

416 Stainless Steel

416 STAINLESS STEEL DATASHEET

416 stainless steel is a Martensitic stainless steel. It is a chromium steel which has added chemistry, such as Phosphorus and Sulfur to make this a free machining grade. The modified chemistry also improves machinability and non-galling properties. Like 440C, this grade is magnetic in all conditions. As with other Martensitic grades this grade is capable of being heat treated to improve mechanical properties. 416 stainless steel is not intended for use in environments with high sulfur content such as sour gas and as such is not compliant to NACE MR0175 and MR0103.

Common industry/applications for 416 stainless steel include: Automatic Screw Machine Parts, Bolts, Screws & Studs, Shafts, Pumps, Valves & Electric Motors, Gears & Fasteners, and Structural Supports, Railings & Handles.

Product forms include round bar, hollow bar, and forgings.



Standards

- **UNS S41600**

Physical Properties

- **Density: 0.276LB/in³ (7.60g/cm³)**
- **Melting Point: 2550–2590°F (1398–1421°C)**
- **Modulus of Elasticity: 29.7x10⁶psi (205 GPa)**
- **Magnetic Permeability: 22μΩ/in @ 68°F (20°C)**

Characteristics

- **Excellent machinability.**
- **Excellent Anti-Galling properties.**
- **Corrosion and Heat Resistance.**

Chemical Composition

	C	Mn	S	P	Si	Cr	* Ni	* Mo
MIN	0.09	-	0.15	-	-	11.50	-	-
MAX	0.15	1.50	0.35	0.06	1.00	14.00	1.00	0.60

* Ni + Mo Added as additional options.

Mechanical Properties: Condition T (Hardened Temper)

Tensile (min) KSI (Mpa)	Yield (min) KSI (Mpa)	Elongation (min) %	Reduction of Area (min) %	Hardness * Brinell HB
125 (861)	100 (698)	14%	45%	248-302

* As a Martensitic Stainless, 416 responds to Heat Treat and can be hardened to various conditions and hardness strengths.

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