Ni-21Cr-6Mo-Cu-N
ASTM/ASME	A/SA	240	N08904	904L	45		8.2	44Fe-25Ni-21Cr-Mo
ASTM/ASME	A/SA	240	S20100	201-1	8	3	8.3	17Cr-4Ni-6Mn
ASTM/ASME	A/SA	240	S20100	201-2	8	3	8.3	17Cr-4Ni-6Mn
ASTM/ASME	A/SA	240	S20153	201LN	8	3	8.3	16Cr-4Ni-6Mn
ASTM/ASME	A/SA	240	S20200	202	8	3	8.3	18Cr-5Ni-9Mn
ASTM/ASME	A/SA	240	S20400		8	3	8.3	16Cr-9Mn-2Ni-N
ASTM/ASME	A/SA	240	S20910	XM-19	8	3	8.3	22Cr-13Ni-5Mn
ASTM/ASME	A/SA	240	S21600	XM-17	8	3	8.3	19Cr-8Mn-6Ni-Mo-N
ASTM/ASME	A/SA	240	S21603	XM-18	8	3	8.3	19Cr-8Mn-6Ni-Mo-N
ASTM/ASME	A/SA	240	S21800	S21800	8	3	8.1	18Cr-8Ni-4Si-N
ASTM/ASME	A/SA	240	S24000	XM-29	8	3	8.3	18Cr-3Ni-12Mn
ASTM/ASME	A/SA	240	S30100	301	8	1	8.1	17Cr-7Ni
ASTM/ASME	A/SA	240	S30200	302	8	1	8.1	18Cr-8Ni
ASTM/ASME	A/SA	240	S30400	304	8	1	8.1	18Cr-8Ni
ASTM/ASME	A/SA	240	S30403	304L	8	1	8.1	18Cr-8Ni
ASTM/ASME	A/SA	240	S30409	304H	8	1	8.1	18Cr-8Ni
ASTM/ASME	A/SA	240	S30451	304N	8	1	8.1	18Cr-8Ni-N
ASTM/ASME	A/SA	240	S30452	XM-21	8	1	8.1	18Cr-8Ni-N
ASTM/ASME	A/SA	240	S30453	304LN	8	1	8.1	18Cr-8Ni-N
ASTM/ASME	A/SA	240	S30500	305	8	1	8.1	18Cr-11Ni
ASTM/ASME	A/SA	240	S30600	S30600	8	1	8.1	18Cr-15Ni-4Si
ASTM/ASME	A/SA	240	S30601	S30601	8	1	8.1	17.5Cr-17.5Ni-5.3Si
ASTM/ASME	A/SA	240	S30815	S30815	8	2	8.2	21Cr-11Ni-N

Table 1 (continued)

Standard	Specification	No.	UNS	Type/Grade	ASME/AWS P/M-No.	Group No.	ISO/TR 15608:2017 Group	Nominal composition
ASTM/ASME	A/SA	240	S30908	309S	8	2	8.2	23Cr-12Ni
ASTM/ASME	A/SA	240	S30909	309H	8	2	8.2	23Cr-12Ni
ASTM/ASME	A/SA	240	S30940	309Cb	8	2	8.2	23Cr-12Ni-Cb
ASTM/ASME	A/SA	240	S30941	309HCb	8	2	8.2	23Cr-12Ni-Cb
ASTM/ASME	A/SA	240	S31008	310S	8	2	8.2	25Cr-20Ni
ASTM/ASME	A/SA	240	S31009	310H	8	2	8.2	25Cr-20Ni
ASTM/ASME	A/SA	240	S31040	310Cb	8	2	8.2	25Cr-20Ni-Cb
ASTM/ASME	A/SA	240	S31041	310HCb	8	2	8.2	25Cr-20Ni-Cb
ASTM/ASME	A/SA	240	S31050	310MoLN	8	2	8.2	25Cr-22Ni-2Mo-N
ASTM/ASME	A/SA	240	S31200	S31200	10H	1	10.2	25Cr-6Ni-Mo-N
ASTM/ASME	A/SA	240	S31254	S31254	8	4	8.2	20Cr-18Ni-6Mo
ASTM/ASME	A/SA	240	S31260	S31260	10H	1	10.2	25Cr-6.5Ni-3Mo-N
ASTM/ASME	A/SA	240	S31277	S31277	45		8.2	27Ni-22Cr-7Mo-Mn-Cu
ASTM/ASME	A/SA	240	S31600	316	8	1	8.1	16Cr-12Ni-2Mo
ASTM/ASME	A/SA	240	S31603	316L	8	1	8.1	16Cr-12Ni-2Mo
ASTM/ASME	A/SA	240	S31609	316H	8	1	8.1	16Cr-12Ni-2Mo
ASTM/ASME	A/SA	240	S31635	316Ti	8	1	8.1	16Cr-12Ni-2Mo-Ti
ASTM/ASME	A/SA	240	S31640	316Cb	8	1	8.1	16Cr-12Ni-2Mo-Cb
ASTM/ASME	A/SA	240	S31651	316N	8	1	8.1	16Cr-12Ni-2Mo-N
ASTM/ASME	A/SA	240	S31653	316LN	8	1	8.1	16Cr-12Ni-2Mo-N
ASTM/ASME	A/SA	240	S31700	317	8	1	8.1	18Cr-13Ni-3Mo
ASTM/ASME	A/SA	240	S31703	317L	8	1	8.1	18Cr-13Ni-3Mo
ASTM/ASME	A/SA	240	S31725	S31725	8	4	8.1	19Cr-15Ni-4Mo
ASTM/ASME	A/SA	240	S31726	S31726	8	4	8.1	19Cr-15.5Ni-4Mo
ASTM/ASME	A/SA	240	S31753	S31753	8	1	8.1	18Cr-13Ni-3Mo-N
ASTM/ASME	A/SA	240	S31803	S31803	10H	1	10.1	22Cr-5Ni-3Mo-N
ASTM/ASME	A/SA	240	S32003		10H	1	10.1	21Cr-3.5Ni-Mo-N
ASTM/ASME	A/SA	240	S32053		8	4	8.2	23Cr-25Ni-5.5Mo-N
ASTM/ASME	A/SA	240	S32100	321	8	1	8.1	18Cr-10Ni-Ti

Table 1 (continued)

Standard	Specification	No.	UNS	Type/Grade	ASME/AWS P/M-No.	Group No.	ISO/TR 15608:2017 Group	Nominal composition
ASTM/ASME	A/SA	240	S32101		10H	1	10.1	21Cr-5Mn-1.5Ni-Cu-N
ASTM/ASME	A/SA	240	S32109	321H	8	1	8.1	18Cr-10Ni-Ti
ASTM/ASME	A/SA	240	S32202		10H	1	10.1	22Cr-2Ni-Mo-N
ASTM/ASME	A/SA	240	S32205	2205	10H	1	10.1	22Cr-5Ni-3Mo-N
ASTM/ASME	A/SA	240	S32550	S32550	10H	1	10.2	25Cr-5Ni-3Mo-2Cu
ASTM/ASME	A/SA	240	S32615	S32615	8	1	8.1	18Cr-20Ni-5.5Si
ASTM/ASME	A/SA	240	S32750	S32750	10H	1	10.2	25Cr-7Ni-4Mo-N
ASTM/ASME	A/SA	240	S32760	S32760	10H	1	10.2	25Cr-8Ni-3Mo-W-Cu-N
ASTM/ASME	A/SA	240	S32900	329	10H	1	10.2	26Cr-4Ni-Mo
ASTM/ASME	A/SA	240	S32906	S32906	10H	1	10.2	29Cr-6.5Ni-2Mo-N
ASTM/ASME	A/SA	240	S32950	S32950	10H	1	10.2	26Cr-4Ni-Mo-N
ASTM/ASME	A/SA	240	S34565	S34565	8	4	8.3	24Cr-17Ni-6Mn-4.5Mo-N
ASTM/ASME	A/SA	240	S34700	347	8	1	8.1	18Cr-10Ni-Cb
ASTM/ASME	A/SA	240	S34709	347H	8	1	8.1	18Cr-10Ni-Cb
ASTM/ASME	A/SA	240	S34800	348	8	1	8.1	18Cr-10Ni-Cb
ASTM/ASME	A/SA	240	S34809	348H	8	1	8.1	18Cr-10Ni-Cb
ASTM/ASME	A/SA	240	S38100	XM-15	8	1	8.1	18Cr-18Ni-2Si
ASTM/ASME	A/SA	240	S40500	405	7	1	7.1	12Cr-1Al
ASTM/ASME	A/SA	240	S40910	409	7	1	7.1	11Cr-Ti
ASTM/ASME	A/SA	240	S40920	409	7	1	7.1	11Cr-Ti
ASTM/ASME	A/SA	240	S40930	409	7	1	7.1	11Cr-Ti
ASTM/ASME	A/SA	240	S41000	410	6	1	7.2	13Cr
ASTM/ASME	A/SA	240	S41008	410S	7	1	7.2	13Cr
ASTM/ASME	A/SA	240	S41500	S41500	6	4	7.2	13Cr-4.5Ni-Mo
ASTM/ASME	A/SA	240	S42900	429	6	2	7.2	15Cr
ASTM/ASME	A/SA	240	S43000	430	7	2	7.1	17Cr
ASTM/ASME	A/SA	240	S43035	439	7	2	7.1	18Cr-Ti
ASTM/ASME	A/SA	240	S43932	S43932	7	2	7.1	18Cr-Ti-Cb
ASTM/ASME	A/SA	240	S44400	S44400	7	2	7.1	18Cr-2Mo

Table 1 (continued)

Standard	Specification	No.	UNS	Type/Grade	ASME/AWS P/M-No.	Group No.	ISO/TR 15608:2017 Group	Nominal composition
ASTM/ASME	A/SA	240	S44626	XM-33	10I	1	7.1	27Cr-1Mo-Ti
ASTM/ASME	A/SA	240	S44627	XM-27	10I	1	7.1	27Cr-1Mo
ASTM/ASME	A/SA	240	S44635	S44635	10I	1	7.1	25Cr-4Ni-4Mo-Ti
ASTM/ASME	A/SA	240	S44660	S44660	10K	1	7.1	26Cr-3Ni-3Mo
ASTM/ASME	A/SA	240	S44700	S44700	10J	1	7.1	29Cr-4Mo
ASTM/ASME	A/SA	240	S44800	S44800	10K	1	7.1	29Cr-4Mo-2Ni
ASTM	A	242	K11510	1	1	2	1.2	C
ASTM/ASME	A/SA	249	N08367		45		8.2	46Fe-24Ni-21Cr-6Mo-Cu-N
ASTM/ASME	A/SA	249	N08904		45		8.2	44Fe-25Ni-21Cr-Mo
ASTM/ASME	A/SA	249	S20100	TP 201	8	3	8.3	17Cr-4Ni-6Mn
ASTM/ASME	A/SA	249	S20200	TP 202	8	3	8.3	18Cr-5Ni-9Mn
ASTM/ASME	A/SA	249	S20910	TP XM-19	8	3	8.3	22Cr-13Ni-5Mn
ASTM/ASME	A/SA	249	S24000	TP XM-29	8	3	8.3	18Cr-3Ni-12Mn
ASTM/ASME	A/SA	249	S30400	TP304	8	1	8.1	18Cr-8Ni
ASTM/ASME	A/SA	249	S30403	TP304L	8	1	8.1	18Cr-8Ni
ASTM/ASME	A/SA	249	S30409	TP304H	8	1	8.1	18Cr-8Ni
ASTM/ASME	A/SA	249	S30451	TP304N	8	1	8.1	18Cr-8Ni-N
ASTM/ASME	A/SA	249	S30453	TP304LN	8	1	8.1	18Cr-8Ni-N
ASTM/ASME	A/SA	249	S30815	S30815	8	2	8.2	21Cr-11Ni-N
ASTM/ASME	A/SA	249	S30900	TP309	8	2	8.2	23Cr-12Ni
ASTM/ASME	A/SA	249	S30908	TP309S	8	2	8.2	23Cr-12Ni
ASTM/ASME	A/SA	249	S30909	TP309H	8	2	8.2	23Cr-12Ni
ASTM/ASME	A/SA	249	S30940	TP309Cb	8	2	8.2	23Cr-12Ni-Cb
ASTM/ASME	A/SA	249	S30941	TP309HCB	8	2	8.2	23Cr-12Ni-Cb
ASTM/ASME	A/SA	249	S31008	TP310S	8	2	8.2	25Cr-20Ni
ASTM/ASME	A/SA	249	S31009	TP310H	8	2	8.2	25Cr-20Ni
ASTM/ASME	A/SA	249	S31040	TP310Cb	8	2	8.2	25Cr-20Ni-Cb
ASTM/ASME	A/SA	249	S31041	TP310HCB	8	2	8.2	25Cr-20Ni-Cb
ASTM/ASME	A/SA	249	S31050	TP310MoLN	8	2	8.2	25Cr-22Ni-2Mo-N

Table 1 (continued)

Standard	Specification	No.	UNS	Type/Grade	ASME/AWS P/M-No.	Group No.	ISO/TR 15608:2017 Group	Nominal composition
ASTM/ASME	A/SA	249	S31254	S31254	8	4	8.2	20Cr-18Ni-6Mo
ASTM/ASME	A/SA	249	S31600	TP316	8	1	8.1	16Cr-12Ni-2Mo
ASTM/ASME	A/SA	249	S31603	TP316L	8	1	8.1	16Cr-12Ni-2Mo
ASTM/ASME	A/SA	249	S31609	TP316H	8	1	8.1	16Cr-12Ni-2Mo
ASTM/ASME	A/SA	249	S31651	TP316N	8	1	8.1	16Cr-12Ni-2Mo-N
ASTM/ASME	A/SA	249	S31653	TP316LN	8	1	8.1	16Cr-12Ni-2Mo-N
ASTM/ASME	A/SA	249	S31700	TP317	8	1	8.1	18Cr-13Ni-3Mo
ASTM/ASME	A/SA	249	S31703	TP317L	8	1	8.1	18Cr-13Ni-3Mo
ASTM/ASME	A/SA	249	S31725	S31725	8	4	8.1	19Cr-15Ni-4Mo
ASTM/ASME	A/SA	249	S31726	S31726	8	4	8.1	19Cr-15.5Ni-4Mo
ASTM/ASME	A/SA	249	S32053		8	4	8.2	23Cr-25Ni-5.5Mo-N
ASTM/ASME	A/SA	249	S32100	TP321	8	1	8.1	18Cr-10Ni-Ti
ASTM/ASME	A/SA	249	S32109	TP321H	8	1	8.1	18Cr-10Ni-Ti
ASTM/ASME	A/SA	249	S34700	TP347	8	1	8.1	18Cr-10Ni-Cb
ASTM/ASME	A/SA	249	S34709	TP347H	8	1	8.1	18Cr-10Ni-Cb
ASTM/ASME	A/SA	249	S34800	TP348	8	1	8.1	18Cr-10Ni-Cb
ASTM/ASME	A/SA	249	S34809	TP348H	8	1	8.1	18Cr-10Ni-Cb
ASTM/ASME	A/SA	249	S38100	TP XM-15	8	1	8.1	18Cr-18Ni-2Si
ASTM/ASME	A/SA	250	K11422	T1b	3	1	1.1	C-0.5Mo
ASTM/ASME	A/SA	250	K11522	T1	3	1	1.1	C-0.5Mo
ASTM/ASME	A/SA	250	K11547	T2	3	1	4.2	0.5Cr-0.5Mo
ASTM/ASME	A/SA	250	K11562	T12	4	1	5.1	1Cr-0.5Mo
ASTM/ASME	A/SA	250	K11597	T11	4	1	5.1	1.25Cr-0.5Mo-Si
ASTM/ASME	A/SA	250	K12023	T1a	3	1	1.1	C-0.5Mo
ASTM/ASME	A/SA	250	K21590	T22	5A	1	5.2	2.25Cr-1Mo
ASTM/ASME	A/SA	266	K03017	4	1	2	11.1	C-Mn-Si
ASTM/ASME	A/SA	266	K03506	1	1	1	11.1	C-Si
ASTM/ASME	A/SA	266	K03506	2	1	2	11.1	C-Si
ASTM/ASME	A/SA	266	K05001	3	1	2	11.2	C-Si

Table 1 (continued)

Standard	Specification	No.	UNS	Type/Grade	ASME/AWS P/M-No.	Group No.	ISO/TR 15608:2017 Group	Nominal composition
ASTM/ASME	A/SA	268	S40500	TP405	7	1	7.1	12Cr-1Al
ASTM/ASME	A/SA	268	S40800	S40800	7	1	7.1	12Cr-Ti
ASTM/ASME	A/SA	268	S40900	TP409	7	1	7.1	11Cr-Ti
ASTM/ASME	A/SA	268	S41000	TP410	6	1	7.2	13Cr
ASTM/ASME	A/SA	268	S41500	S41500	6	4	7.2	13Cr-4.5Ni-Mo
ASTM/ASME	A/SA	268	S42900	TP429	6	2	7.2	15Cr
ASTM/ASME	A/SA	268	S43000	TP430	7	2	7.1	17Cr
ASTM/ASME	A/SA	268	S43035	TP439	7	2	7.1	18Cr-Ti
ASTM/ASME	A/SA	268	S43036	TP430Ti	7	2	7.1	18Cr-Ti
ASTM/ASME	A/SA	268	S44400	18Cr-2Mo	7	2	7.1	18Cr-2Mo
ASTM/ASME	A/SA	268	S44600	TP 446-1	10I	1	7.1	27Cr
ASTM/ASME	A/SA	268	S44600	TP 446-2	10I	1	7.1	27Cr
ASTM/ASME	A/SA	268	S44626	TP XM-33	10I	1	7.1	27Cr-1Mo-Ti
ASTM/ASME	A/SA	268	S44627	TP XM-27	10I	1	7.1	27Cr-1Mo
ASTM/ASME	A/SA	268	S44635	25-4-4	10I	1	7.1	25Cr-4Ni-4Mo-Ti
ASTM/ASME	A/SA	268	S44660	26-3-3	10K	1	7.1	26Cr-3Ni-3Mo
ASTM/ASME	A/SA	268	S44700	29-4	10J	1	7.1	29Cr-4Mo
ASTM/ASME	A/SA	268	S44735	S44735	10J	1	7.1	29Cr-4Mo-Ti
ASTM/ASME	A/SA	268	S44800	29-4-2	10K	1	7.1	29Cr-4Mo-2Ni
ASTM	A	269	S20910	TPXM-19	8	3	8.3	22Cr-13Ni-5Mn
ASTM	A	269	S21900	TPXM-10	8	3	8.3	20Cr-6Ni-9Mn
ASTM	A	269	S21904	TPXM-11	8	3	8.3	21Cr-6Ni-9Mn
ASTM	A	269	S24000	TPXM-29	8	3	8.3	18Cr-3Ni-12Mn
ASTM	A	269	S30400	TP304	8	1	8.1	18Cr-8Ni
ASTM	A	269	S30403	TP304L	8	1	8.1	18Cr-8Ni
ASTM	A	269	S30453	TP304LN	8	1	8.1	18Cr-8Ni-N
ASTM	A	269	S31600	TP316	8	1	8.1	16Cr-12Ni-2Mo
ASTM	A	269	S31603	TP316L	8	1	8.1	16Cr-12Ni-2Mo
ASTM	A	269	S31653	TP316LN	8	1	8.1	16Cr-12Ni-2Mo-N

Table 1 (continued)

Standard	Specification	No.	UNS	Type/Grade	ASME/AWS P/M-No.	Group No.	ISO/TR 15608:2017 Group	Nominal composition
ASTM	A	269	S31700	TP317	8	1	8.1	18Cr-13Ni-3Mo
ASTM	A	269	S32100	TP321	8	1	8.1	18Cr-10Ni-Ti
ASTM	A	269	S34700	TP347	8	1	8.1	18Cr-10Ni-Cb
ASTM	A	269	S34800	TP348	8	1	8.1	18Cr-10Ni-Cb
ASTM	A	269	S38100	TPXM-15	8	3	8.3	18Cr-18Ni-2Si
ASTM	A	270	S30400	TP304	8	1	8.1	18Cr-8Ni
ASTM	A	271	S30400	TP304	8	1	8.1	18Cr-8Ni
ASTM	A	271	S30409	TP304H	8	1	8.1	18Cr-8Ni
ASTM	A	271	S31600	TP316	8	1	8.1	16Cr-12Ni-2Mo
ASTM	A	271	S31609	TP316H	8	1	8.1	16Cr-12Ni-2Mo
ASTM	A	271	S32100	TP321	8	1	8.1	18Cr-10Ni-Ti
ASTM	A	271	S32109	TP321H	8	1	8.1	18Cr-10Ni-Ti
ASTM	A	271	S34700	TP347	8	1	8.1	18Cr-10Ni-Cb
ASTM	A	271	S34709	TP347H	8	1	8.1	18Cr-10Ni-Cb
ASTM/ASME	A/SA	276	S30400	TP304	8	1	8.1	18Cr-8Ni
ASTM/ASME	A/SA	276	S30403	TP304L	8	1	8.1	18Cr-8Ni
ASTM/ASME	A/SA	276	S31600	TP316	8	1	8.1	16Cr-12Ni-2Mo
ASTM/ASME	A/SA	276	S31603	TP316L	8	1	8.1	16Cr-12Ni-2Mo
ASTM	A	276	S32101		10H	1	10.1	21Cr-5Mn-1.5Ni-Cu-N
ASTM/ASME	A/SA	276	S32205	S32205	10H	1	10.1	22Cr-5Ni-3Mo-N
ASTM/ASME	A/SA	276	S32550		10H	1	10.1	25Cr-5Ni-3Mo-2Cu
ASTM/ASME	A/SA	276	S41000	TP410	6	1	7.2	13Cr
ASTM/ASME	A/SA	283	K01400	A	1	1	1.1	C
ASTM/ASME	A/SA	283	K01702	B	1	1	1.1	C
ASTM/ASME	A/SA	283	K02401	C	1	1	1.1	C
ASTM/ASME	A/SA	283	K02702	D	1	1	1.1	C
ASTM/ASME	A/SA	285	K01700	A	1	1	1.1	C
ASTM/ASME	A/SA	285	K02200	B	1	1	1.1	C
ASTM/ASME	A/SA	285	K02801	C	1	1	11.1	C

Table 1 (continued)

Standard	Specification	No.	UNS	Type/Grade	ASME/AWS P/M-No.	Group No.	ISO/TR 15608:2017 Group	Nominal composition
ASTM	A	297	J92603	HF	8	2	8.2	21Cr-10Ni-2Mn-2Si
ASTM	A	297	J93403	HE	8	2	8.2	28Cr-10Ni-2Mn-2Si
ASTM	A	297	J93503	HH	8	2	8.2	26Cr-13Ni-2Mn-2Si
ASTM	A	297	J94003	HI	8	2	8.2	28Cr-16Ni-2Mn-2Si
ASTM	A	297	J94224	HK	8	2	8.2	26Cr-20Ni-2Mn-2Si
ASTM/ASME	A/SA	299	K02803	A	1	2	11.1	C-Mn-Si
ASTM/ASME	A/SA	299	K02803	B	1	3	11.1	C-Mn-Si
ASTM/ASME	A/SA	302	K12021	A	3	2	1.1	Mn-0.5Mo
ASTM/ASME	A/SA	302	K12022	B	3	3	1.2	Mn-0.5Mo
ASTM/ASME	A/SA	312	N08367	N08367	45		8.2	46Fe-24Ni-21Cr-6Mo-Cu-N
ASTM/ASME	A/SA	312	N08904		45		8.2	44Fe-25Ni-21Cr-Mo
ASTM/ASME	A/SA	312	S20910	TP XM-19	8	3	8.3	22Cr-13Ni-5Mn
ASTM/ASME	A/SA	312	S21904	TP XM-11	8	3	8.3	21Cr-6Ni-9Mn
ASTM/ASME	A/SA	312	S24000	TP XM-29	8	3	8.3	18Cr-3Ni-12Mn
ASTM/ASME	A/SA	312	S30400	TP304	8	1	8.1	18Cr-8Ni
ASTM/ASME	A/SA	312	S30403	TP304L	8	1	8.1	18Cr-8Ni
ASTM/ASME	A/SA	312	S30409	TP304H	8	1	8.1	18Cr-8Ni
ASTM/ASME	A/SA	312	S30451	TP304N	8	1	8.1	18Cr-8Ni-N
ASTM/ASME	A/SA	312	S30453	TP304LN	8	1	8.1	18Cr-8Ni-N
ASTM/ASME	A/SA	312	S30600	S30600	8	1	8.1	18Cr-15Ni-4Si
ASTM/ASME	A/SA	312	S30815	S30815	8	2	8.2	21Cr-11Ni-N
ASTM/ASME	A/SA	312	S30908	TP309S	8	2	8.2	23Cr-12Ni
ASTM/ASME	A/SA	312	S30909	TP309H	8	2	8.2	23Cr-12Ni
ASTM/ASME	A/SA	312	S30940	TP309Cb	8	2	8.2	23Cr-12Ni-Cb
ASTM/ASME	A/SA	312	S30941	TP309HCb	8	2	8.2	23Cr-12Ni-Cb
ASTM/ASME	A/SA	312	S31008	TP310S	8	2	8.2	25Cr-20Ni
ASTM/ASME	A/SA	312	S31009	TP310H	8	2	8.2	25Cr-20Ni
ASTM/ASME	A/SA	312	S31040	TP310Cb	8	2	8.2	25Cr-20Ni-Cb
ASTM/ASME	A/SA	312	S31041	TP310HCb	8	2	8.2	25Cr-20Ni-Cb

Table 1 (continued)

Standard	Specification	No.	UNS	Type/Grade	ASME/AWS P/M-No.	Group No.	ISO/TR 15608:2017 Group	Nominal composition
ASTM/ASME	A/SA	312	S31050	TP310MoLN	8	2	8.2	25Cr-22Ni-2Mo-N
ASTM/ASME	A/SA	312	S31254	S31254	8	4	8.2	20Cr-18Ni-6Mo
ASTM/ASME	A/SA	312	S31600	TP316	8	1	8.1	16Cr-12Ni-2Mo
ASTM/ASME	A/SA	312	S31603	TP316L	8	1	8.1	16Cr-12Ni-2Mo
ASTM/ASME	A/SA	312	S31609	TP316H	8	1	8.1	16Cr-12Ni-2Mo
ASTM/ASME	A/SA	312	S31635	TP316Ti	8	1	8.1	16Cr-12Ni-2Mo-Ti
ASTM/ASME	A/SA	312	S31651	TP316N	8	1	8.1	16Cr-12Ni-2Mo-N
ASTM/ASME	A/SA	312	S31653	TP316LN	8	1	8.1	16Cr-12Ni-2Mo-N
ASTM/ASME	A/SA	312	S31700	TP317	8	1	8.1	18Cr-13Ni-3Mo
ASTM/ASME	A/SA	312	S31703	TP317L	8	1	8.1	18Cr-13Ni-3Mo
ASTM/ASME	A/SA	312	S31725	S31725	8	4	8.1	19Cr-15Ni-4Mo
ASTM/ASME	A/SA	312	S31726	S31726	8	4	8.1	19Cr-15.5Ni-4Mo
ASTM/ASME	A/SA	312	S32053		8	4	8.2	23Cr-25Ni-5.5Mo-N
ASTM/ASME	A/SA	312	S32100	TP321	8	1	8.1	18Cr-10Ni-Ti
ASTM/ASME	A/SA	312	S32109	TP321H	8	1	8.1	18Cr-10Ni-Ti
ASTM/ASME	A/SA	312	S32615	S32615	8	1	8.1	18Cr-20Ni-5.5Si
ASTM/ASME	A/SA	312	S34565	S34565	8	4	8.3	24Cr-17Ni-6Mn-4.5Mo-N
ASTM/ASME	A/SA	312	S34700	TP347	8	1	8.1	18Cr-10Ni-Cb
ASTM/ASME	A/SA	312	S34709	TP347H	8	1	8.1	18Cr-10Ni-Cb
ASTM/ASME	A/SA	312	S34751	TP347LN	8	1	8.1	18Cr-10Ni-Cb-N
ASTM/ASME	A/SA	312	S34800	TP348	8	1	8.1	18Cr-10Ni-Cb
ASTM/ASME	A/SA	312	S34809	TP348H	8	1	8.1	18Cr-10Ni-Cb
ASTM/ASME	A/SA	312	S38100	TP XM-15	8	1	8.1	18Cr-18Ni-2Si
ASTM/ASME	A/SA	333		10	1	3	11.1	C-Mn-Si
ASTM/ASME	A/SA	333	K03006	6	1	1	11.1	C-Mn-Si
ASTM/ASME	A/SA	333	K03008	1	1	1	11.1	C-Mn
ASTM/ASME	A/SA	333	K11267	4	4	2	4.1	0.75Cr-0.75Ni-Cu-Al
ASTM/ASME	A/SA	333	K21903	7	9A	1	9.1	2.5Ni
ASTM/ASME	A/SA	333	K22035	9	9A	1	9.1	2Ni-1Cu

Table 1 (continued)

Standard	Specification	No.	UNS	Type/Grade	ASME/AWS P/M-No.	Group No.	ISO/TR 15608:2017 Group	Nominal composition
ASTM/ASME	A/SA	333	K31918	3	9B	1	9.2	3.5Ni
ASTM/ASME	A/SA	333	K81340	8	11A	1	9.3	9Ni
ASTM/ASME	A/SA	334	K03006	6	1	1	11.1	C-Mn-Si
ASTM/ASME	A/SA	334	K03008	1	1	1	11.1	C-Mn
ASTM/ASME	A/SA	334	K21903	7	9A	1	9.1	2.5Ni
ASTM/ASME	A/SA	334	K22035	9	9A	1	9.1	2Ni-1Cu
ASTM/ASME	A/SA	334	K31918	3	9B	1	9.2	3.5Ni
ASTM/ASME	A/SA	334	K81340	8	11A	1	9.3	9Ni
ASTM/ASME	A/SA	335	K11522	P1	3	1	1.1	C-0.5Mo
ASTM/ASME	A/SA	335	K11547	P2	3	1	4.2	0.5Cr-0.5Mo
ASTM/ASME	A/SA	335	K11562	P12	4	1	5.1	1Cr-0.5Mo
ASTM/ASME	A/SA	335	K11597	P11	4	1	5.1	1.25Cr-0.5Mo-Si
ASTM/ASME	A/SA	335	K21590	P22	5A	1	5.2	2.25Cr-1Mo
ASTM/ASME	A/SA	335	K31545	P21	5A	1	5.2	3Cr-1Mo
ASTM/ASME	A/SA	335	K41245	P5c	5B	1	5.3	5Cr-0.5Mo-Ti
ASTM/ASME	A/SA	335	K41545	P5	5B	1	5.3	5Cr-0.5Mo
ASTM/ASME	A/SA	335	K51545	P5b	5B	1	5.3	5Cr-0.5Mo-Si
ASTM/ASME	A/SA	335	K90901	P91	15E	1	6.4	9Cr-1Mo-V
ASTM/ASME	A/SA	335	K90941	P9	5B	1	5.4	9Cr-1Mo
ASTM/ASME	A/SA	335	K92460	P92	15E	1	6.4	9Cr-2W
ASTM/ASME	A/SA	336	K11564	F12	4	1	5.1	1Cr-0.5Mo
ASTM/ASME	A/SA	336	K11572	F11, Cl.2	4	1	5.1	1.25Cr-0.5Mo-Si
ASTM/ASME	A/SA	336	K11572	F11, Cl.3	4	1	5.1	1.25Cr-0.5Mo-Si
ASTM/ASME	A/SA	336	K11597	F11, Cl.1	4	1	5.1	1.25Cr-0.5Mo-Si
ASTM/ASME	A/SA	336	K12520	F1	3	2	1.1	C-0.5Mo
ASTM/ASME	A/SA	336	K21590	F22, Cl.1	5A	1	5.2	2.25Cr-1Mo
ASTM/ASME	A/SA	336	K21590	F22, Cl.3	5A	1	5.2	2.25Cr-1Mo
ASTM/ASME	A/SA	336	K31390	F3VCb	5C	1	6.2	3Cr-1Mo-0.25V-Cb-Ca
ASTM/ASME	A/SA	336	K31545	F21, Cl.1	5A	1	5.2	3Cr-1Mo

Table 1 (continued)

Standard	Specification	No.	UNS	Type/Grade	ASME/AWS P/M-No.	Group No.	ISO/TR 15608:2017 Group	Nominal composition
ASTM/ASME	A/SA	336	K31545	F21, Cl.3	5A	1	5.2	3Cr-1Mo
ASTM/ASME	A/SA	336	K31830	F3V	5C	1	6.2	3Cr-1Mo-V-Ti-B
ASTM/ASME	A/SA	336	K31835	F22V	5C	1	6.2	2.25Cr-1Mo-V
ASTM/ASME	A/SA	336	K41545	F5	5B	1	5.3	5Cr-0.5Mo
ASTM/ASME	A/SA	336	K42544	F5A	5B	1	5.3	5Cr-0.5Mo
ASTM/ASME	A/SA	336	K90901	F91	15E	1	6.4	9Cr-1Mo-V
ASTM/ASME	A/SA	336	K90941	F9	5B	1	5.4	9Cr-1Mo
ASTM/ASME	A/SA	336	S20910	FXM-19	8	3	8.3	22Cr-13Ni-5Mn
ASTM/ASME	A/SA	336	S21904	FXM-11	8	3	8.3	21Cr-6Ni-9Mn
ASTM/ASME	A/SA	336	S30400	F304	8	1	8.1	18Cr-8Ni
ASTM/ASME	A/SA	336	S30403	F304L	8	1	8.1	18Cr-8Ni
ASTM/ASME	A/SA	336	S30409	F304H	8	1	8.1	18Cr-8Ni
ASTM/ASME	A/SA	336	S30451	F304N	8	1	8.1	18Cr-8Ni-N
ASTM/ASME	A/SA	336	S30453	F304LN	8	1	8.1	18Cr-8Ni-N
ASTM/ASME	A/SA	336	S30600	F46	8	1	8.1	18Cr-15Ni-4Si
ASTM/ASME	A/SA	336	S31000	F310	8	2	8.2	25Cr-20Ni
ASTM/ASME	A/SA	336	S31600	F316	8	1	8.1	16Cr-12Ni-2Mo
ASTM/ASME	A/SA	336	S31603	F316L	8	1	8.1	16Cr-12Ni-2Mo
ASTM/ASME	A/SA	336	S31609	F316H	8	1	8.1	16Cr-12Ni-2Mo
ASTM/ASME	A/SA	336	S31651	F316N	8	1	8.1	16Cr-12Ni-2Mo-N
ASTM/ASME	A/SA	336	S31653	F316LN	8	1	8.1	16Cr-12Ni-2Mo-N
ASTM/ASME	A/SA	336	S32100	F321	8	1	8.1	18Cr-10Ni-Ti
ASTM/ASME	A/SA	336	S32109	F321H	8	1	8.1	18Cr-10Ni-Ti
ASTM/ASME	A/SA	336	S34700	F347	8	1	8.1	18Cr-10Ni-Cb
ASTM/ASME	A/SA	336	S34709	F347H	8	1	8.1	18Cr-10Ni-Cb
ASTM/ASME	A/SA	336	S34800	F348	8	1	8.1	18Cr-10Ni-Cb
ASTM/ASME	A/SA	336	S34809	F348H	8	1	8.1	18Cr-10Ni-Cb
ASTM/ASME	A/SA	336	S41000	F6	6	3	7.2	13Cr
ASTM/ASME	A/SA	336	S44627	FXM-27Cb	10I	1	7.1	27Cr-1Mo

Table 1 (continued)

Standard	Specification	No.	UNS	Type/Grade	ASME/AWS P/M-No.	Group No.	ISO/TR 15608:2017 Group	Nominal composition
ASTM/ASME	A/SA	350	K03009	LF1	1	1	11.1	C-Mn-Si
ASTM/ASME	A/SA	350	K03011	LF2	1	2	11.1	C-Mn-Si
ASTM/ASME	A/SA	350	K12202	LF6, Cl.1	1	1	1.2	C-Mn-Si-V
ASTM/ASME	A/SA	350	K12202	LF6, Cl.2	1	3	4.1	C-Mn-Si-V
ASTM/ASME	A/SA	350	K12202	LF6, Cl.3	1	2	1.3	C-Mn-Si-V
ASTM/ASME	A/SA	350	K13050	LF5 Cl.1	9A	1	9.1	1.5Ni
ASTM/ASME	A/SA	350	K13050	LF5 Cl.2	9A	1	9.1	1.5Ni
ASTM/ASME	A/SA	350	K20747	LF787, Cl.2	1	2	3.3	1Ni-1Cu-0.75Cr-Mo-Nb
ASTM/ASME	A/SA	350	K20747	LF787, Cl.3	1	3	3.3	1Ni-1Cu-0.75Cr-Mo-Nb
ASTM/ASME	A/SA	350	K22036	LF9	9A	1	9.1	2Ni-1Cu
ASTM/ASME	A/SA	350	K32025	LF3	9B	1	9.2	3.5Ni
ASTM	A	351	J91150	CA15	6	3	7.2	13Cr
ASTM/ASME	A/SA	351	J92500	CF3	8	1	8.1	18Cr-8Ni
ASTM/ASME	A/SA	351	J92500	CF3A	8	1	8.1	18Cr-8Ni
ASTM/ASME	A/SA	351	J92590	CF10	8	1	8.1	19Cr-9Ni-0.5Mo
ASTM/ASME	A/SA	351	J92600	CF8	8	1	8.1	18Cr-8Ni
ASTM/ASME	A/SA	351	J92600	CF8A	8	1	8.1	18Cr-8Ni
ASTM/ASME	A/SA	351	J92710	CF8C	8	1	8.1	18Cr-10Ni-Cb
ASTM/ASME	A/SA	351	J92800	CF3M	8	1	8.1	18Cr-12Ni-2Mo
ASTM/ASME	A/SA	351	J92802	CE20N	8	2	8.2	25Cr-8Ni-N
ASTM/ASME	A/SA	351	J92900	CF8M	8	1	8.1	18Cr-12Ni-2Mo
ASTM/ASME	A/SA	351	J92901	CF10M	8	1	8.1	19Cr-9Ni-2Mo
ASTM/ASME	A/SA	351	J92971	CF10MC	8	1	8.1	16Cr-14Ni-2Mo
ASTM/ASME	A/SA	351	J93000	CG8M	8	1	8.1	19Cr-10Ni-3Mo
ASTM/ASME	A/SA	351	J93254	CK3MCuN	8	4	8.2	20Cr-18Ni-6Mo
ASTM/ASME	A/SA	351	J93345	CE8MN	10H	1	10.2	24Cr-10Ni-4Mo-N
ASTM/ASME	A/SA	351	J93370	CD4MCu	10H	1	10.2	26Cr-5Ni-2Mo-3Cu
ASTM/ASME	A/SA	351	J93380	CD3MWCuN	10H	1	10.2	25Cr-8Ni-3Mo-W-Cu-N
ASTM/ASME	A/SA	351	J93400	CH8	8	2	8.2	25Cr-12Ni

Table 1 (continued)

Standard	Specification	No.	UNS	Type/Grade	ASME/AWS P/M-No.	Group No.	ISO/TR 15608:2017 Group	Nominal composition
ASTM/ASME	A/SA	351	J93401	CH10	8	2	8.2	25Cr-12Ni
ASTM/ASME	A/SA	351	J93402	CH20	8	2	8.2	25Cr-12Ni
ASTM/ASME	A/SA	351	J93790	CG6MMN	8	3	8.3	22Cr-12Ni-5Mn
ASTM/ASME	A/SA	351	J94202	CK20	8	2	8.2	25Cr-20Ni
ASTM/ASME	A/SA	351	J94203	HK30	8	2	8.2	25Cr-20Ni-0.5Mo
ASTM/ASME	A/SA	351	J94204	HK40	8	2	8.2	25Cr-20Ni-0.5Mo
ASTM/ASME	A/SA	351	J94651	CN3MN	45		8.2	46Fe-24Ni-21Cr-6Mo-Cu-N
ASTM/ASME	A/SA	351	N08007	CN7M	45		8.2	28Ni-19Cr-Cu-Mo
ASTM/ASME	A/SA	351	N08151	CT15C	45		45	32Ni-45Fe-20Cr-Cb
ASTM/ASME	A/SA	351	N08603	HT30	45		45	35Ni-15Cr-0.5Mo
ASTM/ASME	A/SA	352	J02504	LCA	1	1	11.1	C-Si
ASTM/ASME	A/SA	352	J02505	LCC	1	2	11.1	C-Mn-Si
ASTM/ASME	A/SA	352	J03003	LCB	1	1	1.1	C-Si
ASTM/ASME	A/SA	352	J12522	LC1	3	1	1.1	C-0.5Mo
ASTM/ASME	A/SA	352	J22500	LC2	9A	1	9.1	2.5Ni
ASTM/ASME	A/SA	352	J31550	LC3	9B	1	9.3	3.5Ni
ASTM/ASME	A/SA	352	J41500	LC4	9C	1	9.3	4.5Ni
ASTM/ASME	A/SA	352	J42215	LC2-1	11A	5	9.2	3Ni-1.5Cr-0.5Mo
ASTM/ASME	A/SA	352	J91540	CA6NM	6	4	7.2	13Cr-4Ni
ASTM/ASME	A/SA	353	K81340		11A	1	9.3	9Ni
ASTM	A	356	J03502	1	1	2	11.1	C-Si
ASTM	A	356	J11697	8	4	1	6.2	1Cr-1Mo-V
ASTM	A	356	J12073	6	4	1	5.1	1.25Cr-0.5Mo
ASTM	A	356	J12523	2	3	1	1.1	C-0.5Mo
ASTM	A	356	J21610	9	4	1	6.2	1Cr-1Mo-V
ASTM	A	356	J22090	10	5A	1	5.2	2.25Cr-1Mo
ASTM	A	356	J84090	12A	15E	1	6.4	9Cr-1Mo-V
ASTM/ASME	A/SA	358	N08367	N08367	45		8.2	46Fe-24Ni-21Cr-6Mo-Cu-N
ASTM/ASME	A/SA	358	S20910	XM-19	8	3	8.3	22Cr-13Ni-5Mn