

416 Stainless

Technical Datasheet



Martensitic Stainless Steel Alloy with added Sulphur

Service. Quality. Value.

Typical Applications

- Automotive components
- General engineering
- Washing machine parts
- Motor shafts
- Gears
- Valves & pumps

Product Description

Type 416 stainless is a martensitic steel alloy with added sulphur - this gives the alloy excellent machining properties, in fact, they are best of any stainless steel. The added sulphur also improves non-galling characteristics. However, this performance comes at a cost. Corrosion resistance is limited, as is formability and weldability is poor. Corrosion resistance is at its optimum performance if the alloy is hardened and tempered. Because of their high machinability and low cost of the alloy, Type 416 steels are available in highly tempered, hardened or unhardened forms.

Key features

- Addition of sulphur to this martensitic alloy gives it the best machining properties of any stainless steel.
- This comes at a cost in terms of reduced corrosion resistance, formability & weldability.

Machinability

Excellent machinability.

Weldability

Poor.

Availability

Round Bar, plate, sheet, wire tube.

Corrosion resistance

Highly resistant to acids, alkalis, fresh water and dry air.

Chemical Composition (weight %)

	C	Cr	Mn	Si	P	S	Fe		
min	0.08	12.00				0.15	Bal		
max	0.15	14.00	1.50	1.00	0.04	0.35	Bal		

Mechanical Properties

Tensile strength	500 - 1400	MPa
Proof Stress	280 - 1110	MPa
Elongation A5	11 - 30	%

Mechanical properties vary greatly according to the heat treatment that the material has undergone.

Physical Properties

Density	7.75	g/cm ³
Modulus of Elasticity	200	GPa
Electrical Resistivity	0.057	x10 ⁻⁶ Ω.m
Thermal Conductivity	24.9	W/m.K
Thermal Expansion	9.9	x10 ⁻⁶ /K

Technical Assistance

Our knowledgeable staff backed up by our resident team of qualified metallurgists and engineers, will be pleased to assist further on any technical topic.

UK Service Centres:

Smiths Belfast **02895 908 897**
 Smiths Biggleswade **01767 604 704**
 Smiths Birmingham **0121 728 4940**
 Smiths Bristol **0117 971 2800**
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 Smiths Redruth **01209 315 512**
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Quality & Testing:



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