BRONMETAL

Alloys

ALLOY	MATERIAL CONDITION	CHEMICAL COMPOSITION																	TYPICAL MECHANICAL PROPERTIES				NATIONAL SPECIFICATION
400	ANNEALED		Ni	Cu	Fe	Mn	C	Si	S										**Tensile Strength,min Yield Strength (0,2 % offset), min Elongation in 2" or 50mm (or 4D), min**	**PSI** 70,000 25,000	**MPa** 480 170	**%** 35	**BS 3076 NA13** ASTM B164 W Nr 2,4360 UNS N04400
		Mín.	63,0	28,0	–	–	–	–	–	%													
		Máx.	–	34,0	2,5	2,0	0,3	0,2	0,024	%													
K500	HOT WORKED SOLUTION ANNEALED & PRECIPITATION TREATED (AGED)		Ni	Cu	Fe	Al	C	Si	Mn	Ti	S								**Size(mm)**				
		Mín.	63,0	27,0	–	2,3	–	–	–	0,35	–	%							**Over** – 25 110 / **Up to & including** 25 110 300	**0,2% PS.** min 620 585 500	**MPa Tensile Strength min** 900 900 830	**Elongation on gaude length of 5,65/So** 20 20 15	**BS 3076 NA18** W Nr 2,4375 UNS N05500
		Máx.	–	33,0	2,0	3,2	0,25	0,5	1,5	0,85	0,01	%											
625	ANNEALED GRADE 1		C	Mn	Si	P	S	Cr	Cb+Ta	Co	Mo	Fe	Al	Ti	Ni				**Tensile Strength,min Yield Strength (0,2 % offset), min Elongation in 2" or 50mm (or 4D), min**	**PSI** 120,000 60,000	**MPa** 827 413	**%** 30	**BS 3076 NA21** ASTM B446 AMS 5666 W Nr 2,4856 UNS N06625
		Mín.	–	–	–	–	–	20,0	3,15	–	8,0	–	–	–	58,0	%							
		Máx.	0,1	0,5	0,5	0,15	0,15	23,0	4,15	1,0	10,0	5,0	0,4	0,4	–	%							
825	ANNEALED		Ni	Cr	Fe	Mn	C	Cu	Si	S	Al	Ti	Mo						**Tensile Strength,min Yield Strength (0,2 % offset), min Elongation in 2" or 50mm (or 4D), min**	**PSI** 85,000 35,000	**MPa** 586 241	**%** 30	**BS 3076 NA16** ASTM B425 UNS N08825
		Mín.	38,0	19,5	22,0	–	–	1,5	–	–	–	0,6	2,5	%									
		Máx.	46,0	23,5	–	1,0	0,05	3,0	0,5	0,03	0,2	1,2	3,5	%									

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			C	Mn	Si	P	S	Cr	Ni	Mo	Cb+Ta	Ti	Al	Co	B	Cu	Fe						
718	SOLUTION ANNEALED & PRECIPITATION TREATED (AGED)SOLUTION ANNEALED	Mín.	–	–	–	–	–	17,0	50,0	2,8	4,75	0,65	0,2	–	–	–	Bal	%	**Tensile Strength,min Yield Strength (0,2 % offset), min Elongation in 2" or 50mm (or 4D), min Reduction of Area Hardness (Rockwell)**	**PSI** 150,000 120,000 40 Rc (max)	**MPa** 1034 825	**%** 17 25	**ASTM B637** AMS 5662 AMS 5663 UNS N07718
		Máx.	0,08	0,035	0,35	0,15	0,15	21,0	55,0	3,3	5,5	1,15	0,8	1,0	0,006	0,3		%					
			C	Mn	Si	S	Cr	Co	Cb+Ta	Ti	Al	Fe	Cu	Ni									
X-750	SOLUTION ANNEALED & PRECIPITATION TREATED (AGED)	Mín.	–	–	–	–	14,0	–	0,7	2,25	0,4	5,0	–	70,0	%				**Tensile Strength,min Yield Strength (0,2 % offset), min Elongation in 2" or 50mm (or 4D), min Reduction of Area Hardness (Rockwell)**	**PSI** 125,000 85,000 35 Rc (max)	**MPa** 861 586	**%** 12 12	**ASTM B637** AMS 5668 UNS N07750
		Máx.	0,08	1,0	0,5	0,01	17,0	1,0	1,2	2,75	1,0	9,0	0,5	–	%								
			C	Mn	Si	P	S	Cr	Ni	Mo	Ti	Al	V	B	Fe								
A-286	SOLUTION ANNEALED & PRECIPITATION TREATED (AGED)	Mín.	–	–	–	–	–	13,5	24,0	1,0	1,9	–	0,1	0,001	Bal	%			**Tensile Strength,min Yield Strength (0,2 % offset), min Elongation in 2" or 50mm (or 4D), min Reduction of Area Hardness (Brinell)**	**PSI** 145,000 105,000 293-331 HBN	**MPa** 1000 724	**%** 15 18 30-35 Rc	**ASTM B638** GRADE 660 TYPE 2 * MEETS THE REQUIREMENTS OF ASTM A453 GRADE 660B AMS 5731 AMS 5732 UNS K66286
		Máx.	0,08	2,0	1,0	0,04	0,3	16,0	27,0	1,5	2,35	0,35	0,5	0,01		%							

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ALLOY	MATERIAL CONDITION	CHEMICAL COMPOSITION																	TYPICAL MECHANICAL PROPERTIES				NATIONAL SPECIFICATION
			Mo	Cr	Fe	W	Co	C	Si	Mn	V	P	S	Ni									
C-276	SOLUTION ANNEALED	Mín.	15,0	14,5	4,0	3,0	–	–	–	–	–	–	–	Bal	%				**Tensile Strength,min Yield Strength (0,2 % offset), min Elongation in 2" or 50mm (or 4D), min**	**PSI** 100,000 41,000	**MPa** 690 283	**%** 40	**ASTM B574** W Nr 2,4602 UNS N10276
		Máx.	17,0	16,5	7,0	4,5	2,5	0,01	0,08	1,0	0,35	0,04	0,03		%								
			C	Si	Mn	S	Ag	Al	B	Bi	Co	Cr	Cu	Fe	Pb	Ti	Ni						
80A	SOLUTION ANNEALED & PRECIPITATION TREATED (AGED)	Mín.	0,04	–	–	–	–	1,0	–	–	–	18,0	–	–	–	1,8	Bal	%	**Tensile Strength,min Yield Strength (0,2 % offset), min Elongation in 2" or 50mm (or 4D), min**	**PSI** 142,000 86,000	**MPa** 980 590	**%** 20	**BS 3076 NA20** BS 2HRI ASTM B637 W 2,4952 UNS N07080
		Máx.	0,1	1,0	1,0	0,015	0,0005	1,8	0,008	0,0001	2,0	21,0	0,2	1,5	0,002	2,7		%					
			Al	V	C	Fe	O	N	H	Ti													
TITANIUM 6AL-4V	ANNEALED	Mín.	5,5	3,5	–	–	–	–	–	–	%								**Tensile Strength,min 0,2% Proof Stress, min Elongation over 2", min Reduction in Area, min Hardness (Rockwell)**	**PSI**	**MPa** 897 828 (Typical)	**%** 10 25 36 Rc	**ASTM B348** GRADE 5 AMS 4928 BS 2TA11 BS 7252:PT3 MIL-T-9047
		Máx.	6,75	4,5	0,08	0,3	0,2	0,05	0,0125	Bal	%												
			C	Ni	Co	Mo	Ti	Al	Mn	Si	Fe												
MARAGING TYPE 250	SOLUTION TREATED	Mín.	–	17,0	7,0	4,6	0,3	0,05	–	–	Bal	%							**Tensile Strength,min Yield Strength Reduction in Area, min Elongation % (4d)**	**PSI**	**MPa** 1815 1760 60,8	% 12,6	**AMS 6512** S162 (DTD 5212) MIL-S-46850 GR.250 W 1,6359
		Máx.	0,03	19,0	8,5	5,2	0,5	0,15	0,1	0,1		%											
			C	Ni	Co	Mo	Ti	Al	Mn	Si	Fe												
MARAGING TYPE 300	SOLUTION TREATED	Mín.	–	17,0	8,0	4,6	0,5	0,05	–	–	Bal	%							**Tensile Strength,min Yield Strength Reduction in Area, min Elongation % (4d)**	**PSI**	**MPa** 2020 1975 53,0	**%** 11,5	**AMS 6514** MIL-S-46850 GR.300 W 1,6358
		Máx.	0,03	19,0	9,5	5,2	0,9	0,15	0,1	0,1		%											
			C	Ni	Cr	Mo	Al	Mn	Si	Fe													
Ph 13/8 Mo	SOLUTION TREATED	Mín.	–	7,5	12,25	2,0	0,9	–	–	Bal	%								**Tensile Strength,min Yield Strength Reduction in Area, min Elongation % (4d)**	**PSI**	**MPa** 1413 1310 60,0	**%** 10,0	**AMS 5629** ASTM-A-693/XM.13 W Nr 1,4534
		Máx.	0,05	8,5	13,25	2,5	1,35	0,1	0,1		%												