

Nimonic 90

Materials Data Sheet

Description

A Nickel-Chromium-Cobalt alloy being precipitation hardenable, having high stress-rupture strength and creep resistance at high temperatures up to about 950°C (1740°F). It is widely used and a well proven alloy in high temperature conditions.

Uses: Due to its ability to withstand very high temperatures, Nimonic is ideal for use in aircraft parts and gas turbine components such as turbine blades and exhaust nozzles on jet engines, for instance, where the pressure and heat are extreme.

Chemical Composition

Element	%
Cr	21.00
Fe	1.50
Ti	3.00
Mn	1.0
Si	1.0
C	0.13
Al	2.00
Co	21.00
S	0.015
Cu	0.20
B	0.02
Pb	0.002
Zr	0.15
Ag	0.0005
Bi	0.0001
Ni	Remaining

Density	8.18g/cm ³	0.296 lb/in ³
Melting Point	1370°C	2500°F
Coefficient of Expansion	12.7 µm/m °C (20 - 100°C)	7.1 x 10-6 in/in °F (70 - 212°F)
Modulus of Rigidity	82.5 kN/mm ²	11966 ksi
Modulus of Elasticity	213 kN/mm ²	30894 ksi

Heat Treatment

Condition	Type	Temperature	
		°C	°F
Spring Temper	Age Harden	650	1200
Spring Temper	Age Harden	600	1110

Properties

Condition	Approximate Tensile Strength		Approximate Operating Temperature	
	N/mm ²	ksi	°C	°F
Spring Temper and Aged	1500-1800	218-261	350	660

*Information compiled using Alloy Wire International as source.