

CLADDINGS

Cladding material is selected by the customer. Depending on application and requirements, a broad range of grades is available. The most fre-

quently used claddings are listed in the tables on pages 17 and 18/19.

STAINLESS AND HEAT-RESISTANT STEEL GRADES

Standard	Material No.	Abbreviation	Chemical composition (heat analysis) % ¹⁾ (Extract)							ASTM A240 ASME SA 240 Type
			C max.	Si max.	Mn max.	Cr	Ni	Mo	Others	
EN 10088	1.4000	X6Cr13	0.08	1.00	1.00	12.00-14.00	-	-	-	410S
	1.4002	X6CrAl13	0.08	1.00	1.00	12.00-14.00	-	-	Al 0.10-0.30	405
	1.4301	X5CrNi18-10	0.07	1.00	2.00	17.00-19.50	8.00-10.50	-	N ≤ 0.11	304
	1.4306	X2CrNi19-11	0.030	1.00	2.00	18.00-20.00	10.00-12.00	-	N ≤ 0.11	304L
	1.4541	X6CrNiTi18-10	0.08	1.00	2.00	17.00-19.00	9.00-12.00	-	Ti ≥ 5x%C%0.70	321
	1.4550	X6CrNiNb18-10	0.08	1.00	2.00	17.00-19.00	9.00-12.00	-	Nb ≥ 10x%C%1.0	347
	1.4401	X5CrNiMo17-12-2	0.07	1.00	2.00	16.50-18.50	10.00-13.00	2.00-2.50	N ≤ 0.11	316
	1.4404	X2CrNiMo17-12-2	0.030	1.00	2.00	16.50-18.50	10.00-13.00	2.00-2.50	N ≤ 0.11	316L
	1.4571	X6CrNiMoTi17-12-2	0.08	1.00	2.00	16.50-18.50	10.50-13.50	2.00-2.50	Ti ≥ 5x%C%0.70	316Ti
	1.4435	X2CrNiMo18-14-3	0.030	1.00	2.00	17.00-19.00	12.50-15.00	2.50-3.00	N ≤ 0.11	316L ≥ 2.5 Mo
	1.4436	X3CrNiMo17-13-3	0.05	1.00	2.00	16.50-18.50	10.50-13.00	2.50-3.00	N ≤ 0.11	316 ≥ 2.5 Mo
	1.4429	X2CrNiMoN17-13-3	0.030	1.00	2.00	16.50-18.50	11.00-14.00	2.50-3.00	N 0.12-0.22	316LN ≥ 2.5 Mo
	1.4438	X2CrNiMo18-15-4	0.030	1.00	2.00	17.50-19.50	13.00-16.00	3.00-4.00	N ≤ 0.11	317L
	1.4439	X2CrNiMoN17-13-5	0.30	1.00	2.00	16.50-18.50	12.50-14.50	4.00-5.00	N 0.12-0.22	-
SEW 470	1.4828	X 15 CrNiSi 20 12	0.20	1.5-2.5	2.0	19.0-21.0	11.0-13.0	-	-	305

¹⁾ P 0.045 max., S 0.030 max.

SPECIAL STEELS, NON-FERROUS METALS AND ALLOYS ¹⁾

EN Material No.	Abbreviation	Chemical composition (heat analysis) % (Extract)							
		C max.	Si max.	Mn max.	P max.	S max.	Cr	Ni	Mo
2.4660	NiCr20CuMo	0.07	1.00	2.0	0.025	0.015	19.0–21.0	32.0–38.0	2.0–3.0
1.4539	X1NiCrMoCu 25-20-5	0.020	0.70	2.00	0.030	0.010	19.00–21.00	24.00–26.00	4.00–5.00
1.4563	X1NiCrMoCuN 31-27-4	0.020	0.7	2.00	0.030	0.010	26.00–28.00	30.00–32.00	3.00–4.00
1.4529	X1NiCrMoCuN 25-20-7	0.020	0.5	1.00	0.030	0.010	19.00–21.00	24.00–26.00	6.00–7.00
1.4876	X 10 NiCrAlTi 32 20	0.12	1.0	2.0	0.030	0.020	19.0–23.0	30.0–34.0	–
2.4858	NiCr21Mo	0.025	0.50	1.00	0.020	0.015	19.5–23.5	38.0–46.0	2.5–3.5
2.4816	NiCr15Fe	0.025- 0.10	0.50	1.00	0.020	0.015	14.0–17.0	≧ 72.0	–
2.4856	NiCr22Mo9Nb	0.10	0.5	0.50	0.020	0.015	20.0–23.0	≧ 58.0	8.0–10.0
2.4602	NiCr21Mo14W	0.010	0.08	0.50	0.025	0.015	20.0–22.5	Rest	12.5–14.5
2.4610	NiMo16Cr16Ti	0.015	0.08	1.00	0.025	0.015	14.50–18.0	Rest	14.0–17.0
2.4819	NiMo16Cr15W	0.010	0.08	1.0	0.020	0.015	14.5–16.5	Rest	15.0–17.0
2.4605	NiCr23Mo16Al	0.010	0.10	0.50	0.025	0.015	22.0–24.0	Rest	15.0–16.5
2.4617	NiMo 28	0.010	0.08	1.00	0.025	0.015	≤1.0	Rest	26.0–30.0
2.4600	NiMo29Cr	0.010	0.10	3.00	0.025	0.015	0.5–3.0	≧ 65.0	26.0–32.0
2.4360	NiCu30Fe	0.15	0.5	2.0	–	0.02	–	≧ 63	–
2.4066	Ni99,2	0.10	0.25	0.35	–	0.005	–	≧ 99.2	–
2.4068	LC-Ni99	0.02	0.25	0.35	–	0.005	–	≧ 99.0	–
2.0070	SE-Cu	–	–	–	0.003	–	–	–	–
CW 024 A	Cu-DHP	–	–	–	0.015– 0.040	–	–	–	–
CW 352 H	CuNi10Fe1Mn	0.05	–	0.5– 1.0	–	0.05	–	9.0–11.0	–
CW 354 H	CuNi30Mn1Fe	0.05	–	0.5– 1.5	–	0.05	–	30.0–32.0	–
3.7025	Ti1	0.06	–	–	–	–	–	–	–
3.7035	Ti2	0.06	–	–	–	–	–	–	–

¹⁾ Stress-relief annealing only after consulting with the manufacturer.

²⁾ For comparison of the materials with respect to resistance to perforation corrosion; value not specified.

Others	Mean effective sum %Cr+3,3x%Mo ²⁾	VdTÜV Material sheet	EN DIN SEW	Comparable materials			
				ASTM	Alloy type	Registered trademark ³⁾	VDM designation
Cu 3.0–4.0 Nb \geq 8x%C-1.00 Fe Rest	28	–	DIN 17744	B 463 UNS N08020	Alloy 20	–	Nicrofer 3620 Nb*
Cu 1.20–2.00 N \leq 0.15	35	421	EN 10088	B 625 UNS N08904	Alloy 904 L	–	Cronifer 1925 LC*
Cu 0.70–1.50 N \leq 0.11	39	–		B 709 UNS N08028	Alloy 28	–	Nicrofer 3127 LC*
Cu 0.50–1.50 N 0.15–0.25	41	502		B 625 UNS N08925	Alloy 925	–	Cronifer 1925 hMo*
Al 0.15–0.6 Ti 0.15–0.6		412	SEW 470	B 409 UNS N08800	Alloy 800	Incoloy 800*	Nicrofer 3220*
CU 1.5–3.0 Ti 0.60–1.20 Fe Rest	31	432	DIN 17744	B 424 UNS N08825	Alloy 825	Incoloy 825*	Nicrofer 4221*
Fe 6.0–10.0 Cu \leq 0.50		305	DIN 17742	B 168 UNS N06600	Alloy 600	Inconel 600*	Nicrofer 7216*
Fe \leq 5.0 Nb 3.15–4.15 Al \leq 0.40 Ti \leq 0.40	51	499	DIN 17744	B 443 UNS N06625	Alloy 625	Inconel 625*	Nicrofer 6020 hMo*
Fe 2.0–6.0 W 2.5–3.5 V \leq 0,35 Co \leq 2.5	66	479	DIN 17744	B 575 UNS N06022	Alloy C 22	Hastelloy C 22*	Nicrofer 5621 hMoW*
Fe \leq 3.0 Ti \leq 0.70 Co \leq 2.0	67	424	DIN 17744	B 575 UNS N06455	Alloy C 4	Hastelloy C 4*	Nicrofer 6616 hMo*
W 3.0–4.5 Fe 4.0–7.0 Co \leq 2.5 V \leq 0.35 Cu \leq 0.5	68	400	DIN 17744	B 575 UNS N10276	Alloy C 276	Hastelloy C 276*	Nicrofer 5716 hMoW*
Al 0.1–0.4 Fe \leq 1.5 Co \leq 0.3	75	505	DIN 17744	B 575 UNS N06059	Alloy 59	–	Nicrofer 5923 hMo*
Fe \leq 2.0 Co \leq 1.00		436	DIN 17744	B 333 UNS N10665	Alloy B 2	Hastelloy B 2*	Nimofer 6928*
Al 0.10–0.50		512	DIN 17744	B 333 UNS N10629	Alloy B4		Nimofer 6629*
Cu 28–34 Fe 1.0–2.5 Al \leq 0.5		263	DIN 17743	B 127 UNS N04400	Alloy 400	Monel 400*	Nicorros*
Fe \leq 0.4 Cu \leq 0.25		–	DIN 17740	B 162 UNS N02200	Alloy 200	Nickel 200*	Ni 99.2
Fe \leq 0.4 Cu \leq 0.25		345		B 162 UNS N02201	Alloy 201	Nickel 201*	LC-Ni 99.2
Cu \geq 99.90		–	DIN 1787	–	–	–	–
Cu \geq 99.90		–	EN 1652	B 152 UNS No.C12200	–	–	–
Fe 1.0–2.0 Cu Rest		420		B 171 UNS No.C70600	Alloy CuNi 90/10	–	Cunifer 10*
Fe 0.40–1.0 Cu Rest		–		B 171 UNS No.C71500	Alloy CuNi 70/30	–	Cunifer 30*
Fe \leq 0.15 O \leq 0.12 Ti Rest		230	DIN 17850	B 265 Grade 1	Titan Grade 1	–	–
Fe \leq 0.20 O \leq 0.18 Ti Rest		230		B 265 Grade 2	Titan Grade 2	–	–

³⁾Incoloy, Inconel, Monel – registered trademarks of Special Metals Corporation
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