Duplex Stainless Steel

Alloy 2507

Description

2507 is a super duplex stainless steel. It was originally developed to address the limitations of standard duplex grades and 316L austenitic stainless steel, which exhibited insufficient pitting and crevice corrosion resistance in high-chloride brine environments.

Conventional stainless steels suffered rapid localized corrosion when exposed to seawater, brackish water and chloride-rich process media at elevated temperatures. 2507 combines high mechanical strength and outstanding chloride corrosion resistance, making it ideal for seawater piping, desalination equipment, offshore structural components, heat exchangers and process vessels in chloride service.

Grade: UNS S32750, F53

Chemical Composition (wt%)

C	Cr	Mo	N	Mn	Si	P	S	Cu
≤0.030	24.0–26.0	3.0–5.0	0.24–0.32	≤1.20	≤0.80	≤0.035	≤0.020	≤0.50

Disclaimer: Data is typical for reference only.

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DATASHEET

Technical standards

Technical Standards	Product Form
ASTM A182 / A182M	Forged Fittings, Flanges, Valves and Parts
ASTM A240 / A240M	Plate, Sheet and Strip
ASTM A789 / A789M	Seamless and Welded Tubing
ASTM A479 / A479M	Bars and Shapes

Physical Properties

Room-Temperature Constant Parameters

Item	Typical Value
Density	7.80 g/cm³
Poisson's ratio	0.27
Magnetic property	Magnetic
PREN	⩾ 41

Coefficient of thermal expansion

θ/°C	α/10⁻⁶ /°C
20–200	12.5
20–400	13
20–500	13.3
20–600	13.6
20–700	13.9
20–800	14.2

Modulus of Elasticity

θ/°C	E/GPa
25	200
200	186
425	176
540	168
650	160

Shear Modulus

θ/°C	G/GPa
25	78.7
200	73.2
425	69.3
540	66.1
650	62.9

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Machinability as annealed

Item	Typical Value as solution annealed (Room temperature)
Tensile Strength	790–1000 MPa
0.2% Yield Strength	⩾550 MPa
Elongation	⩾25%
Hardness (HBW)	220–270 HB

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