

Standards & tolerances

ASTM - STANDARDS

- A 213 Seamless ferritic and austenitic alloy steel boiler, superheater and heat exchanger tube.
- A 269 Seamless and welded austenitic stainless steel tubing for general service.
- A 312 Seamless and welded austenitic stainless steel pipe.
- A 511 Seamless stainless steel mechanical tubing.
- A 789 Seamless and welded ferritic-austenitic stainless steel tubing for general service. (duplex)
- B 161 Seamless nickel pipe and tube. (alloy 200, 201)
- B 163 Seamless nickel alloy condenser and heat exchanger tube. (alloy 200, 400, 600, 825)
- B 165 Seamless nickel-copper pipe and tube. (alloy 400)
- B 167 Seamless pipe and tube in nickel-chromium-iron. (alloy 600, 601)
- B 337 Seamless and welded titanium pipe and tube for general service.
- B 338 Seamless and welded titanium tube for condensers and heat exchangers.
- B 407 Seamless pipe and tube in nickel-iron-chromium. (alloy 800, 800H, 800HT)
- B 423 Seamless pipe and tube in nickel-iron-chromium-molybdenum-copper. (alloy 825)
- B 444 Seamless pipe and tube in nickel-chromium-molybdenum-columbium. (alloy 625)
- B 622 Seamless pipe and tube in nickel and nickel-cobalt. (alloy C276, C4)
- B 668 Seamless tube. (alloy 28)
- B 677 Seamless pipe and tube. (alloy 904L)

ASTM-, DIN-, ISO Tolerances

Tolerances according to ASTM A269 and A213 a.w. (Welded and seamless tube).

Outside Diam.	Tol. O.D.	Tol. wall	Tol. ovality	Tol. cut length
mm	mm	%	mm	mm
up to 12,7 mm	± 0,13 mm	± 15 %	-	+ 3,18 mm - 0 mm
12,7 mm up to 38,1 mm	± 0,13 mm	± 10 %	max, 1,65 mm	+ 3,18 mm - 0 mm
38,1 mm up to 88,9 mm	± 0,25 mm	± 10 %	max, 2,41 mm	+ 4,76 mm - 0 mm

Tolerances according to ASTM A312 (Welded and seamless st. st. pipe).

Outside diameter	Tolerance in the outside diameter
mm	mm
10,29 mm up to 48,26 mm	+ 0,40 mm- 0,79 mm
> 48,26 mm up to 114,30 mm	+ 0,79 mm- 0,79 mm
> 114,30 mm up to 219,08 mm	+ 1,59 mm- 0,79 mm
> 219,08 mm up to 457,20 mm	+ 2,38 mm- 0,79 mm

Tolerance in the wall thickness - 12,5% + tolerance not specified.

Tolerances according to EN/ISO 1127: D4/T3 and EN/ISO : D3/T3 (>20 mm).

Tolerance in the outside diameter		Tolerance in the wall thickness	
Classes	Tolerances	Classes	Tolerances
D0	± 2,0 %	T0	± 20,0 % / min. ± 1,0 mm
D1	± 1,5 % / min. ± 0,75 mm	T1	± 15,0 % / min. ± 0,6 mm
D2	± 1,0 % / min. ± 0,50 mm	T2	± 12,5 % / min. ± 0,4 mm
D3	± 0,75 % / min. ± 0,30 mm	T3	± 10,0 % / min. ± 0,2 mm
D4	± 0,5 % / min. ± 0,10 mm	T4	± 7,5 % / min. ± 0,15 mm
		T5	± 5,0 % / min. ± 0,1 mm

The ISO tolerances are printed in bold print.

Material Characteristics

STAINLESS STEEL

Stainless steel is not a specific material, it is the name given to a group of corrosion-resistant steels containing a minimum of 11% chromium, varying additions of nickel, molybdenum, titanium, niobium and other elements may also be present. The mechanical properties and behaviour in service of each type of steel depends upon its composition. Our stainless steel tubes contain nickel as well chromium, and are sometimes referred by the generic title 18/8, i.e. 18% chromium, 8% nickel, although the actual composition may vary widely from these figures. They are amongst the most highly corrosion-resistant materials available to be used for; oil industry, chemical and petrochemical industry, power plants, refineries, automotive, paper mills, construction and engineered products.

Limiting chemical composition, % , Alloy:	304	304L	321	316	316L	316Ti
Cr	18-20	18-20	17-20	16-18	16-18	16.5-18
Ni	8-11	8-13	9-13	11-14	10-15	10.5-12
Mn	2.00	2.00	2.00	2.00	2.00	1.90
Si	0.75	0.75	0.75	0.75	0.75	0.75
Mo	--	--	--	2.0-3.0	2.0-3.0	2.0-2.5
C	0.080	0.035	0.080	0.080	0.035	0.060
P	0.040	0.040	0.040	0.040	0.040	--
S	0.030	0.030	0.030	0.030	0.030	--
Ti	--	--	<0.7	--	--	0.3

Typical mechanical properties (annealed)	304	304L	321	316	316L	316Ti
Tensile Strength	500-700	460-680	500-730	510-710	460-690	500-730
Yield Strength (0.2% Offset)	195	180	200	205	190	210
Elongation, %	40	40	35	40	40	35

Alloy 310S (Wst. 1.4845)

Austenitic heat resistant stainless steel with good oxidation resistance and creep strength up to about 1000 °C in air, suitable for scaling. Used for furnaces, burners, ignition systems, chemical and petrochemical industry.

Limiting chemical composition, %	Cr	Ni	Mn	Si	C	Mo	P	S
			Max.	Max.	Max.	Max.	Max.	Max.
Alloy 310S	24.0-26.0	19.0-22.0	2.00	1.00	0.080	0.750	0.045	0.030

Typical mechanical properties (annealed). Tensile strength, Mpa 500-750. Yield strength (0.2% Offset), Mpa 210. Elongation; 35% .

Alloy 904L (Wst. 1.4539)

Austenitic stainless steel intended for use under severe corrosion conditions, with a very good resistance to attacks in acidic environments, as sulphuric, phosphoric and acetic acid. Very good resistance to pitting corrosion, stress corrosion cracking and a much better resistance to crevice corrosion than steels of alloy 304L and alloy 316L. Used for chemical processing, pollution control equipment, oil and gas well piping, heat exchangers, acid production and pickling equipment.

Limiting chemical composition, %	Ni	Cr	Mo	Cu	Mn	Si	S	C	N
					Max.	Max.	Max.	Max.	Max.
Alloy 904L	23.0-28.0	19.0-23.0	4.0-5.0	1.0-2.0	2.00	1.00	0.035	0.020	0.10

Typical mechanical properties (annealed). Tensile strength, Mpa 500-700. Yield strength (0.2% Offset), Mpa 200. Elongation; 40%.

Alloy 254SMO (Wst. 1.4547)

Austenitic stainless steel, similar to alloy 904L, but with increased molybdenum and nitrogen contents, to be used in seawater, oil and gas piping systems on offshore production platforms and other aggressive chloride bearing media. With an excellent resistance to pitting, crevice corrosion and to stress-corrosion cracking.

Limiting chemical composition, %	Cr	Ni	Mo	Cu	N	Mn	Si	S	C	P
						Max.	Max.	Max.	Max.	Max.
Alloy 254SMO	20	18	6.0-6.5	0.5-1.0	0.18-0.22	1.0	1.0	0.010	0.020	0.030

Typical mechanical properties (annealed). Tensile strength, Mpa 650-850. Yield strength (0.2% Offset), Mpa 300. Elongation; 35% .

Material Characteristics

Alloy 400 (Wst. 2.4360)

A nickel-copper alloy with high strength and excellent corrosion resistance in a range of media including seawater, hydrofluoric acid, sulphuric acid and alkalis. Used for marine engineering, chemical, hydrocarbon processing equipment, and heat exchangers.

Limiting chemical composition, %	Ni	Cu	Fe	Mn	C	S	Si
	Min.		Max.	Max.	Max.	Max.	Max.
Alloy 400	63.0	28.0-34.0	2.50	2.0	0.30	0.024	0.50

Typical mechanical properties (annealed). Tensile strength, Mpa 450-600. Yield strength (0.2% Offset), Mpa 240. Elongation; 40%.

Alloy 600 (Wst. 2.4816)

A nickel-chromium alloy with good oxidation resistance at high temperatures and resistance to chloride-ion stress-corrosion cracking corrosion by high-purity water, and caustic corrosion. Used for furnace components, in chemical and food processing, in nuclear engineering, and for the sparking electrodes.

Limiting chemical composition, %	Ni	Cr	Fe	Mn	C	S	Si	Cu
	Min.			Max.	Max.	Max.	Max.	Max.
Alloy 600	72.0	14.0-17.0	6.0-10.0	0.15	1.0	0.015	0.50	0.50

Typical mechanical properties (annealed). Tensile strength, Mpa 655. Yield strength (0.2% Offset), Mpa 310. Elongation; 40%.

Alloy 825 (Wst. 2.4858) / Alloy 28 (Wst. 1.4563)

Nickel-iron-chromium alloy with additions of molybdenum and copper. It has excellent resistance to both reducing and oxidizing acids, to stress-corrosion cracking, and to localise attack such as pitting and crevice corrosion. The alloy are especially resistant to sulphuric and phosphoric acids. Used for chemical processing, pollution control equipment, oil and gas well piping, nuclear fuel reprocessing, acid production and pickling equipment.

Limiting chemical composition, %	Ni	Fe	Cr	Mo	Cu	Ti	C	Mn	S	Si	Al
		Min.					Max.	Max.	Max.	Max.	Max.
Alloy 825	38.0-46.0	22.0	19.5-23.5	2.50-3.50	1.50-3.00	0.60-1.50	0.05	1.00	0.03	0.50	0.20
Alloy 28	30.0-32.0	22.0	26.0-28.0	3.00-4.00	0.60-1.40	-	0.02	2.00	0.03	0.70	-

Typical mechanical properties Alloy 825 (annealed). Tensile strength, Mpa 690. Yield strength (0.2% Offset), Mpa 310. Elongation; 45%.

Typical mechanical properties Alloy 28 (annealed). Tensile strength, Mpa 650. Yield strength (0.2% Offset), Mpa 250. Elongation; 40%.

Alloy C276 (Wst. 2.4819)

A nickel-molybdenum-chromium alloy with an addition of tungsten having excellent corrosion resistance in a wide range of severe environments. The high molybdenum content makes the alloy especially resistant to pitting and crevice corrosion.

Used in pollution control, chemical processing, pulp and paper production, and waste treatment.

Limiting chemical composition, %	Ni	Mo	Cr	Fe	W	Co	Mn	V	P	S	Si
						Max.	Max.	Max.	Max.	Max.	Max.
Alloy C276	Remainder	15.0-17.0	14.5-16.5	3.00-4.50	3.00-4.50	2.50	1.00	0.35	0.04	0.03	0.08

Typical mechanical properties (annealed). Tensile strength, Mpa 790. Yield strength (0.2% Offset), Mpa 340. Elongation; 50%.

Titanium Grade 2 (Wst. 3.7035)

Titanium is handled much like other high-performance engineering materials, important differences between titanium and stainless steel and nickel alloys to be recognised are; lower modules of elasticity, higher melting point, lower ductility and propensity to gall.

Used in powerplants condensers and heat exchangers, chemical processing, desalination, gas systems.

Limiting chemical composition, %	Ti	Fe	O	N	C	H
				Max.	Max.	Max.
Titanium Grade 2	Remainder	0.20-0.30	0.25-0.18	0.05	0.10	0.013

Typical mechanical properties (annealed). Tensile strength, Mpa 390-540. Yield strength (0.2% Offset), Mpa 250. Elongation; 22%.

Pressure - Temperature table in Bar/ °C

STAINLESS STEEL TUBE AND PIPE ACC. TO ANSI AND DIN.

Acc. to ANSI B.31.3 ANSI 304 L

P = internal max pressure, PSI (Mpa)
 D = outside tube diameter mm.
 S = allowable stress, PSI (Mpa)
 E = Weld joint factor = 1.0
 T = min tube wall thickness, in mm,
 incl. minus tolerance of 12,5%
 Y = 0,4

$$P = \frac{2 \times S \times E \times T}{D \times 2 \times Y \times T}$$

CALCULATION VALUE

Type	304/L	316/L	321	316Ti	904L	6Mo
Qzul min.= (1% yield strength)	215	235	245	265	250	300
Type	400	600	825	C276	TiGr2	
Qzul min.= (0.2% yield strength)	240	310	310	415	275	

Acc. to DIN 2413 werkstoff nr. 1.4306

P = internal max. pressure, bar.
 Da = outside tube diameter in mm.
 Di = inside tube diameter in mm.
 Sv = min. tube wall thickness, incl.
 minus tolerance of 12.5% (T2)
 vN = weldfactor = 1.0
 Qzul = allowable stress, N/mm², based
 on 1% offset yield strength acc.
 to DIN17458 with safety factor
 of 1.5.

1) = temperature below 120 °C

$$P = \frac{20Qzul \times vN \times Sv}{Da}$$

2) = temperature above 120 °C

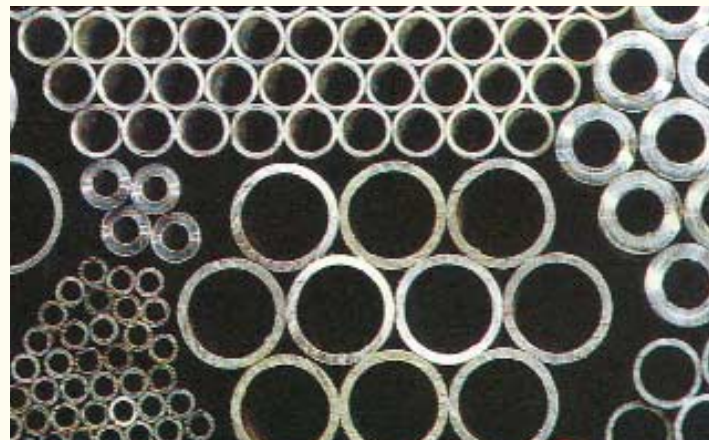
$$P = \frac{20Qzul \times vN \times Sv}{Di + vN \times Sv}$$

CALCULATION FOR THE WEIGHT OF TUBES

D = diameter
 T = wall thickness

Conversion factor for
 stainless steel = 0.02504

$$\text{Weight} = (D - T) \times T \times 0.02504$$



For other alloys :

Divide the result by 8 (specific weight of stainless steel) and multiply by the
 specific weight of the requested alloy. (see page 19)

Special Alloys

THE FOLLOWING QUALITIES ARE AVAILABLE ON REQUEST:

Type 304H, 309S, 321H, 316H, 316LN, 310H, 317/L, 347, 347H, 6 Mo, 254SMO, Sanicro 28, Super Duplex 1.4362 / S32304 / SAF 2304, Super Duplex 1.4410 / S32750 / SAF 2507, Duplex 1.4462 / S31803 / SAF 2205, Uranus B6, 410, 430, Alloy 33, -75, -718 and X750. Alloy 200, 201, K500, 601, 625, 800, 800H, 800HT, 925, C4, C22, B2, Titanium grade 1 up to 5. Zirconium 704, Tungum, Copper B68, CuNi 70/30, CuNi 90/10, Aluminium 99.5, ALMg3.



Extra services

Standard packing

In bundles with protective foil wrapping. In wooden crates / cases. For smaller tubes on shelf. Fittings in carton boxes.

Cutting to lengths

Cutting from 3.00 mm o.d. up to 406 mm. High volume tube cutting.

Polishing

We polish over a range of sizes from 6.00 mm o.d. up to 406 mm o.d, although sizes bigger than 168 mm are hand polished; not mechanical. Polishing standards are gritt 180, 240, 320, 400 and mirror. On the inside we polish from 6.00 mm up to 168 mm. Other facilities are honing and electro polishing, which we can supply till 0.2µ smoothness.

Cleaning

For normal degrease standard and also for the much higher standard of "Oxygen clean" treatment, where air, gas, powder or other substances of high purity require non-contaminated surface finish.

Re-annealing from 6.00 mm up to 323 mm.

Special cleaning will be applied by customers request!

Extra testing

All chemical and mechanical testing. Hardness according to : Rockwell, Brinell, Vickers and NACE MR 01-75. X-Ray and Ultra sonic testing. Witnessing by independent authorities as Lloyd's Register of Shipping, Det Norske Veritas, TÜV, Bureau Veritas, Rina, Germanischer Lloyd and Stoomwezen, or any other certifying authority

Available on request:



Seamless & welded pipe

Execution: Annealed and pickled, in random lengths of approximately 6 meters. According to ASTM A312, A530, ANSI B36.10, ANSI B.36.19

- Grades :304/L, 316/L, 321, 316Ti, 310/S, Nickel Alloy's & Titanium.

Sizes :1/8" n.b. up to, 24" n.b., Sch 10S, 40S, 80S, 160, XXS.

Welded tubing

Execution: Bright annealed and pickled, in random lengths of approximate 6 meters. According to ASTM A 249, A 269 and DIN 17440, 17457. Tolerances according to ANSI B.39.19. and DIN 2463, 2465.

- Round in DIN & ISO Dimensions, Hygienic Tube.

- Square & Rectangular Tube.

- Grades :304/L, 316/L, 321, 316Ti, 310/S, Nickel Alloys & Titanium.

Sizes : 1.00 mm o.d., up to 608 mm o.d.

Flanges

- According to ASTM A 182 / ANSI B.16.5

- Grades : 316/L, 304/L, 321, 310/S, and nickel alloys.

- Types : blind, slip on, welding neck, lap joint, socket weld, screwed, orifice, and long welding neck.

- Ratings : 150 LBS, 300 LBS, 600 LBS, 900 LBS, 1500 LBS, 2500 LBS. Schedules 10S, 40S, 80S, 160, XXS.

Sizes:

1/2" - 24"

- According to DIN 2527, DIN 2576, DIN 2633/2635, DIN 2642, DIN 2566.

- Grades : 316/L, 304/L, 321, 316Ti, 310/S, Aluminium

- Types : blind, slip on, welding neck, lap joint, threaded.

- Ratings : PN 10, PN 16, PN 40, PN 64, PN 100.

Sizes:

NW 10 - 400

Seamless and welded fittings

- According to ASTM A 403, ANSI B.16.9/16.25, MSS - SP 43, and DIN 2605, 2616, 2615, DIN 28011.

- Elbows 90 / 45 Degrees L.R. / S.R. , Equal-/ Reducing Tees,

- Concentric / Eccentric Reducers, Caps, Stub Ends, Collars.

- Grades : 316/L, 304/L, 321, 316Ti, 310/S & Nickel Alloys.

Sizes:

1/2" - 24"

Sch 10S, 40S, 80S

160, XXS

Screwed, socketweld and outlet fittings

- According to ASTM A 182, ANSI B.16.11./ ANSI B.2.1.

- Male & female ends with NPT, BSP, BSPT threads.

- Grades : 316/L, 304/L, 321, 316Ti, 310/S & Nickel Alloys.

- Ratings : 150 LBS, 3000 LBS, and 6000 LBS.

Sizes:

1/8" - 4"

Single ferrule compression fittings

- According to DIN 2353, with BSP & NPT thread.

- Grades : only 316Ti, 316/L.

- Working pressure: up to 630 bar.

Sizes:

4.00 - 42 mm

Twin ferrule compression fittings

- According to ASTM A 182

- Grades : only 316/L, nickel alloys and titanium.

- Working pressure: up to 828 bar.

Sizes:

1/16" - 2"

COMPARATIVE TABLE OF SEAMLESS INSTRUMENT TUBES

Brand name	DIN	DIN / Euronorm	AISI	UNS	Weight KG	Rm N/mm ²	Rp0.2 N/mm ²	A %	C max	Si max	Mn max	Cr	Mo	P max	Fe	Cu	Ni	S max	Al	N	Ti	Others	
304	1.4301	X 5 Cr Ni 18-10	304	S30400	8,00	500-700	195	40	0,080	0,75	2,00	18,0-20,0	--	0,040	--	--	8,0-11,0	max	--	--	--	--	
304L	1.4306	X 2 Cr Ni 19-11	304L	S30403	8,00	460-680	180	40	0,035	0,75	2,00	18,0-20,0	--	0,040	--	--	8,0-13,0	0,030	--	--	--	--	
316	1.4401	X 5 Cr Ni Mo 17-12,2	316	S31600	8,00	510-710	205	40	0,080	0,75	2,00	16,0-18,0	2,0-3,0	0,040	--	--	11,0-14,0	0,030	--	--	--	--	
316L	1.4404	X 2 Cr Ni Mo 17-13,2	316L	S31603	8,00	490-690	190	40	0,035	0,75	2,00	16,0-18,0	2,0-3,0	0,040	--	--	10,0-15,0	0,030	--	--	--	--	
316LN (Mo+)	1.4429	X 2 Cr Ni Mo N 17-13,3	316LN	S31653	8,00	580-800	295	35	0,035	0,75	2,00	16,0-18,0	2,0-3,0	0,040	--	--	10,0-15,0	0,030	0,10-0,16	--	--	--	
316L (Mo+)	1.4435	X 2 Cr Ni Mo 18-14,3	316	S31603	8,00	490-690	190	40	0,035	0,75	2,00	16,0-18,0	2,5-3,0	0,040	--	--	10,0-15,0	0,030	--	--	--	--	
316 (Mo+)	1.4436	X 5 Cr Ni Mo 17-13,3	316	S31600	8,00	490-690	190	40	0,080	0,75	2,00	16,0-18,0	2,5-3,0	0,040	--	--	11,0-14,0	0,030	--	--	--	--	
317L	1.4438	X 2 Cr Ni Mo N 18-15,4	317L	S31703	8,00	580-800	235	45	0,030	1,00	2,00	17,5-19,5	3,0-4,0	0,045	--	--	13,0-16,0	0,030	<0,11	--	--	--	
Duplex	1.4462	X 2 Cr Ni Mo N 22,5 3	318LN	S31803	8,00	640-880	450	22	0,030	1,00	2,00	21,0-23,0	2,5-3,5	--	--	--	4,5-6,5	--	0,08-0,20	--	--	--	
Sanicro 28*	1.4563	X 1 Ni Cr Mo Cu 31-27 4	928	N08028	8,10	500-550	220	30	0,0200	0,70	2,00	26,0-28,0	3,0-4,0	--	--	0,6-1,4	30-32,0	0,030	0,04-0,15	--	--	--	
Uranus B6*	1.4539	X 2 Ni Cr Mo Cu 25-20 5	904L	N08904	8,00	500-700	200	40	0,020	1,00	2,00	19,0-23,0	4,0-5,0	0,045	--	1,0-2,0	23,0-28,0	0,035	<0,10	--	--	--	
321	1.4541	X 6 Cr Ni Ti 18-10	321	S32100	8,00	500-730	200	35	0,080	0,75	2,00	17,0-20,0	--	0,040	--	--	9,0-13,0	0,030	--	<0,7	--	--	
254 SMO*	1.4547	X 2 Ni Cr Mo Cu N20 18 6	6Mo	S31254	8,00	650-850	300	35	0,020	1,00	1,00	20,0	6,0-6,5	0,030	--	0,5-1,0	18	0,010	0,18-0,22	--	--	--	
316Ti	1.4571	X 6 Cr Ni Mo Ti 17-12 2	316Ti	S31635	8,00	500-730	210	35	0,060	0,80	1,90	16,5-18,0	2,0-2,5	--	--	--	10,5-12,0	--	--	0,3	--	--	
310S	1.4845	X 12 Cr Ni 25-21	310S	S31008	8,00	500-750	210	35	0,080	1,00	2,00	24,0-26,0	<0,75	0,045	--	--	19,0-22,0	0,030	--	--	--	--	
Incoloy 800*	1.4876	X 10 Ni Cr AlTi 33-20	800	N08800	8,00	520-690	220	30	0,100	1,00	1,50	19,0-23,0	--	--	>39,5	<0,75	30,0-35,0	0,015	0,15-0,60	--	0,15-0,60	--	
316 (C+)	1.4919	X 5 Cr Ni Ti 17-12 2	316H	S31609	8,00	460	180	40	0,04-0,10	0,75	2,00	16,0-18,0	2,0-3,0	0,040	--	--	11,0-14,0	0,030	--	--	--	--	
321 (C+)	1.4941	X 6 Cr Ni Ti 18-10	321H	S32109	8,00	460	180	35	0,04-0,10	0,75	2,00	17,0-20,0	--	0,040	--	--	9,0-13,0	0,030	--	--	<0,6	--	
304 (C+)	1.4948	X 5 Cr Ni 18-10	304H	S30409	8,00	450	160	40	0,04-0,10	0,75	2,00	18,0-20,0	--	0,040	--	--	8,0-11,0	0,030	--	--	--	--	
Incoloy 800HT*	1.4959	X 8 Ni Cr AlTi 32-21	800HT	N08811	7,95	450-660	240	30	0,06-0,10	1,00	1,50	19,0-23,0	--	--	>39,5	<0,75	30,0-35,0	0,015	0,15-0,60	--	0,15-0,60	--	
Nickel 200*	2.4066	Ni 99,2	200	N02200	8,89	370-570	140	40	0,150	0,35	0,35	--	--	--	0,40	0,25	99,2	0,010	--	--	--	--	
Nickel 201*	2.4068	LC-Ni 99	201	N02201	8,89	340-540	100	40	0,020	--	0,25	--	--	--	0,40	0,25	99,0	--	--	--	--	--	
Monel 400*	2.4360	Ni Cu 30 Fe	400	N04400	8,83	450-600	240	40	0,300	0,50	1,25	--	--	--	>2,5	28,0-34,0	63,0	0,024	--	--	--	W/V/Co	
Hastelloy C22*	2.4602	Ni Cr Mo	C22	N06022	8,70	700	310	25	0,010	0,08	--	22,0	13,0	--	--	--	57,0	--	--	--	--	--	
Hastelloy C4*	2.4610	Ni Mo 16 Cr 16 Ti	C4	N06455	8,64	700	305	40	0,008	--	--	15,0-17,0	15,0-17,0	--	--	--	66,0-69,0	--	--	0,2-0,4	--	--	
Inconel 600*	2.4816	Ni Cr 15 Fe	600	N06600	8,42	655	310	40	1,000	0,50	0,15	14,0-17,0	--	--	6,0-10,0	<0,50	>72,0	0,015	--	--	--	--	
Hastelloy C276*	2.4819	Ni Mo 16 Cr 15W	C276	N10276	8,89	790	340	50	0,010	0,08	1,00	14,5-16,5	15,0-17,0	0,040	3,0-4,5	--	rest	0,030	--	--	--	W/Co/V	
Inconel 601*	2.4851	Ni Cr 23 Fe	601	N06601	8,11	600	260	30	0,100	0,50	1,00	21,0-25,0	--	--	rest	<1,00	58,0-63,0	0,015	1,0-1,7	--	--	--	
Inconel 625*	2.4856	Ni Cr 22 Mo 9 Nb	625	N06625	8,44	830	410	30	0,100	0,50	0,50	20,0-23,0	8,0-10,0	0,015	<5,0	--	<58,0	0,015	<0,40	--	<0,40	Nb/Co	
Incoloy 825*	2.4858	Ni Cr 21 Mo	825	N08825	8,14	690	310	45	0,050	0,50	1,0	19,5-23,5	2,5-3,5	--	>22,0	1,5-3,0	38,0-46,0	0,030	<0,20	--	0,60-1,20	--	
Titanium Gr 2	3.7035	Ti 2	Gr 2	R50400	4,51	390-540	250	22	0,100	--	--	--	--	--	0,2-0,3	--	--	--	--	<0,05	99,4	H/O	
Copper F22	2.0090	SF - Cu	122	C12200	8,80	220	60	55	--	--	--	--	--	0,050	--	99,9	--	--	--	--	--	--	
CuNiFe 90/10	2.0873	CuNi 10Fe 1Mn	--	C70600	8,90	300	180	20	0,050	--	0,5-1,0	--	--	--	1,0-2,0	remainder	9,0-11,0	0,050	--	--	--	Zn<0,5/Pb<0,03	
CuNiFe 70/30	2.0837	CuNi 30Fe 1Mn	--	C71581	8,90	350	300	25	0,050	--	0,5-1,5	--	--	--	0,4-1,0	remainder	30,0-32,0	0,050	--	--	--	Zn<0,5/Pb<0,03	
Zirconium 702	--	Zr 99,2	523	R60702	5,80	413	241	25	0,200	--	--	0,16	--	--	<0,20	--	--	--	--	<0,025	--	--	Zr>99,2/Hf<4,5

*1 These are trademarks of Haynes Int., Krupp-VDM, Inco Alloys, Sandvik, Avesta. Merinox B.V. cannot be responsible for eventual mistakes or misprints.