Nitronic® 50 Superalloy (XM-19, UNS S20910)

Product Data Sheet

Introducing Nitronic® 50

An attractive combination of mechanical performance and outstanding corrosion resistance

Nitronic® 50 is an austenitic stainless steel alloy which offers a unique combination of outstanding corrosion resistance, and superior mechanical performance at both sub-zero and elevated temperatures.

This stainless steel is an ideal product in applications where exposure to high or low temperature is a consideration. For example, in the motorsport sector, Nitronic® 50 is a suitable product for use in racing engine valves.

Supply Condition

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

Excellent Performance

While the alloy, historically, has been utilised in the oil, gas and petrochemical sector, 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 when compared to both 316 and 317 stainless steel; the alloy is also nitrogen strengthened to provide almost double the yield strength. Unusually for an austenitic alloy, when cold-formed, the end-product does not become magnetic. Other favourable performance characteristics include excellent resistance to intergranular attack and SSC (sulphide stress cracking).

The alloy is readily welded 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 either. The fabrication techniques and machinery used are the same.

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

Nitronic® 50 Superalloy

Chemical Composition

	Ni	Cr	Mo	Mn	C	Si	Fe
Min	11.5	20.5	1.50	4.0			
Max	13.5	23.5	3.00	6.0	0.06	1.00	Bal

Mechanical Properties

	Ulitmate Tensile	Yield Strength (0.2% OS)	Elongation	R/A	Hardness
Min	100 KSi	55 KSi	35%	55%	
Max					293

Motorsport Applications

- 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 steels

...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.

HIGH PERFORMANCE

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