Rene■ 41 Datasheet

Rene 41 is a high-strength, heat-resistant superalloy used in aerospace and turbine engine components.

Alloy / Grade	Rene■ 41
Common Forms	Sheet, Strip, Plate, Round Bar, Wire.
Key Feature	Extreme strength up to 1800 deg F.
Service Focus	Retains ultra-high mechanical properties up to 1800 deg F (980 deg C), making it superior to many other precipitation-hardened alloys.

1. Product Overview

Rene■ 41 is an age-hardenable nickel-based superalloy capable of maintaining exceptionally high strength in the temperature range of 1200 deg F to 1800 deg F (650 deg C to 980 deg C). It offers one of the highest strength-to-weight ratios of any superalloy available in this operating range.

Grade	Core Description	Typical Service Focus
Rene■ 41	Rene■ 41 is an age-hardenable nickel-based superalloy capable of maintaining exceptionally high strength in the...	Rene■ 41 is the material of choice when standard superalloys like Inconel 718 or Waspaloy reach their...
Supply Capability	Sheet, Strip, Plate, Round Bar, Wire.	Standard mill forms, cut-to-size material and project supply
Technical Review	Confirm final values by product form, heat treatment and material certificate	Retains ultra-high mechanical properties up to 1800 deg F (980 deg C), making it superior to many other...

2. Key Features

- Rene■ 41 is the material of choice when standard superalloys like Inconel 718 or Waspaloy reach their temperature limits. Originally developed by...
- Retains ultra-high mechanical properties up to 1800 deg F (980 deg C), making it superior to many other precipitation-hardened alloys.
- Excellent resistance to deformation under load over time at high temperatures, critical for rotating turbine components.
- The high Chromium and Cobalt content provides good resistance to oxidation and hot corrosion in combustion environments.

Further information under:	https://www.nickelcasting.com/nickel-alloys/rene-41/
Home page:	www.nickelcasting.com
Email:	ni@Nickelcasting.com

Technical Data

The following values are provided as general reference data for engineering review and procurement planning. Confirm final values against the applicable specification, product form, heat treatment condition and material certificate.

3. Chemical Composition (%)

Element	Content (%)
Nickel (Ni)	Balance
Chromium (Cr)	18.0 - 20.0
Cobalt (Co)	10.0 - 12.0
Molybdenum (Mo)	9.0 - 10.5
Titanium (Ti)	3.0 - 3.3
Aluminum (Al)	1.4 - 1.6
Iron (Fe)	5.0 max

4. Standard Specifications

Product Form	Standards (AMS)
Sheet, Strip, Plate	AMS 5545
Bar, Forgings, Rings	AMS 5712, AMS 5713
Wire (Welding)	AMS 5800

5. Mechanical Properties - Typical at Room Temperature

Property	Room Temp	At 1400 deg F (760 deg C)
Tensile Strength	206 ksi (1420 MPa)	165 ksi (1135 MPa)
Yield Strength (0.2%)	154 ksi (1060 MPa)	135 ksi (930 MPa)
Elongation	14%	16%
Hardness (Rockwell C)	35 - 45 HRC	--

Note: Values are typical or specification reference values. Purchase requirements should be confirmed against the required standard, drawing and material test report.

Applications and Ordering Information

Use this section to define inquiry requirements and accelerate technical confirmation for Rene■ 41 products.

6. Typical Applications

Industry / Area	Typical Components
Industrial Service	Turbine blades, wheels, afterburner parts, and nozzle partitions exposed to direct combustion.
Chemical / Process Equipment	Hot airframe components and structural skins for high-speed missiles and rockets.
Oil, Gas & Marine	Re-entry heat shields and bolting for manned space capsules (historical use in Project Mercury).
High-Temperature / Power	High-temperature springs operating in environments too hot for Inconel X-750 .
Precision Components	We supply high-performance Rene■ 41 in sheet, plate, and bar. Full aerospace certification (AMS 5545 / 5712) included.

7. Available Supply Forms

Pipe & Tube	Plate & Sheet	Bar & Rod
Pipe Fittings	Flanges	Wire & Strip
Forgings	Custom Cutting	Project Supply

8. Information to Include When Requesting a Quote

- Required grade: Rene■ 41, with ASTM / ASME / AMS specification if applicable.
- Product form: pipe, tube, plate, sheet, bar, fittings, flanges, forgings or machined parts.
- Dimensions: outside diameter, wall thickness, length, width, thickness or drawing number.
- Quantity, delivery destination and required delivery schedule.
- Special requirements: cutting, machining, heat treatment, NDT, PMI, test report or material certificate.

Company Information	
Address	Shanghai, China
Email	ni@Nickelcasting.com
Home Page	www.nickelcasting.com
Product Page	https://www.nickelcasting.com/nickel-alloys/rene-41/

Disclaimer

This datasheet is provided for general reference only. Actual values may vary by product form, heat treatment, manufacturing condition and applicable specification. Please contact us for confirmed specifications, test reports and material certificates before ordering.