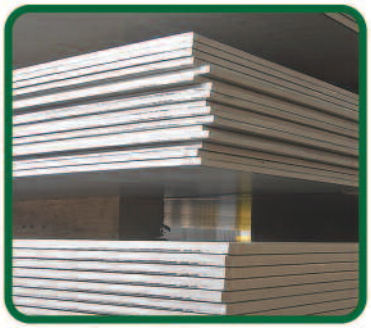
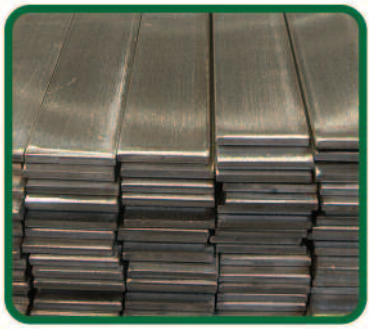
Alloy 405 Specifications: UNS S40500





ALLOY 405 (UNS S40500)

Penn Stainless inventory now includes Alloy 405 (UNS S40500) in sheet, sheet coil, plate, round bar, processed flat bar and tubular products.

GENERAL PROPERTIES

Alloy 405 is a 12% chromium stainless steel designed to be used in the as-welded condition. Unlike the other grades of 12% chromium stainless, 405 is not vulnerable to extensive hardening through air cooling from high temperatures.

APPLICATIONS

Applications that frequently use alloy 405 include, but are not limited to:

- Steam nozzles
- Partitions
- Annealing boxes
- Quenching racks
- Fabrications that cannot be annealed after welding

STANDARDS ALLOY 405

ASTM/ASME .....UNS S40500
EURONORM FeMi35Cr20Cu4Mo2
DIN 2.4660

Alloy 405 (UNS S40500) can be processed by Penn Stainless utilizing the following methods:

- Shear Cutting
- Plasma Cutting
- HQ Plasma Cutting
- Dynamic Water Jet Cutting
- Laser Cutting
- Saw Cutting
- Gauer Processing
- Machine Cutting

Product Offering:

- Plate
- S/E processed bar

MACHINABILITY

- 405 can be easily machined due to its soft and ductile characteristics

WELDABILITY

- Can be welded using shielded fusion and resistance techniques
- Oxyacetylene is not recommended
- Post weld annealing will maximize ductility

HEAT TREATMENT

- Annealing temperature range is 1800 to 2000°F
- May be stress relief annealed within the carbide precipitation range of 800 to 1500°F without any danger of subsequent intergranualr corrosion
- Cannot be hardened by heat treatment

CHEMICAL PROPERTIES

Type	C	Cr	Fe	Mn	Si	S	P	Ni	Al
405	0.08 max	min: 11.5 max: 14.5	balance	1.0 max	1.0 max	0.03 max	0.04 max	0.50 max	min: 0.1 max: 0.3

MECHANICAL PROPERTIES

Grade	Tensile Strength ksi (MPa) min	Yield Strength 0.2% offset ksi (MPa) min	Elongation (% in 50mm) min	Hardness (Brinell) MAX	Hardness (Rockwell B) MAX
405	60 (415)	25 (170)	20	179	88

PHYSICAL PROPERTIES

	Alloy 405
Density	0.279 **lb/cu/in**
Specific Gravity	7.72
Specific Heat at 32 - 212°F (0 - 100°C)	0.11 **Btu/lb//°F**
Thermal Conductivity	416
Modulus of Elasticity Tension	29
Melting Range	2696 to 2786 °F (1480 to 1530 °C

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