

RWMA Class 3 - Copper Cobalt Beryllium (CuCoBe)
UNS C17500

RWMA CLASS 3

Ref: AWS J1.3/J1.3M:2020 - Specification for Materials Used in Resistance Welding Electrodes and Related Equipment

SAFETY - BERYLLIUM: This alloy contains Beryllium. Machining, grinding, or any operation that generates fine particles requires adequate ventilation and personal protective equipment. Consult the Safety Data Sheet (SDS) before processing. Comply with OSHA 1910.1024.

MINIMUM AWS J1.3 PROPERTIES - CLASS 3

| Property | Minimum | Unit |
|-------------------------|---------|--------|
| Electrical Conductivity | 45 | % IACS |
| Hardness | 90 | HRB |

CHEMICAL COMPOSITION

| Cu | Be | Co |
|---------|------------|------------|
| Balance | 0.4 - 0.7% | 2.4 - 2.7% |

TYPICAL PHYSICAL PROPERTIES

| Property | Typical Value | Unit |
|-----------------------------------|---------------|--------|
| Electrical Conductivity (typical) | 45 - 55 | % IACS |
| Hardness (typical, aged) | 90 - 98 | HRB |
| Thermal Conductivity | 200 - 210 | W/m-K |
| Density | 8.75 | g/cm3 |
| Softening Temperature | 590 | C |
| Tensile Strength | 590 - 760 | MPa |
| Melting Point | 1060 | C |

RECOMMENDED APPLICATIONS

- Projection welding of nuts
- Projection welding of studs
- High pressure electrodes
- Welding dies and fixtures
- Applications requiring Class 3

KEY FEATURES

- Alternative to C17510 with Cobalt
- High hardness comparable to CuNiBe
- Good resistance to deformation
- Similar conductivity to C17510
- Available for some specific applications

EQUIVALENT DESIGNATIONS

| | | | | |
|--------------|------------|--------|-------------------------|----------|
| RWMA Class 3 | UNS C17500 | CuCoBe | Cobalt Beryllium Copper | Alloy 10 |
|--------------|------------|--------|-------------------------|----------|

APPLICATION NOTE: C17500 (CuCoBe) is an alternative to C17510 (CuNiBe) for Class 3 applications. Both alloys meet the minimum AWS J1.3 requirements for Class 3. The choice between them usually depends on material availability. C17510 is more common in the North American market for projection welding electrodes.

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Subject to change.
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