Information about the content

Responsible area:	Plansee SE	**Prepared/Updated:**	See SAP-DMS
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Valid from:	10-Jun-2021	**Controlled:**	PSE-020

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

This specification covers MoTa Sputtering Targets.

1 Dimensions and tolerances

The MoTa sputtering targets are produced according to Plansee SE drawings with the dimensions, tolerances and surface finish specified in these construction drawings.

1.1 Bonding position (optional)

The target position on the backing plate is defined as follows:

- Long direction = actual measurement ± 0,5 mm from the backing plate end where the water cooling ports are located. Actual measurement is defined as distance from new backing plate end where the water cooling ports are located to the edge of the target.
- Short direction = actual measurement ± 0,5 mm from both backing plate ends. Actual measurement is defined as distance from the lateral end of the backing plate to the lateral edge of the target.

1.2 Warp (optional)

The warp after bonding will be less than 1,0 mm on plus side and less than 1,0 mm on minus side for targets **smaller than 800 mm** backing plate length.
The warp after bonding will be less than 1,0 mm on plus side and less than 2,0 mm on minus side for **800 to 1600** mm backing plate length target.
The warp after bonding will be less than 1,5 mm on plus side and less than 3,0 mm on minus side for **1600 to 3000** mm backing plate length target.

1.3 Target height (optional)

Target height from backing plate surface will be defined by H in the following equation
(Target thickness) < H < (Target thickness + 1,5 mm)

2 Physical and mechanical product properties

Guaranteed Density:	≥ 98 % of theoretical density
Bonding ratio: a)	A ≥ 95,0 % (the largest single void will be less than 36 cm²)

a) Optional for bonded version

2.1 Surface condition

Appearance: According to the drawing the specified areas of the target and / or the backing plate are blasted.

The targets will have no cracks, abrasions and discoloration.

3 Chemical composition

Main and minor components	Plansee Min. content [%]	EU-Directive RoHS [a]
Mo	**balance**	-
Ta	**10,8 ± 0,70 wt.% 6,0 ± 0,45 at.%**	-
Purity	**Min. 99,97 %** [b]	-
Impurities	**Max. values [µg/g]** [c] **Guaranteed**	**Max. values [µg/g]** [c]
Al	**30**	-
Cr	**20**	-
Cu	**40**	-
Fe	**80**	-
Ni	**10**	-
Si	**40**	-
C	**100**	-
O	**800**	-
Cd	**5**	100
Hg [d]	**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) Metallic purity

c) µg/g ≙ ppm (mass fraction)

d) Initial value / first-up

**) 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_2-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: The target is vacuum-sealed in a vinyl pack, which is put into a transportation box. Alternative customized packaging available.

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

producer's name:	Plansee SE
product description incl. dimension:	W x L x H
part number:	
order number:	
batch number:	
weight:	kg

The targets must be kept in a dry place and protected from mechanical damage. The shelf time for the vacuum-packed targets shall be 6 months from the shipping date under the following storage conditions [a)]. However, the customer is recommended to use the targets within 3 months.

a) **Storage conditions: temperature: 22 ± 4 °C; relative humidity of the air: ≤ 50 %; atmospheric pressure: approx. 1000 mbar.**

4.2 Inspection documents

All targets manufactured by Plansee SE will be certified including the following information:

4.2.1 Identification

The order number, target batch number and target number are indicated.

4.2.2 Chemical composition

Inspection certificate 2.2. according to EN 10204:2004.

An inspection certificate 3.1. according to EN 10204:2004 with test results related to the particular production batch (chemical elements see section 3) can be provided upon customer's request (have to be defined when ordering). Extra costs will be charged.

4.2.3 Dimensions

Actual values of length [mm], width [mm] and thickness [mm] of the sputtering target.

4.2.4 Weight

Actual measured value [kg].

4.2.5 Bonding (Optional for bonded version)

Actual measured bonding ratio (Inspection sheet of ultrasonic test) and warp after bonding.

5 Order instructions

Please quote following information when ordering:

- dimensions
- quality (the number of this specification **must** be mentioned)
- quantity (number of targets)
- type of certificate (2.2 or 3.1 according to EN 10204:2004)
- bonded version (yes/no)
- *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
PS-CFT-014 and PS-CFT-018	▪ Combination of PS-CFT-014 and PS-CFT-018. ▪ New document numbering key ▪ New document layout ▪ Section 1: Integration of bonding specification in one specification ▪ Section 3: Adaptation of referenced documents: QA-QR-06-01 -> PSE-020-WI-003 QA-TA041 -> PSE-680-WI-001 ▪ Section 3: RoHS Directive appellation updated ▪ Section 4: Standardization of labelling by combining the specifications ▪ Section 5: Adding some order instructions: Specification in case of special packaging, type of certificate, bonded version