



Brand Name	NOVENTIN® 1)				
Material Code					
Abbreviation	CuMnNi 25-10				
Chemical Composition (mass components) in %.					
Average values of alloy components					
Cu	Mn	Ni			
Rest	25	10			

Features and Application Notes

The newly developed alloy NOVENTIN® is in the best tradition of Isabellenhütte's precision resistance alloys ZERANIN® 30, MANGANIN® and ISAOHM®. With its high specific electrical resistance, NOVENTIN® closes the gap between MANGANIN® and ISAOHM®.

Like MANGANIN®, an alloy which has been used in many different fields for a long time, NOVENTIN® stands out particularly due to a small temperature coefficient of the electrical resistance between +20 and +50 °C with a parabolic behaviour of the R(T) curve, a high long-term stability of the electrical resistance, an extremely low thermoelectric power against copper and a good workability.

Due to these features, NOVENTIN® is excellently suitable for the production of precision and standard resistors. The maximum application temperature under atmosphere is +170 °C.

Form of Delivery

NOVENTIN® is supplied in the form of round wires in the range 0.03 to 5.00 mm Ø in bare or enamelled condition. The product line includes sheets, ribbons, flat wires, stranded wires and rods.

Electrical Resistance in Annealed Condition

Temperature coefficient of the electrical resistance at 10 ⁻⁶ /K	Electrical resistivity in: μΩ x cm (first line) and Ω /CMF (second line) Reference Values					
+20 °C and +50 °C	+20 °C	+100 °C	+200 °C	+300 °C	+400 °C	+500 °C
±10	90	90				
	540	540				

Physical Characteristics (Reference Values)

Density at +20 °C	Melting point	Specific heat at +20 °C	Thermal conductivity at +20 °C	Average linear thermal expansion coefficient between +20 °C and +100 °C	Thermal EMF against copper at +20 °C
g/cm ³	°C	J/g K	W/m K	10 ⁻⁶ /K	μV/K
8.1	+940	0.47	12.5	18.5	± 0.5

Strength Properties at +20 °C in Annealed Condition

Tensile Strength ²⁾		Elongation (L ₀ = 100 mm) % at nominal diameter in mm			
MPa	psi	0.03 to 0.063	> 0.063 to 0.125	> 0.125 to 0.50	> 0.50 to 1.00
550	80,000	≈ 12	≈ 18	≈ 20	≥ 20

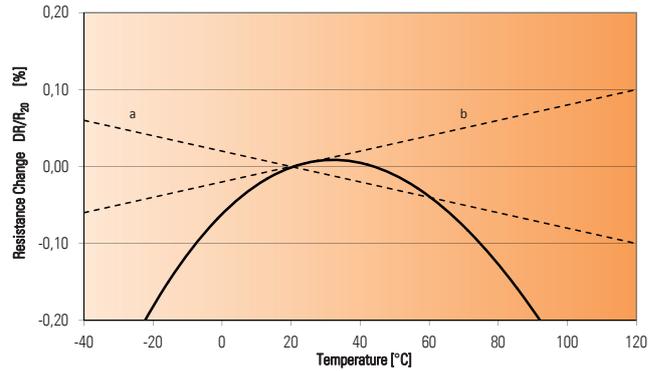
1) NOVENTIN® is a registered trademark of Isabellenhütte Heusler GmbH & Co. KG.

2) This value applies to wires of 1.0 mm diameter. For thinner wires the minimum values will substantially increase, depending on the dimensions.

Processing note // NOVENTIN® is well processable. The alloy can be soldered, however, it develops a thin oxide layer under atmosphere which has to be removed before processing. With an adequate soldering flux, NOVENTIN® is also suitable for dip soldering. Resistors made of NOVENTIN® have to be aged in order to reduce mechanical tensions.

Special Remarks on the Temperature Coefficient (TCR) //

The graph 1 shows the variation of the electrical resistance vs. temperature for different temperature ranges. Because of the parabolic shape of the R(T)-curves in the room temperature range (graph 1) the TCR data must be specified with the corresponding temperature range used. A better and for NOVENTIN® typical characterization of the R(T)-curve is therefore the second zero transition, which is the temperature where the resistance is equal to the +20 °C value. The dotted straight lines a and b apply to a TCR = ± 10 ppm/K.



Graph 1: Electrical resistance vs. temperature (range -40 °C to +120 °C)



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