

Technical Datasheet

Copper Nickel Alloys

Copper Nickel Alloys are available in a range of resistivities. They are particularly useful in low to medium temperature heating applications or where good corrosion resistance is required. Wires are available down to 0.06mm and they may be bunched or stranded for improved flexibility.

Physical and Mechanical Properties

	Units	98/02	94/06	90/10	85/15	80/20	Constantan
Maximum continuous operating temperature in air	°C	300	300	400	450	500	600
Nominal composition	%	Cu 98 Ni 2	Cu 94 Ni 6	Cu 90 Ni 10	Cu 85 Ni 15	Cu 80 Ni 20	Cu 56 Ni 44
Density at 20°C	g/cm ³	8.9	8.9	8.9	8.9	8.9	8.9
Resistivity at 20°C	μΩcm	5	10	15	21	30	49
Temperature Coefficient of Resistance, 20 – 100°C	1/K	0.0013	0.0007	0.00063	0.00035	0.00024	0.00004
Coefficient of thermal expansion, 20 –100°C	1/K x 10 ⁻⁶	17.7	17.5	17.1	16.9	16.4	13.5
Thermal conductivity at 20°C	W/mK	-	67	50	45	38	23
Specific heat capacity at 20°C	kJ/kgK	-	0.38	0.38	0.38	0.38	0.41
Melting point (approx.)	°C	1050	1080	1105	1115	1135	1280
Typical Tensile strength - annealed *	N/mm ²	220	230	250	290	340	420
Typical Elongation at break - annealed *	%	>25	>25	>25	>25	>25	>25

Figures given in the table are nominal or typical values.

* Values will vary dependant upon wire diameter.

Information contained within this technical data sheet is based upon the general experience of Scott Precision Wire Ltd and is believed to be correct at the time of issue. No warranty is given or is to be implied from the details above. Customers are advised to carry out independent tests in order to determine the suitability of any Scott Precision Wire Ltd product for an application.