

LIST OF STAINLESS STEELS THAT CAN BE USED IN CONTACT WITH FOOD

REV. 1 (18-02-2014)

Legislative Decree of Italian government no. 258 of December 21, 2010; Decree no. 140 of November 11, 2013

Part A

EUROPEAN STANDARD	GROUP	NUMBER CODE	ALPHANUMERIC CODE	AISI / ASTM	UNS
EN 10088-1	martensitic	1.4005	X12CrS13	416	S41600
EN 10088-1	martensitic	1.4006	X12Cr13	410	S41000
EN 10088-1	ferritic	1.4016	X6Cr17	430	S43000
EN 10088-1	martensitic	1.4021	X20Cr13	(420)	(S42000)
EN 10088-1	martensitic	1.4031	X30Cr13	(420)	(S42020)
EN 10088-1	martensitic	1.4057	X17CrNi16-2	431	S43100
EN 10088-1	ferritic	1.4105	X6CrMoS17	430F	S43020
EN 10088-1	martensitic	1.4116	X50CrMo15	440A	S44002
EN 10088-1	martensitic	1.4125	X105CrMo17	440C	S44004
EN 10088-4	duplex	1.4162	X2CrMnNiN21-5-1	-----	S32101
EN 10088-1	austenitic	1.4303	X4rNi18-12	305	S30500
EN 10088-1	austenitic	1.4305	X8CrNiS18-9	303	S30300
EN 10088-1	austenitic	1.4306	X2CrNi19-11	(304L)	(S30403)
EN 10088-1	austenitic	1.4307	X2CrNi18-9	(304L)	(S30403)
EN 10088-1	austenitic	1.4310	X10CrNi18-8	301	S30100
EN 10088-1	austenitic	1.4325	X9CrNi18-9	302	S30200
-----	austenitic	-----	-----	303Se	S30323
-----	austenitic	-----	-----	308	S30800
-----	austenitic	-----	-----	316N	S31651
EN 10088-1	duplex	1.4362	X2CrNiN23-4	Type 2304	S32304
EN 10088-1	austenitic	1.4373	X12CrMnNiN18-9-5	202	S20200
EN 10088-1	austenitic	1.4436	X5CrNiMo17-12-2	316	S31600
EN 10088-1	austenitic	1.4404	X2CrNiMo17-12-2	316L	S31603
EN 10088-1	austenitic	1.4432	X2CrNiMo17-12-3	(316L)	(S31603)
EN 10088-1	duplex	1.4460	X3CrNiMoN27-5-2	329	S32900
EN 10088-1	duplex	1.4462	X2CrNiMoN22-5-3	Type 2205	S31803
EN 10088-1	ferritic	1.4509	X2CrTiNb18	-----	S43940
EN 10088-1	ferritic	1.4510	X3CrTi17	-----	-----
EN 10088-1	ferritic	1.4521	X2CrMoTi18-2	444	S43940
EN 10088-1	austenitic	1.4541	X6CrNiTi18-10	321	S32100
EN 10088-1	martensitic PH	1.4542	X5CrNiCuNb16-4	Type 630	S17400
EN 10088-1	austenitic	1.4550	X6CrNiNb18-10	347	S34700
EN 10088-1	ferritic	1.4590	X2CrNbZ17	-----	-----
-----	martensitic	1.4008	X8CrNi13	414	S41400
-----	ferritic	-----	-----	-----	S44500
EN 10088-1	austenitic	1.4876	X10NiCrAlTi 32-21	Type 800	N08800
EN 10088-1	ferritic	1.4526	X6CrMoNb17-1	Type 436	S43600

The stainless steels **430FMo (h**)**, **1.4106 (f**)** and **1.4114 (g**)** passed the overall migration test according to the Ministerial Decree of 21-3-1973 and have been published on the Italian Official Journal no. 294 of December 16, 2013, Part B.

For the conditions of use of the above mentioned steel grades, please refer to the notes of Decree no. 140 of November 11, 2013.

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Part B

Stainless steels identified by chemical cast analysis, in the absence of initials provided by the European or international standards set out in part A. Provided that they meet the migration limits provided for by article 36 of the Ministerial Decree 21.3.1973, other elements can be present in the final cast that have not been added intentionally, for which a percentage limit is not declared in the following table.

Type	a	b	c	d	e
C%	0.05 max	0.08 max	0.03 max	0.03 max	0.1 max
Si%	1.0 max	1.0 max	1.0 max	1.0 max	1.0 max
Mn%	2.0 max	3.8-7.5	1.0 max	1.0 max	5.5-9.5
P%	0.045 max	0.045 max	0.0501 max	0.050 max	0.070 max
S%	0.030 max	0.015 max	0.050 max	0.050 max	0.010 max
N%	0.08-0.20	0.05-0.25	-----	-----	0.15 max
Cr%	22.0-25.0	17.0-18.0	19.0-22.0	22.0-25.0	16.5-18.5
Cu%	-----	1.5-3.5	0.50 max	0.50 max	1.0-2.5
Mo%	2.5-3.5	-----	0.5 max	0.5 max	-----
Nb%	-----	-----	1.0 * max	1.0 * max	-----
Ni%	4.5-6.5	3.5-5.5	0.5 max	0.5 max	4.5-5.5
Ti%	-----	-----	1.0 * max	1.0 * max	-----
Other elements	-----	-----	Al% 0.05 max	Al% 0.05 max	-----

* Ti, Nb are considered in the minimum quantity to comply with the stabilization criteria $(Ti + Nb) \geq 0.2 + 4(C + N)$.

Type	f**	g**	h**	i	l
C%	0,03 max	0,08 max	0,08 max	0,01 max	0,01 max
Si%	2,0 max	1,0 max	1,0 max	0,5 max	0,5 max
Mn%	1,0 max	2,5 max	1,5 max	0,5 max	0,5 max
P%	0,040 max	0,040 max	0,040 max	0,040 max	0,040 max
S%	0,25-0,35	0,15-0,35	0,25-0,35	0,030 max	0,030 max
N%				0,015 max	0,15 max
Cr%	17,0-19,0	17,5-19,5	16,0-18,0	13,75-15,0	16,0-18,0
Cu%					0,40max
Mo%	1,5-2,5	1,5-2,5	0,80-1,70		
Nb%	-----			0,10-0,30 #	0,10-0,25 #
Ni%		0,75 max	0,5 max		0,4 max
Ti%				0,05-0,20 #	0,05-0,15 #
Altri elementi				Sn% 0,10-0,25	Sn% 0,10-0,25

** Provided that what is produced with the steel in question is intended solely for food subject to migration test with distilled water. The suitability for food contact is verified by brief hot or room-temperature tests in distilled water at a temperature of 100°C for about 30 min; three following attacks to determine the overall migration of Chrome, Nickel and Manganese on the liquid coming from the third attack. # $(Nb+Ti) \geq 10(C+N)$

Type	m	n §	p □
C%	0,02 max	0,8-0,95 max	0,08 max
Si%	1,0 max	0,35-0,50	1,0 max
Mn%	1,0 max	0,25-0,40	1,5 max
P%	0,040 max	0,040 max	0,040 max
S%	0,006 max	0,030max	0,25-0,35
N%	0,025 max		

Type	m	n §	p □
Cr%	19,0-21,0	17,0-18,0	16,0-18,0
Cu%	0,30-0,60		
Mo%		1,0-1,25	0,80-1,70
Nb%	0,30-0,80 #		
Ni%	0,60 max	0,25 max	0,5 max
Ti%	0,20 max #		
Other elements			V% 0,08-0,12

§ Provided that what is produced with the steel in question is intended solely for the manufacturing of knives.

□ Provided that what is produced with the steel in question is intended solely for meat grinding components.

$(Nb+Ti) \geq 10(C+N)$