

Crown Silicon Bronze

Gas Metal Arc Welding
(GMAW) MIG Wires

Gas Tungsten Arc Welding
(GTAW) TIG Alloys

Torch Brazing (TB)

Copper Based Alloy



"The Royal Line"

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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

- Tensile Strength 50,000 psi (minimum)
- Hardness 80 – 100 Brinell
- Elongation in 2" up to 55%
- Melting Point 1866°F

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.

Spray transfer welding can be accomplished using settings below. Use DC reverse polarity (DCEP). Settings based on Argon shielding gas.

Wire Diameter (inches)	Welding Current* (amperage)	Arc Voltage (volts)	Wire Feed Speed (ipm)	Gas Flow (cfh)
.023	70 – 120	17 – 22	450 – 520	25 – 30
.030	80 – 150	18 – 24	430 – 500	25 – 30
.035	110 – 195	21 – 26	380 – 450	30 – 40
.045	120 – 230	23 – 28	250 – 320	30 – 40
1/16	250 – 350	27 – 32	145 – 240	35 – 45

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

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).

Metal Thickness	Tungsten Diameter	Filler Rod Diameter	*Use low side of amp range for steel or iron based alloys; middle of range for bronze alloys; high side for copper.		Gas Cup Size	Gas Flow (cfh)
			Amperage* (DCEN)	Amperage* (ACHF)		
.045" – 1/16"	1/16	1/16	70 – 130	70 – 150	3/8 – 1/2	10 – 15
3/32 – 1/8"	3/32	3/32	120 – 190	140 – 230	7/16 – 1/2	15 – 20
3/16" – 1/2"	1/8	3/32 – 1/8	170 – 330	225 – 320	7/16 – 1/2	20 – 25

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

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.

Sizes and Part Numbers

TIG Diameter	Part Numbers		
	1# Package	10# Package	50# Carton
1/16 x 36"	CTSIB/TL-BP	CTSIB/TL-10	CTSIB/TL
3/32 x 36"	CTSIB/TN-BP	CTSIB/TN-10	CTSIB/TN
1/8 x 36"	CTSIB/TO-BP	CTSIB/TO-10	CTSIB/TO

MIG Diameter	Part Numbers		25 lb Spools* or 30 lb Spools
	2 lb (4") Spool	8" 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
1/16	CSSIB/1L	CSSIB/2L	CSSIB/3L



!!!! WARNING !!!!



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.

