



Beryllium Copper Welding Wire and Rod

U.S. ALLOY CO.
dba Washington Alloy
7010-G Reames Rd.
Charlotte, NC 28216
www.weldingwire.com

Quality Management System
in accordance with
ISO 9001
Cert # 05-R0925



ALLOY DESCRIPTION AND APPLICATION;

Washington Alloy Beryllium copper is a copper based filler metal containing about 2% Beryllium and may have small percentages of Nickel, Iron, Silicon and Cobalt. Beryllium copper may be used where Silicon bronze is typically used but will give improved hardness arc welding and gas-metal arc welding of copper, brass, bronze, steel, galvanized steels and also cast iron. Base metals of cast iron may need a preheat of 600° F while copper may need a 400-800° F. The use of a small narrow weld puddle will reduce the contraction stresses and give you a faster cooling during the hot-short temperature range. When welding beryllium copper, care should be taken to avoid inhaling the welding fumes, which are **poisonous. Beryllium is dangerous** to work with and people can become seriously ill when welding it. Certain precautions are necessary, like purging the area by drawing off any of the fumes with smoke eaters and having the operators wear a mask and make sure that his workpiece is positioned so the fumes are taken up and out." Dust or fumes generated by machining, grinding, sawing, blasting, polishing, buffing, brazing, soldering, welding or thermal cutting of the casting can produce **airborne contaminants that are hazardous.** <http://berylliumsafety.eu/>

TYPICAL GMAW WELDING PROCEDURES; DCEP Spray transfer

| Wire Diameter | Wire Speed (ipm) | Amps | Volts | Argon (cfh) |
|---------------|------------------|---------|-------|-------------|
| 0.023 | 460-580 | 60-120 | 21-22 | 20-25 |
| 0.030 | 450-525 | 130-160 | 21-24 | 20-30 |
| 0.035 | 385-455 | 155-190 | 23-25 | 25-30 |
| 0.045 | 275-310 | 210-235 | 26-28 | 30-35 |
| 1/16 | 150-240 | 250-310 | 27-31 | 35-40 |

TYPICAL GTAW WELDING PROCEDURES; DCEN with EWTh-2 truncated conical tip

| Filler Wire Size | Tungsten | Amps | Volts | Gas Cup Size | Argon (cfh) | Base thickness |
|------------------|----------|---------|-------|--------------|-------------|----------------|
| 1/16" | 1/16" | 80-170 | 12 | 3/8-1/2" | 20 | 1/16-1/8" |
| 3/32" | 3/32" | 140-275 | 12 | 3/8-1/2" | 20 | 1/8- 3/16" |
| 1/8" | 1/8" | 200-375 | 12 | 1/2" | 25 | 1/4-3/8" |
| 1/8-5/32" | 3/16" | 260-475 | 12 | 1/2-3/4" | 30 | 3/8-1/2" |

Procedures may vary with change in position, base metals, filler metals, equipment and other changes.

CHEMICAL COMPOSITION REQUIREMENT (%) AND PHYSICAL PROPERTIES;

| | | | |
|------------------|----------------|--------------------------------|----------------------------|
| Silver | 1.00 | Solidus | 1580° F |
| Beryllium | 1.8-2.0 | Liquidus | 1800°F |
| Silicon | 0.20 | Electrical Conductivity | 7.68% (% of IACS) annealed |
| Ni + Fe + Co | 0.6% max. | Density (lbs/in ³) | 0.298 |
| Aluminum | 0.20 | Thermal Conductivity | 21 Btu |
| Ni + Co | 0.20% min.: | Elongation | 45 % |
| | | Tensile Strength (psi) | 68 -100,000 |
| Copper | Remainder | Brinell Hardness | 100-150 |

All single values on composition are maximum percentages & Total others elements 0.50

AVAILABLE SIZES: TU BE-CU = Spools of, .035, .045, 1/16
TU BE-CU Cut lengths of, .035, .045, 1/16,
Other sizes available – please inquire

SPECIFICATIONS; CDA C17200 Chemistry

EAST COAST
7010-G Reames Rd
Charlotte, NC 28216
Tel (888) 522-8296
Fax (704)598-6673

GULF COAST
4855 Alpine Drive #100
Stafford, TX 77477
Tel (877) 711-9274
Fax (281)313-6332

WEST COAST
8535 Utica Ave
Rancho Cucamonga, CA 91730
Tel(800)830-9033
Fax (909)291-4586



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Warehouse Distribution Center – Dallas/Fort Worth, Portland, Oregon & Boston, Massachusetts Head Office – Puyallup, Washington

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