

Information about the content

Scope:	Plansee SE	Prepared/Updated:	Abenthung Peter
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ML is a molybdenum based material doped with lanthanum-oxide. It was developed for high temperature applications and it is mainly used in the lighting industry.

1 Dimensions and tolerances

Diameter [mm]	Ø-Tolerance [%]
0,30 - 0,79	± 2,0
0,80 - 1,49	± 1,5
1,50 - 2,00	± 1,0

2 Physical and mechanical product properties

Diameter [mm]	Mechanical properties			Rx- Temperature ^{a)} [°C]
	Tensile strength [MPa]		Elongation [%]	
	min.	max.	min.	
0,30 - 0,34	1080	1170	5	
0,35 - 0,40	1080	1170	10	b)
0,41 - 0,50	1020	1150	10	
0,51 - 0,60	980	1080	10	
0,61 - 0,80	970	1050	10	
0,81 - 1,00	930	1040	10	c)
1,01 - 2,00	750	-	10	

a) Annealing conditions: 15 minutes in hydrogen atmosphere

b) Onset temperature for recrystallization approx. 1700 °C

c) Onset temperature for recrystallization approx. 1600 °C

100 % recrystallized: 2200 °C



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Density: ^{a)} 10,20 g/cm³

a) The density in case cannot be determined with sufficient accuracy because of small material diameter. Due to the high degree of deformation during production, it is assumed that the theoretical density (above given value) is achieved.

Chamber height	≤ 15 mm / 200 mm lengths, when wire is delivered on spools. Chamber height ≤ than coil diameter when wire delivered in coils
Splits	Hard glass quality ^{a)} Split free, flaw depth ≤ D/50
	Standard - quality ^{b)} Split level ≤ 0,5 %
	"C"- quality ^{b)} Split level ≤ 2,0 %

a) The total length is free of defects; whose depth is more than 2% of the nominal diameter

b) Sum of defects which are deeper than 5% of the nominal diameter and longer than 5 mm

2.1 Surface condition

Surface: Chemically cleaned, annealed, free from oil residues and other contaminations



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3 Chemical composition

Main and minor components	Plansee Content		EU-Directive
			RoHS ^{a)}
Mo	balance		-
La	0,19 – 0,31 %		-
La ₂ O ₃	0,22 – 0,36 %		-
Impurities	Max. values [µg/g]		Max. values [µg/g]
	Typical	Guaranteed	
Al	1	10	-
Cr	3	20	-
Cu	2	20	-
Fe	5	20	-
K	6	20	-
Ni	1	10	-
Si	2	20	-
W	169	300	-
C	13	30	-
H	-	10	-
N	5	10	-
Cd	1	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

***) 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.



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4 Packaging, labelling, storage and certification

4.1 Packaging, labelling and storage

Standard individual packing:

Dimension of standard reels

Spool: ^{a)}	SD300K	SH253K
Outer diameter:	300 mm	253,5 mm
Coil diameter:	180 resp. 210 mm	221,5 mm
Inner diameter:	51 mm	215,0 mm
Total width:	103 mm	37,0 mm
Coil width:	90 mm	30,0 mm
Max. coil weight:	2,5 - 23 kg	0,30 - 2,5 kg

a) For wires with diameter 0,30 – 1,0 mm

Product packaging

Diameter [mm]	Spool	Cardboard	Desiccant, airtight packaging
0,30 - 0,49	SH253K	☒	☒
0,50 - 1,00	SD300K	☒	☒
1,01 - 2,00	STR ^{a)} Ø 300mm	☒	☒

a) Coils Ø 300 mm without carrier spools, other dimensions on request



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

Producer's name:	Plansee
Plansee order number:	
Lot number:	
Material number:	
Material:	ML
Dimension:	Wire diameter
Surface:	
Quantity:	Total quantity in m or kg
Tensile strength range:	
Elongation range:	
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. It is recommended to store the spools vertical.

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.



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PRODUCT SPECIFICATION

5 Order instructions

Please quote following information when ordering:

- Product description
- Quality (the number of this specification must be mentioned)
- Diameter
- Material number
- Quantity in m or kg
- Required spool
- 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-115

- **Regular content review** conducted by Thomas Friedrich on 16.04.2021 no changes of content
- New Document numbering key
- New Document layout
- Section 2: density and description text in view of using the theoretical material density added
- Section 3: RoHS Directive appellation updated
- Section 4.2: Description of Test Report / Inspection Certificate eliminated



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