

F61 (255) Duplex Stainless Steel

F61 (255) DUPLEX STAINLESS STEEL DATASHEET

F61 (255) Duplex Stainless Steel (also known as Ferralium 255) Super Duplex is an austenitic-ferritic (duplex) stainless steel. Consisting of 25% Chromium and 5% Nickel. A main difference in F61 (Ferralium 255) is the alloy is more suited in acidic environments over F53 (2507). Like other duplex grades, F61 (255) Duplex Stainless Steel combines high corrosion resistance and strength over austenitic stainless steels, while also having superior pitting resistance. F61 (255) Duplex Stainless Steel 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 F61 (255) 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 S32550

Physical Properties

- Density: 0.282LB/in³ (7.81g/cm³)
- Melting Point: 2550–2630°F (1399–1443°C)
- Modulus of Elasticity: 30.0x10⁶psi (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	-	0.80	-	-	-	24.50	5.50	3.10	0.20	1.50
MAX	0.025	1.20	0.005	0.025	0.70	26.50	6.50	3.80	0.25	2.00

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)
115 (758)	85 (551)	25%	50%	19-28 (220-270)

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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