

**Test Certificate**

Client

KE.B.E SA  
61100 Nea Santa  
Kilkis  
GREECE

Order no.:

M 2074 / 2012

Order dated : 4<sup>th</sup> November 2011  
Order : Testing of clay roof tiles in accordance with  
DIN EN 1304 by an independent, notified body  
Frost resistance in accordance with  
DIN EN 539-2:2006, Test method E  
(European single test method) and  
DIN EN 539-2 Correction 1:2009  
Number, type and color of samples : 6 interlocking tiles " Mediterranean"  
color natural red  
Manufacturer of samples : KE.B.E SA - Nea Santa  
Country of manufacture : Greece  
Date of Manufacture : Not specified  
Plant code : See 1.2  
Receipt of sample : 16<sup>th</sup> May 2012  
Test time period / date : 1<sup>th</sup> June - 26<sup>th</sup> June 2012  
Testing authority : Kiwa MPA Bautest GmbH, Munich Lab  
Test execution : Mr. Beyer  
Sampling : KE.B.E SA  
Sampling point : Not specified

Garching, 27 June 2012  
be/kr

Department head

  
Dipl.-Ing. (FH) Maik Kramer

Test center manager

  
Dipl.-Ing. (FH) Hendrik Zaus

This test certificate contains 7 pages.  
The test certificate refers to the submitted sample material. The sample material is used.  
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Opinions and interpretations of the testing authority shall be written in *italics* in accordance with DIN EN ISO / IEC 17 025 point 5.10.5

## 1.2 Sample preliminary treatment

Determination of water absorption  $W_{u,R}$

Sample no.	Plant code	Water absorption $W_{u,R}$		
		$m_t$ [g]	$m_w$ [g]	$W_{u,R}$ [%]
1	KE.B.E MADE IN EU	4192	4433	6,5
2	KE.B.E MADE IN EU	4331	4582	5,8
3	KE.B.E MADE IN EU	4375	4633	5,9
4	KE.B.E MADE IN EU	4361	4631	6,2
5	KE.B.E MADE IN EU	4253	4512	6,1
6	KE.B.E MADE IN EU	4327	4575	5,7
Average				6,0



### 1.3 Test results

In accordance with DIN EN 539-2, Point 9.4.2.4 the back sides of the samples were covered with a wet linen cloth after which they were subjected to 150 freeze/thaw cycles at an average ice formation period of 40 minutes.

Sample no.	Number of executed freeze/thaw cycles	Nature and extent of changes caused by the effects of the freeze to		
		30 freeze/thaw cycles performance class 1	90 freeze/thaw cycles performance class 2	150 freeze/thaw cycles performance class 3
1	150	no	no	breaking-off of one nib, breaking-off of rib (back side acceptable frost damage)
2	150	no	no	breaking-off of one nib, (back side acceptable frost damage)
3	150	no	no	breaking-off of one nib, (back side acceptable frost damage)
4	150	no	no	breaking-off of rib (back side acceptable frost damage)
5	150	no	no	incipient chipping of rib (back side acceptable frost damage)
6	150	no	no	breaking-off of one nib, (back side acceptable frost damage)
Requirement satisfied		yes	yes	yes

The freeze/thaw cycles were performed at our accredited test center in Augsburg.





### 1.5 Assessment

The tested clay roof tiles are in compliance with the frost resistance according to DIN EN 539-2:2006 performance class 3.

Garching, 27 June 2012

