3000 SERIES ALUMINUM ALLOYS

Flat, Shaped and Round Wire

Applications
Cooking Utensils, Food processing and handing components, Chemical processing and handing 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

<table>
<thead>
<tr>
<th>UNS #</th>
<th>ALUMINUM</th>
<th>ADDITIONAL ELEMENTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>A93003</td>
<td>Balance</td>
<td>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)</td>
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<tr>
<td>A93004</td>
<td>Balance</td>
<td>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)</td>
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<tr>
<td>A93105</td>
<td>Balance</td>
<td>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)</td>
</tr>
</tbody>
</table>

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

Modulus of Elasticity: KSI
10.4 \times 10^3 \text{ in tension}

Melting Temperature: 1165 - 1210 \(^\circ\)F (629 - 654 \(^\circ\)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.