

Rene 41® is a high-performance, precipitation-hardenable nickel-based alloy engineered for extreme environments. This nickel-chromium alloy offers outstanding high-temperature strength and excellent oxidation resistance in the temperature range of 1200°F to 1800°F (649°C to 982°C), making it ideal for use in aerospace and high-heat applications. Rene 41® maintains its mechanical integrity under high stress and thermal cycling, offering a superior combination of creep resistance, fatigue strength, and surface stability at elevated temperatures. It is precipitation-hardened through a heat treatment process that enhances its strength characteristics while retaining corrosion and oxidation resistance.

## Products & Sizes

### Precision Reroll Strip

0.005"

### Rene 41® Chemical Composition

	Element	Percent by Weight Min	Percent by Weight Max
C	Carbon	-	0.12
Mn	Manganese	-	0.10
Si	Silicon	-	0.50
S	Sulfur	-	0.15
Cr	Chromium	18.00	20.00
Co	Cobalt	10.00	12.00
Mo	Molybdenum	9.00	10.50
Ti	Titanium	3.00	3.30
Al	Aluminum	1.40	1.60
B	Boron	0.003	0.010
Fe	Iron	-	5.00
Cu	Copper	-	0.50
Ni	Nickel	-	Balance

### Industry Standards

### Industry Applications

- Turbine blades
- Wheels
- Combustion chamber liners
- After burners
- Structural hardware

### Related Industries

Aerospace



Defense



Space



## Physical Properties

Physical Properties of Rene 41		
Property	At 70°F	At 20°C
Density	0.298 lb/in <sup>3</sup>	8.25 g/cm <sup>3</sup>
Modulus of Elasticity (E)	31.6 x 10 <sup>3</sup> ksi	218 GPa
Modulus of Rigidity (G)	12.1 x 10 <sup>3</sup> ksi	83.4GPa
Coefficient of Expansion	7.5 microinches/in.-°F (70-1000°F)	102.0 microhm-cm°C (20-538°C)
Electrical Resistivity	51.5 microhm-in	131 microhm-cm
Thermal Conductivity	62 Btu•in/ft <sup>2</sup> •h•°F	9.0 W/wm•°C

## Mechanical Properties

Mechanical Properties of Rene 41			
Condition	Heat Treatment	Tensile Strength, ksi	Suggested Operating Conditions
Annealed	1975°F (1079°C)	170	-300°F - 1500°F (-184°C - 815°C)
Spring Temper			-300°F - 1500°F (-184°C - 815°C)
After Precipitation Heat Treat	Per AMS 5545	160	-300°F - 1500°F (-184°C - 815°C)