



# Material data sheet – WLa10

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## 1. Chemical composition

element	max.
Al	< 20 ppm
As	< 20 ppm
C	< 50 ppm
Ca	< 20 ppm
Co	< 30 ppm

element	max.
Cr	< 20 ppm
Cu	< 10 ppm
Fe	< 30 ppm
K	< 10 ppm
Mg	< 20 ppm

element	max.
Mo	< 50 ppm
Na	< 20 ppm
Ni	< 20 ppm
S	< 20 ppm
Si	< 30 ppm

W	balance
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La <sub>2</sub> O <sub>3</sub>	0.9 – 1.2 %
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## 2. Physical and mechanical properties

density	18.0 – 18.9 g/cm <sup>3</sup> (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 · 10 <sup>-6</sup> K <sup>-1</sup>
finish	ground, drawn (black/cleaned), hammered
heat treatment	annealed, unannealed

## 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](http://www.wolfram-industrie.de/downloads)

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