Semiconductor Probe Needles:
Part Number Definition, Material Properties and Measuring Style

Tip
The point of the probe.

Taper
The cone shaped feature. The taper is produced by electrochemical etching.

Shoulder
The transition from the taper to the shaft.

Plate Line
The transition line between the nickel plating and unplated shaft.

Nickel Plating
Nickel plated area of the probe. Ni plating allows for solderability.

Shaft
The cylindrical body of the probe that is not etched.

Probe Diameter
The non-etched end of the probe, opposite of the tip.

Tail
The non-etched end of the probe, opposite of the tip.

Material | Code | Density (g/cm³) | Resistivity (µΩ·cm) | Yield Strength (MPa) | Hardness (Rockwell) | Modulus of Elasticity (GPa) | Composition | Properties
----------|------|----------------|---------------------|----------------------|---------------------|-----------------------------|------------|-------------------------------------------------------------
Beryllium Copper | (BC) | 8.2 | 6.0 | 1640 | 325 | 131 | Copper 98.00%, Beryllium 1.90% | Softer than tungsten, low contact resistance, high electrical conductivity
Tungsten | (W) | 19.3 | 5.65 | 2900 | 800 | 400 | Tungsten 99.95% | Hard material, high contact resistance, low fatigue
Tungsten Rhenium | (WR) | 19.3 | 9.65 | 3360 | 815 | 410 | Tungsten 96.67%, Rhenium 3.30% | Hardest material, higher contact resistance than pure tungsten

Example Part Number
WNP5-110-01X3-M-A

PROBE DIAMETER (MILS*) | 2-20 MILS
TAPER LENGTH (MILS*) | 40-300 MILS
TIP SHAPE | 01=SHARP POINT
TOTAL LENGTH (INCHES) | .08-.6 INCHES LONG
FINISH | M=MATTE
P=POLISH

Revision Level

Taper Control
3rd Back Basic (50 mils standard)

2nd Back Basic (25 mils standard)

1st Back Basic (15 mils standard)

Specified Ø ± 0.10 mils
Specified Ø ± 0.15 mils
Specified Ø ± 0.20 mils

Taper Length

*1MIL=0.001”
1MIL=25.4microns