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Ulbrich Stainless Steels & Special Metals, Inc. • 153 Washington Avenue • North Haven, CT 06473 USA • 800-243-1676 • ULBRICH.com

15-7MO® STAINLESS STEEL, UNS S15700

Strip, Foil, Wire, AMS 5520, ASTM A693

Applications

Springs, retaining rings, diaphragms, aircraft bulkheads, welded and brazed honeycomb paneling and other aircraft components

Description

Type 15-7MO® is a semi-austenitic precipitation-hardening stainless steel that provides high strength and hardness, good corrosion resistance and minimum distortion upon heat treatment. It is easily formed in the annealed condition and develops an effective balance of properties by simple heat treatments. For applications requiring exceptionally high strength, cold-reduced PH 15-7MO® Stainless Steel in Condition CH 900 is particularly useful for applications permitting only limited ductility and workability. This alloy is particularly beneficial for applications requiring high strength at elevated temperatures.

Chemistry Typical

Carbon: 0.090 max
Manganese: 1.00 max
Silicon: 1.00 max
Chromium: 14.00-16.00
Nickel: 6.50- 7.75
Molybdenum: 2.00-3.00
Aluminum: 0.75-1.50
Phosphorus: 0.040 max
Sulfur: 0.040 max
Iron: Balance

Physical Properties

Density: (Cond. A): 0.28 lbs/in³ 7.80 g/cm³

Thermal Conductivity: BTU/hr/ft²/in/°F (W/m·K):
At 200 °F (93 °C): 112 (16.2)

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Mean Coefficient of Thermal Expansion: (Cond. A): in/in/°F ($\mu\text{m}/\text{m}\cdot\text{K}$):

70 - 200 °F (21 - 93 °C): 8.0×10^{-6} (14.4)

70 - 600 °F (21 - 315 °C): 8.5×10^{-6} (15.3)

70 - 800 °F (21 - 427 °C): 8.9×10^{-6} (16.0)

Modulus of Elasticity: ksi (MPa)

29×10^3 (200×10^3) in tension

Magnetic Permeability:

Annealed: Weak ferromagnetic

Heat Treated: Strong ferromagnetic

Forms

Coil – Strip, Foil, Ribbon

Wire – Profile, Round, Flat, Square

Mechanical Properties at Room Temperature

Properties: Annealed

Ultimate Tensile Strength: 150 KSI max (1035 MPa max)

Yield Strength (0.2% offset): 55 KSI max (380 MPa max)

Elongation: 20% min

Hardness: Rb 92 max

Properties: Tempered

Type 15-7MO[®] can be cold rolled to various tempers. Contact Ulbrich Technical Service for additional information.

Properties: Condition C

Ultimate Tensile Strength: 200 KSI min (1380 MPa min)

Yield Strength (0.2% offset): 175 KSI min (1205 MPa min)

Elongation: 1% min

Hardness: Rc 41 min

Heat Treat Capabilities

Type 15-7MO[®] can be heat treated conditions. Contact Ulbrich Technical Service for additional information.

Additional Properties

Corrosion Resistance

Corrosion resistance of Type 15-7MO[®] stainless steel in Conditions TH 1050 and RH 950 is superior to that of the standard hardenable chromium types of stainless steels such as Types 410, 420 and 431, but is not quite as good as chromium-nickel Type 304.

Refer to NACE (National Association of Corrosion Engineers) for recommendations.

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Finishes

1 – Hot rolled annealed and descaled. It is available in strip, foil and ribbon. It is used for applications where a smooth decorative finish is not required.

2D – Dull finish produced by cold rolling, annealing and descaling. Used for deep drawn parts and those parts that need to retain lubricants in the forming process.

2B – Smooth finish produced by cold rolling, annealing and descaling. A light cold rolling pass is added after anneal with polished rolls giving it a brighter finish than 2D.

#BA – Bright annealed cold rolled and bright annealed

#CBA – Course bright annealed cold rolled matte finish and bright anneal

#2 – Cold Rolled

2BA – Smooth finish produced by cold rolling and bright annealing. A light pass using highly polished rolls produces a glossy finish. A 2BA finish may be used for lightly formed applications where a glossy finish is desired in the formed part.

Polished – Various grit finish for specific polish finished requirements.

** Not all finishes are available for all alloys – Contact Ulbrich Sales for more information.*

Wire Finishes

XC – Extra clean bright annealed or bright annealed and cold rolled

Grease – Ultra-bright finish (for decorative applications)

Soap – Soap is not removed from tempered wire to act as a lubricant.

** Contact Ulbrich Wire for custom wire finishes.*

Hardening

Type 15-7MO® can be hardened by:

Heat treatment from “Condition A” (RH950 or TH1050)

Cold rolling: Condition 1/2 C, 3/4 C, C

Heat treatment of Condition C (CH900)

Welding

For best results refer to: SSINA's “Welding of Stainless Steels and Other Joining Methods”.

15-7MO® is a registered trademark of AK Steel

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