

# DUPLEX STEEL

## UNS S20910 - 1.3964



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Duplex steel 1.3964 is a stainless steel that has high strength and corrosion resistance. It is also known as Nitronic 50, XM-19, or 1.396412 and contains more chromium, nickel, molybdenum, and nitrogen than regular stainless steels, which gives it better resistance to pitting, crevice corrosion, and stress corrosion cracking.

#### KEY FEATURES

- Good mechanical properties
- High corrosion resistance in coastal environments
- Moderately low thermal conductivity

#### CHEMICAL PROPERTIES

Chromium (Cr)	Nickel (Ni)	Manganese (Mn)	Molybdenum (Mo)	Silicone (Si)	Copper (Cu)	Carbon (C)	Nitrogen (N)	Vanadium (V)	Niobium (Nb)	Phosphorus (P)	Sulphur (S)
20-22%	11.5-13.5%	4-6%	3-3.5%	1%	0.5-1%	0.03%	0.25%	0.2%	0.2%	0.025%	0.01%

#### MECHANICAL PROPERTIES

Tensile strength (N/mm <sup>2</sup> )	<b>700-950</b>
Yield strength (N/mm <sup>2</sup> )	<b>370</b>
Elongation (% in 4D)	<b>35</b>
Hardness - Rockwell (HRB) max	<b>110</b>
Hardness - Brinell (HB) max	<b>293</b>

#### PHYSICAL PROPERTIES

Density (kg/m <sup>3</sup> )	<b>7900</b>	
Modulus of elasticity (Gpa)	<b>195</b>	
Mean coefficient of thermal expansion	0-100°C (µm/m/°C)	<b>15.7</b>
	0-350°C (µm/m/°C)	<b>17.2</b>
	0-538°C (µm/m/°C)	<b>18.0</b>
Thermal conductivity	at 100°C (W/m.K)	<b>14.0</b>
	at 500°C (W/m.K)	<b>19.3</b>
Specific Heat 0-100°C (J/kg.K)	<b>460</b>	
Electrical resistivity (nΩ.m)	<b>810</b>	
Melting point (°C)	<b>1450</b>	

#### MARKET SECTORS



**Engineering Components**

Springs, bolts, fasteners



**Chemical Processing**

Pumps, valves, components



**Marine Equipment**

Boat shafts, propellers, fasteners



**Power Generation**

Components in power plants, turbine blades, shafts



**Oil & Gas Industry**

Valves, fittings, downhole equipment



**Aerospace Industry**

Fittings, fasteners, structural elements