



Properties of Paliney® H3C

Paliney® H3C, which stands for High-Hardness / High Conductivity, is a patented Palladium, Copper and Silver based alloy designed for applications such as semiconductor test probes where extreme hardness and higher levels of electrical conductivity are required. Paliney H3C is the hardest of the Paliney family of alloys produced to-date by Deringer-Ney. This alloy is designed to be drawn down to wire diameters as fine as 0.001" and to allow secondary processing operations including forming, coining and pointing.

Physical Properties of Alloy H3C, Nominal			
Solidus (°C)	956	Poisson's Ratio	0.35
Liquidus (°C)	1049	Modulus of Elasticity (x10 ⁶ psi)	17.5
Density (dwt / in ³)	109.6	Temp. Coefficient of Resistance (10 ⁻⁴ / °C)	4.8
Density (gram / cc)	10.4	Thermal Coefficient of Resistance (10 ⁻⁶)	16.1

Mechanical and Electrical Properties: Wire, 0.0015" – 0.020"

Properties of H3C	Batch Age Hardened, Maximum 36" lengths		
	HT Temper	HTB Temper ¹	F9 Temper
Ultimate Tensile Strength (ksi)	220 - 280	190 min.	210 - 260
Elongation (% in 2")	3 max.	1.5 min	2 min
Hardness (Knoop)	425 - 515	390 min	410 - 470
Electrical Conductivity, %IACS nominal	14	15	13 min
Electrical Resistivity, microhn - cm, Nominal	12.3	11.5	13.3

¹ Wire in the HTB temper can be coined and bent.

Properties of H3C	Continuously Hardened, Spool ¹ or Cut lengths		
	Annealed Spool or Cut lengths	DHT Temper	CHT Temper ²
Ultimate Tensile Strength (ksi)	120 - 200	200-260.	220 - 280
Elongation (% in 2")	5 min	3 max	3 max
Hardness (Knoop)	270 - 340	400 - 470	425 - 515
Electrical Conductivity, %IACS nominal	8.5	11.7	14
Electrical Resistivity, microhn - cm, Nominal	20.3	14.7	12.3

¹ 1500 - 4,000 foot, depending on spool diameter.

² In the CHT temper, wire will have a maximum allowable cast of 4mm / 100 mm length.

For applications where long lengths of fine diameter Paliney H3C wire are required in peak hardened condition, a special CHT temper is available. In this temper the wire develops the following mechanical properties:

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For More Information

[Contact Us to discuss your application with one of our Materials Specialists.](#)