MATERIALI

Caratteristiche meccaniche e chimiche

Leghe di Nichel

Alloy	Main Trademarks ®	UNS	W.Nr.	EN	Density Kg/dm³	Reference	Tensile Strength min N/mm²	Yield Point min N/mm²	Elongation 2" min %	Hardness max HB **	Hardness max HRB **
200	-	N02200	2.4066	Ni 99.2	8.9	B/SB 162	380	100	40	140	80
201	-	N02201	2.4068	LC Ni 99	8.9	B/SB 162	345	80	40	135	75
400	Monel 400	N04400	2.4360	NiCu 30 Fe	8.8	B/SB 127	485	195	35	140	80
600	Inconel 600	N06600	2.4816	NiCr 15 Fe	8.4	B/SB 168	550	240	30	180	90
601	Inconel 601	N06601	2.4851	NiCr 23 Fe	8.1	B/SB 168	550	205	30	180	90
602 CA	-	N06025	2.4633	NiCr25FeAlY	7.9	B/SB 168	680	270	30	-	-
617	Inconel 617	N06617	2.4663	NiCr 23 Co 12 Mo	8.4	B/SB 168	655	240	35	-	-
625	Inconel 625	N06625	2.4856	NiCr 22 Mo 9 Nb	8.4	B/SB 443	758 ***	379 ***	30	-	-
800	Incoloy 800	N08800	1.4876	X10 NiCrAlTi 32 20	8	A/SA 240	520	205	30	-	-
800H	Incoloy 800H	N08810	1.4958-1.4876*	X5 NiCrAlTi 31 20	8	A/SA 240 - B/SB 409	450	170	30	-	-
800HT	Incoloy 800HT	N08811	1.4959	X8 NiCrAlTi 32 21	8	A/SA 240 - B/SB 409	450	170	30	-	-
825	Incoloy 825	N08825	2.4858	NiCr 21 Mo	8.1	B/SB 424	586	241	30	165	87
20	-	N08020	2.4660	NiCr 20 CuMo	8.1	B/SB 463	551	241	30	217	95
B3	Hastelloy B3	N10675	2.4600	Ni Mo 29 Cr	9.2	B/SB 333	760	350	40	-	100
B4	-	N10629	2.4600	Ni Mo 29 Cr	9.2	B/SB 333	760	350	40	-	100
C276	Hastelloy C276	N10276	2.4819	NiMo 16 Cr 15 W	8.9	B/SB 575	690	283	40	226	100
C22	Hastelloy C-22	N06022	2.4602	Ni Cr 21 Mo 14 W	8.7	B/SB 575	690	310	45	-	100
C2000	Hastelloy C2000	N06200	2.4675	-	8.5	B/SB 575	690	310	45	-	100
C4	Hastelloy C4	N06455	2.4610	NiMo 16 Cr 16 Ti	8.6	B/SB 575	690	276	40	226	100
59	-	N06059	2.4605	NiCr 23 Mo 16 Al	8.6	B/SB 575	690	310	45	-	100
X	Hastelloy X	N06002	2.4665	NiCr 22 Fe 18 Mo	8.2	B/SB 435	655	240	35	-	-
G30	Hastelloy G30	N06030	2.4603	-	8.2	B/SB 582	586	241	30	-	-
G35	Hastelloy G35	N06035	2.4643	-	8.2	B/SB 575	586	241	30	-	100
-	HR 120	N08120	2.4854	-	8.0	B/SB 409	621	276	30	-	-
Cu/Ni 90/10	-	C70600	2.0872	CuNi 10 Fe 1 Mn	8.9	B/SB 171	275	105	30	-	-

* VdTÜV 412/434
* * Valori indicativi, non sono da utilizzare come base di accettazione.
* * * Valori riferiti al grado 1. Per il grado 2: T.S.min= 690, Y.P.min=276

Titanio

Grade	UNS	W.Nr.	Density Kg/dm³	Reference	Tensile Strength min N/mm²	Yield Point min N/mm²	Elongation 2" min %
Ti Gr.1	R50250	3.7025	4.5	B/SB 265	240	138 - 310	24
Ti Gr.2	R50400	3.7035	4.5	B/SB 265	345	275 - 450	20
Ti Gr.7	R52400	3.7235	4.5	B/SB 265	345	275 - 450	20
Ti Gr.12	R53400	3.7105	4.5	B/SB 265	483	345	18

Zirconio

Grade	UNS	W.Nr.	Density Kg/dm³	Reference	Tensile Strength min N/mm²	Yield Point min N/mm²	Elongation 2" min %
Zirconio 702	R60702	-	6.5	B 551	380	205	16

Nickel alloys

C % max	Mn % max	Si % max	P % max	S % max	Cr %	Ni %	Mo %	Fe %	Cu % max	Co % max	Al % max	Other elements
0.15	0.35	0.35	-	0.01	-	99.0 min	-	0.40 max	0.25	-	-	-
0.02	0.35	0.35	-	0.01	-	99.0 min	-	0.40 max	0.25	-	-	-
0.30	2.00	0.50	-	0.024	-	63 min	-	2.50 max	28 - 34	-	-	-
0.15	1.00	0.50	-	0.015	14 - 17	72 min	-	6 - 10	0.50	-	-	-
0.10	1.00	0.50	-	0.015	21 - 25	58 - 63	-	Resto Balance	1.00	-	1 - 1.7	-
0.15 - 0.25	0.15	0.5	0.02	0.01	24 - 26	Resto Balance	-	8-11	0.1	-	1.8 - 2.4	Ti 0.1-0.2 / Zr 0.01-0.1 / Y 0.05-0.12
0.05 - 0.15	1	1	-	0.015	20 - 24	44.5 min	8 - 10	3 max	0.5	10 - 15	0.8 - 1.5	Ti 0.6 max / B 0.006 max
0.10	0.50	0.50	0.015	0.015	20 - 23	58 min	8 - 10	5.0 max	-	1.0	0.40	Ti 0.4 / Cb+Ta 3.15-4.15
0.10	1.50	1.00	0.045	0.015	19 - 23	30 - 35	-	39.5 min	0.75		0.15 - 0.6	Ti 0.15-0.6
0.05 - 0.1	1.50	1.00	0.045	0.015	19 - 23	30 - 35	-	39.5 min	0.75	-	0.15 - 0.6	Ti 0.15-0.6
0.06 - 0.1	1.50	1.00	0.40	0.015	19 - 23	30 - 35	-	39.5 min	0.75	-	0.15 - 0.6	Ti 0.15-0.6 / Al+Ti 0.85-1.2
0.05	1.00	0.50	-	0.03	19.5 - 23.5	38 - 46	2.5 - 3.5	22 min	1.5 - 3	-	0.2	Ti 0.6-1.2
0.07	2.00	1.00	0.045	0.035	19 - 21	32 - 38	2 - 3	Resto Balance	3 - 4			Co+Ta (8XC)-1.00
0.01	3.00	0.10	0.03	0.01	1 - 3	65 min	27 - 32	1 - 3	0.2	3	0.5	Ti 0.2 / W 3 / Zn 0.1 / Nb 0.2 / Co 3/ Al 0.5 / Ta 0.2 / V 0.2
0.01	1.5	0.05	0.04	0.01	0.5 - 1.5	Resto Balance	26 - 30	1 - 6	0.5	2.5	0.1 - 0.5	-
0.01	1.00	0.08	0.04	0.03	14.5 - 16.5	Resto Balance	15 - 17	4 - 7	-	2.5	-	W 3-4.5 / V 0.35
0.015	0.50	0.08	0.02	0.02	20 - 22.5	Resto Balance	12.5 - 14.5	2 - 6	-	2.5	-	W 2.5-3.5 / V 0.35
0.01	0.5	0.08	0.025	0.01	22 - 24	Resto Balance	15 - 17	3 max	1.3 - 1.9	2	0.5	-
0.015	1.00	0.08	0.04	0.03	14 - 18	Resto Balance	14 - 17	3 max	-	2.0	-	Ti 0.7 max
0.01	0.50	0.10	0.015	0.01	22 - 24	Resto Balance	15 - 16.5	1.5 max	0.5	0.3	0.1 - 0.4	-
0.05 - 0.15	1.00	1.00	0.04	0.03	20.5 - 23	Resto Balance	8 - 10	17 - 20	-	0.5 - 2.5	-	W 0.2-1.0
0.03	1.50	0.80	0.04	0.02	28 - 31.5	Resto Balance	4 - 6	13 - 17	1.0 - 2.4	5	-	W 1.5-4 / Co+Ta 0.3-1.5
0.050	0.50	0.60	0.03	0.015	32.25 - 34.25	Resto Balance	7.6 - 9	2 max	0.30	1	0.40	W 0.6 max / V 0.20max
0.02-0.1	1.5	1.00	0.040	0.03	23 - 27	35 - 39	2.5 max	Resto Balance	0.5	3	0.4	Ti 0.2 max / W 2.5 max / Nb 0.4-0.9 /N 0.15-0.30 / B 0.01 max
0.05	1.00	-	0.02	0.02	-	+Cb 9 - 11	-	1 - 1.8	Resto Balance	-	-	Zn 0.5 max / Pb 0.02 max

* VdTÜV 412/434
* * Approximate values, for information purposes only and are not to be used as a basis of acceptance or rejection.
* * * Values referred to grade 1. For grade 2: T.S.min= 690, Y.P.min=276

Titanium

C % max	N % max	H % max	O % max	Fe % max	Ti %	Ni %	Mo %	Pd %
0.08	0.03	0.015	0.18	0.20	Resto Balance	-	-	-
0.08	0.03	0.015	0.25	0.30	Resto Balance	-	-	-
0.08	0.03	0.015	0.25	0.30	Resto Balance	-	-	0.12 - 0.25
0.08	0.03	0.015	0.25	0.30	Resto Balance	0.6 - 0.9	0.2 - 0.4	-

Zirconium

C % max	N % max	H % max	O % max	Fe+Cr % max	Hf % max	Zr+Hf % min
0.05	0.025	0.005	0.16	0.2	4.5	99.2