

# F53 (2507) Duplex Stainless Steel

## F53 (2507) DUPLEX STAINLESS STEEL DATASHEET

F53 (also known as 2507) Super Duplex is an austenitic-ferritic (duplex) stainless steel. Consisting of 25% Chromium and 7% Ni. F53 (2507) super duplex, like other duplex grades combines higher corrosion resistance and strength compared to other austenitic stainless steels, while also having superior pitting resistance. F53 boasts higher impact strengths over F51, It is also suitable in applications in environments of -50°F to +600°F temperature range. Like other duplex grades F53 does suffer from embrittlement and loss of toughness, when exposed to prolonged use in applications or environments below -50°F or above +600°F, this is why duplex is not suitable for exposure outside of these ranges.

Common industry/applications are: Oil & Gas equipment, Chemical and Biofluid processing, Pressure Vessels, and Mechanical and Structural.

Product forms include round bar, plate & sheet, and forgings.

### Standards

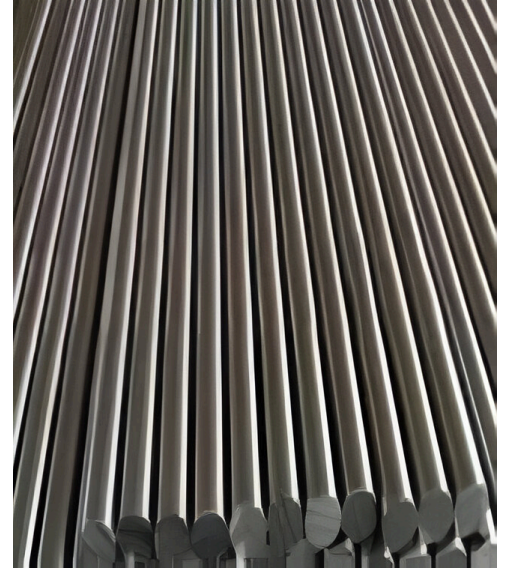
- UNS S32750
- ASTM A240
- ASTM A182 F53
- NACE MR0175
- ASTM A276/A479

### Physical Properties

- Density: 0.281LB/in<sup>3</sup> (7.80g/cm<sup>3</sup>)
- Melting Point: 2570–2660°F (1410–1460°C)
- Modulus of Elasticity: 29.0x10<sup>6</sup>psi (200 GPa)
- Magnetic Permeability: <1.05 @ 68°F (20°C)

### Characteristics

- For use in -50F to +600F temperatures.
- Excellent corrosion & pitting resistance.
- Good cryogenic (-50F) impact strength.



### Chemical Composition

	C	Mn	S	P	Si	Cr	Ni	Mo	N	Cu
MIN	-	-	-	-	-	24.00	6.00	3.00	-	-
MAX	0.03	1.20	0.015	0.035	0.80	26.00	8.00	5.00	0.30	0.50

PREN: Pitting Resistance Equivalent Number: An Equation to correlate pitting resistances of product, based on chemistry. This equation is: Cr + (3.3 x Mo) + (16 x N) - PREN = <40

### Mechanical Properties: Wrought & Forged Bars

Tensile (min) KSI (Mpa)	Yield (min) KSI (Mpa)	Elongation (min) %	Reduction of Area (min) %	Hardness HRC (BHN)
110 (758)	80 (551)	25%	45%	28-33 (270-311)

Charpy Impact: Temp: -50°F (-46°C) / Value: ≥33Ft-Lbs (≥45J)

Typical mechanical properties, actual minimums may vary based on processing.

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SPECIALTY STEEL SUPPLY  
19201 CIRCLE LAKE DR  
PINEHURST, TX 77362  
Call for a quote (281) 821-7111

