



TEST REPORT No. 351645

Place and date of issue: Bellaria-Igea Marina - Italy, 16/05/2018

Customer: LABORATORI ECOBIOS S.r.l. - Lotto 14/A - Zona Industriale - 73033 CORSANO (LE) - Italy

Date test requested: 10/04/2018

Order number and date: 76324, 10/04/2018

Date sample received: 11/04/2018

Test date: from 10/05/2018 to 14/05/2018

Purpose of test: thermal resistance and thermal conductivity by the heat flow meter technique of a coating in accordance with standard ASTM E1530 - 11

Test site: Istituto Giordano S.p.A. - Blocco 2 - Via Gioacchino Rossini, 2 - 47814 Bellaria-Igea Marina (RN) - Italy

Sample origin: sampled and supplied by the Customer

Identification of sample received: No. 2018/0814

Sample name*

The test sample is called "TIXOS (con cemento)" ("*TIXOS (with cement)*").

(*) according to that stated by the Customer.

Comp. AV
Revis. PR

This test report consists of 5 sheets.

This document is the English translation of the test report No. 351645 dated 16/05/2018 issued in Italian;
in case of dispute the only valid version is the Italian one. Date of translation: 06/06/2018.

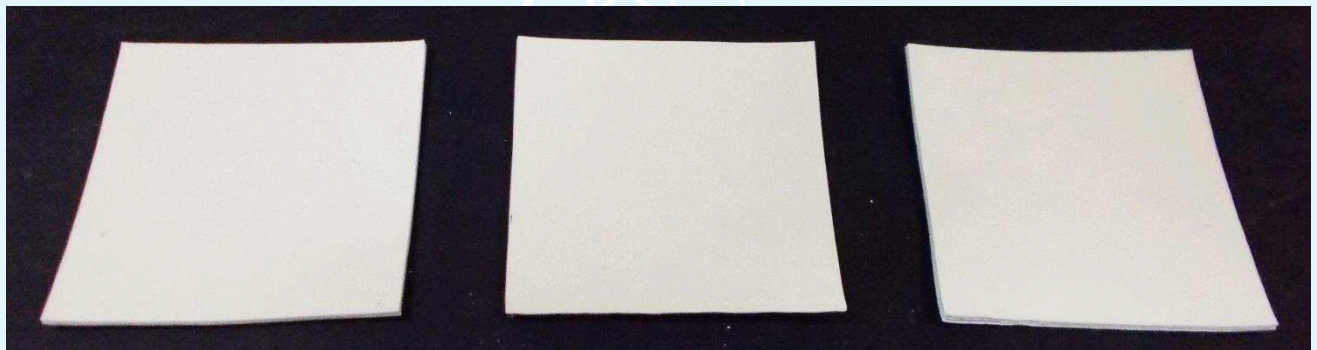
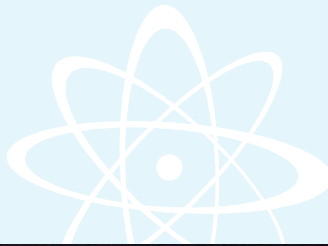
Sheet
1 of 5

Description of sample*

The Customer-supplied sample consists of portions (size 100 mm × 100 mm) of an external twin-layer coating, having a thickness of approx. 2 mm and created by:

- application of a first coat of Ecobios LIB Primer using a roller without water;
- installation of 45 g/m² GRP laminate anchored with a coat of Ecobios LIB Primer using a roller without water;
- application, using a float, of a coat of TIXOS mixed with 30 % quick-setting cement, having a coverage rate of not less than 500 g/m² (plus cement);
- application of a second coat of Ecobios LIB Primer using a roller without water;
- application, using a float, of a second coat of TIXOS mixed with 30 % quick-setting cement, having a coverage rate of not less than 500 g/m² (plus cement);
- application of a third coat of Ecobios LIB Primer using a roller without water;
- application of two coats of Solaria Universal ES milk- and wine vinegar-based mineral emulsion using a roller without water.

Mixing date 06/04/2018.



Sample photo

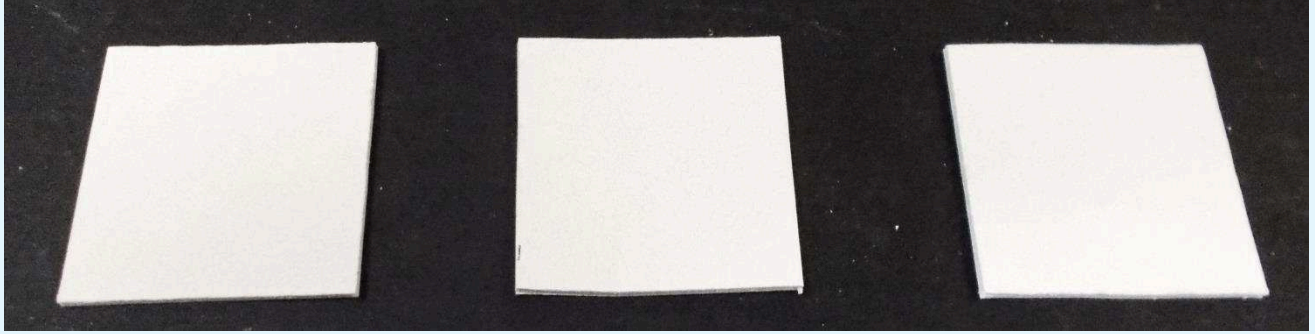
Normative references

The test was carried out in accordance with the requirements of standard ASTM E1530 - 11 "Standard test method for evaluating the resistance to thermal transmission of materials by the guarded heat flow meter technique".

(*) according to that stated by the Customer.

Description of specimens

3 specimens were cut from the test sample.



Specimen photo

Test apparatus

The test was carried out using a guarded heat flow meter complying with standard ASTM E1530 having a square front section, size 50 mm × 50 mm, and downward vertical flow.

The apparatus was calibrated using 6 sheets of glass whose thermal resistance had been previously measured in the guarded hot plate (in-house identification code FT004).

Specimen conditioning

The specimens were conditioned at a temperature of 23 °C and 50 % relative humidity.

Conditioning time: 29 days.

Test method

The test was carried out at a mean temperature of 23 °C and pressure 0,28 MPa.

In order to improve the thermal contact between the surfaces of the specimen and the apparatus, rubber sheets were placed between them.

The temperature of the room containing the apparatus was set to the value of the mean test temperature and the edges of the specimens were insulated with insulation board in order to reduce heat loss.

Specimen measurements

Specimen [No.]	Thickness “ Δx ” [mm]	Size		Mass [g]	Equivalent density “ ρ_c ” [kg/m ³]	Mass per unit area [g/m ²]
		[mm]	[mm]			
1	2,13	51,79	51,52	6,58	1160	2470
2	1,96	52,06	51,55	5,92	1130	2210
3	1,75	51,64	51,73	5,50	1180	2060

Data obtained during testing

Specimen [No.]	Mean steady- state hot-side temperature	Mean steady- state cold-side temperature	Mean test tem- perature	Average temper- ature difference	Mean steady- state tempera- ture in the guarded hotplate
	“ T_1 ” [°C]	“ T_2 ” [°C]	“ $T_m = \frac{T_1 + T_2}{2}$ ” [°C]	“ $\Delta T = T_1 - T_2$ ” [°C]	“ T_g ” [°C]
1	26,12	20,26	23,19	5,86	23,22
2	26,12	20,25	23,18	5,87	23,28
3	26,11	20,25	23,18	5,86	23,22

Test results

Specimen [No.]	Thermal resistance "R _s " [m ² · K/W]	Thermal conductance "C _s " [W/(m ² · K)]	Equivalent thermal conductivity "λ _{eq} " [W/(m · K)]
1	0,00806	124	0,264
2	0,00742	135	0,263
3	0,00657	152	0,267
Mean	0,0074*	140*	0,26*

(*) values rounded off as requested by standard ASTM E1530 - 11.

Test results were obtained under the following conditions:

Specimen hygrothermal conditions	Condition "Iib"**: reference temperature 23 °C, moisture content in equilibrium with air at 23 °C and relative humidity of 50 %
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(*) in accordance with Table 1 "Determination of declared thermal values" of standard UNI EN ISO 10456:2008 dated 22/05/2008 "Building materials and products - Hygrothermal properties - Tabulated design values and procedures for determining declared and design thermal values".

Test Technician:
Dott. Ing. Paolo Ricci

Head of Heat Transfer Laboratory - Testing:
Dott. Ing. Paolo Ricci

Chief Executive Officer

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