



Introducing Nimonic® 80A

A nickel-based alloy offering excellent corrosion resistance and very high mechanical properties after hardening

Nimonic 80A Superalloy is a nickel-chromium based material which offers excellent corrosion and oxidation resistance.

The alloy is precipitation hardenable with additional alloying elements of aluminium, titanium and carbon. The product is a wrought, age-hardenable material developed to operate in service temperatures up to 815° C (1500°F).

Nimonic 80A performs well in any application where high temperature and continual stresses is a significant consideration. Traditionally, it is used in applications requiring these characteristics such as gas turbines and in nuclear generators; in the motorsport sector, material applications include exhaust valves in racing engines and spindles and fasteners. Supplied in the solution treated condition, which makes it easier to machine, subsequent ageing treatment results in very high mechanical performance properties with outstanding resistance to creep and fatigue.

Corrosion Resistance

The corrosion resistance of Nimonic 80A in oxidising atmospheres is excellent - this includes heating and cooling conditions. This protection is due to the chromium oxide film formed on the surface of the alloy, which also offers resistance at elevated temperatures.

Machinability of the alloy is also superior; it can be readily formed and welded using conventional welding methods.

Product Benefits

- High oxidation and corrosion resistance
- Outstanding mechanical properties after age hardening
- Suitable for applications where elevated temperatures and continual stresses are a primary consideration
- Good machinability
- Easily welded

Smiths High Performance is a leading stockholder and supplier of high-performance engineering materials to the global motorsport sector. We are supply partners in a range of specialist motorsport markets including Formula 1, Formula E, NASCAR, MOTO GP, WEC & WRC.

Further technical data available on the reverse of this Datasheet

Chemical Composition

| | C | Cr | Si | Cu | Fe | Mn | Ti | Al | Co | B | Zr | Pb | S | Ni |
|-----|------|------|-----|-----|-----|-----|-----|-----|-----|-------|------|--------|-------|-----|
| Min | | 18.0 | | | | | 1.8 | 1.0 | | | | | | |
| Max | 0.10 | 21.0 | 1.0 | 0.2 | 3.0 | 1.0 | 2.7 | 1.8 | 2.0 | 0.008 | 0.15 | 0.0025 | 0.015 | Bal |

Mechanical Properties

| | | |
|-----------------------------|---------------------------|---------------------|
| Tensile Strength (annealed) | Yield Strength (annealed) | Elongation at break |
| 1250 MPa (181 KSi) | 780 MPa (113 KSi) | 30% |

Applications in Motorsport

- Engine exhaust valves and spindles
- Fasteners
- Gearboxes

Annealing

Nimonic alloy 80A should be annealed at 1079° C (1975°F) for about 8 hours and air-cooled.

Note that Nimonic 80A is similar to Nimonic 75 but can be made precipitation hardenable.

Availability

Round bar and plate

...where performance matters...

When you purchase high-performance materials from **Smiths High Performance**, you will be joining some of the biggest and best global engineering companies. We are a Tier 1 supply chain partner to the world's leading motorsport companies. Our unique business structure and ethos allows us to offer services which are otherwise unavailable in this market sector.