

Brand Name	IRON		
Material Code	1.000		
Abbreviation	JP (X) / LP (X) / KPCA		
Chemical Composition (mass components) in %. Average values of alloy components			
Fe	MnSiAlC		
Balance			

Form of Delivery

IRON is supplied in the form of wires with dimensions from 0.12 to 5.5 mm Ø in bare condition. Enamelled wires are available in dimensions between 0.12 and 1.5 mm Ø. IRON can also be supplied in form of

stranded wire, ribbon, flat wire and rods. Please contact us for the range of dimensions.

Features and Application Notes

IRON is used as positive leg of the thermocouple types J and L. For extension leads, IRON is used for JPX and LPX. As compensating lead, IRON is used as positive leg for KCA. The thermoelectric voltages for LP(X) and KPCA differ from JP(X) materials depending on standards.

The standardized temperature range of the different application possibilities of IRON is available in the tables on pages 10 and 11, 14 and 15 as well as 18 and 19.

See also "Special Remarks on the Alloy".

The IRON supplied by ISABELLENHÜTTE mainly is copper coated and free of rust. All packaging units are protected with antirust substances.

Thermoelectrical and Electrical Values in Soft-Annealed Condition ¹⁾

EMF versus Cu/NIST 175 0 – 100 °C / mV	EMF versus Pt67/NIST 175 0 – 100 °C / mV	EMF versus Pt67/NIST 175 0 – 700 °C / mV	Electrical resistivity in μΩ x cm at 20 °C
1.006	1.779	9.079	12

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	Magnetic at room temperature
g/cm ³	°C	J/g K	W/m K	10 ⁻⁶ /K	
7.8	1496	0.47	81	11.2 to 12.6*	yes

Mechanical Properties at 20 °C in Annealed Condition ²⁾

	Tensile strength MPa	Elongation %	Hardness HV10
hard	> 600	0 - 1	200
soft	370	28	90

1) The exact EMF values according to NIST 175 can be calculated with the "EMF-Software", which can be downloaded from our homepage.

2) The mechanical values considerably depend on dimension. The indicated values refer to a dimension of 1 mm diameter.

* depending on chemical position

Notes on Treatment

IRON is easy to process. The alloy can be soldered and brazed without difficulty.

All known welding methods are applicable.

Special Remarks on the Alloy

IRON has a strong tendency to corrode/rust. The material should be stored and used in a dry environment. If required our IRON can be provided with a variety of liquid anticorrosive agents. Please note that the copper coating does not act as a rust protection. It is only used for production and optical purposes.