

## Tungsten WLa10 - 1% Lanthanum Oxide

Lanthanated Tungsten | Entry-Level Oxide-Doped Electrode Material

RWMA CLASS 13

BLACK (ISO 6848)

LANTHANATED

Reference Standard: ISO 6848:2015 - Arc welding and cutting - Nonconsumable tungsten electrodes - Classification

AWS Equivalent: AWS A5.12/A5.12M - Specification for Tungsten and Oxide Dispersed Tungsten Electrodes for Arc Welding and Cutting

## CHEMICAL COMPOSITION

Tungsten (W)	Balance (≈98.9%)
Lanthanum Oxide (La <sub>2</sub> O <sub>3</sub> )	0.80 - 1.20%
Other Oxides	≤0.10%
Impurities	≤0.10%

## IDENTIFICATION

AWS Designation	EWLa-1
ISO Designation	WLa10
Color Code (ISO 6848)	Black
RWMA Classification	Class 13 (Group B)

## PHYSICAL PROPERTIES

Property	Value	Unit
Density	19.1	g/cm³
Melting Point	3,380	°C
Electrical Conductivity	≥30	% IACS
Thermal Conductivity	150	W/m·K
Work Function	2.7	eV

## RECOMMENDED APPLICATIONS

- Medium-volume terminal welding - Copper terminals, electrical connections
- Cross-wire welding - Wire mesh, battery tabs
- Entry-level contact welding - Lower cycle rates
- General-purpose insert material - Where pure tungsten is insufficient

## LANTHANATED TUNGSTEN COMPARISON:

Grade	La <sub>2</sub> O <sub>3</sub> %	Color	Best For
WLa10	1.0%	Black	Medium-volume, entry-level

WLa15	1.5%	Gold	High-volume production
WLa20	2.0%	Blue	Intensive 24/7 production

**ADVANTAGES OF WLa10:**

- **Non-radioactive** - Safe alternative to thoriated tungsten (WTh20)
- **Lower work function** (2.7 eV vs 4.5 eV for pure W) - easier electron emission
- **Better arc stability** than pure tungsten
- **Improved starting characteristics**
- **Cost-effective** entry point for lanthanated grades

**UPGRADE CONSIDERATION:** For high-cycle production applications (>10,000 welds/day), consider upgrading to WLa15 or WLa20 for extended electrode life. WLa10 is ideal for medium-volume applications where cost efficiency is important.