

Bellaterra: 28th July, 2014
File: **14/8416-1111**
Petitioner: **GREEN EARTH AEROGEL TECHNOLOGIES**
C/ Josep Pla 2
Torres Diagonal Litoral B3/1
08019 BARCELONA



The activities marked (*) are not covered by the accreditation of ENAC

TEST REPORT

Date sample received: 2014-03-28 and 06-05-2014
Date testing performed: 2014-04-25 to 2014-05-07

RECEIVED MATERIAL

White powder material was received from the petitioner and with the following references and measures:

Silicon Dioxide Aerogels AAA.

Product trade name: GEAT SILICA AEROGEL AAA

Amorphous silica Aerogel micro size particles with nano-size bubbles (white powder).

Manufacturer: Green Earth Aerogel Technology, S.L.

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Sample identification	Dimensions of each sample (m)	Quantity	Sample number (laboratory)
GREEN EARTH AAA	0,16 x 0,16 x 0,06	1	1111

Note: It is added the last column to introduce the sample identification number according to the laboratory.

REQUESTED TESTS

Determination of the thermal conductivity according to the standard UNE-EN 12667:2002.

TEST METHOD

Tests based on the Standard UNE-EN 12667:2002 "Thermal performance of building materials and products. Determination of thermal resistance by means of guarded hot plate and heat flow meter methods. Products of high and medium thermal resistance."

Thermal conductivity is measured using a heat flow meter for a sample of symmetrical dimensions 500 x 500 mm, with an area of measurement of 150 x 150 mm, identified as Lambda-Meter EP 500, with equipment nº 170196. The environmental atmosphere of the place that surrounded the equipment during the test is maintained between 23±5 °C.

In this equipment the sample is assembled horizontally with descending flow. The position of the hot side of the sample is the superior one.

This equipment has been verified in date 2014-07-03 using the sample pattern ETAL 125_1_PS of expanded polystyrene (EPS) certified by the Lambda-Messtechnik GMBH Dresden in date 2010-10-24 and with a value of 0'0329 W/m·K.

To be able to perform the test, the material in bulk was applied inside a frame made of expanded polystyrene, over an aluminum sheet and covered with a plastic film, so that the product remains collected inside the frame.

SAMPLES CONDITIONING (*)

According to the specifications given by the petitioner, the sample is tested as received.

DENSITY AND MASS CHANGE

Δm_r : Relative mass change of the material as received due to drying.

Δm_c : Relative mass change of the material due to a more complex conditioning procedure.

Δm_w : Relative mass change for the material before and after the test.

ρ_c : Material density after a most complex conditioning process (until equilibrium with the normal atmosphere of the laboratory)

- **Conditioned samples.**

Sample	Thickness (m)*		Δm_r **	Δm_c **	Density ρ_c (Kg/m ³) ***
1111	0,0566	Measured	0	0	325,5

* Thickness as measured according to the test procedure C5210451

** Conditioning is not performed, according to the petitioner.

*** From the dimensions of the sample, the thickness as indicated previously and conditioned mass of the sample.

- **Tested samples.**

Sample	Δ Thickness (m) ****	Δm_w	Temperature difference (K)	Average T ^a during test (°C)
1111	0	0,0000	15,0	10,0

**** No variation is observed in the dimensions of the sample, so that Δ thickness=0.

The test was carried out by the operator Rafael Carreras.

RESULTS

Uncertainty of the test = 1,6 %

Environmental conditions: 26,0 °C y 48,0 % HR.

Sample		
1111		
Temperature difference (K)	T ^a average during test (°C)	Sample thickness (m)
15	10	0,0566
Flow heat density (W/m ²)	Thermal resistance (m ² ·K/W)	Thermal conductivity (W/m·K)
14,722	1,019	0,056

Technical Director, Industrial Products
LGAI Technological Center S.A.

Technician Responsible
LGAI Technological Center S.A.

The results refer exclusively to the samples tested at the time and under the conditions indicated.

The uncertainties expressed in this document pertain to the expanded uncertainty, which has been obtained by multiplying the typical measurement uncertainty by the coverage factor k=2 which, for a regular distribution, corresponds to a coverage probability of approximately 95%. The typical measurement uncertainty is determined according to the document EAL-R2 (1996). The current designation of EAL-R2 is EA-4/02.

Applus+ guarantees that this task has been carried out in compliance with the requirements of our Quality and Sustainability System, and furthermore, that the contractual terms and legal regulations have been complied with.

In the framework of our improvement programme, we would appreciate any comments you may deem appropriate. These should be addressed to the manager who signs this document, or to the Quality Director of Applus+, at the following address: satisfaccion.cliente@appluscorp.com
