

## Cumin 11

Cumin 11 is a copper based alloy with additions of manganese and nickel, with a very low EMF against copper.

- Particularly suited for DC circuitry with its low temperature coefficient.
- A low density reduces weight requirements.
- Excellent use in custom made thermocouple applications.
- Also for electric resistance standards, precision wire wound resistors etc.

### Physical and Mechanical Properties

	Units	
Maximum continuous operating temperature in air	°C	850
Nominal composition	%	Ni 4 Mn 11 Cu Bal.
Density at 20°C	g/cm <sup>3</sup>	8.40
Resistivity at 20°C	μΩcm	43
Thermal conductivity at 20°C	W/mK	22
Specific heat capacity at 20°C	kJ/kgK	0.410
Melting point (approx.)	°C	1020
Tensile strength R <sub>m</sub> , 1 mm wire – annealed	N/mm <sup>2</sup>	390
Elongation at break, 1 mm wire - annealed	%	30

### Temperature dependant Factors for Cumin II

*Reference temperature 20°C*

Temp °C	15-35
Temp °F	59 - 35
Resistivity Coefficient (10 <sup>-6</sup> /K)	0 ± 15
Coefficient of thermal expansion (10 <sup>-6</sup> /K)	18 (for 100°C)

The figures given in these tables represent nominal or typical values.

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