

Nimonic C263 - Technical Specification

1. Product Description:- Nimonic C263 is a precipitation-hardenable nickel-cobalt-chromium alloy with the addition of molybdenum, titanium, and aluminum for exceptional strength, corrosion resistance, and weldability. It is widely used in high-temperature applications such as gas turbines and aerospace components.

2. Chemical Composition:-

Element	Percentage (%)
Nickel (Ni)	Balance
Cobalt (Co)	19.0-21.0
Chromium (Cr)	19.0-21.0
Molybdenum (Mo)	5.6-6.1
Titanium (Ti)	1.9-2.4
Aluminum (Al)	0.3-0.6
Iron (Fe)	0.7 max
Manganese (Mn)	0.6 max
Silicon (Si)	0.4 max
Carbon (C)	0.04-0.08
Boron (B)	0.005-0.015

3. Mechanical Properties:-

Property	Value
Tensile Strength	~140 ksi (965 MPa)
Yield Strength (0.2%)	~105 ksi (725 MPa)
Elongation	20-25%
Hardness (Rockwell)	~B95

4. Physical Properties:-

Property	Value
Density	8.36 g/cm ³
Melting Range	1327-1371°C (2421-2500°F)
Thermal Conductivity	~11.4 W/m·K (at 20°C)
Electrical Resistivity	~1.2 μΩ·m (at 20°C)

5. Heat Treatment:-

- Solution Annealing: 1140–1175°C (2084–2147°F), followed by air cooling or rapid cooling.
- Aging: Aging at 800°C (1472°F) for 8 hours, then furnace cooling to 500°C (932°F) at 50°C/hour before air cooling.

6. Applications:-

- Aerospace: Combustion chambers, afterburners, and engine components.
- Power Generation: Gas turbine components.
- Automotive: Turbocharger components and exhaust valves.
- Chemical Industry: High-temperature seals and components exposed to corrosive environments.

7. Corrosion Resistance:-

- Excellent resistance to oxidation at elevated temperatures up to 980°C (1796°F).
- Good resistance to high-temperature creep, pitting, and stress-corrosion cracking.
- Performs well in harsh, oxidizing, and reducing environments.