

Information about the content

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This specification is valid for rods in the diameter range of 1,20 – 12,99 mm.

By adding with minor quantities of Al, K and Si the onset temperature for recrystallization is increased and the grain growth is blocked in process related heating steps.

1 Dimensions and tolerances

1.1 Diameter and guaranteed tolerances

Diameter ^{a)} [mm]	Tolerance [mm]
1,20 - 1,99	± 0,010
2,00 - 2,99	± 0,015
3,00 - 12,99	± 0,020

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

Straightness

Maximum deviation / 1000 mm Length	
Ø 1,20 – 10,0 mm	≤ 2,50 mm
Ø 10,1 – 12,99 mm	≤ 1,50 mm

1.2 Production length

Diameter [mm]	Production length [mm]
1,20 – 10,0	≥ 500
10,1 – 12,99	≥ 300

1.3 Guaranteed length tolerances in case of ordering fixlength

Nominallength [mm]	≥ 6 – 30	> 30 – 120	> 120 – 400	> 400 – 1000	> 1000 – 2000	> 2000
Lengthtolerance [mm]	± 1,0	± 1,5	± 2,5	± 4,0	± 6,0	± 8,0

2 Physical and mechanical product properties

Density	Diameter [mm]	[g/cm ³]
	1,20 - 6,00	> 19,20
	6,01 - 10,00	> 19,00
	10,01 - 12,99	> 18,90
Hardness ^{a)}	Diameter [mm]	[HV 30]
	3,00 - 10,00	420 - 500
	10,01 - 12,99	400 - 480
Grain size	Diameter [mm]	[ASTM E112]
	1,20 - 3,00	8 and finer
	3,01 - 6,00	7 and finer
	6,01 - 12,99	6 and finer

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

Non-destructive tests: Eddy current test, visual inspection

2.1 Surface condition

Surface	<u>Centerless ground</u>
	Ra ≤ 1,0 μm

3 Chemical composition

Main and minor components	Plansee		EU- Directive RoHS ^{a)}
	Min./Max. contents [%] Typical	Guaranteed	
W	Balance		-
Al	-	< 30 µg/g	-
K ^{*)}	-	30 – 70 µg/g	-
Si	-	< 30 µg/g	-
Impurities	Max. values [µg/g]		Max. values [µg/g]
	Typical	Guaranteed	
Cr	-	20	-
Cu	-	10	-
Fe	-	30	-
Mo	-	100	-
Ni	-	20	-
C	-	30	-
N ^{**))}	-	10	-
O ^{**))}	-	50	-
Cd	-	5	100
Hg ^{b)}	-	1	1000
Pb	-	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) Initial value

^{*)} Measured by Inductive Coupled Plasma-Optical Emission Spectroscopy

^{**))} Measured by Heat Extraction

^{***)} 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.

4 Packaging, labelling, storage and certification

4.1 Packaging, labelling and storage

Standard individual packing: rods up to 6 mm diameter will be delivered in bundles. Larger sizes will be 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:	WVM
Dimension:	Rod diameter
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.

5 Order instructions

Please quote following information when ordering:

- Product description
- Quality (the number of this specification must be mentioned)
- Diameter
- Material number
- Surface condition
- Required spool
- 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.

This Product specification is compliant to ASTM F288.

Changes to last version

Replacement for	Changes to last version
PS-MPR-126	▪ New Document numbering key
	▪ New Document layout
	▪ Section 1: Dimensions adapted
	▪ Section 2: Dimensions adapted
	▪ Section 2: Description text in view of hardness specification
	▪ Section 3: RoHS Directive appellation updated
	▪ Section 3: Analysis Methods adapted
	▪ Section 4.2: Description of Test Report / Inspection Certificate eliminated
	▪ Actuality check performed by Manuel Friedl on 06.09.2022. No change in content.