Product specification
PS-HPF 156

Cu-MoCu-Cu (1:4:1) Laminate sheet

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PLANSEE

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The Cu-MoCu-Cu-laminate sheet consists of a powder metallurgically composite material infiltrated with Cu which is rollplated on both sides with a Cu-sheet. Heat sinks produced in this way are used as cooling devices in the electronic industry.

1. Physical and mechanical product properties

Coefficient of thermal expansion [1]	20 °C	[10^{-6}/K]	8.0 – 10.0	
Thermal conductivity [2]	20 °C	[W/mk]	≥ 260 (lengthwise and parallel to the plane of the sheet)	≥ 170 (rectangular to the plane of the sheet)
Thermal conductivity of the Cu-layer [2]	20 °C	[W/mk]	≥ 380	
Vickers hardness of the Cu-layer [3]	20 °C	[HV]	80 - 120 HV 0.1	
Density (typical)		[g/cm³]	9.5	

[1] check acc. to DIN 51045
[2] check acc. to ASTM 1461-01
[3] check acc. to ISO 6507-1

2. Surface condition

Surface roughness:	Ra ≤ 0.2 µm
Flatness:	According to ASTM B 386 , rated with max. 1 %

Surface defects acc. to samples of limits

3. Dimensions and tolerances

Thickness (total)	[mm]	1.000 ± 0.040	1.610 ± 0.040
Thickness of the Cu-layer	[mm]	0.17 ± 0.019	0.268 ± 0.020
Length	[mm]	750 ± 150	800 ± 150
Width	[mm]	175 ± 0.5	

4. Chemical Composition

Chemical analyses: [a]	Random chemical analyses see attachment A.

[a] Details of the analysis method can be made known upon request.

Certificates: [a] Acc. to EN 10 204	Test report 2.2 Inspection certificate 3.1.B[b]

[a] Upon customer request
[b] Extra costs are charged

5. Packaging, storage and labelling

Standard individual packaging: depending on their size, the sheets will be packed in parcels with paper between the different pieces.
Special packing: extra costs will be invoiced.

The laminate sheets 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 should be used if the sheets are stored under unusual conditions (aggressive atmosphere, sea air,…).

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

Producer's name:	**PLANSEE**
Plansee order no:	
Lot number:	
Material number:	
Material:	**Cu-MoCu-Cu (1:4:1)**
Dimensions:	
Quantity:	
Date:	

6. Order instructions

Required information:	
- Product description	- Quantity (number of sheets)
- Quality (the number of this specification **must** be mentioned)	- Required certificate - Labelling
- **Drawing number**	- Special packing

For further information on our delivery possibilities, please look into our http://www.plansee.com

Attachment A: Chemical analyses

Base material MoCu-substrate (R 750)

Element	Guaranteed analyses max. [µg/g]
Ag	10
Al	10
As	10
Ba	10
Bi	5
Ca	20
Cd	5
Co	5
Cr	10
Fe	10
K	30
Mg	10
Mn	5
Na	30
Ni	5
Pb	30
Ti	10
Zn	5
Zr	10
W	200

Mo *	**min. 67 %**	**max. 73 %**
Cu *	**min. 27 %**	**max. 33 %**

C	100
H	10
N	5
O	1000
Si	30
Sn	10
Sb	20
Sr	10
V	10

* weight %

Cu-layers (Cu-OF)

Element	Guaranteed analyses max. [µg/g]
O	10
Bi	5
Pb	50
Other elements	300
Material no. 2.0040 acc. to DIN EN 13599	

Cu **	**99.95 %**

** metallic purity