English

Eure Inox

Eure Inox s.r.l.
via Leonardo Da Vinci, 2
20068 Peschiera Borromeo (MI)
tel +39 02 54.77.26.55
fax +39 02 55.30.52.40
sales@eureinox.it
www.eureinox.it

p.iva IT12193360158

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Stainless steel drawn ground and special profiles

Eure Inox

AISI 300 series austenitic stainless steel

Standards		Chemical analysis %									Characteristics	Examples of use
AISI	EN	C max	Mn max	P max	S max	Si max	Cr	Ni	Mo	Others		
302	1.4310	0,05÷0,15	2	0,045	0,015	2	16÷19	6÷9,5	0,8 max	N ≤ 0,11	Cr-Ni austenitic steel, non-hardenable and resistant to corrosion, nonmagnetic in the annealed state and slightly magnetic when cold worked, for general purposes and non-welded parts.	Chemical equipment, decorative architectural elements, grids, antennas and nails. The most important application remains, however, for springs.
303*	1.4305	0,10	2	0,045	0,15÷0,35	1	17÷19	8÷10	-	N ≤ 0,11; Cu ≤ 1	Cr-Ni austenitic steel, non-hardenable with improved machinability due to the addition of sulphur, nonmagnetic in the annealed state, slightly magnetic when cold worked. Not suitable for welded parts.	The same applications as 302 and 304 for parts produced on automatic machines or all parts not subject to critical corrosion conditions and whose mechanical machining is to be made easier.
303Kx*	1.4570	0,08	2	0,045	0,15÷0,35	1	17÷19	8÷10	0,6 max	Cu = 1,4÷1,8; N ≤ 0,11	Austenitic steel with excellent machinability on automatic lathes, excellent shreddability with prolonged efficiency of the tools by effect of its self-lubrication, limited formation of heat and good conductivity due to its copper content. Good cold deformation and weldability. It cannot be subjected to electropolishing.	In high-precision micromechanics with a low degree of roughness and gloss of parts turned at a high speed.
304*	1.4301	0,07	2	0,045	0,030	1	17,5÷19,5	8÷10,5	-	N ≤ 0,11	Cr-Ni austenitic steel with a low C content, non-hardenable and resistant to corrosion, nonmagnetic in the annealed state, slightly magnetic when cold worked. Good weldability and intercrystalline corrosion resistance. Excellent toughness down to extremely low temperatures. It may be subjected to electropolishing.	Plants for companies in the chemical, textile, food, pharmaceutical, paper, plastics, nuclear, frozen goods, naval and electronic sectors, or those manufacturing equipment for kitchens, bars, restaurants, butcher's shops, cutlery, etc.
304L*	1.4307	0,03	2	0,045	0,015	1	17,5÷19,5	8÷10,5	-	N ≤ 0,11	Cr-Ni austenitic steel non-hardenable, particularly suitable for welded constructions. Presents excellent intercrystalline corrosion resistance and may be used normally at temperatures of up to 425°C.	The same as 304 for welded constructions and where intercrystalline corrosion resistance is required.
304Cu	1.4567	0,04	2	0,045	0,03	1	17÷19	8,5÷10,5	-	N ≤ 0,11 Cu = 3÷4	Austenitic steel nonmagnetic under all conditions, the presence of Cu and Ni ensures excellent plasticity and flow, and good resistance even in sea water.	Moulding of microscrews, hexagonal socket head bolts, cross-head screws.
310S	1.4845	0,10	2	0,045	0,015	1,5	24÷26	19÷22	-	N ≤ 0,11	Cr-Ni austenitic refractory steel, non-hardenable, nonmagnetic and extremely resistant to high temperatures, thus satisfying most applications. It may be used normally at a temperature of about 1100°C in an oxidizing atmosphere and up to 1000°C in a reducing atmosphere, the atmosphere must always however contain less than 2gr of S per m^3.	Plants for heat treatments, plants for processing sulphur lyes, hydrogenation plants, heat exchangers for furnaces, doors, hearths, grids, pins and brackets. Air warming elements, boxes and pipes for heat treatments, conveyor belts for furnaces, exhaust pipes for gas turbines and engines, stills, cracking or reforming plants.
314	1.4841	0,20	2	0,045	0,015	1,5÷2,5	24÷26	19÷22	-	N ≤ 0,11		
316*	1.4401	0,07	2	0,045	0,030	1	16,5÷18,5	10÷13	2÷2,5	N ≤ 0,11	Cr-Ni-Mo austenitic steel non-hardenable and with a particularly high corrosion resistance due to the presence of molybdenum. The mechanical properties at high temperatures are also better than those of similar types without molybdenum.	Chemical equipment for particularly hard conditions, equipment in contact with water or a marine atmosphere, photographic development equipment, boiler jacket, food processing plants, cokeries, recipients for edible oils.

316L*	1,4404	0,03	2	0,045	0,030	1	16,5÷18,5	10÷13	2÷2,5	N ≤ 0,11	Cr-Ni-Mo austenitic steel non-hardenable with an extremely low Carbon content and particularly suitable for welded constructions. Excellent intercrystalline corrosion resistance and may be used normally at temperatures of up to 450°C.	The same applications as 316 for welded constructions in which a good intercrystalline corrosion resistance is required.
316Cu	1,4578	0,04	1 max	0,045	0,015	1	16,5÷17,5	10÷11	2÷2,5	N ≤ 0,11 Cu = 3÷3,5	Austenitic, nonmagnetic steel suitable for nearly all cold plastic deformations. Even in strongly aggressive environments, it presents an high resistance to intercrystalline corrosion and pitting.	The matrix enables it to be used for moulding complex fasteners, microscrews, hexagonal socket head bolts, cross head screws.
316L ESR	1,4441	0,030	2	0,025	0,010	1	17÷19	13÷15,5	2,5÷3,2	N = 0,1 max; Cu = 0,5 max	The basic material is 316L which is subjected to the ESR method (Electro Slag Remelting) a distillation process, which eliminates all kinds of impurities.	Austenitic steel for osteosynthetic prostheses biocompatible with the aggressiveness of all humours present in the human body with a metal structure designed to avoid all forms of metallosis, in the case of implants for reducing fractures.
316Ti	1,4571	0,08	2	0,045	0,030	1	16,5÷18,5	10,5÷13,5	2÷2,5	Ti = 5xC min Ti = 0,7 max	The Ti content, which is five times the C content, has a stabilizing effect against the precipitation of Cr carbides around the crystals. In fact, the Ti forms, with the C, carbides that are well distributed within the grain and stable. The material presents a high intercrystalline corrosion resistance.	Parts subjected to high temperatures in the presence of chlorine ions. Blades for gas turbines, bottles, welded structures, manifolds. Food and chemical industry.
316LK	1.4598	0,03	2	0,045	0.1÷0.2	1	16.5÷18.5	10÷13	2,0÷2,5	Cu 1.3÷1.8 ; N 0.10	Compared to a standard 1.4404 this grade allows an improvements in its machinability and drilling maintaining its characteristics of resistance to corrosion. Additions to its chemistry of elements as copper and sulfur, as well as specific precipitation, result in superior chip breakability. Machining tools are subject to less stress which reduces abrasive wear.	Minute technical components, precision parts (clock and watch-making industry, mobile components), fine screws connectors.
321	1,4541	0,08	2	0,045	0,030	1	17÷19	9÷12	-	Ti = 5xC min Ti = 0,7 max	Ni-Cr austenitic steel stabilized with Ti, non-hardenable, nonmagnetic and particularly indicated for welded constructions and for applications at temperatures between 400 and 800°C, resistant to corrosion.	Exhaust manifolds for aviation motors, boiler bodies or collector rings, equipment for the oil industry. Expansion joints. Chemical equipment resistant to high temperatures.

*These materials may be supplied in the "**Eure+**" type, a manufacturing process that makes them particularly suitable for high speeds and use on automatic machines.

Aisi 400 series ferritic, martensitic, duplex and precipitation hardening stainless steel

410	1,4006	0,08÷0,15	1,5	0,04	0,030	1	11,5÷13,5	0,75	-	-	General-purpose Cr martensitic stainless steel. The hardening and tempering treatment improves its corrosion resistance while the hardening and tempering treatments at a low temperature of between -180 and -200°C ensure good mechanical characteristics.	Parts of valves, refinery plants, low-cost cutlery, parts of machines, shafts and parts of pumps (rods), cylinders for copper rolling, coal riddles and chutes.
416	1,4005	0,06÷0,15	1,5	0,04	0,15÷0,35	1	12÷14	-	0,6 max	-	Martensitic stainless steel with high degree of resulphuration that makes it suitable for high-speed machining on automatic lathes. The hardening and tempering treatment improves its corrosion resistance and mechanical characteristics.	Bolts and screws machined on automatic machines, shafts and parts of machine machined on automatic machines. Shafts of motors and pumps, mechanical and micromechanical parts in general.
420	1,4021* 1,4028 1,4031 1,4034	0,16÷0,25 0,26÷0,35 0,36÷0,42 0,43÷0,50	1,5 1,5 1 1	0,04 0,04 0,04 0,04	0,030 0,030 0,030 0,030	1 1 1 1	12÷14 12÷14 12,5÷14,5 12,5÷14,5	- - - -	- - - -	- - - -	Cr martensitic stainless steel hardenable up to 50/52 HRC. It presents maximum corrosion resistance in its hardened state and after polishing.	Knives, surgical or dental instruments, bushes, button dies, screwdrivers, moulds for plastic materials and glass, parts of valves, shafts in general.

430	1,4016	0,08	1	0,04	0,030	1	16÷18	-	-	-	General-purpose Cr ferritic stainless steel non-hardenable with a greater resistance to corrosion and to heat than the 13% Cr types.	Decorative architectural elements, brass annealing pots, parts for oil burners, nitric acid tanks and tankers, equipment for bars and restaurants, nitrogen fixing plants, car accessories, annealing bins, parts for the food industry, parts for the chemical industry.
430F	1,4104 1,4105	0,10÷0,17 0,08 max	1,5 1,5	0,04 0,04	0,15÷0,35 0,15÷0,35	1 1,5	15,5÷17,5 16÷18	-	-	Mo 0,2÷0,6	Cr ferritic stainless steel, non-hardenable and with improved machinability, specifically designed for parts that are to be machined at a high speed on chip removing machine tools.	The same applications as 430 for parts produced on automatic machines and for all parts not subject to critical corrosion conditions and whose mechanical machining is to be made easier.
	1,4106	0,03	1	0,04	0,25÷0,35	≤2	17÷19	-	1,5÷2,5	-	Ferromagnetic stainless steel with magnetic hysteresis at a low residual magnetization, optimizes low values of coercive force of Hc 140-160 A/Mt, equivalent to 1.82-2,00 Os without any deterioration in the resistance to intercrystalline corrosion and pitting on this object.	Comparable to the austenitic stainless steel in consideration of its excellent self-lubrication, it is used in the production of cores for solenoids for which an high productivity on automatic lathes is required. It is also used in the production of solenoid valves and in the car industry.
431	1,4057	0,12÷0,22	1,5	0,04	0,030	1	15÷17	1,5÷2,5	-	-	Cr-Ni martensitic stainless steel, hardenable, with good mechanical characteristics and a greater corrosion resistance than the 403, 410, 420, 430 types.	Shafts in general, bolts, machinery for machining paper, screw conveyors, aeroplane accessories.
440B	1,4112	0,85÷0,95	1	0,04	0,030	1	17÷19	-	0,9÷1,3	0,07 ≤ V ≤ 0,12	Cr martensitic stainless steel, hardenable to very high values with good resistance to corrosion and wear after hardening. Hardness increases in proportion to the increase in the C content	Balls, bearings, rings, parts for valves, dies in general, glass moulds, can closing rollers, bushes, special knives, blades, dental equipment.
630	1,4542	0,07	1,5	0,04	0,030	0,7	15÷17	3÷5	3÷5	Cu 3-5 ; Nb 5xC-0,45	Belonging to precipitation hardening stainless steels is a great compromise between mechanical resistance and corrosion resistance, being able to modify its tensile through a heat treatment.	Used in all application in which austenitic steels could suffer corrosion issues under stress. Main uses are for mechanical and oil&gas. It has mechanical tensiles higher than the ones from austenitic stainless steels with good resistance to corrosion.
F51	1,4462	0,03	2	0,035	0,015	1	21÷23	4,5÷6,5	2,5÷3,5	N 0,10-0,22	F51 steel (ASTM A182) or 1.4462 (EN 10088-3) or 2205 belongs to duplex family (austenoferritic). Corrosion resistance is much higher than austenitic steels with Chromium-Nickel-Molybdenum (316/316L and derivates) with an elastic limit much higher; its limits are linked to its biphasic structure (austenitic + ferritic) which is stable until temperatures of 350°C.	Used for aerospace industry engine components, shafts, oil tubes and mechanical components where it is required an elevated mechanical resistance in environments rich of chlorides, sulphates and sulfides.
	1.4362	0,03	2	0,035	0,015	1	22÷24.5	3,5÷5,5	0,1÷0,6	Cu 0.1÷0.6 ; N 0.05÷0,20	Ferritic-austenitic stainless steel also referred to as duplex stainless steels, combine many of the beneficial properties of ferritic and austenitic steels. These steels offer good resistance to localised and uniform corrosion, good fatigue resistance, high mechanical strength and have good weldability.	Flue-gas clearing, components for structural design, rotors, impellers and shafts, reinforcing bars for concrete structures, storage tanks.

Manufacturing programme

1. Standard and special product range

› Wire in coils from 0,8 mm to 25 mm:
- raw, annealed polished drawn
- bonderized and drawn for cold heading

› 1.50 to 100 mm round bars:
- peeled
- bright drawn
- centerless ground

› 2 to 65 mm square and hexagonal bars:
- hot rolled
- polished drawn
- centerless ground

› 2 x 1 to 20 x 15 mm rolls and flat bars with rounded edges:
- polished drawn

› 2 x 1 to 15 x 20 mm flat bars with sharp edges:
- polished drawn

› Special profiles on request

2. Dimensional tolerances

› Bright drawn ISO h8 - h9 - h11

› Centerless ground ISO h7

› Centerless ground ISO h6, f6, g6 and other tolerances

Table of tolerances for drawn, sized and ground parts in mm

diameter mm	common drawn parts				sized parts			ground parts					
	ISO h 11	10 UT UNI 468	8 UT	ISO h 10	5 UT	ISO h 9	3 UT UNI 469	ISO h 8	2 UT	ISO h 7	1 UT	ISO h 6	ISO h 5
1 ≤ Ø ≤ 3	0,06	0,05	0,05	0,04	0,03	0,025	0,018	0,014	0,012	0,009	0,006	0,007	0,005
3 < Ø ≤ 6	0,075	0,08	0,06	0,048	0,04	0,03	0,025	0,018	0,015	0,012	0,008	0,008	0,005
6 < Ø ≤ 10	0,09	0,10	0,08	0,058	0,05	0,036	0,03	0,022	0,02	0,015	0,010	0,009	0,006
10 < Ø ≤ 18	0,11	0,10	0,10	0,07	0,06	0,043	0,035	0,027	0,025	0,018	0,012	0,011	0,008
18 < Ø ≤ 30	0,13	0,15	0,12	0,084	0,07	0,052	0,045	0,033	0,030	0,021	0,015	0,013	0,009
30 < Ø ≤ 50	0,16	0,15	0,14	0,10	0,08	0,062	0,05	0,039	0,035	0,025	0,018	0,016	0,011
50 < Ø ≤ 80	0,19	0,20	0,16	0,12	0,10	0,074	0,06	0,046	0,04	0,030	0,021	0,019	0,013
80 < Ø ≤ 100	0,22	0,20	0,18	0,14	0,12	0,087	0,07	0,054	0,045	0,035	0,022	0,022	0,015

The tolerances indicated in this table are always intended to be negative, unless specified otherwise.
The degree of ovalization allowed is half the tolerance indicated here.

Table of weights in Kg/m, specific weight 7,85 g/cm³

Ø or side in mm	●	■	⬢	Ø or side in mm	●	■	⬢	Ø or side in mm	●	■	⬢	Ø or side in mm	●	■	⬢	Ø or side in mm	●	■	⬢
1	0,006	0,008	0,007	**9**	0,499	0,636	0,551	**24**	3,520	4,481	3,885	**40**	9,776	12,56	10,88	**60**	21,99	-	-
1,50	0,014	0,018	0,015	**9,50**	0,556	0,709	0,641	**25**	3,819	4,863	4,216	**41**	10,28	13,20	11,43	**62**	23,47	-	-
2	0,025	0,031	0,027	**10**	0,617	0,785	0,680	**26**	4,131	5,259	4,560	**42**	10,78	13,85	12,00	**64**	25,01	-	-
2,50	0,039	0,049	0,042	**11**	0,746	0,950	0,823	**27**	4,455	5,672	4,917	**43**	11,30	14,52	12,57	**65**	25,88	-	-
3	0,055	0,071	0,061	**12**	0,880	1,120	0,971	**28**	4,791	6,100	5,288	**44**	11,83	15,20	13,16	**66**	26,60	-	-
3,50	0,076	0,096	0,083	**13**	1,033	1,315	1,140	**29**	5,139	6,543	5,673	**45**	12,37	15,90	13,77	**68**	28,24	-	-
4	0,099	0,126	0,109	**14**	1,198	1,525	1,322	**30**	5,499	7,002	6,071	**46**	12,93	16,61	14,39	**70**	30,00	-	-
4,50	0,125	0,159	0,138	**15**	1,375	1,751	1,518	**31**	5,872	7,544	6,459	**47**	13,51	17,34	15,02	**72**	31,66	-	-
5	0,154	0,196	0,170	**16**	1,564	1,992	1,727	**32**	6,257	8,038	6,907	**48**	14,08	18,09	15,67	**73**	32,50	-	-
5,50	0,187	0,237	0,206	**17**	1,766	2,248	1,949	**33**	6,654	8,549	7,319	**49**	14,70	18,85	16,32	**74**	33,44	-	-
6	0,222	0,283	0,245	**18**	1,980	2,521	2,185	**34**	7,064	9,075	7,859	**50**	15,28	19,63	17,00	**75**	34,45	-	-
6,50	0,261	0,332	0,287	**19**	2,202	2,809	2,435	**35**	7,485	9,620	8,328	**52**	16,51	-	-	**76**	35,38	-	-
7	0,302	0,385	0,333	**20**	2,444	3,112	2,698	**36**	7,919	10,17	8,811	**54**	17,81	-	-	**78**	37,15	-	-
7,50	0,347	0,442	0,382	**21**	2,695	3,442	2,975	**37**	8,365	10,75	9,307	**55**	18,60	-	-	**80**	39,15	-	-
8	0,395	0,502	0,435	**22**	2,957	3,726	3,265	**38**	8,823	11,34	9,817	**56**	19,15	-	-	**85**	44,54	-	-
8,50	0,446	0,567	0,491	**23**	3,232	4,116	3,568	**39**	9,294	11,94	10,34	**58**	20,55	-	-	**90**	49,60	-	-

Inch to mm conversion table

inches	0	1/16	1/8	3/16	1/4	5/16	3/8	7/16	1/2	9/16	5/8	11/16	3/4	13/16	7/8	15/16
0	0,00	1,59	3,18	4,76	6,35	7,94	9,53	11,11	12,70	14,29	15,88	17,46	19,05	20,64	22,23	23,81
1	25,40	26,99	28,57	30,16	31,75	33,34	34,92	36,51	38,10	39,69	41,27	42,86	44,45	46,04	47,62	49,21
2	50,80	52,39	53,97	55,56	57,15	58,74	60,32	60,91	63,50	65,09	66,67	68,26	69,85	71,44	73,02	74,61
3	76,20	77,79	79,37	80,96	82,55	84,14	85,72	87,31	88,90	90,49	92,07	93,66	95,25	96,84	98,42	100
4	101,6	103,1	104,8	106,4	108	109,5	111,1	112,7	114,30	115,9	117,5	119,1	120,7	122,2	123,8	125,4
5	127,0	128,6	130,2	131,8	133,4	134,9	136,5	138,1	139,7	141,3	142,9	144,5	146,1	147,6	149,2	150,8
6	152,4	154,0	155,6	157,2	158,8	160,9	161,9	163,5	165,1	166,7	168,3	169,9	171,5	173	174,6	176,2
7	177,8	179,4	181,4	182,6	184,2	185,7	187,3	188,9	190,5	192,1	193,7	195,3	196,9	198	200,1	201,6
8	203,2	204,8	206,4	208	209,6	211,1	212,7	214,3	215,9	217,5	219,1	220,7	222,3	223,8	225,4	227
9	228,6	230,2	231,8	233,4	235	236,5	238,1	239,7	241,3	242,9	244,5	246,1	247,7	249,2	250,8	252,4
10	254,0	255,6	257,2	258,8	260,4	261,9	263,5	265,1	266,7	268,3	269,9	271,5	273,1	274,6	276,2	277,8

12 inches = 1 foot = 0.305 m
3 feet = 1 yard = 0.915 m