

# 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 for F53 (2507) Super Duplex Stainless Steel include: 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

### 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)<br>KSI (Mpa) | Yield (min)<br>KSI (Mpa) | Elongation (min) % | Reduction of Area (min) % | Hardness<br>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.

WWW.SPECIALTYSTEELSUPPLY.COM



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



All information in our data sheet is based on approximate testing and is stated to the best of our knowledge and belief. It is presented apart from contractual obligations and does not constitute any guarantee of properties or of processing or application possibilities in individual cases. Our warranties and liabilities are stated exclusively in our terms of trading.  
© Specialty Steel Supply