

RWMA Class 3 - Copper Nickel Beryllium (CuNiBe)
UNS C17510

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 (0.2-0.6%). Solid bars are **safe to handle**. Machining that generates fine particles requires adequate ventilation and PPE. Consult the Safety Data Sheet (SDS). 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	Ni
Balance	0.2 - 0.6%	1.4 - 2.2%

TYPICAL PHYSICAL PROPERTIES

Property	Typical Value	Unit
Electrical Conductivity (typical)	45 - 60	% IACS
Hardness (typical, aged)	90 - 102	HRB
Thermal Conductivity	208 - 210	W/m-K
Density	8.75	g/cm3
Softening Temperature	600	C
Tensile Strength	620 - 860	MPa
Melting Point	1050	C

RECOMMENDED APPLICATIONS

- Projection welding of nuts (nut projection)
- Projection welding of studs (stud welding)
- High pressure electrodes
- Welding dies and fixtures
- Inserts for composite electrodes
- Flash welding and upset welding

KEY FEATURES

- Maximum hardness of standard RWMA alloys
- Exceptional resistance to deformation
- Maintains geometry under high pressure
- Reduces mushrooming in projection welding
- High mechanical strength (860 MPa)
- Ideal for precision locators

EQUIVALENT DESIGNATIONS

RWMA Class 3

UNS C17510

CuNiBe

Nickel Beryllium Copper

Alloy 3

BeCu 10

APPLICATION NOTE: Class 3 C17510 is the standard choice for projection welding where high hardness (≥90 HRB) is required to resist locating forces and prevent electrode deformation. The lower conductivity (45% IACS) concentrates more heat in the weld zone, which is desirable in projection welding. For conventional spot welding applications, Class 2 is more appropriate.

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