

Assessment Report

- Translation -

Document No.: (1200/011/15) – Wob of 16/01/2015

Client: Société d'Exploitation des EtsRené
Klingler & Fils Sarl
10 Rue des Arcadias
F - 67410 Drusenheim

Order date: 15/12/2014

Order Ref.: Korner

Order received: 15/12/2014

Subject: Determination of thermal conductivity of two types of mineral insulation boards

Test basis: DIN EN 12664

Test material received: 12/11/2014

Sampling: Made by the client

Test material marking: See section 2 of this report

Assessment period: 12/11/2014 until 08/12/2014

This Assessment Report consists of 6 pages, including the cover sheet.



This document is the translated version of Assessment Report No. 4202/530/14 – Wob dated 17/12/2014. The legally binding text is the aforementioned German Assessment Report.

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1 General information

On behalf of Société d'Exploitation des Ets René Klingler & Fils Sarl, France, CCM Technology e.K., Salzgitter, Germany, commissioned the Civil Engineering Materials Testing Institute (MPA) in Braunschweig with their order of 31/10/2014 to determine the thermal conductivity and the dry apparent density of two types of mineral insulation boards.

2 Material used for testing

The client delivered the following eight mineral insulation boards:

- Sample 1: 23.09 M2; apparent density: 100 kg/m³
- Sample 2: 23.09 M3; apparent density: 100 kg/m³
- Sample 3: 26.09 M4; apparent density: 100 kg/m³
- Sample 4: 26.09 M5; apparent density: 100 kg/m³
- Sample 5: 23.09 M1; apparent density: 125 kg/m³
- Sample 6: 23.09 M2; apparent density: 125 kg/m³
- Sample 7: 23.09 M3; apparent density: 125 kg/m³
- Sample 8: 26.09 M5; apparent density: 125 kg/m³

The mineral insulation boards were produced by CCM Technology e.K. at Salzgitter.

3 Test conditions for the mineral insulation boards; apparent density 100 kg/m³

Pre-measurement material details

Test method:	Method with the single-specimen guarded hot plate based on DIN EN 12667
Measuring unit/test set-up:	λ meter EP 500, supplier: Lambda, Dresden/Germany, in accordance with DIN EN 1946-2 Horizontal
Air conditioning/change in weight during the drying process:	105 °C in the drying oven / -19 to -40 %; mean value: -34.6 %
Testing engineer:	Dr. M. Wobst
Installation thickness:	Sample 1: 0.0779 m Sample 2: 0.0812 m Sample 3: 0.0826 m Sample 4: 0.0759 m
Other sample preparations:	<ul style="list-style-type: none">• Use of a vapour-proof covering (household plastic film)
Mean test temperature difference:	10 °C
Accuracy:	< 3 %

Post-measurement material details

Thickness:	-0.44 %
Volume:	-0.84 %
Weight:	0.19 %
Density:	-1.04 %

3.1 Thermal conductivity and apparent dry density

The thermal conductivity was determined between 19. and 24. November 2014 at the mean temperatures 10, 20 and 30 °C. Results for thermal conductivity, thermal resistance and dry apparent density are listed below.

Table 1: Thermal conductivity readings at an apparent density of 100 kg/m³

Sample	Heat flux density [W/m ²]	Temperature difference [°C]	Mean temp. [°C]	Lambda [W/mK]	r [m ² K/W]
1	4.4	10	10	0.0341	2.273
1	4.6	10	20	0.0357	2.173
1	4.8	10	30	0.0371	2.090
2	4.3	10	10	0.0350	2.304
2	4.6	10	20	0.0369	2.186
2	4.8	10	30	0.0385	2.096
3	4.2	10	10	0.0342	2.403
3	4.4	10	20	0.0362	2.27
3	4.6	10	30	0.0375	2.189
4	4.7	10	10	0.0353	2.137
4	4.9	10	20	0.0368	2.053
4	5.1	10	30	0.0387	1.953
Mean value	*	10	10	0.0346	*
	*	10	20	0.0363	*
	*	10	30	0.0378	*

* Because of the different sample thicknesses, mean values for the heat flux density and the thermal resistance cannot be specified.

Table 2: Calculated thermal conductivity and apparent dry density

Sample	Calculated λ [W/m*K]	Density [kg/m ³]
1	0.0342	105.5
2	0.0351	101.7
3	0.0343	105.5
4	0.0353	105.9
Mean value	0.0347	104.7

4 Test conditions for the mineral insulation boards; apparent density of 125 kg/m³

Pre-measurement material details

Test method:	Method with the single-specimen guarded hot plate based on DIN EN 12667
Measuring unit/test set-up:	λ meter EP 500, supplier: Lambda, Dresden/Germany, in accordance with DIN EN 1946-2 Horizontal
Air conditioning/change in weight during the drying process:	105 °C in the drying oven / mean value: -19.8 %
Testing engineer:	Dr M. Wobst
Installation thickness:	Sample 5: 0.0896 m Sample 6: 0.0816 m Sample 7: 0.0904 m Sample 8: 0.0854 m
Other sample preparations:	• Use of a vapour-proof covering (household plastic film)
Mean test temperature difference:	10 °C
Accuracy:	< 3 %

Post-measurement material details

Thickness:	-0.36 %
Volume:	-0.54 %
Weight:	0.27 %
Density:	0.81 %

4.1 Thermal conductivity and apparent dry density

The thermal conductivity was determined between 25. November and 2. December 2014 at the mean temperatures 10, 20 and 30 °C. Results for thermal conductivity, thermal resistance and dry apparent density are listed below.

Table 3: Thermal conductivity readings at an apparent density of 125 kg/m³

Sample	Heat flux density [W/m ²]	Temperature difference [°C]	Mean temp. [°C]	Lambda [W/mK]	r [m ² K/W]
5	3.8	10	10	0.0339	2.64
5	4.0	10	20	0.0360	2.488
5	4.1	10	30	0.0372	2.411
6	4.4	10	10	0.0354	2.295
6	4.6	10	20	0.0375	2.165
6	4.8	10	30	0.0389	2.089
7	3.7	10	10	0.0335	2.706
7	3.9	10	20	0.0356	2.544
7	4.0	10	30	0.0365	2.48
8	4.2	10	10	0.0353	2.40
8	4.4	10	20	0.0377	2.251
8	4.6	10	30	0.0388	2.186
Mean value	*	10	10	0.0347	*
	*	10	20	0.0368	*
	*	10	30	0.0380	*

* Because of the different sample thicknesses, mean values for the heat flux density and the thermal resistance cannot be specified.

Table 4: Apparent dry density

Sample	Calculated thermal conductivity [W/m*K]	Density [kg/m ³]
5	0.0341	122.8
6	0.0355	119.1
7	0.0336	125.7
8	0.0355	121.9
Mean value	0.0348	120.9

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Braunschweig, 16 January 2015

Deputy Head of Section

i.A.

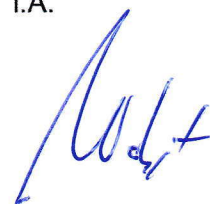


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