UNITED PERFORMANCE METALS
QUALITY SOLUTIONS. TRUSTED PARTNERS.
AN ONI COMPANY

Duplex 2205

SS 2205 is a duplex stainless steel with a microstructure of nearly equal proportions of austenite and ferrite, when properly heat treated. This microstructure ensures that 2205 is much more resistant to stress corrosion cracking than SS 304 or 316L. Its higher chromium, molybdenum, and nitrogen content gives the product significantly improved pitting and crevice-corrosion resistance in the presence of chlorides. SS 2205 also has better general corrosion resistance than 316L in most environments. In addition, 2205 has a 0.2% proof stress of approximately double that of conventional austenitic stainless steels. SS 2205 is highly suitable for service in environments containing chlorides and hydrogen sulfide, such as marine applications and the oil and gas extraction and processing industries.

Specifications

UNS: S32205, S31803
ASTM: A240
ASME: SA240
NACE: MR0175
W.Nr./EN: 1.4462

Chemical Composition, %

	Cr	Ni	Mn	Si	P	S	C	N	Mo	Fe
MIN	22.0	4.5	–	–	–	–	–	0.1	3.0	–
MAX	23.0	6.5	2.0	1.0	0.03	0.02	0.03	0.2	3.5	bal

Features

- Microstructure ensures more resistance to stress-corrosion cracking
- Significantly improved pitting and crevice-corrosion resistance in the presence of chlorides
- 0.2% proof stress of approximately double that of conventional austenitic stainless steels
- Highly suitable material for service in environments containing chlorides and hydrogen sulfide

Applications

- Chemical industry (processing, transport and storage, pressure vessels, tanks, and piping)
- Pulp and paper industry (digesters and liquor tanks)
- Mining industry
- Heat exchangers (especially those where chloride-bearing water or brackish water is used as the cooling medium)
- Production tubing and flow lines for the extraction of oil and gas from sour wells

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Physical Properties

Density: 0.278 lb/in^3	Melting Range: 2525-2630°F
Specific Heat Capacity at 212°F	0.119 Btu/lb/°F
Thermal Conductivity at 212°F	8.4 Btu/hr-ft-°F
Poisson's Ratio	0.3
Elastic Modulus at 72°F	29 x 10 psi

Mechanical Properties

0.2% Yield Strength, ksi	65 min
Tensile Strength, ksi	90 min
Elongation, %	25 min
Hardness [HRC]	293 max

Tensile Properties at Elevated Temperatures

Temperature °F	212	302	392	572
0.2% Yield Strength (ksi)	52	49	45	41
Ultimate Tensile Strength (ksi)	90	83	83	81