



E STEEL SDN BHD (891338-A)

NO 3, Lorong Sungai Puloh 7/KU 6,
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Stainless Steel Grade NITRONIC® 50 (XM-19) (UNS S20910)

NITRONIC 50 Stainless Steel provides a combination of corrosion resistance and strength not found in any other commercial material available in its price range. This austenitic stainless has corrosion resistance greater than that provided by SUS 316 and SUS 316L, plus approximately twice the yield strength at room temperature. In addition, NITRONIC 50 Stainless has very good mechanical properties at both elevated and sub-zero temperatures. And, unlike many austenitic stainless steels, NITRONIC 50 (XM19) does not become magnetic when cold worked.

Chemical Composition

Element	Content (%)
Chromium, Cr	20.5-23.5
Nickel, Ni	11.5-13.5
Manganese, Mn	4-6
Molybdenum, Mo	1.5-3
Silicon, Si	1 max
Nitrogen, N	0.20-0.40
Niobium, Nb	0.10-0.30
Vanadium, Va	0.10-0.30
Phosphorous, P	0.04 max
Carbon, C	0.06 max
Sulfur, S	0.010 max

Mechanical Properties

Properties	Metric	Imperial
Tensile strength	690 MPa	100 ksi
Yield strength	380 MPa	55 ksi
Elongation	35%	35%
Hardness	293	293



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XM-19 , Nitronic 50 Applications

- Superior corrosion resistance
- Almost double the yield strength
- Exceptionally low magnetic permeability
- Outstanding cryogenic properties

Outstanding corrosion resistance gives NITRONIC 50 Stainless Steel the leading edge for applications where Types SS316, SS316L, SS317 and SS317L are only marginal. It's an effective alloy for the petroleum, petrochemical, chemical, fertilizer, nuclear fuel recycling, pulp and paper, textile, food processing and marine industries.

- Components using the combination of excellent corrosion resistance and high strength currently include pumps, valves and fittings, fasteners, cables, chains, screens and wire cloth, marine hardware, boat and pump shafting, heat exchanger parts, springs and photographic equipment.
- Fastener - High strength, and higher strength fasteners can improve the durability of your equipment
- Marine hardware - Mastings, tie downs
- Marine and Pump shafts - better corrosion than stainless steel SUS304 and SUS316, with double the yield strength.
- Valves and fittings - better corrosion than sus 304 and sus 316 stainless steel, with double the yield strength.
- Downhole rigging - better corrosion than stainless steel 304, stainless steel 316 and 17-4 stainless steel, with double the yield strength in annealed condition.
- Reduced cross sections - better corrosion than stainless steel grade 304, 316 and sus630,

Corrosion Properties

NITRONIC50/XM-19 Stainless Steel provides outstanding corrosion resistance - superior to Types sus316, sus316L, sus317 and sus317L in many media. For many applications the 1950 F (1066 C) annealed condition provides adequate corrosion resistance and a higher strength level. In very corrosive media or where material is to be used in the as-welded condition, the 2050 F (1121 C) annealed condition should be specified. High-Strength (HS) NITRONIC50(XM-19) bars are useful for applications such as shafting and bolting, but do not quite exhibit the corrosion resistance of the annealed conditions in all environments.

Intergranular Attack

The resistance to intergranular attack is excellent even when sensitized at 1250 F (675 C) for one hour to simulate the heat-affected zone of heavy weldments. Material annealed at 1950 F (1066 C) has very good resistance to intergranular attack for most applications. However, when thick sections are used in the as-welded condition in certain strongly corrosive media, the 2050 F (1121 C) condition gives optimum corrosion resistance.