

RWMA Class 4 - High-Strength Copper Beryllium
UNS C17200

RWMA CLASS 4

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

WARNING - Restricted Use

Class 4 is NOT for conventional spot welding electrodes.

Its low conductivity (22% IACS) generates excessive electrode heating in spot welding applications. Use only for:

- Mold inserts and tooling
- Flash/upset welding dies
- Structural components requiring maximum hardness
- Applications where heat transfer is NOT critical

Safety - High Beryllium Content

This alloy contains **1.8-2.0% Beryllium** (the highest of RWMA alloys). Solid bars are **safe to handle and store**. Machining that generates fine particles requires specialized ventilation systems and PPE. Comply strictly with **OSHA 1910.1024**.

MINIMUM AWS J1.3 PROPERTIES - CLASS 4

Property	Minimum	Unit
Electrical Conductivity	22	% IACS
Hardness	33	HRC

Note: Hardness in HRC (Rockwell C) scale, not HRB

CHEMICAL COMPOSITION

Cu	Be	Co
Balance	1.8 - 2.0%	≥0.2%

TYPICAL PHYSICAL PROPERTIES

Property	Typical Value	Unit
Electrical Conductivity (typical)	22 - 25	% IACS
Hardness (typical, aged)	36 - 42	HRC
Thermal Conductivity	105 - 115	W/m-K
Density	8.36	g/cm3
Softening Temperature	650	C
Tensile Strength	1100 - 1400	MPa
Melting Point	1000	C

RECOMMENDED APPLICATIONS

- Plastic injection mold inserts
- High-load welding dies
- Flash welding fixtures
- Structural welding machine components
- High wear resistance tooling

KEY FEATURES

- Hardness comparable to hardened steel
- Exceptional tensile strength (1400 MPa)
- Excellent fatigue resistance
- High softening temperature
- Retains hardness up to 650C

EQUIVALENT DESIGNATIONS

RWMA Class 4	UNS C17200	CuBe2	Alloy 25	High-Strength BeCu
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Subject to change.
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