

Nitronic® 50 Superalloy

Smiths High Performance



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Superb Corrosion Resistance

Nitronic® 50 offers an attractive combination of mechanical performance and outstanding corrosion resistance.

Nitronic® 50 is an austenitic stainless steel alloy with outstanding corrosion resistance and superior mechanical performance at both sub-zero and elevated temperatures.

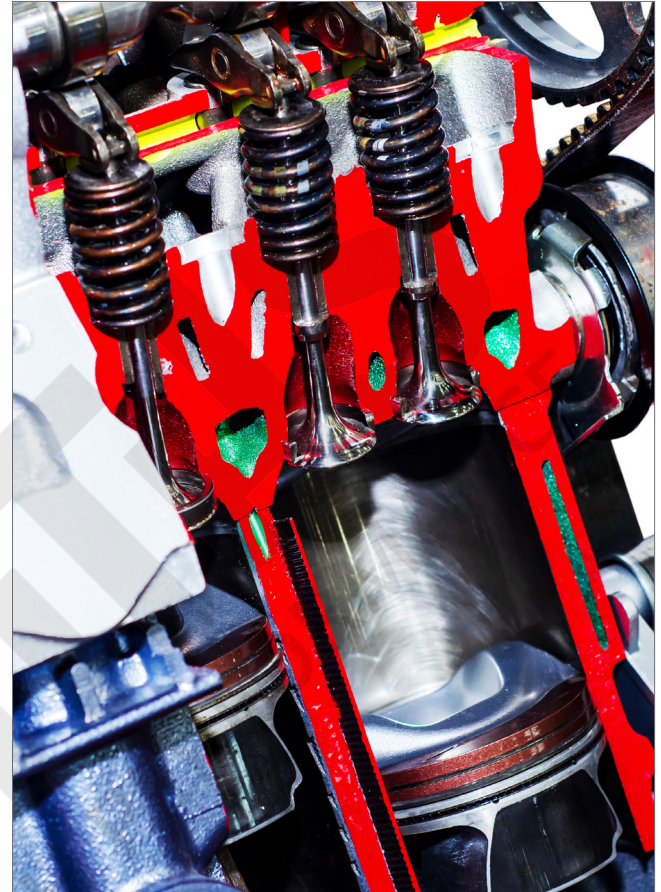
The product is ideal for applications where exposure to high or low temperatures is essential. For example, in the motorsport sector, Nitronic® 50 is a suitable product for racing engine valves.

Excellent Performance:

While the alloy, historically, has been utilised in the oil, gas and petrochemical sectors, motorsport is a recent beneficiary. We stock Nitronic® 50, which serves as yet another example of how Smiths High Performance provides products to give engineers flexible design options.

The material grade offers superior corrosion resistance compared to 316 and 317 stainless steel; the alloy is also nitrogen strengthened to provide almost double the yield strength. The end product does not become magnetic when cold-formed, which is unusual for an austenitic alloy. Other favourable performance characteristics include excellent resistance to intergranular attack and SSC (sulphide stress cracking).

The alloy is weldable using conventional welding methods, but welding processes can result in a loss of overall strength. While the material offers an attractive combination of strength and corrosion resistance, this is no adverse effect on machinability. The fabrication techniques and machinery used are the same.



Supply Condition:

Nitronic® 50 is typically supplied in the annealed condition for most applications as it offers a superior strength and corrosion resistance combination.

A higher-strength option is also available.

About Smiths High Performance

Smiths High Performance is a leading stockholder and supplier of high-performance engineering materials. We are material supply chain partners supporting high-technology market sectors.



Further technical data available on the reverse of this Datasheet

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Chemical Composition (weight, %)

	Ni	Cr	Mo	Mn	C	Si	N	Nb	V	S	Fe	
Min:	11.50	20.50	1.50	4.00			0.20	0.10	0.10		Bal	
Max:	13.50	23.50	3.00	6.00	0.06	1.00	0.40	0.30	0.30	0.03	Bal	

Mechanical Properties

	Ultimate Tensile	Yield Strength (0.2%, OS)	Elongation	Reduction in Area	Hardness
Min.	100 ksi	55 ksi	35%	55%	
Max.					293

Applications in Motorsport:

- Engine valves
- Fasteners
- High-temperature applications
- Fittings
- Springs
- Shafts
- Heat exchangers

Benefits:

- Outstanding corrosion resistance
- Superior mechanical performance
- Easily welded
- Does not become magnetic when cold formed
- Excellent resistance to intergranular attack
- Good mechanical properties in both high and sub-zero temperature service
- Exceptionally low magnetic permeability
- Double the yield strength of 304 and 316 stainless

...where performance matters...

When you purchase high-performance materials from **Smiths High Performance**, you will join 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 allow us to offer services otherwise unavailable in this market sector.

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