

3000 SERIES ALUMINUM ALLOYS

Flat, Shaped and Round Wire

Applications

Cooking Utensils, Food processing and handling components, Chemical processing and handling components, Trim for transportation equipment

Description

3000 series of alloys are that are alloyed with manganese. They have higher strength than pure aluminum while maintaining good formability and corrosion resistance. These alloys are not heat treatable and are suitable for anodizing and welding. Alloy 3003 is the most widely used of all the aluminum alloys.

Chemistry Typical

UNS #	ALUMINUM	ADDITIONAL ELEMENTS
A93003	Balance	1.0-1.5 Mn, 0.05-0.20 Cu, 0.7 Fe max, 0.6 Si max, 0.10 Zn max, 0.05 max other (each), 0.15 max other (total)
A93004	Balance	1.0-1.5 Mn, 1.0-1.3 Mg, 0.25 Cu, 0.70 Fe max, 0.30 Si max, 0.25 Zn max, 0.05 max other (each), 0.15 max other (total)
A93105	Balance	0.20-0.80 Mn, 0.20-0.80 Mg, 0.30 Cu, 0.7 Fe max, 0.6 Si max, 0.40 Zn max, 0.20 Cr max, 0.10 Ti max, 0.05 max other (each), 0.15 max other (total)

* Contact Ulbrich Wire for request regarding the availability of other aluminum alloys.

Physical Properties

Typical Density: 0.0983 - 0.0986 lbs/in³, 2.72 - 2.73 g/cm³

Electrical Conductivity: (% IACS at 68°F, annealed): 40-50%

Thermal Conductivity: BTU-in/hr-ft²-°F:

At 68 °F: 1190 - 1340

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Mean Coefficient of Thermal Expansion: $\mu\text{in/in-}^\circ\text{F}$:
68 - 572 $^\circ\text{F}$: 13.9

Modulus of Elasticity: KSI
 10.4×10^3 in tension

Melting Temperature: 1165 - 1210 $^\circ\text{F}$ (629 - 654 $^\circ\text{C}$)

Forms

Profile, Round, Flat, Square

Mechanical Properties at Room Temperature

Properties: Temper O

Ultimate Tensile Strength: 16 KSI min (110 MPa min)

Yield Strength: 6 KSI min (41.4 MPa min)

Elongation: 24% min

Properties: Tempered

These alloys can be cold worked to various tempers.

** Actual physical and mechanical properties are alloy dependent. Contact Ulbrich Technical Service for alloy specific properties.*

Additional Properties

Corrosion Resistance

Contact Ulbrich Wire for specific information.

Wire Finishes

XC - Extra clean. Annealed or annealed and cold rolled.

Contact Ulbrich Wire with special finish requests.

Heat Treatment

These alloys are hardenable by cold working.

Welding

Contact Ulbrich Wire for specific information.

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