

# F55 (25Cr) Duplex Stainless Steel

## F55 (25Cr) DUPLEX STAINLESS STEEL DATASHEET

F55 (also known as Zeron 100) Super Duplex is an austenitic-ferritic (duplex) stainless steel. Consisting of 25% Chromium and 7% Ni. A main difference in F55 over F53 (2507) is the inclusion of Tungsten in the chemical composition. The intentional addition of Tungsten is to improve corrosion resistance similar to that of Molybdenum. Like other duplex grades F55 combines high corrosion resistance and strength over austenitic stainless steels, while also having superior pitting resistance. F55 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

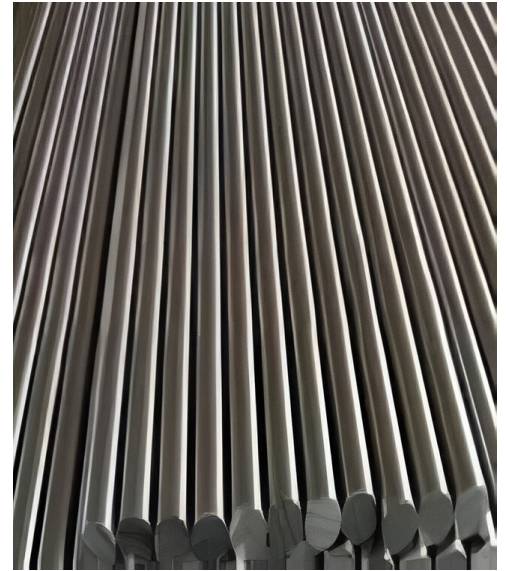
- UNS S32760
- ASTM A240
- ASTM A182 F55
- NACE MR0175
- ASTM A276/A479

### Physical Properties

- Density: 0.285LB/in<sup>3</sup> (7.88g/cm<sup>3</sup>)
- Melting Point: 2525–2630°F (1385–1443°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	W	Cu
MIN	-	-	-	-	-	24.00	6.00	3.00	0.20	0.50	0.50
MAX	0.03	1.00	0.01	0.03	1.00	26.00	8.00	5.00	0.30	1.00	1.00

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

### Mechanical Properties: Wrought & Forged Bars

Tensile (min) KSI (Mpa)	Yield (min) KSI (Mpa)	Elongation (min) %	Reduction of Area (min) %	Hardness HRB (BHN)
100 (758)	80 (551)	25%	45%	28-33 (270-311)

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

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