

## Introducing Nimonic® 115

A nickel-chromium-based alloy with the introduction of molybdenum, titanium and aluminium, for additional strength.

Nimonic® 115 is a precipitation-hardenable alloy which is available for supply in bar form and extruded sections. The material is known as a creep-resisting alloy, initially developed for high-temperature service operation up to 1010°C. Offering superior oxidation resistance and high-temperature strength, the original intended application for this product was in the production of gas turbine blades.

Heat treatment of the product is by solution treatment and then ageing.

### Forming & Machining

Nimonic® has good ductility; forming is, therefore, superior although powerful equipment is needed as the alloy has greater strength when compared to standard steels. Thorough cleaning after forming is required as lubricant residues can cause future embrittlement of the alloy. The alloy is machined using conventional machining methods and is work hardened during the machining process. Processing at high speeds requires a water-based coolant.

### Product Availability

Round bar and plate

### About Smiths High Performance

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



### Weldability

We recommend the use of an alloy filler for welding - this can either be an exact alloy match or a filler with high nickel, cobalt, molybdenum and chromium content. Suitable welding techniques include gas metal-arc welding, gas-tungsten arc welding, submerged-arc welding and shielded metal-arc welding.

### In Motorsport

This superalloy offers a unique combination of high temperature and mechanical strength and is suitable for motorsport applications where high surface stability is required. Exhaust valves, fasteners, springs and engine components are good examples of where the alloy is suitable.

## Chemical Composition (%)

Nickel	54
Chromium	14.0 - 16.0
Cobalt	13.0 - 15.5
Aluminium	4.50 - 5.50
Molybdenum	3.0 - 5.0
Titanium	3.50 - 4.50
Iron	1.0
Manganese	1.0
Silicon	1.0
Copper	0.20
Zirconium	0.15
Carbon	0.12 - 0.20
Sulphur	0.015
Boron	0.010 - 0.025

## Mechanical Properties

Precipitation hardened, prior to test

Tensile Strength	1140 MPa	(@ 550°C)
	1300 MPa	(@ 23°C)
Tensile Strength, Yield	720 MPa	(@ 550°C)
(@Strain 0.200%)	850 MPa	(@ room temperature)
Elongation at Break	25%	(precipitation hardened)
	20%	(@ 550°C)

## Physical Properties

Density	7.85 g/cc
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## Product Benefits

- High tensile and yield strength
- Superior high-temperature strength
- Good ductility
- For high-temperature service applications
- High creep resistance
- Available in round bar and plate

## In Motorsport

- Engine components
- Valve components
- Springs
- Fasteners

Nimonic® 115 is suitable for motorsport applications where a combination of high-temperature service and mechanical strength is a core requirement.

...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.