ALCAVIL

Copper Electrodes & Alloys for Resistance Welding

TECHNICAL DATA SHEET
TDS-30W3-R01 | 2024-11

RWMA Class 12 - Elkonite 30W3 Copper-Tungsten High Hardness

CuW 80/20

RWMA CLASS 12

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

ELKONITE 30W3 PROPERTIES

Property	Value	Unit
Electrical Conductivity	**42**	**% IACS**
Hardness	**103**	**HRB**
Density	15.4	g/cm3

NOMINAL COMPOSITION

Copper (Cu)	Tungsten (W)
20%	80%

TYPICAL PHYSICAL PROPERTIES

Property	Typical Value	Unit
Electrical Conductivity	42	% IACS
Hardness	103	HRB
Density	15.4	g/cm3
Melting Point (Cu matrix)	1083	C
Ultimate Strength	98,000	PSI
Cross Breaking Strength	170,000	PSI

RECOMMENDED APPLICATIONS

- Heavy duty projection welding electrodes
- Die facings for electro-forming
- Die facings for electro-forging
- Projection of M10+ nuts on AHSS/UHSS
- Applications requiring higher hardness than Class 11

KEY FEATURES

- MAXIMUM HARDNESS of RWMA grades (103 HRB)
- Highest tungsten content (80%)
- Excellent for high-strength steels
- Superior wear resistance
- Extended life under extreme conditions

EQUIVALENT DESIGNATIONS

RWMA Class 12 | Elkonite 30W3 | CuW 80/20 | 20% Cu / 80% W | W80Cu20

APPLICATION NOTE: Elkonite 30W3 (RWMA Class 12) is the maximum hardness grade (103 HRB) of the CuW family for resistance welding. Used for heavy duty projection welding electrodes, die facings for electro-forming and electro-forging. With 80% tungsten, it is ideal for the most demanding applications: M10 and larger nuts on AHSS/UHSS steels. Used where slightly harder material than Class 11 (10W3) is required for the same applications.

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