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# 436 STAINLESS STEEL, UNS S43600

## Strip, Coil, Foil, Wire

### Applications

Automotive exhaust applications, stretch formed trim

### Description

Type 436 is a variation of Type 434 to which Columbium has been added to minimize “roping” or “ridging” during stretch forming operations.

### Chemistry Typical

Carbon: 0.12 max  
Manganese: 1.00 max  
Silicon: 1.00 max  
Chromium: 16.00-18.00  
Nickel: 0.50 max  
Molybdenum: 0.75-1.25  
Phosphorus: 0.040 max  
Sulfur: 0.030 max  
Cobumbium + Tantalum: 5xC min-0.70 max  
Iron: Balance

### Physical Properties

Density: 0.28 lbs/in<sup>3</sup> 7.74 g/cm<sup>3</sup>

Electrical Resistivity: microhm-in (microhm-cm):  
68 °F (20 °C): 23.68 (60)

Specific Heat: BTU/lb/°F (kJ/kg•K):  
32 - 212 °F (0 - 100 °C): 0.11 (0.46)

Thermal Conductivity: BTU/hr/ft<sup>2</sup>/ft/°F (W/m•K)  
At 212 °F (100 °C): 15.1 (26.1)  
At 932 °F (500 °C): 15.2 (26.3)

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

32 – 212 °F (0 - 100 °C):  $5.2 \times 10^{-6}$  (9.3)

32 – 1000 °F (0 - 538 °C):  $6.3 \times 10^{-6}$  (11.4)

Modulus of Elasticity: ksi (MPa)

$29 \times 10^3$  ( $200 \times 10^3$ ) in tension

Magnetic Permeability: Magnetic

Melting Range: 2600 - 2750 °F (1427 - 1510 °C)

## Forms

Coil – Strip, Foil, Ribbon

Wire – Profile, Round, Flat, Square

## Mechanical Properties at Room Temperature

### Properties: Annealed

Ultimate Tensile Strength: 77 KSI min (531 MPa min)

Yield Strength (0.2% offset): 53 KSI min (365 MPa min)

Elongation: 22% min

Hardness: Rb 89 max

## Additional Properties

### Corrosion Resistance

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

### 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.*

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### 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.*

### Cold Forming

Type 436 is readily drawn and formed. Its drawing characteristics are similar to those of low carbon steel, although it is stronger in the annealed condition and will require stronger tooling and increased power. It is also adaptable to most hot-forming operations. It does have a slightly tendency to “rope” during forming, but it is minimized by the addition of columbium.

### Welding

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

For Reference Only

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