

Resistant Alloys

Nickel Chromium Alloys



1. Chemical composition

| | Ni | Cr | Fe | Cu | Others |
|---|----|----|----|----|--------|
| % | 69 | 30 | - | - | Si + |

2. Physical properties

| | |
|--|----------------|
| - Resistivity ($\Omega \text{ mm}^2/\text{m}$) | : 1.18 |
| - Temperature coefficient ($\text{K} \times 10^{-6}/^\circ\text{C}$) from 20 to 1000 °C | : 110 |
| - Thermal conductivity at 120 °C ($\text{Wm}^{-1} \text{ } ^\circ\text{C}^{-1}$) | : 13.70 |
| - Coefficient of linear expansion (coeff. $10^{-6}/^\circ\text{C}$) from 20 to 1000 °C | : 17.50 |
| - Density (g/cm^3) | : 8.16 |
| - Creeping point in | |
| - at 800 °C | : 15 |
| - at 1 000°C | : 4 |
| - Melting point (°C) | : 1 380 |
| - Maximal operating temperature (°C) | : 1 250 |

Standard mechanical properties

| | |
|---|---------------|
| - Tensile Strength (daN/mm^2) | : 80 |
| - Yield Strength (daN/mm^2) | : 40 |
| - Elongation (A% on 100 mm) | : ≥ 30 |
| - Hardness (HV) | : 220 |

3. Typical Applications

Nickel-Chromium alloys are particularly useful for high temperature applications in oxidizing atmospheres.

Its high chromium percentage (30%) gives Resistohm 70 indeed a very good life time in the furnace application. Elements in Resistohm 70 have also a satisfactory life time when operating atmosphere is alternatively oxidizing and reducing.

It is not recommended to exceed a temperature of 1250°C on the surface of the wire or the strip of elements in Resistohm 70. Because of its high resistivity, it is sometimes better to use Resistohm 70 rather than another nickel-chromium alloy. Moreover 30% of chromium make that it is less subject to the "green rot" as the other NiCr alloys.

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.