

Table 11 — Material groups and temperature limitations for ASTM based non-alloy and low alloy steels

ASTM No.	Grade	Mtl. Grp.	Limitation	ASTM No.	Grade	Mtl. Grp.	Limitation
A105		1C1	Not for prolonged use over 425 °C	A182	F2	1C7	Not to be used over 540 °C
A216	WCB	1C1	Not for prolonged use over 425 °C	A204	C	1C7	Not for prolonged use over 470 °C
A350	LF2	1C1	Not for prolonged use over 425 °C	A217	WC4	1C7	Not to be used over 540 °C. ^a
A515	70	1C1	Not for prolonged use over 425 °C	A217	WC5	1C7	a
A516	70	1C1	Not for prolonged use over 425 °C	A691	CM-75	1C7	—
A537	Cl 1	1C1	Not to be used over 370 °C	A335	P11	1C8	Not for prolonged use over 595 °C
A672	B70	1C1	Not for prolonged use over 425 °C	A335	P12	1C8	Not for prolonged use over 595 °C
A672	C70	1C1	Not for prolonged use over 425 °C	A335	P22	1C8	Not for prolonged use over 595 °C
A675	70	1C1	Not for prolonged use over 425 °C	A369	FP11	1C8	Not for prolonged use over 595 °C
A696	Gr C	1C1	—	A369	FP12	1C8	Not for prolonged use over 595 °C
A106	C	1C2	Not to be used over 425 °C	A369	FP22	1C8	Not for prolonged use over 595 °C
A203	B	1C2	Not for prolonged use over 425 °C	A387	11 Cl.1	1C8	Not for prolonged use over 595 °C
A203	E	1C2	Not for prolonged use over 425 °C	A387	12 Cl.2	1C8	Not for prolonged use over 595 °C
A216	WCC	1C2	Not for prolonged use over 425 °C	A387	22 Cl.1	1C8	Not for prolonged use over 595 °C
A350	LF3	1C2	Not to be used over 345 °C	A691	1¼CR	1C8	Not for prolonged use over 595 °C
A352	LC2	1C2	Not to be used over 345 °C	A691	1CR	1C8	Not for prolonged use over 595 °C ^a
A352	LC3	1C2	Not to be used over 345 °C	A691	2¼CR	1C8	Not for prolonged use over 595 °C
A352	LCC	1C2	Not to be used over 345 °C	A182	F11 Cl2	1C9	Not for prolonged use over 595 °C ^a
A203	A	1C3	Not for prolonged use over 425 °C	A182	F12 Cl2	1C9	Not for prolonged use over 595 °C
A203	D	1C3	Not for prolonged use over 425 °C	A217	WC6	1C9	Not to be used over 595 °C. ^a
A352	LCB	1C3	Not to be used over 345 °C	A387	11 Cl.2	1C9	Not for prolonged use over 595 °C
A515	65	1C3	Not for prolonged use over 425 °C	A739	B11	1C9	Not for prolonged use over 595 °C
A516	65	1C3	Not for prolonged use over 425 °C	A182	F22 Cl3	1C10	Not for prolonged use over 595 °C ^a
A672	B65	1C3	Not for prolonged use over 425 °C	A217	WC9	1C10	Not to be used over 595 °C. ^a
A672	C65	1C3	Not for prolonged use over 425 °C	A387	22 Cl.2	1C10	Not for prolonged use over 595 °C
A675	65	1C3	Not for prolonged use over 425 °C	A739	B22	1C10	Not for prolonged use over 595 °C
A106	B	1C4	Not for prolonged use over 425 °C	A182	F21	1C11	Not for prolonged use over 595 °C
A350	LF1	1C4	Not for prolonged use over 425 °C	A302	A	1C11	Not to be used over 470 °C
A515	60	1C4	Not for prolonged use over 425 °C	A302	B	1C11	Not to be used over 470 °C
A516	60	1C4	Not for prolonged use over 425 °C	A302	C	1C11	Not to be used over 470 °C
A672	B60	1C4	Not for prolonged use over 425 °C	A302	D	1C11	Not to be used over 470 °C
A672	C60	1C4	Not for prolonged use over 425 °C	A387	21 Cl.2	1C11	Not for prolonged use over 595 °C
A675	60	1C4	Not for prolonged use over 425 °C	A537	Cl.2	1C11	Not to be used over 370 °C
A696	Gr B	1C4	—	A335	P5	1C12	—
A182	F1	1C5	Not for prolonged use over 470 °C	A335	P5b	1C12	—
A204	A	1C5	Not for prolonged use over 470 °C	A369	FP5	1C12	—
A204	B	1C5	Not for prolonged use over 470 °C	A387	5 Cl.1	1C12	—
A217	WC1	1C5	Not for prolonged use over 470 °C ^a	A387	5 Cl.2	1C12	—
A352	LC1	1C5	Not to be used over 345 °C	A691	5CR	1C12	—
A691	CM-70	1C5	Not for prolonged use over 470 °C	A182	F5	1C13	—
A335	P1	1C6	Not for prolonged use over 470 °C	A182	F5a	1C13	—
A369	FP1	1C6	Not for prolonged use over 470 °C	A217	C5	1C13	a
A387	12 Cl.1	1C6	Not for prolonged use over 593 °C	A182	F9	1C14	—
A387	2 Cl.1	1C6	Not to be used over 540 °C	A217	C12	1C14	a
A387	2 Cl.2	1C6	Not to be used over 540 °C	A182	F91	1C15	
A691	½CR	1C6	Not for prolonged use over 540 °C	A217	C12A	1C15	
				A335	P91	1C15	
				A387	91 Cl.2	1C15	

^a Use only at temperatures above 540 °C when carbon content is 0,04 % or higher.

Table 12 — Material groups and temperature limitations for ASTM based high alloy steels

ASTM No.	Grade	Mtl. Grp.	Limitation	ASTM No.	Grade	Mtl. Grp.	Limitation
A182	F304	2C1	a	A182	F347	2C5	Not to be used over 540 °C
A182	F304H	2C1	—	A182	F347H	2C5	—
A240	304	2C1	a	A182	F348	2C5	Not to be used over 540 °C
A240	304H	2C1	—	A182	F348H	2C5	—
A312	TP304	2C1	a	A240	347	2C5	Not to be used over 540 °C
A312	TP304H	2C1	—	A240	347H	2C5	—
A351	CF3	2C1	Not to be used over 425 °C	A240	348	2C5	Not to be used over 540 °C
A351	CF8	2C1	a	A240	348H	2C5	—
A358	304	2C1	a	A312	TP347	2C5	Not to be used over 540 °C
A376	TP304	2C1	a	A312	TP347H	2C5	—
A376	TP304H	2C1	—	A312	TP348	2C5	Not to be used over 540 °C
A312	FP304	2C1	a	A312	TP348H	2C5	—
A312	FP304H	2C1	—	A351	CF8C	2C5	a
A479	304	2C1	a	A358	347	2C5	Not to be used over 540 °C
A479	304H	2C1	—	A376	TP347	2C5	Not to be used over 540 °C
A182	F316	2C2	a	A376	TP347H	2C5	—
A182	F316H	2C2	—	A376	TP348	2C5	Not to be used over 540 °C
A240	316	2C2	a	A430	FP347	2C5	Not to be used over 540 °C
A240	316H	2C2	—	A430	FP347H	2C5	—
A240	317	2C2	a	A479	347	2C5	Not to be used over 540 °C
A312	TP316	2C2	a	A479	347H	2C5	—
A312	TP316H	2C2	—	A479	348	2C5	Not to be used over 540 °C
A312	TP317	2C2	a	A479	348H	2C5	—
A351	CF3A	2C2	Not to be used over 345 °C	A240	309H	2C6	—
A351	CF3M	2C2	Not to be used over 455 °C	A240	309S	2C6	a b
A351	CF8A	2C2	Not to be used over 345 °C	A312	TP309H	2C6	—
A351	CF8M	2C2	a	A351	CH20	2C6	a
A351	CG8M	2C2	Not to be used over 540 °C	A351	CH8	2C6	a
A358	316	2C2	a	A358	309H	2C6	—
A376	TP316	2C2	a	A182	F310H	2C7	—
A376	TP316H	2C2	—	A240	310H	2C7	—
A312	FP316	2C2	a	A240	310S	2C7	a b
A312	FP316H	2C2	—	A312	TP310H	2C7	—
A479	316	2C2	a	A351	CK20	2C7	a
A479	316H	2C2	—	A358	310H	2C7	—
A182	F304L	2C3	Not to be used over 425 °C	A479	310H	2C7	—
A182	F316L	2C3	—	A479	310S	2C7	a b
A240	304L	2C3	Not to be used over 425 °C	A182	F44	2C8	—
A240	316L	2C3	—	A182	F51	2C8	Not to be used over 315 °C
A312	TP304L	2C3	Not to be used over 425 °C	A182	F53	2C8	Not to be used over 315 °C
A312	TP316L	2C3	—	A182	F55	2C8	Not to be used over 315 °C
A479	304L	2C3	Not to be used over 425 °C	A240	S31254	2C8	—
A479	316L	2C3	—	A240	S31803	2C8	Not to be used over 315 °C
A182	F321	2C4	Not to be used over 540 °C	A240	S32750	2C8	Not to be used over 315 °C
A182	F321H	2C4	—	A240	S32760	2C8	Not to be used over 315 °C
A240	321	2C4	Not to be used over 540 °C	A312	S31254	2C8	—
A240	321H	2C4	—	A351	CD3MW CuN	2C8	Not to be used over 315 °C

Table 12 (continued)

ASTM No.	Grade	Mtl. Grp.	Limitation	ASTM No.	Grade	Mtl. Grp.	Limitation
A312	TP321	2C4	Not to be used over 540 °C	A351	CD4MCu	2C8	Not to be used over 315 °C
A312	TP321H	2C4	—	A351	CE8MN	2C8	Not to be used over 315 °C
A358	321	2C4	Not to be used over 540 °C	A351	CK3MCu N	2C8	—
A376	TP321	2C4	Not to be used over 540 °C	A358	S31254	2C8	
A376	TP321H	2C4	—	A479	S31803	2C8	Not to be used over 315 °C
A430	FP321	2C4	Not to be used over 540 °C	A479	S32154	2C8	—
A430	FP321H	2C4	—	A479	S32750	2C8	Not to be used over 315 °C
A479	321	2C4	Not to be used over 540 °C	A789	S31803	2C8	Not to be used over 315 °C
A479	321H	2C4	—	A789	S32750	2C8	Not to be used over 315 °C
				A789	S32760	2C8	Not to be used over 315 °C
				A790	S31803	2C8	Not to be used over 315 °C
				A790	S32750	2C8	Not to be used over 315 °C
				A790	S32760	2C8	Not to be used over 315 °C
<p>^a Use only at temperatures above 540 °C when carbon content is 0,04 % or higher.</p> <p>^b For service temperature of greater than 565 °C the grain size shall be not finer than ASTM No.6.</p>							