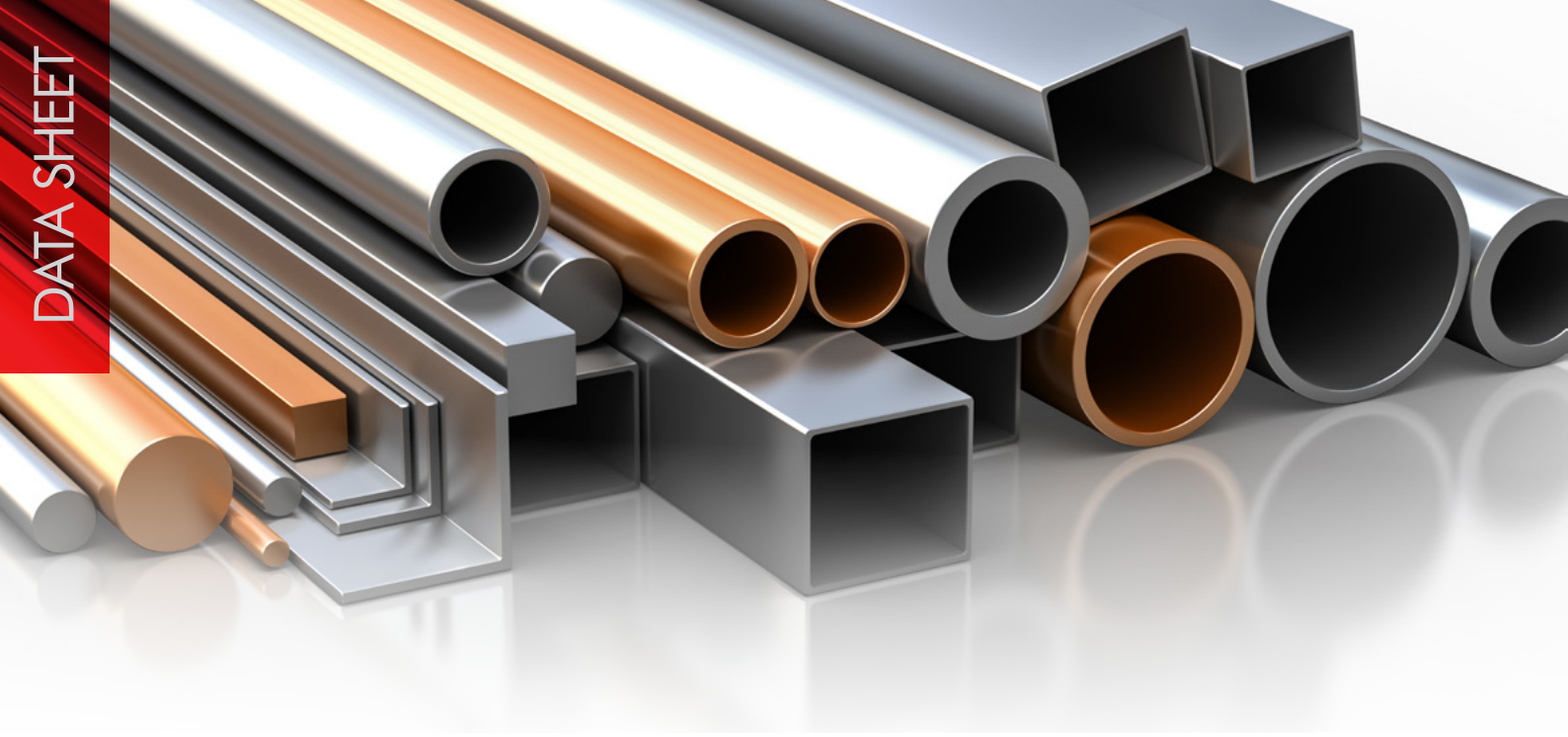
DATA SHEET



Grade 410 Stainless Steels are universally useful martensitic stainless steels containing 11.5% chromium, which gives good corrosion resistance properties. However, the corrosion resistance of grade 410 steels can be further improved by a series of processes for example, hardening, tempering and polishing. Quenching and tempering can harden grade 410 steels. The main applications of Stainless Steel 410 involve mild corrosion, heat resistance and high strength. Martensitic stainless steels are fabricated by utilizing techniques that require final heat treatment. These grades are less resistant to corrosion when compared to that of austenitic grades. Their working temperatures are frequently influenced by their loss of strength at high temperatures, because of over-tempering and loss of ductility at sub-zero temperatures.

Applications

- Press plates
- Petrochemical equipment
- Gate valves
- Mining machinery
- Distillation trays

Characteristics

- Hardenable stainless steel which may be tempered as high as 1350°F to produce high impact toughness
- Oxidation resistant through 1500°F intermittently, 1200°F continuously
- Corrosion resistant

SUNMACH™
shaping exotic metals

S. S. 410

Machining
Machining is tough, draggy chips along with heavy build-up. While this alloy can be machined in the annealed condition, it has tendency to act better in the cold drawn or heat treated condition.

Welding
With this alloy most common techniques of welding can be successfully utilized. It is advisable to preheat the workpiece to 350-400 F (177-204 C) to reduce the chance of cracking. Post-weld annealing is recommended to reattain maximum ductility. Filler metal, when required, should be AWS E/ER410.

Hot Working
2000-2200 F (1093-1204 C) is the appropriate hot work range. Do not work this material beneath 1650 F (899 C).

Cold Working
Cold Working is promptly formed by utilizing the most common practices.

Tempering
Temper for desired hardness, air or furnace cool.

Annealing
1200-1400 F (649-760 C) followed by air cooling.

Hardening
Hardening at 1750-1850 F (954-1010 C) oil quench for maximum hardness.

Chemical Properties

C	Si	P	S	Cr	Mn	Fe
0.15 max	1.0 max	0.040 max	0.030 max	11.5-13.5	1.0 max	Remainder

S. S. 410

Mechanical Properties

Tensile Strength (ksi)	0.2% Yield Strength (ksi)	Elongation% in 2 inches
75	45	25

Physical Properties

Properties	Units	Temperature in °C
Density	7.74 g/cm^3	Room
Specific Heat	0.11 Kcal/kg.C	22°
Melting Range	1482-1532°C	-
Modulus of Elasticity	200 KN/mm^2	20°
Electrical Resistivity	570 µΩ.cm	Room
Coefficient of Expansion	9.9 µm/m °C	20-100°
Thermal Conductivity	24.9 W/m-°K	100°

ASTM Specifications

Pipe / Tube (SMLS)	Pipe / Tube Welded	Sheet / Plate	Bar	Forging	Fittings	Wire
A 511	A 268	A 176, A 240	A 276, A 314, A 479	A 193, A 314, A 194, A 473, A 336	A 182	A 580, A 493

Availability

MANUFACTURING
Fasteners
Custom Machining
Custom Fabrication
Piping / Spools
Stamped Parts
B/W Fittings
S/W Fittings
Flanges
Compression Fittings

RAW MATERIALS
Pipes
Tubes
Bars
Sheets
Plates
Wires
-
-
-