BROWN METALS COMPANY
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ALLOY TECHNICAL DATA SHEET

TYPE 410 STAINLESS STEEL

Martensitic Stainless Steel · UNS S41000

GENERAL PROPERTIES

Type 410 is a hardenable, straight-chromium stainless steel that combines the wear resistance of high-carbon alloys with the corrosion resistance of chromium stainless. Oil quenching from 1800–1950 °F (982–1066 °C) produces the highest strength and wear resistance along with best corrosion resistance. It is used where strength, hardness and/or wear resistance must be combined with corrosion resistance.

A major use is cutlery, where alloys are selected for heat-treating response, mechanical properties and fabricating characteristics.

CHEMICAL COMPOSITION

Percent by weight, maximum unless range is specified — ASTM A240

Element	410
Carbon	0.08–0.15
Manganese	1.00
Phosphorus	0.040
Sulfur	0.030
Silicon	1.00
Chromium	11.50–13.50
Iron	Balance

MECHANICAL PROPERTIES

Typical annealed properties and hardening response

Property	Type 410
Tensile strength, ksi (MPa)	74 (510)
0.2% Yield strength, ksi (MPa)	42 (290)
Elongation in 2" (51 mm)	34%
Hardness, annealed	Rockwell B82
Hardening response	Rockwell C38–45

Data are typical and do not necessarily represent minimum or maximum values. Each lot may vary.

PHYSICAL PROPERTIES

Melting range	2700–2790 °F (1482–1532 °C)
Density	0.276 lb/in^3 (7.64 g/cm^3)
Specific gravity	7.65
Modulus of elasticity	29 × 10^6 psi (200 GPa)
Specific heat	0.11 Btu/lb·°F
Thermal conductivity, 212 °F (100 °C)	14.4 Btu/hr·ft·°F (24.9 W/m·K)
Electrical resistivity, 68 °F (20 °C)	56 microhm-cm

THERMAL EXPANSION

°F	°C	in/in/°F	cm/cm/°C
68–392	20–200	5.9 × 10^{-6}	10.5 × 10^{-6}
68–1112	20–600	6.5 × 10^{-6}	11.6 × 10^{-6}

CORROSION RESISTANCE

Type 410 resists atmospheric corrosion, potable water and mildly corrosive chemical environments thanks to a tightly adherent protective oxide film. Exposure to chlorides in everyday use — food preparation, sporting goods and similar — is generally satisfactory when parts are properly cleaned after use.

Values are typical or specification minimums as noted, provided for information only, and should not be used as design limits or as a guarantee of properties for any particular lot or application. Certified test reports are supplied with each order.

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