Silicon Bronze Welding (and Brazing) Wire

Typical Applications

Crown Silicon Bronze contains 3% silicon and residual amounts of manganese, tin and zinc. The relatively high silicon content ensures that this alloy can be used for both welding and brazing processes. It is used for welding copper, copper-silicon, brass or bronze and for welding steel (primarily sheet metal) to itself or to the aforementioned alloys. Because of its relatively low melting temperature, Crown Silicon Bronze is well suited to weld (or “braze weld”) galvanized steels and other coated steels since it does not destroy the galvanized coating in the vicinity of the weld. The Crown Silicon Bronze weld metal is itself highly corrosion resistant thus retaining the corrosion protection of the original galvanized steel. The corrosion resistant feature makes this alloy ideal for surfacing parts that may be exposed to a corrosive environment.

Specifications

AWS A5.7/A5.7M
ER CuSi-A

Sizes and Part Numbers

<table>
<thead>
<tr>
<th>Diameter (inches)</th>
<th>1# Package</th>
<th>10# Package</th>
<th>50# Carton</th>
</tr>
</thead>
<tbody>
<tr>
<td>1/16 x 36&quot;</td>
<td>CTSIB/TL-BP</td>
<td>CTSIB/TL-10</td>
<td>CTSIB/TL</td>
</tr>
<tr>
<td>3/32 x 36&quot;</td>
<td>CTSIB/TN-BP</td>
<td>CTSIB/TN-10</td>
<td>CTSIB/TN</td>
</tr>
<tr>
<td>1/8 x 36&quot;</td>
<td>CTSIB/TO-BP</td>
<td>CTSIB/TO-10</td>
<td>CTSIB/TO</td>
</tr>
<tr>
<td>3/32 x 72&quot;</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1/8 x 72&quot;</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

MIG Diameter | Part Numbers | 2 lb (4") Spool | 8" Spools | 25 lb Spools* | 30 lb Spools
--- | --- | --- | --- | --- | ---
.023" | CSSIB/1D | CSSIB/2D | CSSIB/3D |
.030" | CSSIB/1E | CSSIB/2E | CSSIB/3E |
.035" | CSSIB/1F | CSSIB/2F | CSSIB/3F |
.045" | CSSIB/1G | CSSIB/2G | CSSIB/3G |
.062" | CSSIB/1H | CSSIB/2H | CSSIB/3H |
1/16" | CSSIB/1I | CSSIB/2I | CSSIB/3I |
1/8" | CSSIB/1J | CSSIB/2J | CSSIB/3J |
3/32" | CSSIB/1K | CSSIB/2K | CSSIB/3K |
1/4" | CSSIB/1L | CSSIB/2L | CSSIB/3L |
3/8" | CSSIB/1M | CSSIB/2M | CSSIB/3M |
1/2" | CSSIB/1N | CSSIB/2N | CSSIB/3N |
Pkg | 25 lb Spools* | 30 lb Spools
--- | --- | ---
2# Package | CSSIB/2P | CSSIB/3P |
10# Package | CSSIB/10P | CSSIB/10Q |
50# Carton | CSSIB/50P | CSSIB/50Q |

**Torch Brazing (TB)**

Use a slightly oxidizing flame. The heated area should be kept small to promote rapid solidification & minimize cracking. Dip heated Silicon Bronze into Royal Tiger Flux #3 and proceed to finish by flowing alloy into joint. The flux should be applied both before & during welding.

**Procedure**

**GMAW (MIG) Welding Parameters**

Clean joint area thoroughly. It is best to keep the weld pool small and the interpass temperature below 150°F to minimize hot cracking. The use of narrow weld passes reduces contraction stresses and also permits faster cooling through the hot-short temperature range. When welding on copper, higher preheat temperatures and faster welding rates than for steel are necessary.

<table>
<thead>
<tr>
<th>Wire Diameter (inches)</th>
<th>Welding Current* (amperage)</th>
<th>Arc Voltage (volts)</th>
<th>Wire Feed Speed (ipm)</th>
<th>Gas Flow (cfh)</th>
</tr>
</thead>
<tbody>
<tr>
<td>.023&quot;</td>
<td>70 – 120</td>
<td>17 – 22</td>
<td>450 – 520</td>
<td>25 – 30</td>
</tr>
<tr>
<td>.030&quot;</td>
<td>80 – 150</td>
<td>18 – 24</td>
<td>430 – 500</td>
<td>25 – 30</td>
</tr>
<tr>
<td>.045&quot;</td>
<td>120 – 230</td>
<td>23 – 28</td>
<td>250 – 320</td>
<td>30 – 40</td>
</tr>
<tr>
<td>1/16&quot;</td>
<td>250 – 350</td>
<td>27 – 32</td>
<td>145 – 240</td>
<td>35 – 45</td>
</tr>
</tbody>
</table>

**GTAW (TIG) Welding Parameters**

Clean joint area thoroughly. Best results are obtained by keeping the weld pool small. Welding can be done in all positions, but the flat position is preferred. When welding on copper, higher preheat temperatures and faster welding rates than for steel are necessary.

Use DC straight polarity (DCEN) electrode negative or ACHF. Shielding Gas: Argon is suggested for thickness up to approximately 1/2”. For thicker sections, argon-helium mixes may be used for deeper penetration. Tungsten: Traditional choice is a 2% thoriated tungsten (Red Band).

<table>
<thead>
<tr>
<th>Metal Thickness</th>
<th>Tungsten Diameter</th>
<th>Filler Rod Diameter</th>
<th>*Use low side of amp range for steel or iron based alloys; middle of range for bronze alloys; high side for copper.</th>
<th>Gas Cup Size</th>
<th>Gas Flow (cfh)</th>
</tr>
</thead>
<tbody>
<tr>
<td>.045” – 1/16”</td>
<td>1/16</td>
<td>1/16</td>
<td>70 – 130</td>
<td>3/8 – 1/2</td>
<td>10 – 15</td>
</tr>
<tr>
<td>3/16” – 1/2”</td>
<td>1/8</td>
<td>3/32 – 1/8</td>
<td>120 – 190</td>
<td>7/16 – 1/2</td>
<td>20 – 25</td>
</tr>
</tbody>
</table>

*Use low side of amp range for steel or iron based alloys; middle of range for bronze alloys; high side for copper.

**Arc Voltage**

17 – 22
18 – 24
21 – 26
23 – 28
27 – 32

**Wire Feed Speed**

450 – 520
430 – 500
380 – 450
250 – 320
145 – 240

**Gas Flow**

25 – 30
25 – 30
30 – 40
30 – 40
35 – 45

*All suggested settings are approximate. Inverter-based welders generally require less heat input (lower amps). Welds should be tested to comply to your specifications.

Crown Silicon Bronze Welding (and Brazing) Wire
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.