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Table 1 — Stainless steel grades — Chemical composition

Stainless steel grade		Chemical composition [a] (cast analysis, mass fraction in %) [b]										Other elements and notes
		C	Si	Mn	P	S	Cr	Mo	Ni	Cu	N	
Austenitic	A1	0,12	1,00	6,5	0,020	0,15 to 0,35	16,0 to 19,0	0,70	5,0 to 10,0	1,75 to 2,25	—	c,d,e
	A2	0,10	1,00	2,00	0,050	0,030	15,0 to 20,0	— [f]	8,0 to 19,0	4,0	—	g,h
	A3	0,08	1,00	2,00	0,045	0,030	17,0 to 19,0	— [f]	9,0 to 12,0	1,00	—	5C ≤ Ti ≤ 0,80 and/or 10C ≤ Nb ≤ 1,00
	A4	0,08	1,00	2,00	0,045	0,030	16,0 to 18,5	2,00 to 3,00	10,0 to 15,0	4,0	—	h,i
	A5	0,08	1,00	2,00	0,045	0,030	16,0 to 18,5	2,00 to 3,00	10,5 to 14,0	1,00	—	5C ≤ Ti ≤ 0,80 and/or 10C ≤ Nb ≤ 1,00 [i]
	A8	0,030	1,00	2,00	0,040	0,030	19,0 to 22,0	6,0 to 7,0	17,5 to 26,0	1,50	—	—
Martensitic	C1	0,09 to 0,15	1,00	1,00	0,050	0,030	11,5 to 14,0	—	1,00	—	—	i
	C3	0,17 to 0,25	1,00	1,00	0,040	0,030	16,0 to 18,0	—	1,50 to 2,50	—	—	—
	C4	0,08 to 0,15	1,00	1,50	0,060	0,15 to 0,35	12,0 to 14,0	0,60	1,00	—	—	c,i
Ferritic	F1	0,08	1,00	1,00	0,040	0,030	15,0 to 18,0	— [f]	1,00	—	—	j
Duplex	D2	0,040	1,00	6,0	0,040	0,030	19,0 to 24,0	0,10 to 1,00	1,50 to 5,5	3,00	0,05 to 0,20	Cr + 3,3Mo +16N ≤ 24,0 [k]
	D4	0,040	1,00	6,0	0,040	0,030	21,0 to 25,0	0,10 to 2,00	1,00 to 5,5	3,00	0,05 to 0,30	24,0 < Cr + 3,3Mo + 16N [k]
	D6	0,030	1,00	2,00	0,040	0,015	21,0 to 23,0	2,50 to 3,5	4,5 to 6,5	—	0,08 to 0,35	—
	D8	0,030	1,00	2,00	0,035	0,015	24,0 to 26,0	3,00 to 4,5	6,0 to 8,0	2,50	0,20 to 0,35	W ≤ 1,00

[a] According to material standards, values are maximum unless otherwise indicated and the number of digits shown is in accordance with usual rules, see e.g. EN 10088 (all parts).

[b] In case of dispute, product analysis applies.

[c] Selenium can be used to replace sulphur, however restrictions may apply to its use.

[d] If the nickel content is below 8,0 %, the minimum manganese content shall be 5,0 %.

[e] There is no minimum limit to the copper content provided that the nickel content is greater than 8,0 %.

[f] Molybdenum may be present at the discretion of the manufacturer. However, if for some applications limiting of the molybdenum content is essential, this shall be stated at the time of ordering by the purchaser.

[g] If the chromium content is below 17,0 %, the minimum nickel content should be 12,0 %.

[h] For austenitic stainless steels having a maximum carbon content of 0,030 %, nitrogen may be present but shall not exceed 0,22 %.

[i] At the discretion of the manufacturer the carbon content may be higher as necessary in order to obtain the specified mechanical properties for larger diameters, but shall not exceed 0,12 % for austenitic steels.

[j] Titanium and/or niobium may be included to improve corrosion resistance.

[k] This formula is used solely for the purpose of classifying duplex steels in accordance with this document (it is not intended to be used as a selection criterion for corrosion resistance).

For the choice of the appropriate stainless steel grade suitable for a specific application, see ISO 3506-6. Examples of stainless steels in accordance with Table 1 are also given in ISO 3506-6.

6.2 Heat treatment for martensitic stainless steel fasteners

Fasteners of grades and property classes C1-70, C3-80 and C4-70 shall be quenched and tempered.

Fasteners of grade and property class C1-110 shall be quenched and tempered, with a minimum tempering temperature of 275 °C.

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