

**Tungsten 1% La<sub>2</sub>O<sub>3</sub> rod**

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**Information about the content**

<b>Responsible area:</b>	Plansee SE	<b>Prepared/Updated:</b>	See SAP-DMS
		<b>Released:</b>	See SAP-DMS
<b>Valid from:</b>	22-Jun-2021	<b>Controlled:</b>	PSE-020

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*This specification covers Tungsten 1% La<sub>2</sub>O<sub>3</sub>-rods, produced in the diameter range of 1,20 - 50 mm.*

**1 Dimensions and tolerances****1.1 Diameter and guaranteed product tolerances**

<b>Diameter <sup>a)</sup> [mm]</b>	<b>Mechanically worked and cleaned</b>	<b>Ground</b>	<b>Turned</b>
1,20 – 1,99	-	± 0,010	
2,0 – 2,99	-	± 0,015	
3,0 – 15,9	-	± 0,020	
16,0 – 24,9	± 0,30	± 0,030	
25,0 – 34,9	± 0,40	± 0,050	
35,0 – 39,9	± 0,40	± 0,060	± 0,30
40,0 – 50,0	± 0,40	± 0,20	± 0,30

a) **Roundness:** Values within defined Ø-tolerance

**1.2 Production length and straightness**

<b>Diameter [mm]</b>	<b>Production length [mm]</b>	<b>Straightness / Meter [mm]</b>	
		<b>Mechanically worked and cleaned</b>	<b>Ground / turned</b>
1,20 – 10,0	≥ 500	< 2,5	< 2,5
10,1 – 50,0	≥ 300	< 2,0	< 1,5

**1.3 Guaranteed length tolerances in case of ordering fix length**

<b>Diameter 1,20 – 30,0 mm</b>						
Nominal length [mm]	≤ 15	> 15 - 120	> 120 - 400	> 400 - 1000	> 1000 - 2000	> 2000
Tolerance[mm]	± 0,2	± 0,3	± 0,5	± 2,0	± 3,0	± 4,0
<b>Diameter &gt; 30,0 mm</b>						
Nominal length [mm]	≤ 30	> 30 - 120	> 120 - 400	> 400 - 1000	> 1000 - 2000	> 2000
Tolerance [mm]	± 0,5	± 0,8	± 1,2	± 4,0	± 6,0	± 8,0

## 2 Physical and mechanical product properties

<b>Density</b>	<b>Diameter [mm]</b>	<b>[g/cm<sup>3</sup>]</b>
	1,20 – 6,0	18,85
	> 6,0 – 40,0	18,75
	> 40,0 – 50,0	18,65
<b>Hardness <sup>a)</sup></b>	<b>Diameter [mm]</b>	<b>[HV 30]</b>
	3,0 – 10,0	> 420
	> 10,0 – 30,0	> 400
	> 30,0 – 50,0	> 380
<b>Grain size</b>	<b>Diameter [mm]</b>	<b>[ASTM E112]</b>
	1,20 – 3,0	9 and finer
	> 3,0 – 13,0	7 and finer
	> 13,0 – 30,0	5 and finer
	> 30,0 – 50,0	3 and finer

a) The actual value quoted in certificates corresponds to the mean-value of a representative control sample.

	<u>Ø-range ≥ 15,0 mm</u>	<u>Ultrasonic test</u>
<b>Non-destructive tests:</b>	<u>Ø-range 1,20 – 50,0 mm</u>	<u>Eddy current test for ground products</u>
	<u>Visual inspection</u>	

### 2.1 Surface condition

<b>Surface:</b>	<b>Mechanically worked and cleaned</b>	<b>Ground</b>	<b>Turned</b>
	Ø 15,0 - 50 mm	Ø 1,20 - 50,0 mm	Ø ≥ 35,0 mm
<b>Roughness:</b>	<b>Diameter [mm]</b>	<b>R<sub>a</sub> [µm]</b>	<b>R<sub>a</sub> [µm]</b>
		<b>ground</b>	<b>turned</b>
	≤ 2,50	≤ 0,80	–
	> 2,50 - 30,0	≤ 1,0	–
	> 30,0 - 50,0	≤ 1,2	–
	≥ 35,0	–	≤ 3,2

**Tungsten 1% La<sub>2</sub>O<sub>3</sub> rod****3 Chemical composition**

Main and minor components	Plansee		EU-Directive
	Content [%]		RoHS <sup>a)</sup>
<b>W</b>	<b>Balance</b>		-
<b>La</b>	<b>0,77 – 0,94</b>		-
<b>La<sub>2</sub>O<sub>3</sub></b>	<b>0,90 – 1,10</b>		-
Impurities	Max. values [µg/g]		Max. values [µg/g]
	Typical	Guaranteed	
Al	1	15	-
Cr	3	20	-
Cu	1	10	-
Fe	8	30	-
K	1	10	-
Mo	12	100	-
Ni	2	20	-
Si	1	20	-
C	6	30	-
H	-	5	-
N	1	5	-
Cd	1	5	100
Hg <sup>b)</sup>	-	1	1000
Pb	1	5	1000
Cr (VI)			1000
Organic impurities (e.g. PBB, PBDE, PFOS, PFOA)	- <sup>**)</sup>	- <sup>**)</sup>	1000

a) EU-directives 2015/863/EU, 2011/65/EU and 2000/53/EC

b) Initial value

<sup>\*\*)</sup> The presence of Cr (VI) and organic impurities can definitely be excluded because of the production process (multiple heat treatments at temperatures above 1000 °C in H<sub>2</sub>-atmosphere).

The chemical composition is checked by means of random sampling. The sampling inspection plan, analysis and evaluation methods are determined in the internal instruction PSE-020-WI-003. The application of the measured values for the chemical analysis is defined in PSE-680-WI-001.

**Remarks:** The specified physical and chemical characteristics are disclosed not regarding measurement accuracy.

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## 4 Packaging, labelling, storage and certification

### 4.1 Packaging, labelling and storage

**Standard individual packing:** rods are either bundled or packed individually. Rods < 25 mm length in dependence to the diameter may be backed as bulk freight.

*Each package will be provided with a label with the following information:*

<b>Producer's name:</b>	Plansee
<b>Plansee order number:</b>	
<b>Lot number:</b>	
<b>Material number:</b>	
<b>Material:</b>	WL10
<b>Dimension:</b>	Rod diameter and length
<b>Surface:</b>	
<b>Quantity:</b>	Total quantity in m or kg
<b>Date:</b>	

The material must be kept in a dry place and protected from mechanical damage. It is best to keep the material in the original packing until used.

**Special packing:** (extra costs will be invoiced)

Special packing should be used if the material is stored under unusual conditions or aggressive atmosphere (e.g. sea air, ...).

### 4.2 Inspection documents

Following inspection documents will be supplied upon customer request according to EN 10 204:

#### **Test report 2.2**

Plansee confirms with this test report that the delivered product meets the specification and gives details of the material properties according to ongoing production surveillance, not directly related to the particular production batch.

#### **Inspection certificate 3.1** (extra costs will be invoiced)

An inspection officer from Plansee confirms with this inspection certificate that the delivered product meets the specification and gives test results related to the particular production batch.

## 5 Order instructions

Please quote following information when ordering:

- Product description
- Quality (the number of this specification must be mentioned)
- Material Number
- Diameter
- Surface condition
- Quantity in m or kg
- Required certificate and content in case of a 3.1 inspection certificate
- **For special packing:** Specification of packaging

For further information on our delivery possibilities. please look into our <http://www.plansee.com>

**6 Referenced standards**

The standards applied for the test methods are listed in the Plansee standard InfoBase and are made available upon request.

**Changes to last version**

Replacement for	Changes to last version
01	<ul style="list-style-type: none"><li>■ All affected sections: The maximum available diameter has been changed from 80mm to 50mm</li><li>■ 4.1 Packaging, labelling and storage: max Ø for bundle packaging deleted</li></ul>
	<ul style="list-style-type: none"><li>■ Section 1.1 the designation of “forged” was clarified to “deformed and cleaned” (02.05.2023).</li><li>■ Section 1.2 the designation of “cleaned” was clarified to “deformed and cleaned” (02.05.2023).</li><li>■ Section 2.1 the designation of “forged, cleaned” was clarified to “deformed and cleaned” (02.05.2023).</li></ul>
	<ul style="list-style-type: none"><li>■ Section 1.1 the designation of “deformed and cleaned” was clarified to “Mechanically worked and cleaned” (12.01.2024).</li><li>■ Section 1.2 the designation of “deformed and cleaned” was clarified to “Mechanically worked and cleaned” (12.01.2024).</li><li>■ Section 2.1 the designation of “deformed and cleaned” was clarified to “Mechanically worked and cleaned” (12.01.2024)</li></ul>