



Brand Name	<b>ISABELLIN®A</b> <sup>1)</sup>				
Material Code					
Abbreviation	<b>CuMn13Al</b>				
Chemical Composition (mass components) in %.					
Average values of alloy components					
<b>Cu</b> Rem.	<b>Mn</b> 12.5	<b>Al</b> 3			

### Features and Application Notes

ISABELLIN®A is in the best tradition of Isabellenhütte's precision resistance alloys ZERANIN® 30, MANGANIN®, NOVENTIN® and ISAOHM®. ISABELLIN®A is especially characterized by a high resistivity and a low temperature coefficient of resistance between +20°C and +60°C with a parabolic behavior of the R(T) curve. ISABELLIN®A is excellently suitable for the production of standard resistors with a maximum working temperature in air of +140°C. It is also suitable for heating elements with low conductor temperatures up to 200°C in non-oxidizing atmosphere.

Due to its low melting point, ISABELLIN®A is also proved successfully for years in thermal spraying applications, e.g. heating layers and heated surfaces.

### Form of Delivery

ISABELLIN®A is supplied in the form of round wires in the range of 1 to 6 mm Ø in bare annealed condition.

### Electrical Resistance in Annealed Condition

Temperature coefficient of electrical resistance between +20°C and +60°C 10 <sup>-3</sup> /K	Electrical resistivity in Ωxmm <sup>2</sup> /m at Reference Values					
	Nom. value	+20°C Perm. value [%]	+100°C	+300°C	+400°C	+500°C
<b>±50</b>	<b>0.50</b>	<b>+10</b>	<b>0.50</b>	-	-	-

### 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		Thermal EMF against copper at
<b>g/cm<sup>3</sup></b>	<b>°C</b>	<b>J/g K</b>	<b>W/m K</b>	+100°C	+400°C	+20°C
<b>8.0</b>	<b>+940</b>	<b>0.42</b>	-	<b>18</b>	-	<b>≤ -1</b>

### Strength Properties at +20°C in Annealed Condition

Tensile Strength <b>N/mm<sup>2</sup></b>	Elongation (L <sub>0</sub> = 100 mm) % at nominal diameter in mm
<b>[Min.]</b>	Over 1 min.
<b>420</b>	<b>25</b>

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

**Precision resistance alloys:**

	ZERANIN®30	MANGANIN®	ISOTAN®	ISABELLIN® A	NOVENTIN®	CENTANIN®	ISAOHM®
resistivity [ $\mu\Omega \cdot \text{cm}$ ]	29	43	49	50	90	100	132
low TCR	●	●	●	◐	●	◐	●
low thermal EMF	◐	●	○	○	●	○	○
solderability / workability	●	●	●	◐	●	◐	○

very good ●  
 good ◐  
 less good ○