ROLLED ALLOYS

DATA SHEET
Alloy 2507

2507 is a super duplex stainless steel with exceptional corrosion resistance and high strength. 2507's molybdenum, chromium, and nitrogen content results in superior resistance to chloride pitting and crevice corrosion over that of standard duplex grades like 2205. 2507's mechanical properties are 50-100% higher than most austenitic stainless steels due to its dual phase structure and high nitrogen content. Like other duplex stainless steels, 2507 is susceptible to secondary phase formation at elevated temperatures, which can reduce both its toughness and corrosion resistance. As a result, 2507 should be limited to applications below 600°F. 2507 is welded using E2594 or ER2594 filler metal.

Specifications

UNS: S32750 **W.Nr/EN:** 1.4410 **ASTM:** A-240, A-276, A-479, A-182 (Gr. F53)
ASME: SA-240, SA-276, SA-479, SA-182 (Gr. F53), P-number 10H, Group Number 1; ASME II-D 2013
Euro Pressure Vessels: EN 10028-7:2007 **NACE:** ISO 15156/MR0175

Chemical Composition, %

	Cr	Ni	Mo	N	Cu	Mn	Si	S	C	P	Fe
MIN	24.0	6.0	3.0	0.24	-	-	-	-	-	-	*bal
MAX	26.0	8.0	5.0	0.32	0.5	1.20	0.80	0.020	0.030	0.035	-

Physical Properties

Density: 0.282 lb/in³ at 68°F (20°C) **Melting Range:** 2570 - 2660°F **Poisson's Ratio:** 0.3 **Electrical Resistivity:** 0.80 ohm mx10⁻⁶

Temperature, °F	68	212	392	572
Coefficient* of Thermal Expansion, in/in°F x 10^6	-	7.2	7.5	7.8
Thermal Conductivity Btu • ft/ft2 • hr • °F	8.6	9.2	9.8	10.4
Modulus of Elasticity Dynamic, psi • 10^6	29	28.1	27	-

Mechanical Properties

Ultimate Tensile Strength, ksi	116 min
0.2% Yield Strength, ksi	80 min
Elongation, %	15 min
Hardness, HRC	32 max

Minimum Elevated Mechanical Properties, Plate

Temperature, ° F	212	392	482
Ultimate Tensile Strength, ksi	99	93	91
0.2% Yield Strength, ksi	65	58	55

Corrosion Resistance

Alloy	PREn	Critical Pitting Temperature (CPT) °F
2507	42	185
2205	35	120
316L	24	64

PREn= Cr% + 3.3*Mo% +16*N% except for UNS S32760 where PREn= Cr% + 3.3*(Mo% + 0.5*W%) + 16*N%

Features

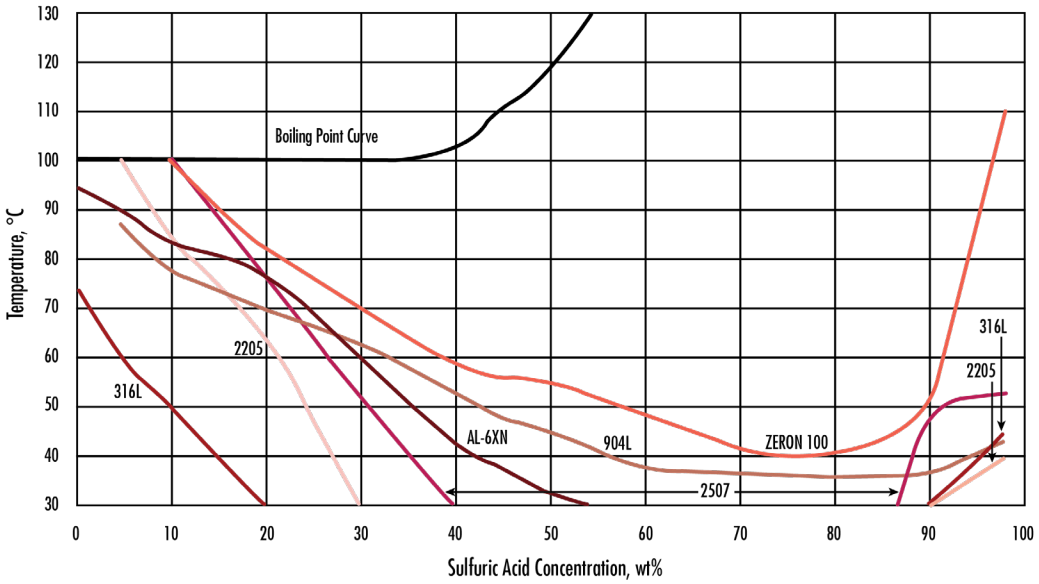
- Exceptional resistance to chloride stress cracking
- Chloride pitting and crevice corrosion resistance similar to 6-moly alloys
- Excellent general corrosion resistance
- High strength
- Useful to 600°F

Applications

- Desalination facilities & water reuse plants
- Chemical process equipment, including pressure vessel, piping, heat exchangers, & storage tanks
- Food, beverage, & pharmaceutical process equipment
- Offshore oil firewater and process water systems, blast & firewalls, and strake clamps
- Downhole oil process & control tubing, control & wire lines, band clamps
- Pulp mill digester & bleach washers
- Architectural & infrastructure applications, including bridges and dam weirs

Sulfuric Acid

Iso-corrosion Curves,
0.1mm/y in Sulfuric Acid



Hydrochloric Acid

Iso-corrosion Curves,
0.1mm/yr in Hydrochloric Acid