

Nilo 52 Alloy

Heanjia Super Metals Co., Ltd

Nilo 52 Alloy offers constant dimensions over the wide temperature limits up to 1050oF. It consists of 52% Nickel. Nilo 52 alloy is used in the different frequency operations. It is referred as controlled expansion alloy with low coefficient of thermal expansion in the low and high temperature limits up to 565oC. It is hard and ductile and attains low dispersion.



Chemical Composition of Nilo 52 Alloy

Nickel	52%
Iron	Bal.
Cobalt	--
Carbon	0.05
Silicon	0.30
Sulfur	0.025
Chromium	0.025

Properties of Nilo 52 Alloy

Density	8.3 gm/cm ³	
Specific Gravity	8.3	
Thermal expansion	5.5 ppm/oF (75oF to 842oF)	9.9 ppm/oC (25oC to 450oC)
Specific Heat	0.12 Cal/g-oC	
Thermal conductivity	0.14 W/cm ² oC	97 BTU-in/sq ft-hr
Electrical resistivity	44 micro-ohm-cm	258 ohm-cir mil/ft
Melting Point	2600oF	1427oC
Curie temp	986oF	530oC

Mechanical Properties of Nilo 52 Alloy

Tensile Strength	552 MPa
Yield Strength	276 MPa
Modulus of Elasticity	159 GPa

ASTM Designations

- UNS N14052
- ASTM F30
- Pernifer 50

Processing of Nilo 52 Alloy

Cold processing is not suitable for Nilo 52 alloy because it disturbs the coefficient of thermal expansion. Nilo 52 alloy is annealed at temperature of 850oC to 1000oC.

The properties of processed of Nilo 52 alloy are shown as following:

Condition	Tensile Strength		Approx. service temperature	
	Annealed	450 – 550 N/mm ²	65 - 80 ksi	up to 450°C
Hard Drawn	700 - 900 N/mm ²	102 - 131 ksi	up to 450°C	up to 840°F

Coefficient of thermal expansion

Degree C		Degree C	
30-100	10.5	30-450	9.6 - 10.7
30-150	10.5	30-475	10.1
30-200	10.4	30-500	10.0
30-250	10.4	30-525	10.4
30-300	10.2	30-550	10.2 - 10.7
30-325	--	30-600	10.8
30-350	10.2	30-700	11.7
30-375	--	30-800	12.5
30-400	10.1	30-900	13.3
30-425	--	30-1000	14.2

Applications of Nilo 52 Alloy

1. Soft Glasses
2. Glass to metal sealing
3. Ceramics

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