

Fraunhofer-Institut für Bauphysik IBP

Forschung, Entwicklung,  
Demonstration und Beratung auf  
den Gebieten der Bauphysik

Zulassung neuer Baustoffe,  
Bauteile und Bauarten

Bauaufsichtlich anerkannte Stelle für  
Prüfung, Überwachung und Zertifizierung

**Institutsleitung**

Univ.-Prof. Dr.-Ing. Gerd Hauser

Univ.-Prof. Dr.-Ing. Klaus Sedlbauer

Test Report P14-007e/2014

## **Tests on Cellular Glass »Gemini Foamglass« For a Technical Approval at the Deutsches Institut für Bautechnik DIBt**

Client:

LLC "ICM Glass Kaluga"

119435, Russian Federation,

Moscow, Savinskaya nab., 15

Stuttgart, January 15, 2014



Prüflabor Wärme-Kennwerte  
durch DAkkS GmbH akkreditiert nach  
DIN EN ISO/IEC 17025:2005

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## 1 Tested Material

Cellular glass »Gemini foamglass« as insulation under load-bearing ground slabs.

Grain size: not defined  
Description: »gemini foamglass«  
Type: none  
Manufacturer: LLC "ICM Glass Kaluga"  
119435, Russian Federation,  
Moscow, Savinskaya nab., 15

## 2 Sampling

On December 10, 2013, 400 l test specimen were delivered to the Fraunhofer Institute for Building Physics IBP, Stuttgart, by the client.

## 3 Description of test specimen

According to our offer no. 174-13-229 the following tests have been performed:

- Bulk density according to EN 1097-3,
- Determination of the thermal conductivity according to EN 12667, air dry and compressed,
- Compressive stress at 10 %, 20 % and 25 % deformation of compressed and dried samples according to EN 826:1996-05,

All tests were performed on samples, which have been pre-treated by mixing for 2 minutes in a mixing machine.

Test period: calendar week 50 in 2013 until calendar week 2 in 2014.

## 4 Test results

### 4.1 Bulk density

The results of the determination of the bulk density are shown in Table 1.

### 4.2 Thermal conductivity

The determination of the thermal conductivity on air dry insulation according to DIN EN 12667 has been tested with a compression ratio of 1.3:1. The results are shown in Table 2.

### 4.3 Compressive stress

The compressive stress at 10%, 20% and 25 % deformation has been performed according to DIN EN 826. The air dry samples were tested with a pre-compressed ratio of 1.3:1. The results are listed in Table 3.

## 5 Summary of results

The bulk density, thermal conductivity and compressive stress have been measured on samples of cellular glass »gemini foamglass«.

Note: The results exclusively refers to the tested object.

The test laboratory is recognized by the Deutsches Institut für Bautechnik (DIBt) as a testing facility under applicable building regulations LBO/BRL No. BWU-10 and as a Notified Body No. 1004 to the terms of the Regulation of Construction Products (EU-BauPVO). It has been granted flexible accreditation under DIN EN ISO/IEC 17025 by the Deutsche Akkreditierungsstelle GmbH (DAkkS) under accreditation No. D-PL-11140-11-04.

This test report comprises 3 pages of text and 3 tables.

Stuttgart, January 15, 2014/JHA

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Deputy Head of the Test Laboratories

Responsible Engineer

Dipl.-Ing. (FH) Andreas Zegowitz

Dipl.-Ing. (FH) Nis Andresen



**Table 1:** Determination of the bulk density on cellular glass,  
according to DIN 1097-3:1998-06.

Description: »gemini foamglass«  
Date of delivery: December 10, 2013  
Specimen no. of QM: 13/410  
Pre-Treatment: 2 min. mixing

test no.	bulk density
	kg/m <sup>3</sup>
1	139.5
2	140.3
3	137.4
4	128.8
5	129.4
6	133.6
7	128.4
8	137.9
9	136.9
10	134.8
mean	134.7



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**Table 2.1:**

Determination of the thermal resistance and thermal conductivity on cellular glass with one-plate-method according to DIN EN 12667: 2001-05.

test method/ test equipment/ installation of test specimens:	one-plate-method, 500 mm-test apparatus no. 2 with protective ring, horizontal installation of test specimens, in test frame, ambient temperature 20 °C
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**Specimen**

material:	cellular glass	
description:	»gemini foamglass«	
date of delivery:	December 10, 2013	
specimen no. of QM:	13/410	
compression ratio:	1.3:1	
pre-treatment:	2 min. mixing, air dry, no conditioning	
measured specimen parameters		
mass before measurement:	kg/m³	174.8
length x width x thickness:	mm	570 x 570 x 145
relative mass change:	kg/kg	-0.001
mass after measurement:	kg/m³	174.6

**Results**

measure- ment no.	mean temperature of the sample surface		mean temperature difference	mean temperature of samples	mean temperature of samples	thermal resistance R	thermal conductivity $\lambda$
	hot plate side	cold plate side					
	°C	°C					
1	15.2	4.9	10.2	10.0	5.53	1.85	0.0783

**Table 3:** Compression stress at 10 %, 20 % and 25 % deformation on cellular glass according to DIN EN 826:1996-05.

Description: » gemini foamglass«  
 Date of delivery: December 10, 2014  
 Specimen no of QM: 13/410  
 Pre-Treatment: 2 min mixing  
 Compression: 1.3:1  
 Measurement frame  
 l x w x h: 200 mm x 200 mm x 160 mm

test no	compression at 10 % deformation	compression at 20 % deformation	compression at 25 % deformation
	kPa	kPa	kPa
1	485	711	814
2	505	680	803
3	558	730	999
4	469	713	791
5	529	732	865
mean	509	713	855







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