Crown Deoxidized Copper

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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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

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

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 10º - 20º 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 70º overall "V".
*Use low side of amp range for steel or iron based alloys; middle of range for bronze alloys; high side for copper.

GMAW (MIG) Welding Parameters

GMAW is the preferred process when welding heavy sections of copper. ^Argon is the preferred shielding gas when overlaying steel.
Spray transfer welding can be accomplished using settings below. Use DC reverse polarity (DCEP).

Metal Thickness	Wire Diameter (inches)	Amperage* (DCEP)	Preheat Temperature (for high copper alloys)	Arc Voltage (volts)	Wire Feed Speed (ipm)	Shielding Gas^	Gas Flow (cfh)
.045 – 1/8	.035	125 – 200	200ºF max.	23 – 27	345 – 450	Argon	30 – 35
3/32 – 7/32	.045	150 – 250	100ºF - 200ºF	25 – 28	200 – 320	Argon	30 – 35
7/32 on up	1/16	250 – 400	300ºF - 950ºF	26 – 32	145 – 260	75% Helium/25% Ar	40

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.
Use DC straight polarity (DCEN) electrode negative or ACHF.
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).

Metal Thickness	Tungsten Diameter	Filler Rod Diameter	Amperage* (DCEN)	Amperage* (ACHF)	Preheat Temperature (for high copper alloys)	Gas Cup Size	Gas Flow (cfh)
.045 – 1/16	1/16	1/16	60 – 150	70 – 150	----	3/8 – 1/2	15
3/32 – 1/8	3/32	3/32	150 – 275	140 – 280	100ºF	7/16 – 1/2	15 – 20
3/16 – 1/2	1/8	3/32 – 1/8	210 – 400	225 – 320	200ºF - 650ºF	7/16 – 1/2	20 – 25
1/2 on up	3/16	3/16	325 – 550	300 – 500	750ºF - 950ºF	1/2	25 – 30

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)

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. Oxyfuel welding can also be employed.

Sizes and Part Numbers

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

MIG Diameter	Part Numbers		
	2 lb (4") Spool	8" Spools	30 lb Spools
.035	CSDEO/1F	CSDEO/2F	CSDEO/3F
.045	CSDEO/1G	CSDEO/2G	CSDEO/3G
1/16	CSDEO/1L	CSDEO/2L	CSDEO/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.