



Brand Name	<b>NISIL</b>				
Material Code					
Abbreviation	<b>NN (X)</b>				
Chemical Composition (mass components) in %. Average values of alloy components					
<b>Ni</b>	<b>Si</b>				
Balance	4.8				

### Features and Application Notes

NISIL is used as negative leg of the thermocouple type N. In the version for extension leads NISIL is used for type NNX. The standardized temperature range of the different application possibilities of NISIL is available in the tables of the glossary.

### Form of Delivery

NISIL (NN und NNX) is supplied in the form of bare wire with dimensions from 0.10 to 6.00 mm Ø. We supply coated wires from 0.10 to 1.50 mm Ø. Nisil can also be supplied in the form of stranded wire, ribbon, flat wire and rods. Please contact us for the range of dimensions.

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

EMF versus Cu/NIST 175 at +100 °C / mV <sup>2)</sup>	EMF versus Pt67/NIST 175 at +100 °C / mV <sup>2)</sup>	EMF versus Pt67/NIST 175 at +1,000 °C / mV <sup>2)</sup>	Electrical resistivity in μΩ x cm at +20 °C
<b>-1.763</b>	<b>-0.990</b>	<b>-10.210</b>	<b>36</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 temperature
g/cm <sup>3</sup>	°C	J/g K	W/m K	10 <sup>-6</sup> /K	
<b>8.55</b>	<b>+1,341</b>	<b>0.50</b>	<b>23</b>	<b>12.70</b>	<b>slight</b>

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

	Tensile strength MPa	Elongation %	Hardness HV10
<b>hard</b>	<b>&gt; 1.200</b>	<b>&lt; 2</b>	<b>450</b>
<b>soft</b>	<b>650</b>	<b>30</b>	<b>130</b>

**Notes on Treatment** // NISIL can be brazed without difficulty. All known welding methods are applicable. However, the alloy is difficult to soft-solder. See also "Special Remarks on the Alloy".

**Special Remarks on the Alloy**// NISIL has been developed as a counterleg to Nicrosil. By increasing the silicon and reducing the aluminium concentration versus the negative leg of thermocouple type K (KN), a higher oxidation stability has been achieved. Consequently, compared to KN the corrosive reaction to sulphur will be lower at higher working temperatures.

1) The exact EMF values can be calculated with a "EMF-Software", which can be downloaded from our homepage.

2) Reference at 0 °C.

3) The mechanical values considerably depend on dimension. The indicated values refer to a dimension of 1.0 mm diameter.