Controlled Expansion Alloys
Iron-Nickel Alloys

1. Chemical composition

	Ni	Cr	Fe	Cu	Others
%	36	-	Bal.	-	C, Si+, Mn

2. Physical properties

- Resistivity (Ω mm²/m) : **0.80**
- Temperature coefficient (K x 10- 6/°C) from 20 to 100 °C : **1 350**
- Thermal conductivity at 120 °C (Wm- 1° C-1) : **11**
- Coefficient of linear expansion (coeff. 10-6/°C) from 20 to 100 °C : **1.50**
- Density (g/cm^3) : **8.11**

- Melting point (°C) : **1 425**

Standard mechanical properties

- Tensile Strength (daN/mm²) : **50**
- Yield Strength (daN/mm²) : **30**
- Elongation (A% on 100 mm) : **≥ 25**

3. Typical Applications

Invar® is an iron-nickel alloy with the lowest coefficient of thermal expansion in the temperature range -100°C to +230°C.

It features optimised chemical compositions in order to achieve the best balance between expansion and the other properties required by the applications: mechanical properties, weldability, structural stability at cryogenic temperature, etc.

Typical applications are thermostat rods, clock balance wheels, moulds for composites and filters for mobile telephone relay stations.

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