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# ZIRCONIUM 702, UNS C15100

## Strip, Foil, Wire, ASTM B551

### Applications

Structured packing and gaskets for chemical processing plants, getter straps and nuclear

### Description

Zirconium 702 is a commercially pure Zirconium. It exhibits good ductility even at cryogenic temperatures and good strength comparable with other common engineering alloys. Zirconium is a reactive metal that has a high affinity for oxygen resulting in the formation of a protective oxide layer in air at room temperature. This protective oxide gives zirconium alloys their superior corrosion resistance.

### Chemistry Typical

Zirconium + Hafnium: 99.2 min

Hafnium: 4.5 max

Iron + Chromium: 0.2 max

Hydrogen: 0.005 max

Nitrogen: 0.025 max

Carbon: 0.05 max

Oxygen: 0.16 min

### Physical Properties

Density: 0.235 lbs/in<sup>3</sup>, 6.51 g/cm<sup>3</sup>

Mean Coefficient of Thermal Expansion: in/in/°F (µm/m/°C):

70 - 212 °F (20 - 100 °C)  $3.2 \times 10^{-6}$  (5.8)

Thermal Conductivity: BTU-in/h-ft-°F (W/m-°K): 70 °F (21 °C): 13 (22)

Modulus of Elasticity, ksi (mPa):

$14.4 \times 10^3$  ( $99.2 \times 10^3$ ) in tension

$5.25 \times 10^3$  ( $36.2 \times 10^3$ ) in shear

Melting Point: 2550 °F (1852 °C)

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## Forms

Coil – Strip, Foil, Ribbon

Wire – Profile, Round, Flat, Square

## Mechanical Properties at Room Temperature

### Annealed Typical

Ultimate Tensile Strength: 55 KSI min (379 MPa min)

Yield Strength (0.2% offset): 30 KSI min (207 MPa min)

Elongation: 16% min

### Tempered

Zirconium 702 can be cold rolled to various tempers. Contact Ulbrich Technical Service for additional information.

## 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 in 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 finishes.*

### Welding

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

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