

Tungsten WLa15 - 1.5% Lanthanum Oxide

Lanthanated Tungsten | Recommended WTh20 Replacement for High-Volume Production

RWMA CLASS 13

GOLD (ISO 6848)

RECOMMENDED

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

ALCAVIL RECOMMENDATION: WLa15 is our most recommended lanthanated tungsten grade for high-volume electrical contact welding. It provides the optimal balance between electrode life, arc stability, and cost-effectiveness while being completely non-radioactive (unlike WTh20).

CHEMICAL COMPOSITION

Tungsten (W)	Balance (≈98.4%)
Lanthanum Oxide (La ₂ O ₃)	1.30 - 1.70%
Other Oxides	≤0.10%
Impurities	≤0.10%

IDENTIFICATION

AWS Designation	EWLa-1.5
ISO Designation	WLa15
Color Code (ISO 6848)	Gold
RWMA Classification	Class 13 (Group B)

PHYSICAL PROPERTIES

Property	Value	Unit
Density	19.0	g/cm³
Melting Point	3,370	°C
Electrical Conductivity	≥30	% IACS
Thermal Conductivity	145	W/m·K
Work Function	2.6	eV

RECOMMENDED APPLICATIONS

- High-volume terminal welding** - Automotive, industrial electrical connections
- Contactor manufacturing** - Industrial contactors, motor starters (Siemens, Schneider)
- Circuit breaker assembly** - Contact welding for circuit protection devices
- Cross-wire welding** - Battery tabs, wire mesh for electronic applications
- Relay production** - Precision contact welding at high cycle rates

WLa15 vs WTh20 (THORIATED) COMPARISON:

Property	WLa15	WTh20
Radioactivity	None	Yes (ThO ₂)
Work Function	2.6 eV	2.6 eV
Arc Stability	Excellent	Excellent
Electrode Life	Equivalent or better	Reference
Regulatory Compliance	No restrictions	NORM regulations

ADVANTAGES OF WLa15:

- **Non-radioactive** - No special handling, shipping, or disposal requirements
- **Lowest work function** among lanthanated grades - better electron emission
- **Extended electrode life** - 15-20% longer than WLa10 in high-cycle applications
- **Excellent arc stability** - consistent weld quality
- **Direct WTh20 replacement** - no process parameter changes needed
- **Environmentally safe** - no hazardous waste concerns

UPGRADING FROM WTh20: When transitioning from thoriated tungsten (WTh20) to WLa15, you can typically use the same welding parameters. Some users report slight improvements in arc starting characteristics. No special disposal procedures are required for WLa15 electrodes.