Crucible Compaction Metals Rene 95 Nickel Based Superalloy

Categories: Metal; Nonferrous Metal; Nickel Alloy; Superalloy

Material Notes: P/M Rene 95 is one of the highest strength alloys available for service in the range of 800°F to 1200°F (425°C to 650°C). The alloy also provides excellent high temperature creep resistance and low cycle fatigue life. Tens of thousands of high pressure turbine discs and turbine blades retainers made from Crucible Rene 95 are in service on commercial and military airplanes and helicopters worldwide.

Rene 95 is available as either as-HIP preforms or extruded billet. As-HIP parts can range up to 46 inches (1.2 m) in diameter and weighs up to 16,000 lb (7,200 kg). Extruded billet up to 12 inches (.3 m) in diameter is produced from compacts containing up to 8,000 lb (3,600 kg) of powder.

Advantages:

- High Strength
- Excellent high temperature creep resistance
- Extended low cycle fatigue life

Information provided by Crucible Compaction Metals.

Key Words: Powder Metallurgy

Vendors: No vendors are listed for this material. Please click here if you are a supplier and would like information on how to add your listing to this material.

Mechanical Properties	Metric	English	Comments
Tensile Strength, Ultimate	210 MPa @Temperature 650 °C	30500 psi @Temperature 1200 °F	
	240 MPa @Temperature 23.0 °C	34800 psi @Temperature 73.4 °F	
Tensile Strength, Yield	160 MPa @Temperature 650 °C	23200 psi @Temperature 1200 °F	
	180 MPa @Temperature 23.0 °C	26100 psi @Temperature 73.4 °F	
Elongation at Break	10 % @Temperature 650 °C	10 % @Temperature 1200 °F	
	14 % @Temperature 23.0 °C	14 % @Temperature 73.4 °F	
Reduction of Area	13 % @Temperature 650 °C	13 % @Temperature 1200 °F	
	17 % @Temperature 23.0 °C	17 % @Temperature 73.4 °F	
Creep Strength	620 MPa @Temperature 705 °C, Time 72000 sec	89900 psi @Temperature 1300 °F, Time 20.0 hour	0.2% Creep
	850 MPa @Temperature 650 °C, Time 864000 sec	123000 psi @Temperature 1200 °F, Time 240 hour	0.2% Creep
Rupture Strength	620 MPa @Temperature 760 °C, Time 36000 sec	89900 psi @Temperature 1400 °F, Time 10.0 hour	
	1035 MPa @Temperature 650 °C, Time 198000 sec	150100 psi @Temperature 1200 °F, Time 55.0 hour	

Component Elements Properties	Metric	English	Comments
Aluminum, Al	3.3 - 3.7 %	3.3 - 3.7 %	
Boron, B	0.0060 - 0.015 %	0.0060 - 0.015 %	
Carbon, C	0.040 - 0.090 %	0.040 - 0.090 %	
Chromium, Cr	12 - 14 %	12 - 14 %	
Cobalt, Co	7.0 - 9.0 %	7.0 - 9.0 %	
Molybdenum, Mo	3.3 - 3.7 %	3.3 - 3.7 %	
Nickel, Ni	59.325 - 65.424 %	59.325 - 65.424 %	As Balance
Niobium, Nb (Columbium, Cb)	3.3 - 3.7 %	3.3 - 3.7 %	
Titanium, Ti	2.3 - 2.7 %	2.3 - 2.7 %	
Tungsten, W	3.3 - 3.7 %	3.3 - 3.7 %	
Zirconium, Zr	0.030 - 0.070 %	0.030 - 0.070 %	