HIGH CARBON STEELS

Flat, Shaped and Round Wire

Applications

High strength wire, Masonry nails, Springs, Cutting tools, Knives

Description

High carbon steels are difficult to weld because they contain carbon in the range of 0.6 percent to 1.0 percent. High carbon steels are susceptible to heat, and it easily flame hardened which allows it to be worked into many different forms. High carbon steels have greater tensile strength and are used to create products where strength is required.

Chemistry Typical

<table>
<thead>
<tr>
<th>UNS #</th>
<th>CARBON</th>
<th>MANGANESE</th>
<th>PHOSPHORUS</th>
<th>SULFUR</th>
<th>IRON</th>
</tr>
</thead>
<tbody>
<tr>
<td>G10600</td>
<td>0.55-0.65</td>
<td>0.60-0.90</td>
<td>0.040 max</td>
<td>0.050 max</td>
<td>Balance</td>
</tr>
<tr>
<td>G10650</td>
<td>0.60-0.70</td>
<td>0.60-0.90</td>
<td>0.040 max</td>
<td>0.050 max</td>
<td>Balance</td>
</tr>
<tr>
<td>G10700</td>
<td>0.65-0.75</td>
<td>0.60-0.90</td>
<td>0.040 max</td>
<td>0.050 max</td>
<td>Balance</td>
</tr>
<tr>
<td>G10750</td>
<td>0.70-0.80</td>
<td>0.40-0.70</td>
<td>0.040 max</td>
<td>0.050 max</td>
<td>Balance</td>
</tr>
<tr>
<td>G10800</td>
<td>0.75-0.88</td>
<td>0.60-0.90</td>
<td>0.040 max</td>
<td>0.050 max</td>
<td>Balance</td>
</tr>
<tr>
<td>G10850</td>
<td>0.80-0.93</td>
<td>0.70-1.00</td>
<td>0.040 max</td>
<td>0.050 max</td>
<td>Balance</td>
</tr>
<tr>
<td>G10900</td>
<td>0.85-0.98</td>
<td>0.60-0.70</td>
<td>0.040 max</td>
<td>0.050 max</td>
<td>Balance</td>
</tr>
<tr>
<td>G10950</td>
<td>0.91-1.03</td>
<td>0.30-0.50</td>
<td>0.040 max</td>
<td>0.050 max</td>
<td>Balance</td>
</tr>
</tbody>
</table>

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

Physical Properties

Typical Density: 0.278 - 0.290 lbs/in³, 7.85 - 8.03 g/cm³

Electrical Resistivity (typical): (ohm-cm @ 32°F, cold drawn): 0.0000163 - 0.0000180

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Thermal Conductivity (typical): BTU-in/hr-ft^2°F: 346

Mean Coefficient of Thermal Expansion (typical): μin/in-°F: 68 - 212 °F: 6.11 - 6.67

Modulus of Elasticity: KSI
29.7 x 10^3 in tension

Melting Temperature: 2600 - 2800 °F (1425 - 1540 °C)

**Forms**
Profile, Round, Flat, Square

**Mechanical Properties at Room Temperature**

**Properties: Cold Drawn (Typical)**
- Ultimate Tensile Strength: 92 KSI min (635 MPa min)
- Yield Strength: 70 KSI min (485 MPa min)
- Elongation: 10% 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**

**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 and heat treating.

* Contact Ulbrich Wire for additional information.

**Welding**
Contact Ulbrich Wire for specific information.