

Properties of Paliney® 8

Paliney® 8, a complex, heat-treatable alloy, was developed to fill the need for a lower cost contact alloy of nickel-chromium resistance wires with strength, hardness, and wear resistance similar to that of Paliney® 7. The advantages that this alloy offers are as follows: the metal cost is substantially less than that of Paliney® 7; Paliney® 8 provides low wear, and stable contact resistance with low noise when used as a sliding contact for nickel-chromium resistance wire alloys; it has good corrosion resistance and shelf life; it has high strength and hardness.

Properties of Paliney 8	Annealed	Ductile Heat-Treated	Heat-Treated* (Age-Hardened)
Resistivity, normal, ohm-cmf	180	150	150
Microhm cm	29.9	24.9	24.9
Conductivity, % IACS, nominal	5.8	6.9	6.9
Density, grams/cc, nominal	10.8	10.8	10.8
Dwt./cu. in., nominal	114	114	114
Solidus Temperature			
F, nominal	1780	1780	1780
C, nominal	970	970	970
Coefficient of Linear Expansion			
F(70 - 212F) nominal	7.5x10(-6)	7.5x10(-6)	7.5x10(-6)
C(20 - 100C) nominal	13.5x10(-6)	13.5x10(-6)	13.5x10(-6)
Thermal EMF Versus Platinum - (0 - 100C), uv/C, nominal	-18	-18	-18
Fatigue strength (rotating - bending) at 10(8) cycles, psi	-	40,000	40,000
Megapascals	-	275	275
Modulus of Elasticity, psi nominal	16x10(6)	16x10(6)	16x10(6)
Megapascals	110x10(3)	110x10(3)	110x10(3)
Proportional Limit, psi, nominal	70,000	125,000	155,000
Megapascals	480	860	1070
Ultimate Tensile Strength, psi			
Wire .005-.020 dia., Rolled Shapes	100,000-125,000	150,000-195,000	190,000-240,000
Strip .003-.015 thick	100,000-125,000	140,000-180,000	170,000-230,000
Elongation, % in 2", min.			
Wire .005 - .020 dia.	20 min	5 min	1 min
Strip .003 - .015 thick	15 min	4 min	1 min
Knoop Hardness, (100-gram load)			
(50-gram under .005 thick)			
Wire .003 - .060 dia., Rolled Shapes	200 - 260	300 - 360	360 – 450
Strip .003 - .015 thick	200 - 260	300 - 360	340 – 420

*Forming or bending is not recommended for this "temper" of alloy.

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