

Properties of Paliney® 7

A superior alloy for demanding, low energy electrical contacts. Similar to Paliney 6, Paliney 7 is a Palladium, silver age-hardenable alloy that in addition contains 10% gold and 10% platinum. This alloy, with over 50 years of reliable service, is ideally suited for those extraordinarily demanding applications in which extremely long life and stable contact resistance (low noise) are critical. Paliney 7 features include high resistance to corrosion and tarnish while providing the mechanical properties of Beryllium Copper. Applications include, but are not limited to, guidance systems for military hardware, satellite communications, high-speed slip rings, and drug-delivery systems. Paliney 7 meets ASTM Standard B540 for electrical contact alloys.

Properties of Paliney 7	Annealed	Stress-Relieved	Ductile HT (Age-Hardened)	Heat-Treated* (Age-Hardened)
Resistivity, nominal, ohm-cmf	210	200	190	190
Modulus of Elasticity, psi, nominal,	17 x 10 ⁶	17 x 10 ⁶	17 x 10 ⁶	17 x 10 ⁶
microhm cm	34.9	33.2	31.6	31.6
Density, nominal grams/cc,	11.8	11.8	11.8	11.8
Dwt./cu. in.	124.5	124.5	124.5	124.5
Solidus Temperature nominal F	1860	1860	1860	1860
Solidus Temperature nominal C	1015	1015	1015	1015
Coefficient of Linear Expansion				
/ °F(70 - 212° F) nominal	7.5x10 ⁻⁶	7.5x10 ⁻⁶	7.5x10 ⁻⁶	7.5x10 ⁻⁶
/ °C (20 - 100° C)	13.5x10 ⁻⁶	13.5x10 ⁻⁶	13.5x10 ⁻⁶	13.5x10 ⁻⁶
Thermal emf vs. Platinum (0 - 100C), uv/C nominal	-10	-9	-8	-8
Fatigue strength (rotating - bending) at 10(8) cycles, psi	50,000	50,000	50,000	50,000
Wire Properties				
Proportional Limit, psi, nominal	90,000	135,000	135,000	145,000
Ultimate Tensile Strength, psi				
.004 - .020 dia.	110,000-130,000	140,000-170,000	160,000-190,000	160,000-200,000

.021 - .060 dia.	105,000-130,000	130,000-170,000	155,000-180,000	160,000-200,000
Elongation, % in 2"				
.004 - .020 dia.	20 min.	10-20	8-18	1-10
.021 - .060 dia.	15 min.	8-25	8-25	1-10
Knoop Hardness (100-gram load)				
(50-gram under .005 thick)				
.004 - .020 dia.	200-260	280-340	320-370	350-410
.021 - .060 dia.	200-260	280-340	310-360	340-400
Vickers Hardness (100-gram load)				
(50-gram under .005 dia.)				
.004 - .020 dia.	190-250	265-340	320-380	330-400
.021 - .060 dia. headed	190-250	265-340	320-380	330-400
Strip and Rod Properties .003 - .020				
UTS, ksi	110 - 135	135 - 160	150 - 180	160 - 200
Elongation, % in 2"	12 min	8 - 25	8 - 25	1 - 10
Knoop Hardness	200 - 260	280 - 340	320 - 370	350 - 410
Vickers Hardness	185 - 255	265 - 340	320 - 380	330 - 400
Proportional Limit, psi	100,000		135,000	145,000
UTS, psi	110,000 - 125,000		150,000 - 185,000	160,000 - 200,000

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

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