



Brand Name	<b>IRON</b>		
Material Code	<b>1.0000</b>		
Abbreviation	<b>JP(X)</b>	<b>LP(X)</b>	<b>KPCA</b>
Chemical Composition. (mass components.) in % average values of alloy components			
Fe	Mn	Si	Al C
Balance			

## Form of Delivery

IRON is supplied in the form of wires with dimensions from 0.12 to 10 mm Ø in bare condition. Enamelled wires are available in dimension between 0.12 and 1.5 mmØ. IRON can also be supplied in form of stranded wire, ribbon, flat wire and rods. Please contact us for the range of dimension.

## Features and Application Notes

IRON is used as positive leg of the thermocouple types J and L. In the version for extension leads IRON is used for JP(X) and LP(X). 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. IRON is standardized from -40 to 750 °C in thermocouple type J and between -200 and 900 °C in thermocouple type L. Iron is standardized between -25 and 200 °C for extension- or compensating-leads. The iron produced by ISABELLENHÜTTE is supplied copper coated and free of rust. All packaging units are protected with antirust substances.

## Thermoelectrical and Electrical Values in Soft-Annealed Condition <sup>1)</sup>

EMF vers. Pt/NIST 175 0-200 ° F / mV	EMF vers. Pt67/NIST 175 0-100 ° C / mV	EMF vers. Pt/NIST 175 0-1400 ° F / mV	EMF vers. Pt67/NIST 175 0-700 ° C / mV	Electrical resistivity at 20°C in	
				µΩ x cm	Ω / cir mil ft
<b>1.664</b>	<b>1.779</b>	<b>10.063</b>	<b>9.079</b>	<b>12</b>	<b>72</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 100 ° C	Magnetic at room temp.
g/cm <sup>3</sup>	lb/cub in	°C	J/g K	W/m K	10 <sup>-6</sup> /K	
<b>7.8</b>	<b>0.282</b>	<b>1496</b>	<b>0.47</b>	<b>81</b>	<b>11.2 to 12.6<sup>2)</sup></b>	<b>yes</b>

## Mechanical Properties at 20 °C in Annealed Condition (Reference Values) <sup>3)</sup>

Annealing State	Tensile Strength		Elongation %	Hardness HV10
	MPa	lb / sq in		
<b>hard</b>	<b>&gt;600</b>	<b>&gt;87000</b>	<b>0-1</b>	<b>&gt;200</b>
<b>soft</b>	<b>370</b>	<b>53650</b>	<b>28</b>	<b>90</b>

- 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.  
 3) In dependency of the chemical analysis.

## 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 anti-corrosive agents. Please note that the copper coating does not act as a rust protection. It is only used for a production and optical purposes.