WOLFRAM INDUSTRIE
TUNGSTEN TECHNOLOGY GROUP

Material data sheet – WLa15

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1. Chemical composition

element	max.	element	max.	element	max.
Al	< 20 ppm	Cr	< 20 ppm	Mo	< 50 ppm
As	< 20 ppm	Cu	< 10 ppm	Na	< 20 ppm
C	< 50 ppm	Fe	< 30 ppm	Ni	< 20 ppm
Ca	< 20 ppm	K	< 10 ppm	S	< 20 ppm
Co	< 30 ppm	Mg	< 20 ppm	Si	< 30 ppm

W	balance	La_2O_3	1.3 – 1.7 %		

2. Physical and mechanical properties

density	18.0 – 18.7 g/cm³ (depends on the forming degree)	
tensile strength	at diameter 1.0 – 1.99 mm	> 1500 – 2200 MPa
	at diameter 2.0 – 3.2 mm	> 1300 – 2000 MPa
elongation	< 6 %	
properties of recrystallization	starting of recrystallization:	ca. 1300 °C
	complete recrystallization	ca. 1500 °C 1 hour
spec. el. resistance	300 K	5.65 µΩ cm
	500 K	10.65 µΩ cm
	1000 K	24.93 µΩ cm
	1500 K	40.36 µΩ cm
	2000 K	56.67 µΩ cm
	2500 K	73.91 µΩ cm
	3000 K	92.04 µΩ cm
	3500 K	111.10 µΩ cm
thermal conductivity at 293° K	174 W/m·K	
temperature coefficient	273 – 373 K	$4.5 \cdot 10^{-6}\ K^{-1}$
finish	ground, drawn (black/cleaned), hammered	
heat treatment	annealed, unannealed	

The stated data are confirmed by periodic tests of the ongoing production.

3. Application

non melting electrode for TIG welding; electrodes for lightning; electrodes for plasma cutting and welding and thermal spraying; cathodes for electronic tubes, wires in different electric applications

4. Continuative literature

The following documents are available under www.wolfram-industrie.de/downloads

- company brochure
- TIG electrode flyer
- Overview non-radioactive electrodes
- TIG-Welding Guideline