

Alloy 2205 Stainless Steel

UNS S32205
W. Nr 1.4462

Applicable Specifications

Wire & Bar | ASTM A313, A479, NACE MR0175/ISO 15156

Description: Alloy 2205 is a duplex (austenitic/ferritic) stainless steel alloyed with chromium, molybdenum, and nitrogen for improved performance and corrosion resistance compared to 304 and 316 stainless steels. The alloy's distributed austenite/ferrite microstructure combined with the alloying additions provide resistance to stress corrosion cracking, pitting, and chlorine induced crevice corrosion. Alloy 2205 also has acceptable oxidation resistance up to 980°C, but only for specific applications as the material can become embrittled when exposed to temperatures between 300°C and 1000°C for extended periods.

Applications include: Mixing tanks, Heat exchangers, Pressure vessels, Extraction/distillation columns, Pulp processing equipment, Pipes, Pumps, Food processing equipment, Springs

Industries supplied include: Chemical Processing, Oil & Gas, Nuclear Power Generation, Food Processing

Nominal Composition

	C	Mn	P	S	Si	Ni	Cr	Mo	N	Fe
min	-	-	-	-	-	4.5	22.0	3	0.14	Bal
max	0.03	2.0	0.03	0.02	1.0	6.5	23.0	3.5	0.20	-

Physical Properties

	At 70°F	At 20°C
Density	0.284 lb/in ³	7.86 g/cm ³
Modulus of Elasticity (E)	29.0 x 10 ³ ksi	200 GPa
Coefficient of Expansion	11.1 µin/in-°F (70-2000°F)	14.0 µm/m-°C (0-300°C)
Electrical Resistivity	33.5 µohm-in	85.1 µohm-cm
Thermal Conductivity	104 Btu-in/ft ² -hr-°F	15.0 W/m-°C

Typical Mechanical Properties

Condition	Heat Treatment	Tensile Strength	Suggested Operating Conditions
Annealed	1868-2050°F (1020-1121°C)	90-120 ksi (620-827 MPa)	-58°F to 572°F (-50°C to 300°C)
Spring	Stress Relieve 600-900°F (316-482°C)	180 ksi min (1240 MPa)	Up to 550°F (288°C)

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