

254 SMO® Alloy

UNS S31254
W. Nr 1.4547

Applicable Specifications

Strip and Foil ASTM A240

Description: 254 SMO® is a high-alloy super-austenitic stainless steel with low carbon content that was originally developed for use in seawater and other aggressive chloride-bearing environments. It demonstrates outstanding resistance to pitting, crevice corrosion stress cracking, and corrosion fatigue uniform corrosion, with strength that is twice that of the 300 series stainless steels. With high levels of chromium, molybdenum, and nitrogen, 254 SMO® is frequently used in high chloride environments, such as brackish water, seawater, pulp mill bleach plants, and other chloride process streams. For certain applications it has been found to be a more cost-effective substitute for high nickel and titanium alloys.

Applications include: Desalination equipment, Saltwater handling, Flue gas desulfurization, Food processing equipment, Heat exchangers, Pulp mill bleach systems, and Oil distillation.

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

Nominal Composition

| | C | Si | Mn | P | S | Cr | Ni | Mo | N | Cu |
|-----|-------|------|------|-------|-------|------|------|-----|------|------|
| min | - | - | - | - | - | 19.5 | 18.7 | 6 | 0.18 | 0.50 |
| max | 0.020 | 0.80 | 1.00 | 0.030 | 0.010 | 20.5 | 18.5 | 6.5 | 0.25 | 1.00 |

Physical Properties

| | At 70°F | At 20°C |
|---------------------------|--|-------------------------|
| Density | 0.290 lb/in ³ | 8.0 g/cm ³ |
| Modulus of Elasticity (E) | 28.3 x 10 ³ ksi | 195 GPa |
| Modulus of Rigidity (G) | 10.9 x 10 ³ ksi | 75 GPa |
| Coefficient of Expansion | 9.17 µin/in-°F (86-200°F) | 16.5 µm/m-°C (30-100°C) |
| Electrical Resistivity | 34 µohm-in | 86 µohm-cm |
| Thermal Conductivity | 97.2 Btu-in/ft ² -hr-°F (212°F) | 14 W/m-°C (100°C) |

Typical Mechanical Properties

| Condition | Heat Treatment | Tensile Strength | Suggested Operating Conditions |
|-----------|---------------------------|---------------------------|------------------------------------|
| Annealed | 2100-2192°F (1150-1200°C) | 100-120 ksi (690-830 MPa) | -320°F to 1000°F (-196°C to 538°C) |

254 SMO® is a registered trademark of Avesta/Outokumpu.

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