

Custom® 455 Stainless Steel Bar

Smiths Advanced Metals

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Custom® 455 (UNS S45500)

We stock Custom® 455 - a martensitic age hardenable stainless steel combining excellent yield strength and corrosion resistance.

While soft and easily formed in the annealed condition, Custom® 455 offers outstanding yield strength (three times greater than Grade 304) with impressive toughness and ductility resulting from a single-step ageing treatment. The alloy offers a perfect solution for applications where high strength with good corrosion resistance is possible via a simple heat-treating process.

Machining Custom® 455 is acceptable in the annealed condition, and hardening creates minimal dimensional changes, so the alloy is machinable to close tolerances. Machining is straightforward and requires a robust cutting tool and high-quality coolant.

Welding

The alloy may be welded by shielded fusion and resistance welding practices. Oxyacetylene welding is not possible. Welding in the overaged condition may be required if high stresses on the welding area are present. Rings and combusters.

Benefits

- Outstanding yield strength
- Good ductility and toughness
- Machinable to close tolerances



Key Applications

- Heat exchangers
- Shafts and spindles
- Food processing equipment

Chemical Composition (weight %)

	C	P	Si	Ni	Cu	Cb+Ta	Mn	S	Cr	Mo	Ti	Fe
min.				7.50	1.50	0.10			11.00		0.80	
max.	0.05	0.04	0.50	9.50	2.50	0.50	0.50	0.03	12.50	0.50	1.40	Bal

*Physical & Mechanical Properties

Density	7.76 g/cm ³
Tensile Strength	1413 MPa
Yield strength	1345 MPa
Modulus of Elasticity	200 GPa
Elongation	14%
Brinell Hardness	411
Hardness, Rockwell C	44

* H1000 typical properties

Corrosion Resistance

Custom® 455 provides good atmospheric corrosion resistance, resisting staining from the air and no corrosion in freshwater.

The alloy also offers good stress corrosion cracking resistance (SCC), further improving by increasing the ageing temperature. Passivation (treatment with an oxidant such as nitric acid to remove free iron) will prevent the material from rusting.

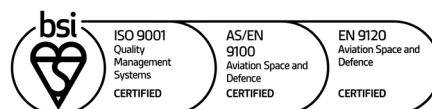
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