

## Resistant Alloys

### Nickel Chromium Alloys



#### 1. Chemical composition

	Ni	Cr	Fe	Cu	Others
%	37	18	Bal.	-	Si +

#### 2. Physical properties

- Resistivity ( $\Omega \text{ mm}^2/\text{m}$ )	: <b>1.05</b>
- Temperature coefficient ( $\text{K} \times 10^{-6}/^\circ\text{C}$ ) from 20 to 1000 °C	: <b>240</b>
- Thermal conductivity at 120 °C ( $\text{Wm}^{-1} \text{ } ^\circ\text{C}^{-1}$ )	: <b>13</b>
- Coefficient of linear expansion (coeff. $10^{-6}/^\circ\text{C}$ ) from 20 to 1000 °C	: <b>18</b>
- Density ( $\text{g}/\text{cm}^3$ )	: <b>7.95</b>
- Creeping point in	
- at 800 °C	: <b>20</b>
- at 1 000°C	: <b>4</b>
- Melting point (°C)	: <b>1 380</b>
- Maximal operating temperature (°C)	: <b>1 050</b>

#### Standard mechanical properties

- Tensile Strength ( $\text{daN}/\text{mm}^2$ )	: <b>75</b>
- Yield Strength ( $\text{daN}/\text{mm}^2$ )	: <b>40</b>
- Elongation (A% on 100 mm)	: <b>≥ 30</b>
- Hardness (HV)	: <b>220</b>

#### 3. Typical Applications

With a nominal composition of 37% of nickel, 18% of chromium, 2% of silicon and with an addition of rare earths, Resistohm 40 is suitable for a large field of domestic heating applications, and particularly when use temperature is not too high and that cost is a vital factor.

Its high temperature coefficient allows it a speedier rise in temperature than the other NiCr.

The most frequent use fields are:

- Heating accumulators
- Convectors
- Heaters

Its maximum operating temperature is 1 050°C.

When an electric furnace must operate in a carburizing or semi-reducing atmosphere, this alloy has distinct advantages compared to the other Nickel-Chromium which have a higher percentage of nickel.

April 2012 - The data enclosed in this document are only given as indicative values and correspond to our standard products. Different specific requirements are subject to discussion and formal approval by Aperam Alloys Rescal. For further information or special request, please contact us.