Chemical composition (cast analysis) [1][7] of stainless steel flat products

GRADES	Name Designation EN	EN Number Designation	Designation AISI/ASTM	C	Si	Mn	P max	S	N	Cr	Mo	Ni	Others
DUPLEX	X2CrNiMoN22-5-3 [8]	1.4462 [6]	2205	≤0,030	≤1,00	≤2,00	0,035	≤0,015	0,10 to 0,22	21,00 to 23,00	2,50 to 3,50	4,50 to 6,50	
	X2CrNiN23-4 [9]	1.4362 [9]	2304	≤0,030	≤1,00	≤2,00	0,035	≤0,015	0,05 to 0,20	22,00 to 24,00	0,10 to 0,60	3,50 to 5,50	Cu:0,10 to 0,60
	X2CrNiCuN23-4	1.4655		≤0,030	≤1,00	≤2,00	0,035	≤0,015	0,05 to 0,20	22,00 to 24,00	0,10 to 0,60	3,50 to 5,50	Cu:1,00 to 3,00
	X2CrNiMoN25-7-4 [9]	1.4410 [9]	2507	≤0,030	≤1,00	≤2,00	0,035	≤0,015	0,24 to 0,35	24,00 to 26,00	3,00 to 4,50	6,00 to 8,00	
	X2CrNiMoCuN25-6-3	1.4507	255	≤0,030	≤0,70	≤2,00	0,035	≤0,015	0,20 to 0,30	24,00 to 26,00	3,00 to 4,00	6,00 to 8,00	Cu:1,00 to 2,50
	X2CrNiMoCuWN25-7-4	1.4501		≤0,030	≤1,00	≤1,00	0,035	≤0,015	0,20 to 0,30	24,00 to 26,00	3,00 to 4,00	6,00 to 8,00	Cu:0,50 to 1,00; W: 0,50 to 1,00
	X2CrNiMoSi18-5-3	1.4424		≤0,030	1,40 to 2,00	1,20 to 2,00	0,035	≤0,015	0,05 to 0,10	18,00 to 19,00	2,50 to 3,00	4,50 to 5,20	
	X2CrNiMoN29-7-2 [9]	1.4477 [9]		≤0,030	≤0,50	0,80 to 1,50	0,030	≤0,015	0,30 to 0,40	28,00 to 30,00	1,50 to 2,60	5,80 to 7,50	Cu≤0,80
FERRITIC	X2CrNi12	1.4003		≤0,030	≤1,00	≤1,50	0,040	≤0,015 [2]	≤0,030	10,50 to 12,50		0,30 to 1,00	
	X2CrTi12	1.4512	409	≤0,030	≤1,00	≤1,00	0,040	≤0,015		10,50 to 12,50			Ti:6x(C+N) to 0,65
	X6CrNiTi12	1.4516		≤0,08	≤0,70	≤1,50	0,040	≤0,015		10,50 to 12,50		0,50 to 1,50	Ti:0,05 to 0,35
	X6Cr13	1.4000	410S	≤0,08	≤1,00	≤1,00	0,040	≤0,015 [2]		12,00 to 14,00			
	X6CrAl13	1.4002	405	≤0,08	≤1,00	≤1,00	0,040	≤0,015 [2]		12,00 to 14,00			Al: 0,10 to 0,30
	X5CrNiMoTi15-2	1.4589		≤0,08	≤1,00	≤1,00	0,040	≤0,015		13,50 to 15,50	0,20 to 1,20	1,00 to 2,50	Ti: 0,30 to 0,50
			429 [8]	≤0,12	≤1,00	≤1,00	0,040	≤0,030		14,00 to 16,00			
	X1CrNb15	1.4595		≤0,020	≤1,00	≤1,00	0,025	≤0,015	≤0,020	14,00 to 16,00			Nb: 0,20 to 0,60
	X6Cr17	1.4016	430	≤0,08	≤1,00	≤1,00	0,040	≤0,015 [2]		16,00 to 18,00			
	X2CrTi17	1.4520		≤0,025	≤0,50	≤0,50	0,040	≤0,015	≤0,015	16,00 to 18,00			Ti: 0,30 to 0,60
	X3CrNb17	1.4511		≤0,05	≤1,00	≤1,00	0,040	≤0,015 [2]		16,00 to 18,00			Nb:12xC to 1,00
	X6CrNi17-1	1.4017		≤0,08	≤1,00	≤1,00	0,040	≤0,015		16,00 to 18,00		1,20 to 1,60	
	X6CrMo17-1	1.4113	434	≤0,08	≤1,00	≤1,00	0,040	≤0,015 [2]		16,00 to 18,00	0,90 to 1,40		
	X3CrTi17	1.4510	439	≤0,05	≤1,00	≤1,00	0,040	≤0,015 [2]		16,00 to 18,00			Ti:4x(C+N)+0,15 to 0,80 [5]
	X2CrMoTi17-1	1.4513		≤0,025	≤1,00	≤1,00	0,040	≤0,015	≤0,020	16,00 to 18,00	0,80 to 1,40		Ti: 0,30 to 0,60
	X2CrMoTi18-2	1.4521	444	≤0,025	≤1,00	≤1,00	0,040	≤0,015	≤0,030	17,00 to 20,00	1,80 to 2,50		Ti:4x(C+N)+0,15 to 0,80 [5]
	X6CrMoNb17-1	1.4526	436	≤0,08	≤1,00	≤1,00	0,040	≤0,015	≤0,040	16,00 to 18,00	0,80 to 1,40		Nb:7x(C+N)+0,10 to 1,00
	X2CrTiNb18	1.4509		≤0,030	≤1,00	≤1,00	0,040	≤0,015		17,50 to 18,50			Nb:3xC+0,30 to 1,00; Ti:0,10 to 0,60
	X2CrNbZr17	1.4590		≤0,030	≤1,00	≤1,00	0,040	≤0,015		16,00 to 17,50			Nb: 0,35 to 0,55; Zr ≥ 7x(C+N)+0,15
	X18CrN28	1.4749	446	0,15 to 0,20	≤1,00	≤1,00	0,040	≤0,015	0,15 to 0,25	26,00 to 29,00			
	X10CrAlSi7	1.4713		≤0,12	0,50 to 1,00	≤1,00	0,040	≤0,015		6,00 to 8,00			Al: 0,50 to 1,00
	X10CrAlSi13	1.4724		≤0,12	0,70 to 1,40	≤1,00	0,040	≤0,015		12,00 to 14,00			Al: 0,70 to 1,20
	X10CrAlSi25	1.4762		≤0,12	0,70 to 1,40	≤1,00	0,040	≤0,015		23,00 to 26,00			Al: 1,20 to 1,70
	X2CrMoTi29-4	1.4592		≤0,025	≤1,00	≤1,00	0,030	≤0,010	≤0,045	28,00 to 30,00	3,50 to 4,50		Ti:4x(C+N)+0,15 to 0,80 [5]
MARTENSITIC [10]	X12Cr13	1.4006	410	0,08 to 0,15	≤1,00	≤1,50	0,040	≤0,015 [2]		11,50 to 13,50		≤0,75	
	X15Cr13	1.4024		0,12 to 0,17	≤1,00	≤1,00	0,040	≤0,015 [2]		12,00 to 14,00			
	X20Cr13	1.4021	420	0,16 to 0,25	≤1,00	≤1,50	0,040	≤0,015 [2]		12,00 to 14,00			
	X30Cr13	1.4028	420	0,26 to 0,35	≤1,00	≤1,50	0,040	≤0,015 [2]		12,00 to 14,00			
	X39Cr13	1.4031	420	0,36 to 0,42	≤1,00	≤1,00	0,040	≤0,015 [2]		12,50 to 14,50			
	X46Cr13	1.4034	420	0,43 to 0,50	≤1,00	≤1,00	0,040	≤0,015 [2]		12,50 to 14,50			
	X50CrMoV15	1.4116		0,45 to 0,55	≤1,00	≤1,00	0,040	≤0,015 [2]		14,00 to 15,00	0,50 to 0,80		V: 0,10 to 0,20
	X55CrMo14	1.4110		0,48 to 0,60	≤1,00	≤1,00	0,040	≤0,015 [2]		13,00 to 15,00	0,50 to 0,80		V≤0,15
	X38CrMo14	1.4419		0,36 to 0,42	≤1,00	≤1,00	0,040	≤0,015		13,00 to 14,50	0,60 to 1,00		
	X39CrMo17-1	1.4122		0,33 to 0,45	≤1,00	≤1,50	0,040	≤0,015 [2]		15,50 to 17,50	0,80 to 1,30	≤1,00	
	X3CrNiMo13-4	1.4313		≤0,05	≤0,70	≤1,50	0,040	≤0,015	≥0,020	12,00 to 14,00	0,30 to 0,70	3,50 to 4,50	
	X4CrNiMo16-5-1	1.4418		≤0,06	≤0,70	≤1,50	0,040	≤0,015 [2]	≥0,020	15,00 to 17,00	0,80 to 1,50	4,00 to 6,00	
	X1CrNiMoCu12-5-2	1.4422		≤0,020	≤0,50	≤2,00	0,040	≤0,003	≤0,020	11,00 to 13,00	1,30 to 1,80	4,00 to 5,00	Cu:0,20 to 0,80
	X1CrNiMoCu12-7-3	1.4423		≤0,020	≤0,50	≤2,00	0,040	≤0,003	≤0,020	11,00 to 13,00	2,30 to 2,80	6,00 to 7,00	Cu:0,20 to 0,80
PH [10]	X5CrNiCuNb16-4	1.4542	630	≤0,07	≤0,70	≤1,50	0,040	≤0,015 [2]		15,00 to 17,00	≤0,60	3,00 to 5,00	Cu:3,00 to 5,00; Nb: 5xC to 0,45
	X7CrNiAl17-7	1.4568	631	≤0,09	≤0,70	≤1,00	0,040	≤0,015		16,00 to 18,00		6,50 to 7,80 [4]	Al: 0,70 to 1,50

(1) Elements not quoted in this table may not be intentionally added to the steel without the agreement of the purchaser except for the finishing of the cast. All appropriate precautions are to be taken to avoid the addition of such elements from scrap and other materials used in production which would impair mechanical properties and the suitability of the steel.
(2) For products to be machined, a controlled sulfur content of 0,015% to 0,030% is recommended and permitted. For weldability, a controlled sulphur content of 0,008% to 0,030% is recommended and permitted. For polishability, a controlled sulphur content of 0,015% max. is recommended.
(3) Parts made of high sulphur free cutting austenitic stainless steels may not comply with European Directive 94/27 regarding articles in contact with human skin.
(4) For better cold deformability, the upper limit may be increased to 8,30%.
(5) The stabilization may be made by use of titanium or niobium or zirconium. According to the atomic number of these elements and the content of carbon and nitrogen, the equivalence shal be the following Ti^=7/4Nb^=7/4Zr
(6) By agreement, this grade can be supplied with a Pitting Resistance Equivalent number (PRE = Cr + 3,3 Mo + 16 N) greater than 34
(7) according to EN 10088-1:2005
(8) According to ASTM A240/A240M-05a
(9) Patented steel grade.
(10) Tighter Carbon ranges may be agreed at the time of enquiry and order (martensitic and PH grades).