ALCAVIL

Copper Electrodes & Alloys for Resistance Welding

TECHNICAL DATA SHEET
TDS-C18000-R01 | 2024-11

RWMA Class 3 - Copper Chromium Nickel Silicon (CuCrNiSi)

UNS C18000

RWMA CLASS 3

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

MINIMUM AWS J1.3 PROPERTIES - CLASS 3

Property	Minimum	Unit
Electrical Conductivity	**45**	**% IACS**
Hardness	**90**	**HRB**

CHEMICAL COMPOSITION

Cu	Cr	Ni	Si
Balance	0.4 - 0.8%	2.0 - 3.0%	0.4 - 0.8%

TYPICAL PHYSICAL PROPERTIES

Property	Typical Value	Unit
Electrical Conductivity (typical)	40 - 50	% IACS
Hardness (typical, aged)	90 - 96	HRB
Thermal Conductivity	185 - 195	W/m-K
Density	8.80	g/cm3
Softening Temperature	540	C
Tensile Strength	550 - 720	MPa
Melting Point	1085	C

RECOMMENDED APPLICATIONS

- Projection welding (beryllium-free alternative)
- Medium to high pressure electrodes
- Welding dies and fixtures
- Applications requiring Class 3 without Be
- Welding machinery components

KEY FEATURES

- BERYLLIUM-FREE - No handling restrictions
- Economical alternative to C17510/C17500
- Good hardness and conductivity
- No special health controls required
- Easier to machine than Be alloys

EQUIVALENT DESIGNATIONS

RWMA Class 3 | UNS C18000 | CuCrNiSi | Beryllium-Free Class 3 | CDA 180

APPLICATION NOTE: C18000 (CuCrNiSi) is the BERYLLIUM-FREE alternative for Class 3 applications. Although its mechanical properties are slightly lower than C17510, it meets the minimum AWS J1.3 requirements and eliminates safety concerns related to beryllium. It is ideal for shops that prefer to avoid the special controls required for handling beryllium alloys (OSHA 1910.1024).

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