UNS S20910 (Nitronic® 50 / XM19)

Grade: Austenitic stainless steel (UNS S20910 / Nitronic® 50 / XM19)
Type: Corrosion resistant stainless steel, usually delivered in the annealed condition though a high strength (HS) can be supplied*.

Nominal Composition	
Element	**Weight /**
Carbon	0.06 max
Silicon	1.0 max
Manganese	4.0 / 6.0
Phosphorus	0.04 max
Sulphur	0.010 max
Molybdenum	1.5 - 3.0
Chromium	20.5 - 23.5
Nickel	11.5 - 13.5
Nitrogen	0.20 - 0.40
Niobium	0.10 / 0.30
Vanadium	0.10 / 0.30

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Notes

*HS (high strength 105ksi yield) version up to 3" dia can be achieved through controlled hot working practices.
This grade cannot be hardened by heat treatment
Nitronic® is a trade name

Mechanical Properties: annealed condition

Property	Values
Ultimate Tensile Strength	100 min Ksi (689 N/mm2)
0.2 / Yield Strength	55 min Ksi (379 N/mm2)

Elongation	35 / min
Reduction of Area	55 / min
Hardness (see note**)	NACE (35HRC max)

Mechanical Properties: HS (high strength) condition

Property	Values
Ultimate Tensile Strength	135 min Ksi (930 N/mm2)
0.2 / Yield Strength	105 min Ksi (724 N/mm2)
Elongation	20 / min
Reduction of Area	50 / min
Hardness (see note**)	NACE (35HRC max)

Notes:

** NACE - "general use" approval now limits the maximum environmental temperature to 150ºF (66ºC)
The grade is readily weldable using conventional processes

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Overview

This annealed austenitic stainless steel provides a combination of corrosion resistance and strength not found in any other commercial material available in its price range. Its corrosion resistance is greater than that provided by Types 316 & 316L, plus approximately twice the yield strength at room temperatures.
In addition it has very good mechanical properties at both elevated and sub-zero temperatures and unlike many austenitic stainless steels it does not become magnetic when cold worked. It also has exceptional low magnetic permeability and outstanding cryogenic properties.

Applications

Industry

Petroleum, petrochemical, chemical, fertilizer, nuclear fuel, recycling, pulp & paper, textile, food processing, fastener and marine.

Components

Pumps, valves & fittings, fasteners (high strength and higher strength), cables, chains, screens and wire cloth, marine hardware, boat and pump shafting, masting, tie downs, heat exchanger parts, springs and photographic equipment

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