Special Metals NIMONIC® Alloy PE16

Categories: Metal; Nonferrous Metal; Nickel Alloy; Superalloy

Material Notes: A precipitation-hardenable nickel-iron-chromium alloy with an addition of molybdenum for solid-solution strengthening. It has good strength and oxidation resistance at temperatures to about 1380°F (750°C). The alloy is designed to provide a precipitation-hardened material having excellent hot-working, cold-working, and welding characteristics. Used for gas-turbine components and in nuclear reactors. Standard product forms are round, flats, extruded section, sheet, strip, tube, and wire.

Data provided by the manufacturer, Special Metals.

Key Words: BS HR55, HR207; AFNOR NW 11 AC

Vendors: Click here to view all available suppliers for this material.

Please click here if you are a supplier and would like information on how to add your listing to this material.

Physical Properties	Metric	English	Comments
Density	8.02 g/cc	0.290 lb/in³	

Mechanical Properties	Metric	English	Comments
Tensile Strength, Ultimate	720 MPa @Temperature 550 °C	104000 psi @Temperature 1020 °F	Precipitation Hardened prior to test
	900 MPa @Temperature 23.0 °C	131000 psi @Temperature 73.4 °F	
Tensile Strength, Yield	450 MPa @Strain 0.200 %	65300 psi @Strain 0.200 %	Precipitation Hardened. Value at room temperature
	380 MPa @Strain 0.200 %, Temperature 550 °C	55100 psi @Strain 0.200 %, Temperature 1020 °F	Precipitation Hardened prior to test
Elongation at Break	28 %	28 %	Precipitation Hardened
	30 % @Temperature 550 °C	30 % @Temperature 1020 °F	Precipitation Hardened prior to test.

Electrical Properties	Metric	English	Comments
Electrical Resistivity	0.000110 ohm-cm	0.000110 ohm-cm	
Magnetic Permeability	1.4	1.4	at 200 oersted (15.9 kA/m)

Thermal Properties	Metric	English	Comments
CTE, linear	13.8 µm/m-°C @Temperature 20.0 - 100 °C	7.67 µin/in-°F @Temperature 68.0 - 212 °F	
Specific Heat Capacity	0.544 J/g-°C	0.130 BTU/lb-°F	
Thermal Conductivity	11.72 W/m-K	81.34 BTU-in/hr-ft²-°F	
Melting Point	1310 - 1355 °C	2390 - 2471 °F	
Solidus	1310 °C	2390 °F	
Liquidus	1355 °C	2471 °F	

Component Elements Properties	Metric	English	Comments
Aluminum, Al	1.1 - 1.3 %	1.1 - 1.3 %	
Boron, B	<= 0.0050 %	<= 0.0050 %	
Carbon, C	0.040 - 0.080 %	0.040 - 0.080 %	
Chromium, Cr	15.5 - 17.5 %	15.5 - 17.5 %	
Cobalt, Co	<= 2.0 %	<= 2.0 %	
Copper, Cu	<= 0.50 %	<= 0.50 %	
Iron, Fe	31 %	31 %	As remainder
Manganese, Mn	<= 0.20 %	<= 0.20 %	
Molybdenum, Mo	2.8 - 3.8 %	2.8 - 3.8 %	
Nickel, Ni	42 - 45 %	42 - 45 %	Including Cobalt
Silicon, Si	<= 0.50 %	<= 0.50 %	
Sulfur, S	<= 0.015 %	<= 0.015 %	
Titanium, Ti	1.1 - 1.3 %	1.1 - 1.3 %	
Zirconium, Zr	0.020 - 0.040 %	0.020 - 0.040 %	

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