

Information about the content

Scope:	Plansee SE	Prepared/Updated:	Abenthung Peter
		Released:	Ostheimer Josef
Valid from:	03-Jul-2017	Controlled:	QM

This document is subject to electronic version control – confirm revision status before using.

This specification covers Tungsten rods in the diameter range of 0,50 – 90,0 mm. Tungsten has the highest melting point of all metals. Tungsten rods are mainly used in the lighting industry and high temperature furnace construction.

1 Dimensions and tolerances

1.1 Diameter and guaranteed product tolerances

Diameter ^{a)} [mm]	Tolerance [mm]			
	Drawn / straightened	Forged	Turned	Ground
0,50 - 0,99	-	-	-	± 0,007
1,00 - 1,99	-	-	-	± 0,010
2,00 - 2,99	± 2,0 %	-	-	± 0,015
3,00 - 15,9	-	b)	-	± 0,020
16,0 - 24,9	-	± 0,30	-	± 0,030
25,0 - 34,9	-	± 0,40	-	± 0,050
35,0 - 39,9	-	± 0,40	± 0,30	± 0,060
40,0 - 49,9	-	± 0,40	± 0,30	± 0,20
50,0 - 90,0	-	± 1,00	± 0,40	-

a) **Roundness:** the maximum elliptical value is within the diameter tolerance

b) upon request



Details to our certificates
at www.plansee.com



1.2 Product length and straightness

Diameter [mm]	Production length [mm]	Straightness / Meter [mm]	
		Cleaned	Ground / turned
0,50 – 10,0	≥ 500	< 2,5	< 2,5
10,1 – 50,0	≥ 300	< 2,0	< 1,5
50,1 – 90,0	≥ 100		

1.3 Guaranteed length tolerances

Diameter 0,50 - 30,0 mm						
Nominal length [mm]	≥ 15	> 15 - 120	> 120 - 400	> 400 - 1000	> 1000 - 2000	> 2000
Lengthtolerance [mm]	± 0,2	± 0,3	± 0,5	± 2,0	± 3,0	± 4,0
Diameter > 30,0 mm						
Nominal length [mm]	≥ 30	> 30 - 120	> 120 - 400	> 400 - 1000	> 1000 - 2000	> 2000
Lengthtolerance [mm]	± 0,5	± 0,8	± 1,2	± 4,0	± 6,0	± 8,0

2 Physical and mechanical product properties

Density: All dimensions $\geq 19,10 \text{ g/cm}^3$

Nondestructive Testing: For diameters > 15,00 mm: 100 % ultrasonic testing, visual inspection
For diameters of 0,50 – 50,0 mm: Eddy current tests, visual inspection



Details to our certificates
at www.plansee.com



Hardness ^{a)}	Diameter [mm]	Hardness [HV 30]
	0,50 – 2,99	---
	3,00 – 9,99	420 - 500
	10,0 – 29,9	420 - 480
	30,0 – 49,9	380 - 460
	≥ 50	> 350

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

Grain size	Diameter [mm]	Grain size [acc. to ASTM E112]
	0,50 – 2,99	8 and finer
	3,00 – 14,9	6 and finer
	15,0 – 34,9	4 and finer
	35,0 – 49,9	3 and finer

2.1 Surface condition

Surface	Diameter [mm]	Surface condition
	0,50 – 90,0	Chemical cleaned
	≥ 40,0	Turned Ra ≤ 3,2 µm
	0,50 – 30,0	Centerless ground Ra ≤ 1,0 µm
	30,1 – 50,0	Centerless ground Ra ≤ 1,2 µm



Details to our certificates
at www.plansee.com



3 Chemical composition

Main and minor components	Plansee		EU-Directive
	Typical	Guaranteed	RoHS ^{a)}
W	99,99 ^{b)}	99,97 ^{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	-
O	2	20	-
Cd	1	5	100
Hg ^{c)}	-	1	1000
Pb	1	5	1000
Cr (VI)			1000
Organic impurities (e.g. PBB, PBDE, PFOS, PFOA)	- ^{**)}	- ^{**)}	1000

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

b) Metallic purity without Mo

c) Initial value

^{**)} 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 H₂-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.



Details to our certificates
at www.plansee.com



4 Packaging, labelling, storage and certification

4.1 Packaging, labelling and storage

Standard individual packing: rods are either bundled ($\varnothing < 6$ mm) 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:

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

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.



Details to our certificates
at www.plansee.com



PRODUCT SPECIFICATION**5 Order instructions**

Please quote following information when ordering:

- Product description
- Quality (the number of this specification must be mentioned)
- Surface condition
- Dimension
- 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 PS-MPR-105

- New Document numbering key
- New Document layout
- Section 2: description text in view of hardness specification
- Section 3: RoHS Directive appellation updated
- Section 4.2: Description of Test Report / Inspection Certificate eliminated



Details to our certificates
at www.plansee.com

