

## Alloy 2205 Stainless Steel

UNS S32205  
W. Nr 1.4462

### Applicable Specifications

Strip and Foil | ASTM A240, 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 <sup>3</sup>	7.86 g/cm <sup>3</sup>
Modulus of Elasticity (E)	29.0 x 10 <sup>3</sup> 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 <sup>2</sup> -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)	120-150 ksi (825-1035 MPa)	-58°F to 572°F (-50°C to 300°C)
Spring Temper	(Stress relieve as needed)	200 ksi min (1380 MPa)	Up to 550°F (288°C)

**Elgiloy Specialty Metals - Strip Products**

1565 Fleetwood Dr.

Elgin, IL 60123 USA

Phone: 1-888-843-2350

[www.elgiloy.com](http://www.elgiloy.com)

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