

# MATERIAL COMPARISON TABLE



EURONORM/DIN	W. Nr.	AISI	UNS	AFNOR	BRAND NAME
<b>FERRITIC, MARTENSITIC &amp; PRECIPITATION HARDENING STAINLESS STEEL</b>					
X 6 Cr 13	1.4000	410 S	S 41008	Z 8 C 12	
X 6 Cr Al 13	1.4002	405	S 40500	Z 8 CA 12	
X 12 Cr S 13	1.4005	416	S 41600	Z 11 CF 13	
X12 Cr 13	1.4006	410	S 41000	Z 10 C 13 / Z 13 C 13	
X 6 Cr 17	1.4016	430	S 43000	Z 8 C 17	
X 20 Cr 13	1.4021	420	S 42000	Z 20 C 13	
X 30 Cr 13	1.4028	420 F	S 42020	Z 33 C 13	
X 46 Cr 13	1.4034			Z 44 C 14	
X 17 Cr Ni 16-2	1.4057	431	S 43100	Z 15 CN 16-02	
X 14 Cr Mo S 17	1.4104	430 F	S 43020	Z 13 CF 17	
X 90 Cr Mo V 18	1.4112	440 B	S 44003	X 89 Cr Mo V 18-1	
X 6 Cr Mo 17-1	1.4113	434	S 43400	Z 8 CD 17-01	
X 39 Cr Mo 17-1	1.4122			Z 38 CD 16-01	
X 105 Cr Mo 17	1.4125	440C	S 44004	Z 100 CD 17	
X 3 Cr Ni Mo 13-4	1.4313		S 41500	Z 6 CN 13-04	F 6 NM
X 4 Cr Ni Mo 16-5-1	1.4418			Z 6 CND 16-05-01	
X 2 Cr Ti 12	1.4512	409	S 40900	Z 3 CT 12	
X 5 Cr Ni Cu Nb 16-4	1.4542	630	S 17400	Z 7 CNU 17-04	17.4 PH
X7 Cr Ni Al 17-7	1.4568	631	S 17700	Z 9 CNA 17-07	17.7 PH
X 5 Cr Ni Mo Cu Nb 14-5	1.4594	XM-12	S 15500	Z 7 CNU 15-05	15.5 PH
<b>AUSTENITIC STAINLESS STEEL</b>					
X 5 Cr Ni 18-10	1.4301	304	S 30400	Z 7 CN 18-09	
X 4 Cr Ni 18-12	1.4303	305	S 30500	Z 5 CN 18-11 FF	
X 8 Cr Ni S 18-9	1.4305	303	S 30300	Z 8 CNF 18-09	
X 2 Cr Ni 19-11	1.4306	304 L	S 30403	Z 3 CN 18-10 / 19-11	
X 2 Cr Ni 18-9	1.4307	304 L	S 30403	Z 3 CN 18-9	
X 10 Cr Ni 18-8	1.4310	301	S 30100	Z 11 CN 17-08 / 18-08	
X 2 Cr Ni N 18-10	1.4311	304 LN	S 30453	Z 3 CN 18-10 Az	
X 1 Cr Ni S 18-15-4	1.4361		S 30600	Z 1 CNS 17-15	URANUS® S1 / A610®
X 6 Cr Ni Ti 18-10	1.4541	321	S 32100	Z 6 CNT 18-10	
X 6 Cr Ni Nb 18-10	1.4550	347	S 34700	Z 6 CNNb 18-10	
X 5 Cr Ni Mo 17-12-2	1.4401	316	S 31600	Z 7 CND 17-11-02 / 17-12-02	
X 2 Cr Ni Mo 17-12-2	1.4404	316 L	S 31603	Z 3 CND 17-12-02 / 18-12-02	
X 2 Cr Ni Mo N 17-11-2	1.4406	316 LN	S 31653	Z 3 CND 17-11 Az	
X 2 Cr Ni Mo N 17-13-3	1.4429	316 LN (Mo+)	S 31653	Z 3 CND 17-12 Az	
X 2 Cr Ni Mo 18-14-3	1.4435	316 L (Mo+)	S 31603	Z 3 CND 18-14-03 / 17-13-03	
X 3 Cr Ni Mo 17-13-3	1.4436	316 (Mo+)	S 31600	Z 6 / Z 7 CND 18-12-03	
X 2 Cr Ni Mo N 18-15-4	1.4428	317 L	S 31703	Z 3 CND 19-15-04	
X 2 Cr Ni Mo N 17-13-5	1.4439	317 LN	S 31753	Z 3 CND 18-14-05 Az	
X 5 Cr Ni Mo 17-13	1.4449	317	S 31700	Z 6 CND 17-12-04	
X 4 Ni Cr Mo Cu Nb 20-18-2	1.4505			Z 5 NCDUNb 20-18	
X 6 Cr Ni Mo Ti 17-12-2	1.4571	316 Ti	S 31635	Z 6 CNDT 17-12	
X 6 Cr Ni Mo Nb 17-12-2	1.4580	316 Cb	S 31640	Z 6 CNDNb 17-12	
X 10 Cr Ni Mo Nb 18-12	1.4583	318		Z 6 CNDNb 18-12	

EURONORM/DIN	W. Nr.	AISI / ASTM	UNS	AFNOR	BRAND NAME
<b>SUPERAUSTENITIC STAINLESS STEEL</b>					
X 1 Cr Ni 25-21	1.4335	(310 L NAG)	S 31002	Z 1 CN 25-20	URANUS® 65 / SS 25L
X 1 Cr Ni Mo N 25-25-2	1.4465		N 08310	Z 2 CND 25-25 Az	
X 1 Cr Ni Mo N 25-22-2	1.4466	310 MoLN	S 31050	Z 2 CND 25-22 Az	
X 1 Ni Cr Mo Cu N 25-20-7	1.4529		N 08926	Z 2 NCDU 25-20-06 Az	19-25 hMo / 6MO
X 1 Cr Ni Mo Cu N 25-25-5	1.4537		N 08932	Z 2 NCDU 25-25-05 Az	URANUS® SB8
X 1 Ni Cr Mo Cu 25-20-5	1.4539	904 L	N 08904	Z 2 NCDU 25-20	URANUS® B6 / 2RK 65®
X 1 Cr Ni Mo Cu N 20-18-7	1.4547	F44	S 31254	Z 1 CNDU 20-18-06 Az	254 SMO® / 6MO
X 1 Ni Cr Mo Cu 32-28-7	1.4562		N 08031		ALLOY 31
X 1 Ni Cr Mo Cu 31-27-4	1.4563		N 08028	Z 2 NCDU 31-27	SANICRO 28®
X 3 Cr Ni Mn Mo Nb N 23-17-5-3	1.4565		S 34565		4565 S
X 3 Cr Ni Mo Ti 25-25	1.4577			Z 5 CNDT 25-25	
X 1 Cr Ni Mo Cu N 24-22-8	1.4652		S 32654		654 SMO®
<b>DUPLEX &amp; SUPERDUPLEX</b>					
X 2 Cr Ni N 23-4	1.4362		S 32304	Z 3 CN 23-04 Az	URANUS® 35 N / 23 04
X 2 Cr Ni Mo N 25-7-4	1.4410	A182 F53	S 32750	Z 3 CND 25-07 Az	25 07
X 3 Cr Ni Mo N 27-5-2	1.4460	329	S 32900	Z 5 CND 27-05 Az	SS 44
X 2 Cr Ni Mo N 22-5-3	1.4462	A182 F51	S 31803	Z 3 CND 22-05 Az	URANUS® 45 N / 22 05
X 2 Cr Ni Mo N 22-5-3	1.4462	A182 F60	S 32205	Z 3 CND 22-05 Az	URANUS® 45 N / 22 05
X 2 Cr Ni Mo Cu W N 25-7-4	1.4501	A182 F55	S 32760	Z 3 CNDUW 25-07 Az	ZERON 100®
X 2 Cr Ni Mo Cu N 25-6-3	1.4507	A182 F61	S 32550	Z 3 CNDU 25-07 Az	URANUS® 52 N
<b>HIGH-TEMPERATURE RESISTING STAINLESS STEEL</b>					
X 6 Cr Ni 18-11	1.4948	304 H	S 30409	Z 6 CN 18-09	
X 8 Cr Ni Ti 18-10	1.4941	321 H	S 32109	Z 6 CNT 18-10	
X 6 Cr Ni Nb 18-10	1.4550	347 H	S 34709	Z 6 CNNb 18-10	
X 6 Cr Ni Mo 17-13	1.4919	316 H	S 31609	Z 6 CND 17-12	
X 10 Ni Cr Al Ti 32-20	1.4876		N 08800	Z 10 NC 32-21	INCOLOY® 800
X 5 Ni Cr Al Ti 31-20	1.4958		N 08810	Z 8 NC 33-21	INCOLOY® 800 H
X 8 Ni Cr Al Ti 32-21	1.4959		N 08811		INCOLOY® 800 HT
X 10 Cr Al 7	1.4713			Z 8 CA 7	
X 10 Cr Al 13	1.4724			Z 10 CAS 13	
X 10 Cr Al 18	1.4742			Z 12 CAS 18	
X 18 Cr N 28	1.4749	446	S 44600	Z 12 C 25	4 C 54®
X 10 Cr Al 24	1.4762			Z 12 CAS 25	
X 20 Cr Ni Si 25-4	1.4821			Z 20 CNS 25-04	
X 15 Cr Ni Si 20-12	1.4828			Z 17 CNS 20-12	
X 7 Cr Ni 23-14	1.4833	309 S	S 30908	Z 20 CN 24-13 / Z 15 CN 23-13	
X 10 Cr Ni Si N 21-11	1.4835		S 30815		253 MA®
X 15 Cr Ni Si 25-20	1.4841	314	S 31400	Z 15 CNS 25-20	
X 12 Cr Ni 25-21	1.4845	310 S	S 31008	Z 8 CN 25-20	
X 12 Ni Cr Si 36-16	1.4864	330	N 08330	Z 20 NCS 33-16	INCOLOY® DS

• Incoloy®, Incoloy® and Nimonic® are trademarks of the Special Metals Corporation group of companies  
 • Uranus® is a trademark of the Arcelor-Mittal group of companies  
 • A610® is a trademark of the Böhler-Uddeholm group of companies  
 • 2RK 65®, 4 C 54® and Sanicro 28® are trademarks of Sandvik AB  
 • Zeron 100® is a trademark of Weir Materials Ltd  
 • 253 MA®, 254 SMO® and 254 SMO® are trademarks of Outokumpu group of companies



# MATERIAL COMPARISON TABLE



EURONORM/DIN	W. Nr.	DENSITY	UNS	AFNOR	BRAND NAME
<b>NICKEL, TITANIUM, CUPRO-NICKEL, ZIRCONIUM &amp; ALLOYS</b>					
Ni 99.2	2.4066	8.9	N 02200	Ni 01	NICKEL 200
LC-Ni 99	2.4068	8.9	N 02201	Ni 02	NICKEL 201
NiCu 30 Fe	2.4360	8.8	N 04400	Nu 30	MONEL® 400
NiCu 30 Al	2.4375	8.5	N 05500	Nu 30 AT	MONEL® K 500
NiCr 20 Cu Mo	2.4660	8.0	N 08020	Z 2 NCUUD 31-20 Az	20 Cb 3 / ALLOY 20
NiCr 21 Mo	2.4858	8.1	N 08825	NFe 32 C 20 DU	INCOLOY® 825
NiCr 25 FeAlY	2.4633	7.9	N 06025		ALLOY 602 CA
NiCr 29 Fe	2.4642	8.2	N 06690	NC 30 Fe	INCONEL® 690
NiCr 23 Co 12 Mo	2.4663	8.4	N 06617	NC 22 KDA	INCONEL® 617
NiCr 19 NbMo	2.4668	8.2	N 07718	NC 19 FeNb	INCONEL® 718
NiCr 15 Fe 7 TiAl	2.4669	8.3	N 07750	NC 15 FeT	INCONEL® X-750
NiCr 15 Fe	2.4816	8.4	N 06600	NC 15 Fe	INCONEL® 600
NiCr 23 Fe	2.4851	8.1	N 06601	NC 23 Fe A	INCONEL® 601
NiCr 22 Mo 9 Nb	2.4856	8.5	N 06625	NC 22 Dnb	INCONEL® 625
NiMo 29 Cr	2.4600	9.2	N 10629		ALLOY B4
NiCr 21 Mo 14 W	2.4602	8.7	N 06022		HASTELLOY® C22
NiCr 30 FeMo	2.4603	8.2	N 06030		HASTELLOY® G30
NiCr 23 Mo 16 Al	2.4605	8.6	N 06059		ALLOY 59
NiCr 21 Mo 16 W	2.4606	8.8	N 06686		INCONEL® 686
NiMo 16 Cr 16 Ti	2.4610	8.6	N 06455		HASTELLOY® C4
NiMo 28	2.4617	9.2	N 10665	NiMo 28	HASTELLOY® B2
		9.2	N 10675		HASTELLOY® B3
NiCr 22 Mo 6 Cu	2.4618	8.4	N 06007		HASTELLOY® G
NiCr 22 Mo 7 Cu	2.4619	8.3	N 06985		HASTELLOY® G3
NiCr 22 Fe 18 Mo	2.4665	8.3	N 06002	NC 22 FeD	HASTELLOY® X
NiCr 23 Mo 16 Cu	2.4675	8.5	N 06200		HASTELLOY® C 2000
NiMo 16 Cr 15 W	2.4819	8.9	N 10276	NiMo 16 Cr 15	HASTELLOY® C276
NiCr 20 Ti	2.4951	8.4	N 06075	NC 20 T	NIMONIC 75®
NiCr 20 Ti Al	2.4952	8.2	N 07080	NC 20 TA	NIMONIC 80 A®
NiCr 20 Co 18 Ti	2.4969	8.2	N 07090	NCK 20 TA	NIMONIC 90®
NiCo 20 Cr 15 MoAlTi	2.4634	8.0	N 13021	NK 20 CDA	NIMONIC 105®
	3.7025	4.5	R 50250	T 35	Grade 1
	3.7035	4.5	R 50400	T 40	Grade 2
	3.7065	4.5		T 60	Grade 4
	3.7165	4.4		TA 6V	Grade 5 / 6 Al 4 V
	3.7235	4.5	R 52400	T 40 Pd	Grade 7
	3.7225	4.5	R 52250	T 35 Pd	Grade 11
CuNi 10 Fe 1 Mn	2.0872	8.9	C 70600	CuNi 10 Fe	CUPRONICKEL 90/10
CuNi 30 Mn 1 Fe	2.0882	8.9	C 71500	CuNi 30 Mn 1 Fe	CUPRONICKEL 70/30
		6.5	R 60702		ZIRKONIUM 702

### Registered Trademark information

- Incoloy®, Incoloy® and Nimonic® are trademarks of the Special Metals Corporation group of companies
- Uranus® is a trademark of the Arcelor-Mittal group of companies
- A610® is a trademark of the Böhler-Uddeholm group of companies
- 2RK 65®, 4 C 54® and Sanicro 28® are trademarks of Sandvik AB
- Zeron 100® is a trademark of Weir Materials Ltd
- 253 MA®, 254 SMO® and 254 SMO® are trademarks of Outokumpu group of companies
- Hastelloy® is a trademark of Haynes International Inc.

EURONORM	DIN	W. Nr.	ASTM	ASTM	ASTM	AFNOR
<b>LOW / HIGH-TEMPERATURE RESISTING CARBON / ALLOY STEEL</b>						
12 Ni 14	10 Ni 14	1.5637	A 333 Gr. 3	A 420 WPL 3	A 350 LF 3	TU 10 N 14
	X 8 Ni 9	1.5662	A 333 Gr. 8	A 420 WPL 8		Z 8 N 9
	T St E 285	1.0488	A 333 Gr. 6	A 420 WPL 6	A 350 LF 2	TU 42 BT
P 235GH	ST 35.8	1.0305	A106 Gr. A			TU 37 C
P 265GH	ST 45.8	1.0405	A106 Gr. B	A 234 WPB	A 105	TU 42 C
			API 5L Gr. B			
16 Mo 3	15 Mo 3	1.5415				TU 15 D 3
	16 Mo 5	1.5423	A 335 P 1	A 234 WP 1	A 182 F 1	
			A 335 P 11	A 234 WP 11	A 182 F 11	TU 10 CD 5.05
13 Cr Mo 4-5	13 Cr Mo 4 4	1.7335	A 335 P 12	A 234 WP 12	A 182 F 12	TU 13 CD 4.04
10 Cr Mo 9-10	10 Cr Mo 9 10	1.7380	A 335 P 22	A 234 WP 22	A 182 F 22	TU 10 CD 9.10
X 11 Cr Mo 5	12 Cr Mo 19 5	1.7362	A 335 P 5	A 234 WP 5	A 182 F 5	TU Z 12 CD 05.05
X 12 Cr Mo 9 1	X 11 Cr Mo 9-10	1.7386	A 335 P 9	A 234 WP 9	A 182 F 9	TU Z 10 CD 09
X 10 Cr Mo V Nb 9-1	X 10 Cr Mo V Nb 9-1	1.4903	A 335 P 91	A 234 WP 91	A 182 F 91	TU Z 10 CDNbV 09.01
X 20 Cr Mo V 12-1	X 20 Cr Mo V 11-1	1.4922				

### PIPE WALL THICKNESS TABLE

NPS	mm	5S	10S	10	20	30	40S	STD	40	60	80S	XS	80	100	120	140	160	XXS	
1/8	10.29	-	1.24	-	-	-	1.73	1.73	1.73	-	2.41	2.41	2.41	-	-	-	-	-	
1/4	13.72	-	1.65	-	-	-	1.73	1.73	1.73	-	3.02	3.02	3.02	-	-	-	-	-	
3/8	17.14	-	1.65	-	-	-	2.31	2.31	2.31	-	3.20	3.20	3.20	-	-	-	-	-	
1/2	21.34	1.65	2.11	-	-	-	2.77	2.77	2.77	-	3.73	3.73	3.73	-	-	-	-	4.75	7.47
3/4	26.67	1.65	2.11	2.11	-	-	2.87	2.87	2.87	-	3.91	3.91	3.91	-	-	-	-	5.54	7.82
1	33.40	1.65	2.77	2.77	-	-	3.38	3.38	3.38	-	4.55	4.55	4.55	-	-	-	-	6.35	9.09
1 1/4	42.16	1.65	2.77	2.77	-	-	3.56	3.56	3.56	-	4.85	4.85	4.85	-	-	-	-	6.35	9.70
1 1/2	48.26	1.65	2.77	2.77	-	-	3.68	3.68	3.68	-	5.08	5.08	5.08	-	-	-	-	7.14	10.16
2	60.32	1.65	2.77	2.77	-	-	3.91	3.91	3.91	-	5.54	5.54	5.54	-	-	-	-	8.71	11.07
2 1/2	73.02	2.11	3.05	3.05	-	-	5.16	5.16	5.16	-	7.01	7.01	7.01	-	-	-	-	9.52	14.02
3	88.90	2.11	3.05	3.05	-	-	5.49	5.49	5.49	-	7.62	7.62	7.62	-	-	-	-	11.13	15.24
3 1/2	101.60	2.11	3.05	3.05	-	-	5.74	5.74	5.74	-	8.08	8.08	8.08	-	-	-	-	-	16.15
4	114.30	2.11	3.05	3.05	-	-	6.02	6.02	6.02	-	8.56	8.56	8.56	-	11.13	-	-	13.49	17.12
5	141.30	2.77	3.40	3.40	-	-	6.55	6.55	6.55	-	9.53	9.53	9.53	-	12.70	-	-	15.88	19.05
6	168.28	2.77	3.40	-	-	-	7.11	7.11	7.11	-	10.97	10.97	10.97	-	14.27	-	-	18.24	21.95
8	219.08	2.77	3.76	-	6.35	7.04	8.18	8.18	8.18	10.31	12.70	12.70	12.70	15.06	18.26	20.62	23.01	22.22	
10	273.05	3.40	4.19	-	6.35	7.80	9.27	9.27	9.27	12.70	12.70	12.70	12.70	15.06	18.26	21.44	25.40	28.58	25.40
12	323.85	3.96	4.57	-	6.35	8.38	9.52	9.52	10.31	14.27	12.70	12.70	12.70	17.48	21.44	25.40	28.58	33.32	25.40
14	355.60	3.96	4.78	6.35	7.92	9.52	-	9.52	11.13	15.06		12.70	19.05	23.83	27.79	31.75	35.71	-	
16	406.40	4.19	4.78	6.35	7.92	9.52	-	9.52	12.70	16.66		12.70	21.44	26.19	30.96	36.52	40.46	-	
18	457.20	4.19	4.78	6.35	7.92	11.12	-	9.52	14.27	19.05		12.70	23.82	29.36	34.92	39.67	45.24	-	
20	508.00	4.78	5.54	6.35	9.52	12.70	-	9.52	15.06	20.62		12.70	26.19	32.54	38.10	44.45	49.99	-	
22	558.8	4.78	5.54	6.35	9.52	12.70	-	9.52	15.87	22.22		12.70	28.58	34.92	41.28	47.62	53.98	-	
24	609.4	5.54	6.35	6.35	9.52	14.27	-	9.52	17.48	24.61		12.70	30.93	38.89	46.02	52.37	59.51	-	
26	660.4	-	-	-	-	-	-	9.52	-	-		12.70	-	-	-	-	-	-	-
28	711.2	-	-	7.92	12.70	15.88	-	9.52	-	-		12.70	-	-	-	-	-	-	-
30	762.0	6.35	7.92	7.92	12.70	15.88	-	9.52	-	-		12.70	-	-	-	-	-	-	-
32	812.8	-	-	7.92	12.70	15.88	-	9.52	17.48	-		12.70	-	-	-	-	-	-	-
34	863.6	-	-	7.92	12.70	15.88	-	9.52	17.48	-		12.70	-	-	-	-	-	-	-
36	914.4	-	-	7.92	12.70	15.88	-	9.52	19.05	-		12.70	-	-	-	-	-	-	-
38	965.2	-	-	-	-	-	-	9.52	-	-		12.70	-	-	-	-	-	-	-
40	1016.0	-	-	-	-	-	-	9.52	-	-		12.70	-	-	-	-	-	-	-
42	1066.8	-	-	-	-	-	-	9.52	-	-		12.70	-	-	-	-	-	-	-
44	1117.6	-	-	-	-	-	-	9.52	-	-		12.70	-	-	-	-	-	-	-
46	1168.4	-	-	-	-	-	-	9.52	-	-		12.70	-	-	-	-	-	-	-
48	1219.2	-	-	-	-	-	-	9.52	-	-		12.70	-	-	-	-	-	-	-