

Special Metals NILO® 365 Controlled-Expansion Alloy

Category : Metal , Ferrous Metal , Superalloy , Iron Base

Material Notes:

For the manufacture of tooling for composites, the NILO® nickel-iron alloys offer a unique combination of matched thermal expansion to avoid warping during the curing cycle, along with strength, rigidity, durability, ease of fabrication and availability. NILO alloy 365 has 43% nickel and is strengthened by additions of 1.4% Ti and 3.3% Nb. Strengthening occurs during the aging heat-treatment @ 1250°F (677°C) for 4 hours, furnace cool at 100°F (38°C) per hour to 1150°F (621°C) for 4 hours, air cool @ producing a gamma prime precipitate. Agehardened NILO alloy 365 develops higher room-temperature hardness (Rockwell C39) and four times the yield strength @ 146 ksi (1006 MPa) @ compared with annealed 36% Ni-Fe alloys. Creep strength (resistance to deformation under load) is also much higher. Information Provided by Special Metals Corporation

Order this product through the following link:

http://www.lookpolymers.com/polymer_Special-Metals-NILO-365-Controlled-Expansion-Alloy.php

Physical Properties	Metric	English	Comments
Density	8.11 g/cc	0.293 lb/in ³	

Mechanical Properties	Metric	English	Comments
Tensile Strength at Break	717 MPa	104000 psi	Annealed
	1269 MPa	184100 psi	Annealed and Age Hardened
Tensile Strength, Yield	407 MPa	59000 psi	Annealed
	@Strain 0.200 %	@Strain 0.200 %	
Elongation at Break	1007 MPa	146100 psi	Annealed and Age Hardened
	@Strain 0.200 %	@Strain 0.200 %	
Reduction of Area	16 %	16 %	50 mm, Annealed and Age Hardened
	41 %	41 %	50 mm, Annealed
Reduction of Area	36 %	36 %	Annealed and Age Hardened
	63 %	63 %	Annealed

Thermal Properties	Metric	English	Comments
Specific Heat Capacity	0.500 J/g-°C	0.120 BTU/lb-°F	
Thermal Conductivity	12.4 W/m-K	86.1 BTU-in/hr-ft ² -°F	

Component Elements Properties	Metric	English	Comments
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Carbon C Component Elements Properties	0.020 % Metric	0.020 % English	Comments
Iron, Fe	51.78 %	51.78 %	Balance
Nickel, Ni	43.5 %	43.5 %	
Niobium, Nb (Columbium, Cb)	3.3 %	3.3 %	
Titanium, Ti	1.4 %	1.4 %	

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