Deoxidized Copper Welding (and Brazing) Wire

Typical Applications
Crown Deoxidized Copper is a 98% minimum copper filler wire which also contains small amounts of phosphorus, silicon, tin and manganese. Phosphorus and silicon are primarily deoxidizers, while the silicon and other elements serve to improve fluidity and weldability. Crown Deoxidized Copper is primarily used to weld deoxidized copper (sometimes termed “phosphorized” copper) (C12000 - C12300) and electrolytic tough pitch (ETP) copper (C11000). It is commonly used for welding copper where color match is important and/or where electrical conductivity is imperative such as buss bars, lugs, etc. It is also used to join galvanized steel and deoxidized copper to mild steel where strength is not critical. It can also be used to overlay surfaces to resist corrosion. Crown Deoxidized Copper is used for the fabrication of copper pipes, tanks and copper fittings.

Specifications
AWS A5.7/A5.7M
ER Cu AWS A5.7/A5.7M

- Electrical Conductivity (%IACS) 40%
- Tensile Strength 29,000 psi (typical)
- Hardness 54 Brinell
- Elongation in 2" up to 30%
- Melting Point 1967°F

Procedure
The following procedure must be followed whether MIG welding or TIG welding:
Clean joint area thoroughly. When welding on copper, higher preheat temperatures and faster welding rates than for steel are necessary.
Preheating is desirable on most work; on thick base metals it is essential. Joint angles are typically 10° - 20° wider than those used with steels due to the high thermal conductivity of copper and copper alloys. A typical groove welding joint design should be 70° overall “V”.
*Use low side of amp range for steel or iron based alloys; middle of range for bronze alloys; high side for copper.

MIG (GMAW) Welding Parameters
GMAW is the preferred process when welding heavy sections of copper. Argon is the preferred shielding gas when overlaying steel.

SMAW: Use DC straight polarity (DCEN) electrode negative or ACHF.
Spray transfer welding can be accomplished using settings below. Use DC reverse polarity (DCEP).

GTAW (TIG) Welding Parameters
Keep the weld pool small. Welding can be done in all positions, but the flat position is preferred. Hold short arc with either string or weave beads.

Shielding Gas: Argon for thickness up to approximately 1/8". For thicker sections of high copper alloys, use argon-helium mixes or even pure helium for deeper penetration.

Tungsten: Traditional choice is a 2% thoriated tungsten (Red Band).

Torch Brazing (TB)
While seldom utilized, torch brazing is a process that can be used. Use a slightly oxidizing flame. The heated area should be kept small to promote rapid solidification & minimize cracking. Dip heated Deoxidized Copper into Royal Tiger Flux #3 and proceed to finish by flowing alloy into joint. The flux should be applied both before & during welding. Oxysol welding can also be employed.

Sizes and Part Numbers

<table>
<thead>
<tr>
<th>TIG Diameter</th>
<th>Part Numbers</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td># Package</td>
</tr>
<tr>
<td>1/16 x 36&quot;</td>
<td>CTD35/LT-BP</td>
</tr>
<tr>
<td>3/32 x 36&quot;</td>
<td>CTD35/LT-BP</td>
</tr>
<tr>
<td>1/8 x 36&quot;</td>
<td>CTD35/LT-BP</td>
</tr>
<tr>
<td>3/16 x 36&quot;</td>
<td>CTD35/LT-BP</td>
</tr>
</tbody>
</table>

MIG Diameter

<table>
<thead>
<tr>
<th>2 lb (4&quot;) Spool</th>
<th>8&quot; Spools</th>
<th>30 lb Spools</th>
</tr>
</thead>
<tbody>
<tr>
<td>.035</td>
<td>CSDEO/1F</td>
<td>CSDEO/2F</td>
</tr>
<tr>
<td>.045</td>
<td>CSDEO/1G</td>
<td>CSDEO/2G</td>
</tr>
<tr>
<td>1/16</td>
<td>CSDEO/1L</td>
<td>CSDEO/2L</td>
</tr>
</tbody>
</table>

All suggested settings are approximate. Inverter-based welders generally require less heat input (lower amps). Welds should be tested to comply to your specifications.
WELDING FUMES AND GASES CAN BE DANGEROUS TO YOUR HEALTH.

BEFORE USING THIS PRODUCT THE WELDER (END-USER) MUST READ AND UNDERSTAND THE COMPLETE PRODUCT WARNING LABEL AND THE NEW 16 SECTION SAFETY DATA SHEET (SDS).

THE SAFETY DATA SHEET (SDS) WHICH OUTLINES THE POTENTIAL HEALTH HAZARDS AND SAFETY INFORMATION RELATED TO THIS PRODUCT CAN BE DOWNLOADED FROM THE SDS PORTION OF THIS WEBSITE. IT IS ALSO AVAILABLE FROM YOUR EMPLOYER AND WELDING SUPPLY DISTRIBUTOR.

DO NOT PROCEED WITH USE OF THIS PRODUCT UNTIL YOU READ AND UNDERSTAND THE SAFETY DATA SHEET (SDS) AND PRODUCT WARNING STATEMENT.

BE SURE TO CONSULT THE LATEST VERSION OF THE SDS.

SEE THE PRODUCT WARNING LABEL AND SDS FOR COMPLETE WARNING INFORMATION.