

321 Stainless Steel (AMS 5645)

Smiths Advanced Metals

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Austenitic Stainless Steel Bars

Bars stabilised with titanium resulting in an engineering material which offers excellent resistance to intergranular corrosion in the heat-affected zone (HAZ).

Including titanium reduces the formation of chromium carbide - the non-magnetic, high-strength product suits engineering applications where components are subject to continuous heating or cooling.

Typical examples include jet engine components and afterburners. The alloy benefits from impressive mechanical properties and may be easily welded and formed. The suitable operating temperature range is 800° F to 1500° F.

Temperature Performance

While the alloy retains significant strength, toughness and corrosion resistance at elevated temperatures, as an austenitic stainless steel grade, cryogenic performance is equally impressive. Therefore, 321 stainless is similarly suitable for high-temperature applications such as engine manifolds and low-temperature applications in sub-sea environments.

Benefits

- High strength
- Excellent intergranular corrosion resistance
- Impressive mechanical properties



Key Applications

- Afterburners
- Expansion joints
- Oil refinery equipment

*Chemical Composition (weight %)

	C	Mn	Si	P	S	Cr	Ni	N	Ti	Mo	Cu
min.						17.00	8.00		5(C+N)		
max.	0.08	2.00	1.00	0.040	0.030	19.00	12.00	0.10	0.70	0.75	0.75

* As per AMS 5645

*Physical & Mechanical Properties

Tensile Strength	515 MPa min
Proof Stress	205 MPa min
Elongation A5	40% min
Reduction of Area	50%
Density	8.09 g/m ³
Melting Point	1400 °C
Modulus of Elasticity	193 GPa
Electrical Resistivity	0.074 x10 ⁻⁶ Ω.m
Thermal Conductivity at 100°C	16.1 W/m.K

* Properties as per AMS 5645 (bars over 1/2" diameter, hot finished)

Product Suitability

321 stainless steel should be considered for applications which require freedom from intergranular corrosion in moderately corrosive environments.

General atmospheric and oxidation resistance is excellent, similar to Type 304 and even better once annealed and subjected to elevated temperature service. The product also provides improved creep and stress rupture characteristics when compared to 304 stainless steel.

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