

Alloy 52

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26

Fe

Iron

28
Ni

Nickel

Alloy 52, a controlled expansion alloy consisting of 50.5% nominal Nickel, balance Iron; used in a wide variety of electronic applications especially for glass seals. This alloy is also known as Pernifer® 50 and Carpenter Glass Sealing® 52.

APPLICATIONS

Glass-to-metal seals for electronic tubes, automotive and industrial lamps, and specialty hermetic devices.

Typical Physical Properties

Density	lb/cu in	0.30
Specific Gravity		8.3
Curie Temp	°F °C	986 530
Melting Point	°F °C	2600 1427
Electrical Resistivity	Microhms-cm	43
Thermal Conductivity	W/cm °C	18
Specific Heat	Cal/g °C	0.12

Source: ASTM F30-96 (2017), Carpenter Controlled Expansion Alloys, Brochure v.12/99 p.20-21

Forms | Sizes Available

Round Bar Rod	0.0395" - 0.500"
Strip Coil	0.010"-0.015"

Our inventory fluctuates based on market demands. If you do not see the size or form you require, please call us.

Typical Mechanical Properties

Tensile Strength	ksi (MPa)	75 (517)
Yield Strength	ksi (MPa)	40 (276)
Elongation	% in 2 in.	35
Hardness Ann.	Rockwell HRB max.	80
Modulus of Elasticity	ksi (MPa)	23 (159)

Strip as Annealed

Source: Carpenter Controlled Expansion Alloys Brochure v.12/99 p.20-21

Average Linear Coefficient of Thermal Expansion $\mu\text{m/m} \cdot ^\circ\text{C}$

Temperature Range °C	52 Alloy UNS N14052
30 to 300	10.1
30 to 400	9.9
30 to 450	9.7 to 10.2*
30 to 500	9.9
30 to 550	10.0 to 10.5*
30 to 600	10.8
30 to 700	11.7
30 to 800	12.5
30 to 900	13.3
30 to 1000	14.2

Source: ASTM F30 - 96 (2017), Table X1.1 *ASTM F30-96 ; Table 2

CHEMISTRY

Nickel 50.5 nom., Bal. Iron.

Source: ASTM F-30-96 (2017), Table 1, 52 Alloy



Specifications

ASTM F30 • AMS I-23011 CL 2 • MIL-I-23011 CL 2 • UNS N14052

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