

## Information about the content

|                    |             |                          |                |
|--------------------|-------------|--------------------------|----------------|
| <b>Scope:</b>      | Plansee SE  | <b>Prepared/Updated:</b> | Joachim RESCH  |
|                    |             | <b>Released:</b>         | Wolfgang GLATZ |
| <b>Valid from:</b> | 03-May-2021 | <b>Controlled:</b>       | PSE-020        |

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*This specification covers stress-relieved ribbons out of Lanthanum Oxide doped Molybdenum.*

## 1 Dimensions and tolerances

| Thickness<br>[mm] | Thickness Tolerance<br>[± mm] | Width<br>[mm] | Width Tolerance<br>[± mm] |
|-------------------|-------------------------------|---------------|---------------------------|
| ≥ 0,381 – ≤ 0,500 | 0,015                         | 76,20 – 152,4 | 0,50                      |
| > 0,500 – ≤ 0,635 | 0,020                         | 76,20 – 152,4 | 0,50                      |
| > 0,635 – 0,762   | 0,030                         | 76,20 – 152,4 | 0,50                      |

## 2 Physical and mechanical product properties

**Density:** <sup>a)</sup> ≥ 10,1 g/cm<sup>3</sup>

**Hardness Vickers:** <sup>b)</sup> ≤ 250 HV

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

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

**Remarks:** All MLS-ribbons are delivered stress-relieved annealed.

### 2.1 Surface condition

|                         |  |
|-------------------------|--|
| <b>Surface:</b>         | The material will be of uniform quality, free from foreign matter, splits and fractures.<br>Surface defects and geometric variations are assessed in the frame of visual inspection. |
| <b>Surface Quality:</b> | Pickled (dull)   |



Details to our certificates  
at [www.plansee.com](http://www.plansee.com)



### 3 Chemical composition

| Main and minor components                             | Plansee               |            | EU-Directive       |
|---|-----------------------|------------|--------------------|
|   | Content [%]           |            | RoHS <sup>a)</sup> |
| Mo  | Balance <sup>b)</sup> |            | -                  |
| La  | 0,52 - 0,62           |            | -                  |
| La <sub>2</sub> O <sub>3</sub>                        | 0,61 - 0,73           |            | -                  |
| 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   | 1                     | 10         | -                  |
| Cd  | 1                     | 5          | 100                |
| Hg <sup>c)</sup>                                      | -                     | 1          | 1000               |
| Pb  | -                     | 5          | 1000               |
| Cr (VI)   |                       |            | 1000               |
| Organic impurities<br>(e.g. PBB, PBDE,<br>PFOS, PFOA) | - **)                 | - **)      | 1000               |

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

b) Metallic purity without W

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 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:** the ribbons are delivered as coils with an inner diameter of approx. 500 to 600 mm and are sealed in a plastic bag together with a dehydrating agent.

*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>             | MLS                  |
| <b>Dimension:</b>            | thickness, width     |
| <b>Quantity:</b>             | Total quantity in kg |
| <b>Date:</b>                 |                      |

The material must be kept in a dry place and protected from mechanical damage. It is best to keep the sheets in their 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.



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## 5 Order instructions

Please quote following information when ordering:

- Product description
- Quality (the number of this specification must be mentioned)
- Thickness, width
- Quantity in 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.

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### *Changes to last version:*

Replacement for PS-MPF-168 Rev. 00

- Section 3: Table 2 chemical composition, header "min. content" to "content"



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