kiwa
Partner for progress

Test Certificate

Client

KOTHALI S.A.
1st klm. Chrissoupoupolis-Eratinou
Chrissoupolis 64200
GREECE

Order no.:

M 2164 / 2012

Order dated	:	12th July 2012
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 "HOLLAND" color natural red
Manufacturer of samples	:	KOTHALI SA
Country of manufacture	:	Greece
Date of Manufacture	:	Not specified
Plant code	:	See 1.2
Receipt of sample	:	25th July 2012
Test time period / date	:	8th August - 3th September 2012
Testing authority	:	Kiwa MPA Bautest GmbH, Munich Lab
Test execution	:	Mr. Beyer
Sampling	:	KOTHALI SA
Sampling point	:	Not specified

Garching, 13 September 2012
be/kr

Department head

Dipl.-Ing. (FH) Maik Kramer

Kiwa MPA Bautest
Kiwa GB

Test center manager

i.V.

Dipl.-Ing. (FH) Hendrik Zaus

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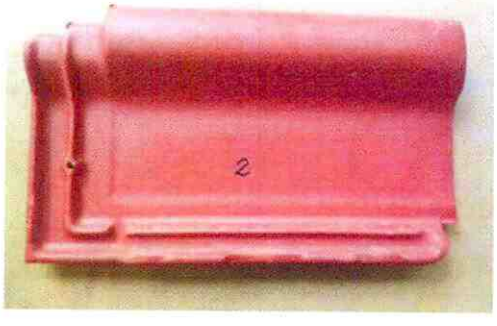
The test certificate refers to the submitted sample material. The sample material is used.

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.

bautest
Kiwa MPA Bautest GmbH
Dirnismaning 24
85748 Garching
Tel. 089 329880-0, Fax 329880-40

1 Determination of frost resistance in accordance with DIN EN 539-2:2006 Test method E (European single test method)

1.1 Images (Condition at delivery)

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4
ΚΟΘΑΛΗ Α.Ε
ΚΑΒΑΛΑ


5


5
ΚΟΘΑΛΗ Α.Ε
ΚΑΒΑΛΑ


6


6
ΚΟΘΑΛΗ Α.Ε
ΚΑΒΑΛΑ


Kiwa MPA Bautest
kiwa

1.2 Sample preliminary treatment

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

Sample no.	Plant code	Water absorption $W_{u,R}$		
		m_{tr} [g]	m_w [g]	$W_{u,R}$ [%]
1	ΚΟΘΑΛΗ ΑΕ CE ΚΑΒΑΛΑ MADE IN EU	3178	3302	3,9
2	ΚΟΘΑΛΗ ΑΕ CE ΚΑΒΑΛΑ MADE IN EU	3119	3209	2,3
3	ΚΟΘΑΛΗ ΑΕ CE ΚΑΒΑΛΑ MADE IN EU	3117	3240	3,9
4	ΚΟΘΑΛΗ ΑΕ CE ΚΑΒΑΛΑ MADE IN EU	3132	3291	5,1
5	ΚΟΘΑΛΗ ΑΕ CE ΚΑΒΑΛΑ MADE IN EU	3148	3309	5,1
6	ΚΟΘΑΛΗ ΑΕ CE ΚΑΒΑΛΑ MADE IN EU	3136	3249	3,6
Average				4,1

Kiwa MPA Bautest
kiwa

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.

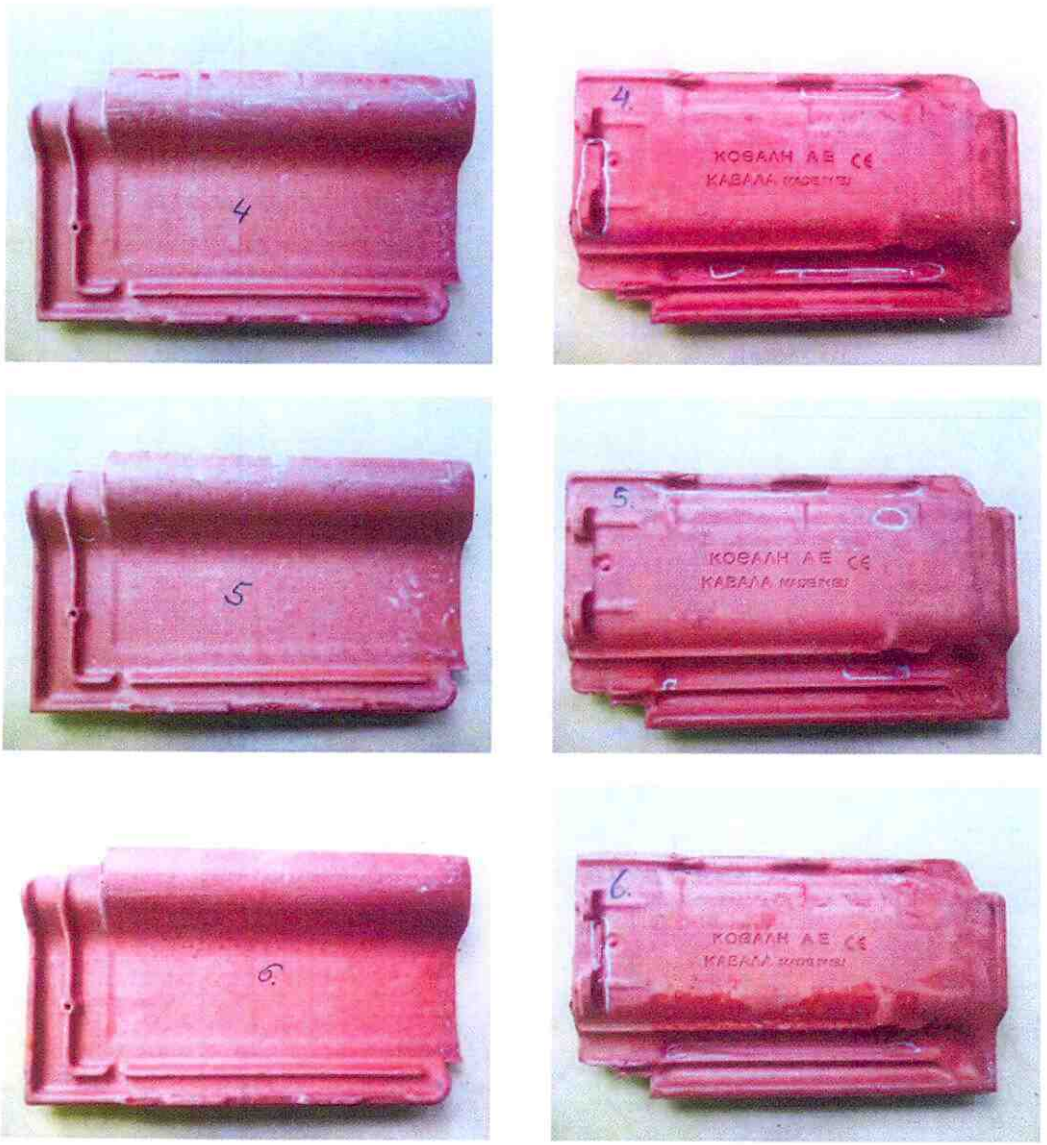
Sample no.	Number of executed freeze/thaw cycles	Nature and extent of changes caused by the effects of the freeze to		
		30 freeze/thaw cycles performance class 1	90 freeze/thaw cycles performance class 2	150 freeze/thaw cycles performance class 3
1	150	no	no	surface damage (scaling - back side acceptable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

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

Kiwa MPA Bautest
kiwa

1.4 Photos (after 150 freeze/thaw cycles

Kiwa MPA Bautest
kiwa



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, 13 September 2012

Kiwa MPA Bautest
kiwa

kiwa
Partner for progress

Test Certificate

Client

KE.B.E SA
61100 Nea Santa
Kilkis
GREECE

Order no.:

M 2043 / 2013

Order dated	:	13th February 2013
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 " ROMAN" 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	:	21th February 2013
Test time period / date	:	11th March - 3th April 2013
Testing authority	:	Kiwa MPA Bautest GmbH, Munich Lab
Test execution	:	Mr. Beyer
Sampling	:	KE.B.E SA - KILKIS
Sampling point	:	Not specified

Garching, 4 April 2013
be/kr

Deputy of Test center manager

Siegfried Bräuer

Kiwa MPA Bautest
kiwa

Department head

Dipl.-Ing. (FH) Maik Kramer

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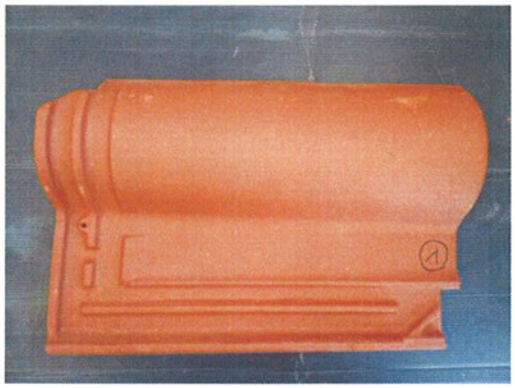
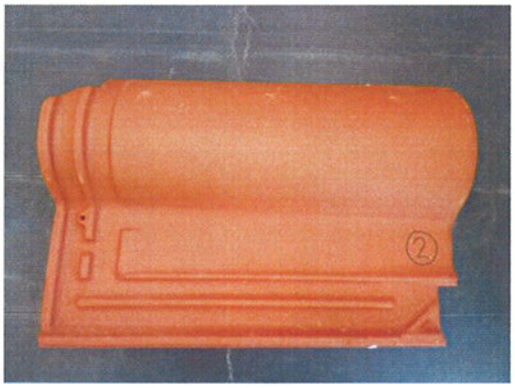
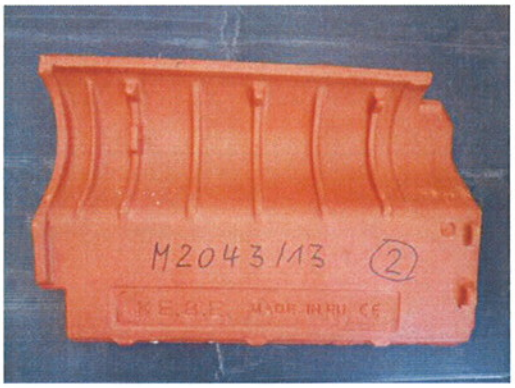
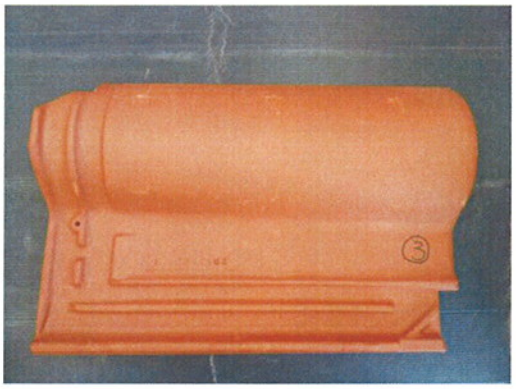
bautest
Kiwa MPA Bautest GmbH
Gutenbergstraße 25
85748 Garching
Tel. 089 329880-0, Fax 329880-40

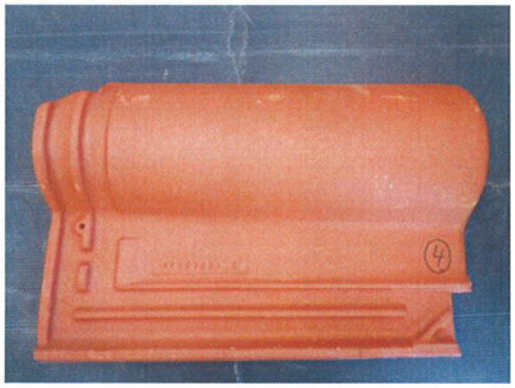
1 Determination of frost resistance in accordance with DIN EN 539-2:2006 **Test method E** (European single test method)

1.1 Images (Condition at delivery)



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M 2043/13
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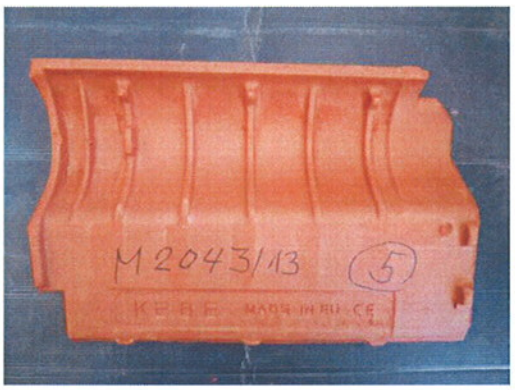
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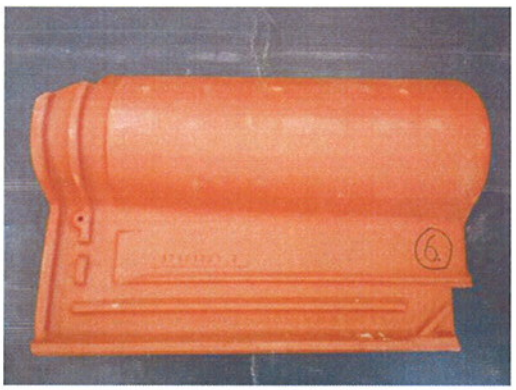
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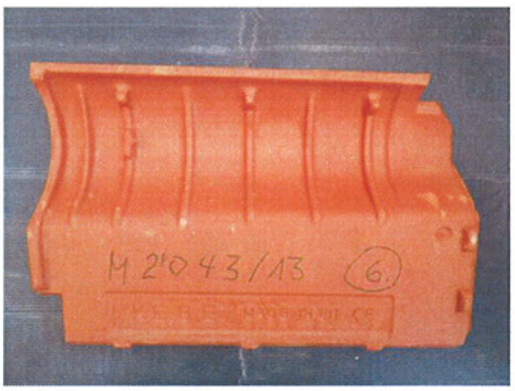

M 2043/13
6

1.2 Sample preliminary treatment

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

Sample no.	Plant code	Water absorption $W_{u,R}$		
		m_{tr} [g]	m_w [g]	$W_{u,R}$ [%]
1	KE.B.E MADE IN EU CE 20121221.1	3330	3416	2,6
2	KE.B.E MADE IN EU CE 20121221.1	3349	3441	2,7
3	KE.B.E MADE IN EU CE 20121221.1	3543	3622	2,2
4	KE.B.E MADE IN EU CE 20121221.1	3393	3558	4,9
5	KE.B.E MADE IN EU CE 20121221.1	3315	3382	2,0
6	KE.B.E MADE IN EU CE 20121221.1	3386	3531	4,3
Average				3,1

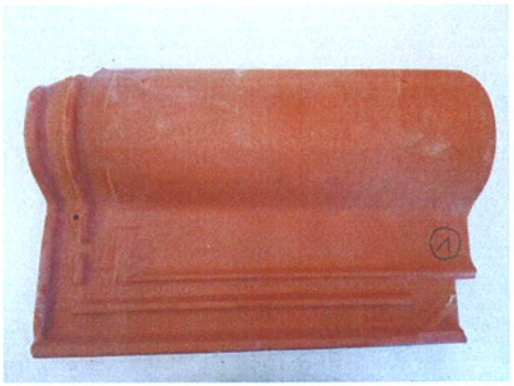
1.3 Test results

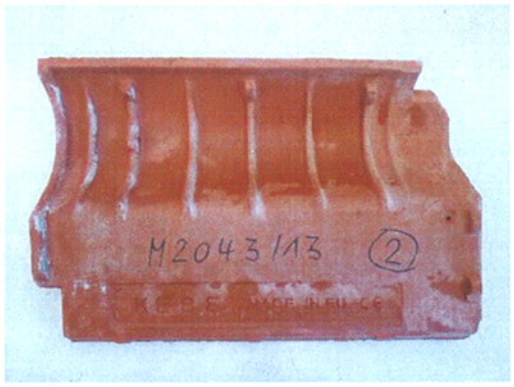
In accordance with DIN EN 539-2, Point 9.4.2.4 the back sides of the samples were covered with a wet linen cloth after which they were subjected to 150 freeze/thaw cycles at an average ice formation period of 40 minutes.

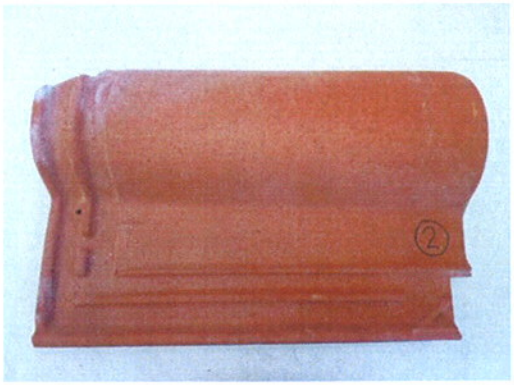
Sample no.	Number of executed freeze/thaw cycles	Nature and extent of changes caused by the effects of the freeze to		
		30 freeze/thaw cycles performance class 1	90 freeze/thaw cycles performance class 2	150 freeze/thaw cycles performance class 3
1	150	no	no	no
2	150	no	no	no
3	150	no	no	no
4	150	no	no	no
5	150	no	no	no
6	150	no	no	no
Requirement satisfied		yes	yes	yes

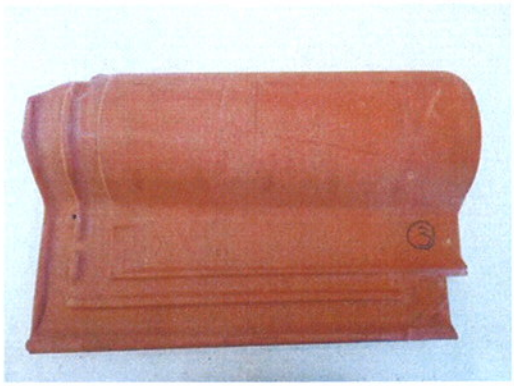
The freeze/thaw cycles were performed at our accredited test center in Munich.

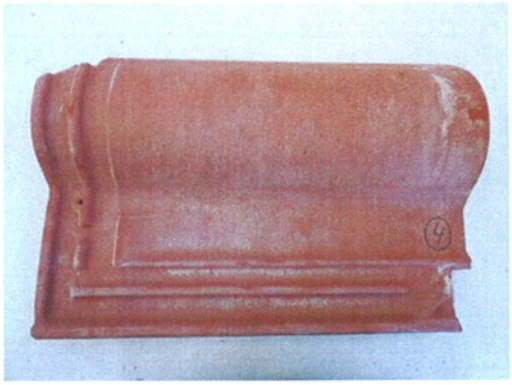
1.4 Photos (after 150 freeze/thaw cycles











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, 04 April 2013

kiwa
Partner for progress

Test Certificate

Client

KE.B.E SA
61100 Nea Santa
Kilkis
GREECE

Order no.:

M 2044 / 2013

Order dated	:	13th February 2013
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 " MARSEILLE " 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	:	21th February 2013
Test time period / date	:	11th March - 3th April 2013
Testing authority	:	Kiwa MPA Bautest GmbH, Munich Lab
Test execution	:	Mr. Beyer
Sampling	:	KE.B.E SA - KILKIS
Sampling point	:	Not specified

Garching, 4 April 2013
be/kr

Deputy of Test center manager

Siegfried Bräuer

Kiwa MPA Bautest
Kiwa

Department head

Dipl.-Ing. (FH) Maik Kramer

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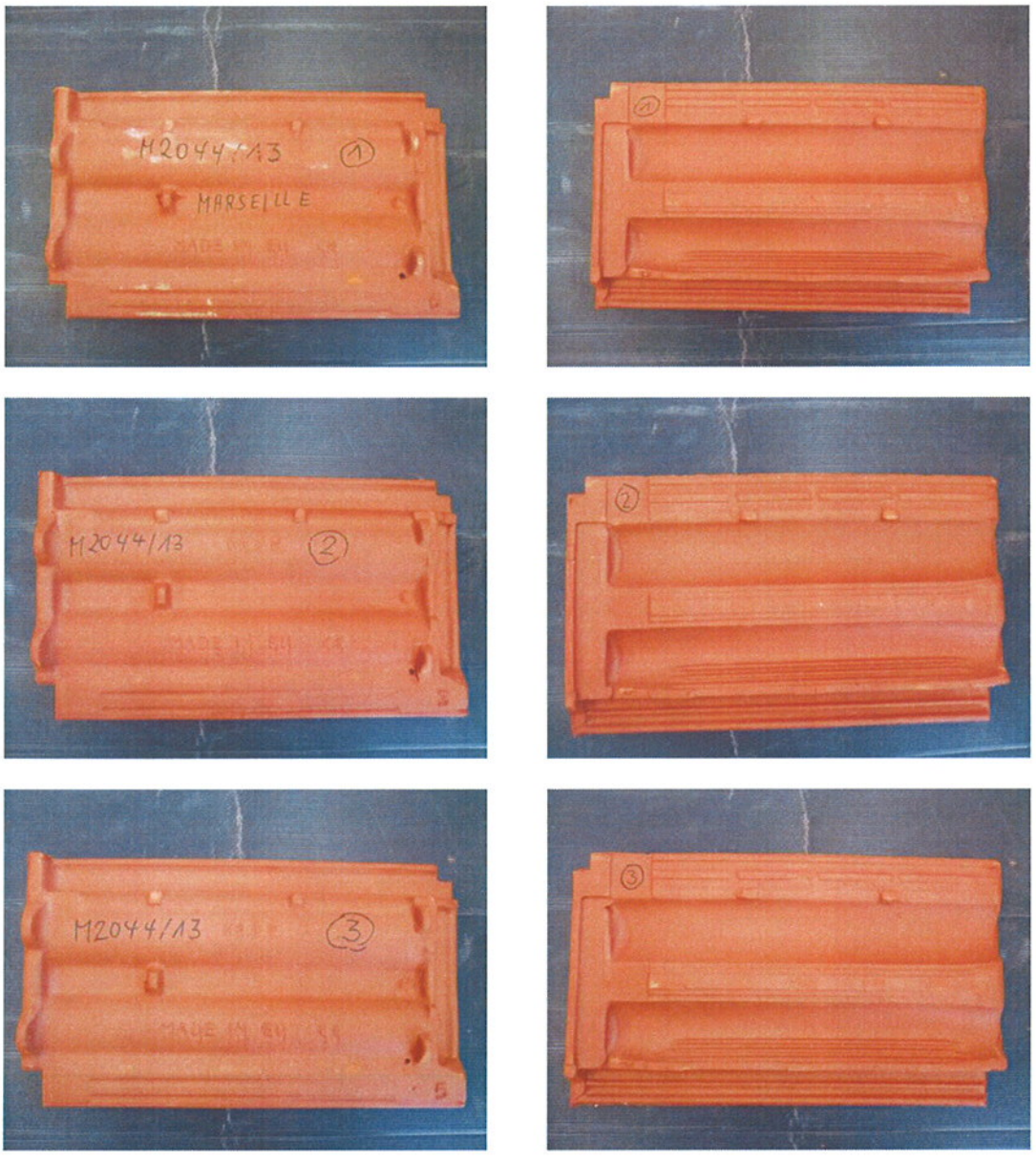
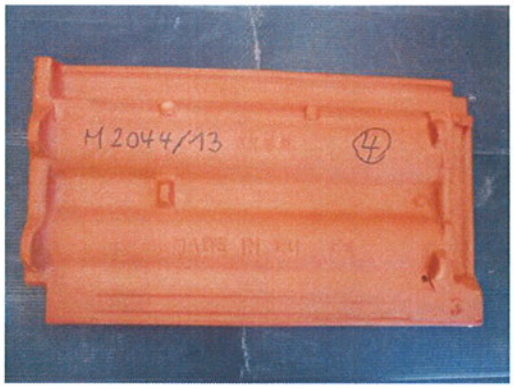
bautest
Kiwa MPA Bautest GmbH
Gutenbergstraße 25
85748 Garching
Tel. 089 329880-0, Fax 329880-40

DAkkS Deutsche Akkreditierungsstelle D-PL-11217-02-00

1 Determination of frost resistance in accordance with DIN EN 539-2:2006 **Test method E** (European single test method)

1.1 Images (Condition at delivery)




M 2044/13
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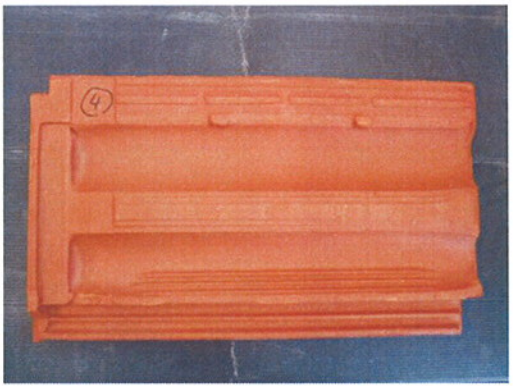
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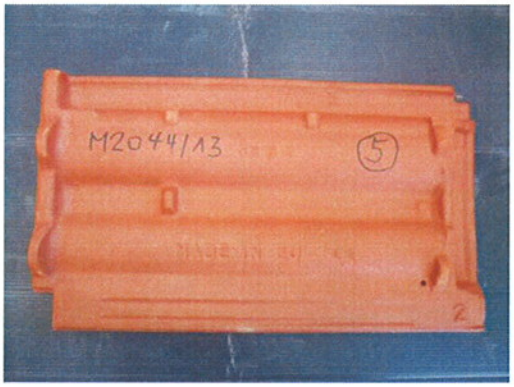
M2044/13
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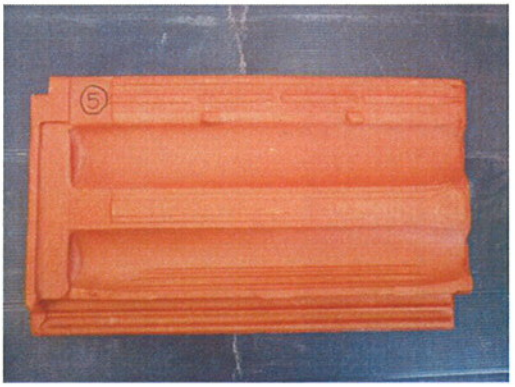
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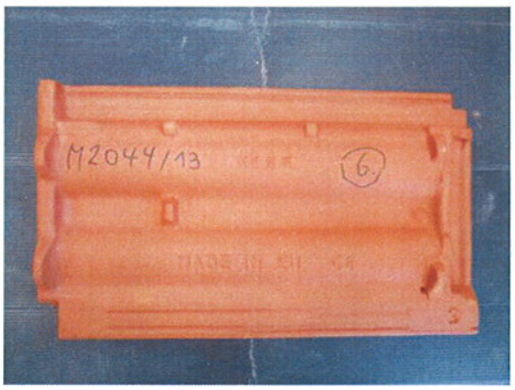
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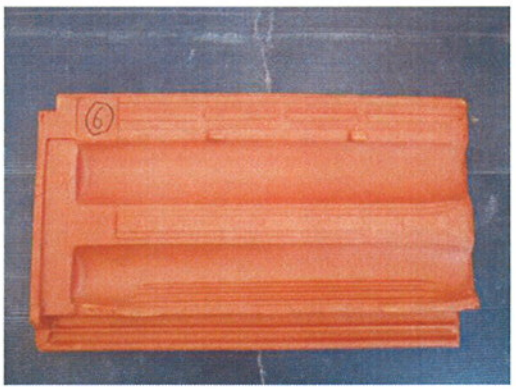

6

1.2 Sample preliminary treatment

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

Sample no.	Plant code	Water absorption $W_{u,R}$		
		m_{tr} [g]	m_w [g]	$W_{u,R}$ [%]
1	KE.B.E MADE IN EU CE	3020	3168	4,9
2	KE.B.E MADE IN EU CE	2982	3151	5,7
3	KE.B.E MADE IN EU CE	3007	3165	5,3
4	KE.B.E MADE IN EU CE	2974	3103	4,3
5	KE.B.E MADE IN EU CE	3048	3201	5,0
6	KE.B.E MADE IN EU CE	2981	3116	4,5
Average				5,0

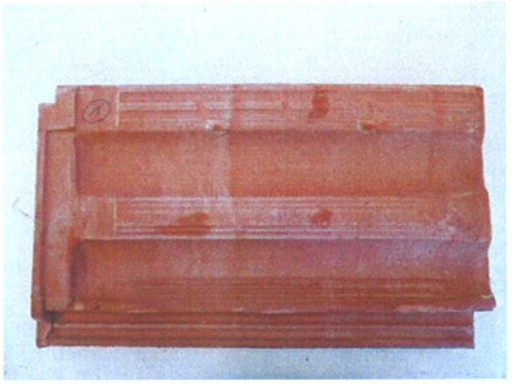
1.3 Test results

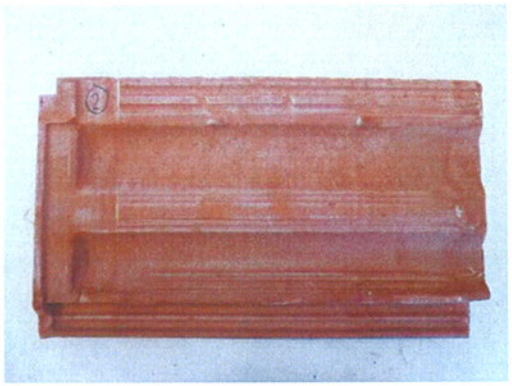
In accordance with DIN EN 539-2, Point 9.4.2.4 the back sides of the samples were covered with a wet linen cloth after which they were subjected to 150 freeze/thaw cycles at an average ice formation period of 40 minutes.

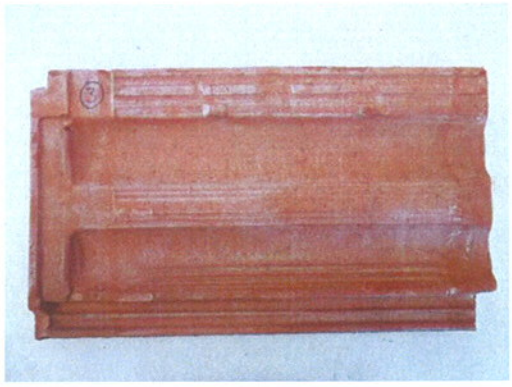
Sample no.	Number of executed freeze/thaw cycles	Nature and extent of changes caused by the effects of the freeze to		
		30 freeze/thaw cycles performance class 1	90 freeze/thaw cycles performance class 2	150 freeze/thaw cycles performance class 3
1	150	no	no	no
2	150	no	no	Hair crack back side - acceptable frost damage
3	150	no	no	Hair cracks back side - acceptable frost damage
4	150	no	no	Hair crack and Surface damage (Flaking) back side - acceptable frost damage
5	150	no	no	Hair crack and Surface damage (Flaking) back side - acceptable frost damage
6	150	no	no	Hair crack back side - acceptable frost damage
Requirement satisfied		yes	yes	yes

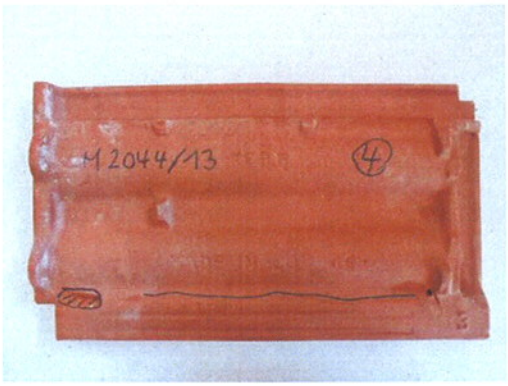
The freeze/thaw cycles were performed at our accredited test center in Munich.

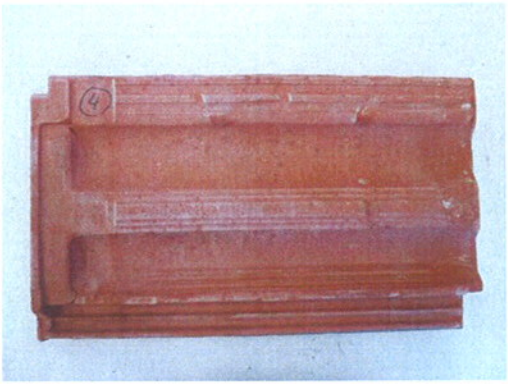
1.4 Photos (after 150 freeze/thaw cycles

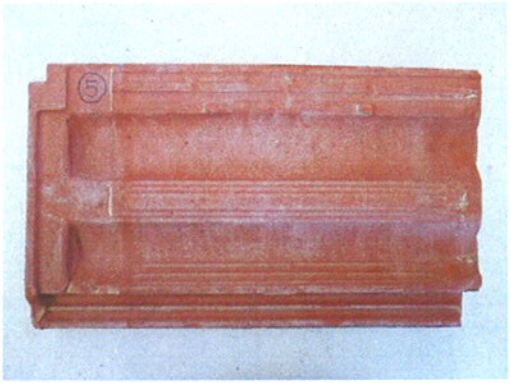


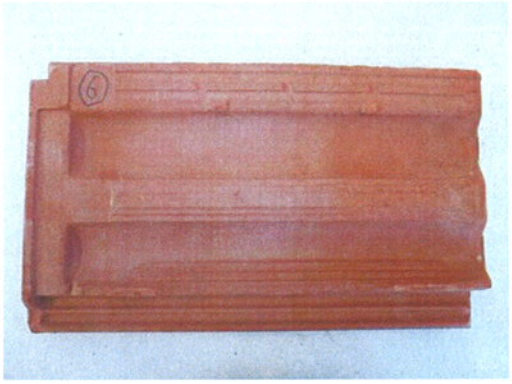












1.5 Assessment

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

Garching, 04 April 2013

kiwa
Partner for progress

Test Certificate

Client

KE.B.E SA
61100 Nea Santa
Kilkis
GREECE

Order no.:

M 2241 / 2012

Order dated	:	4th October 2012
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 " MACEDONIAN " 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	:	15th October 2012
Test time period / date	:	15th October - 24th November 2012
Testing authority	:	Kiwa MPA Bautest GmbH, Munich Lab
Test execution	:	Mr. Beyer
Sampling	:	KE.B.E SA - KILKIS
Sampling point	:	Not specified

Garching, 28 November 2012
be/kr

i.A.

Dipl.-Ing. Tobias Schedl
- Test center manager -

Kiwa MPA Bautest

i.A.

Dipl.-Ing. (FH) Maik Kramer
- Department head -

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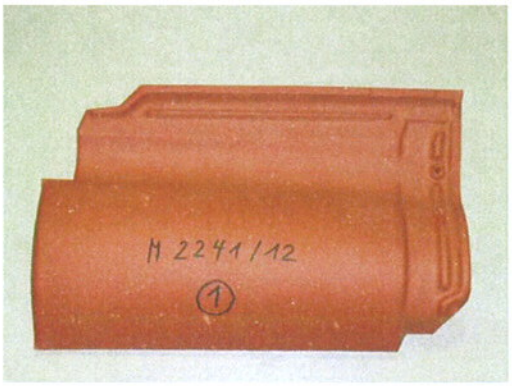
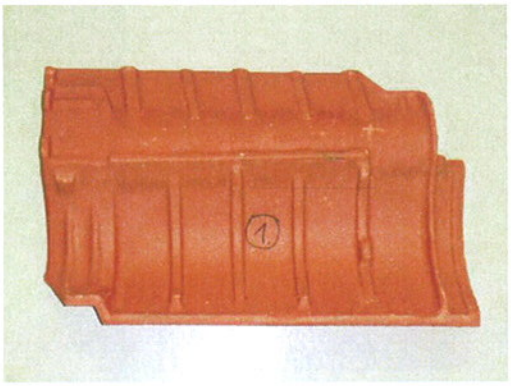
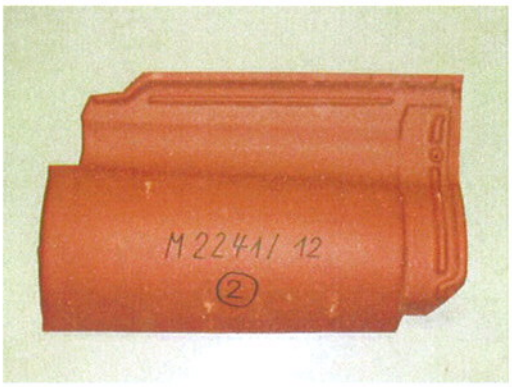
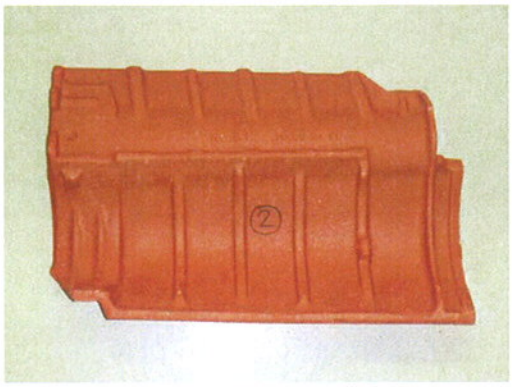
1 Determination of frost resistance in accordance with DIN EN 539-2:2006 **Test method E** (European single test method)

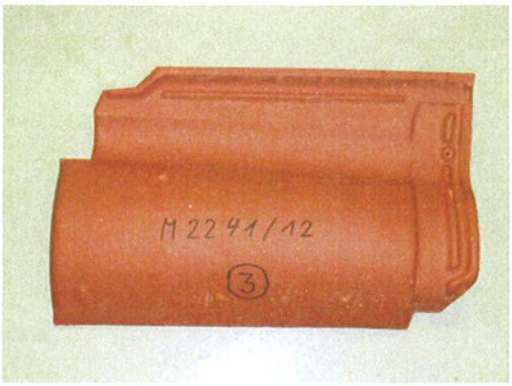
1.1 Images (Condition at delivery)

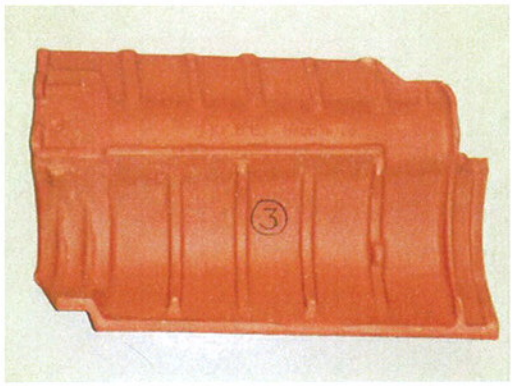




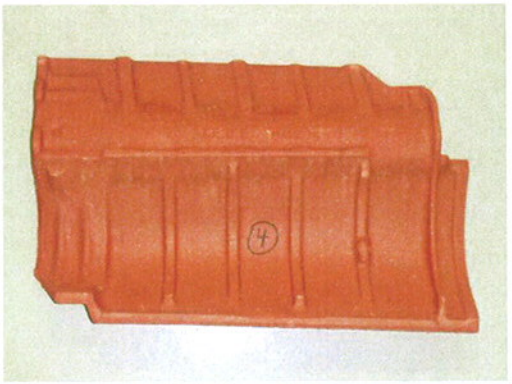









M 2241/12
4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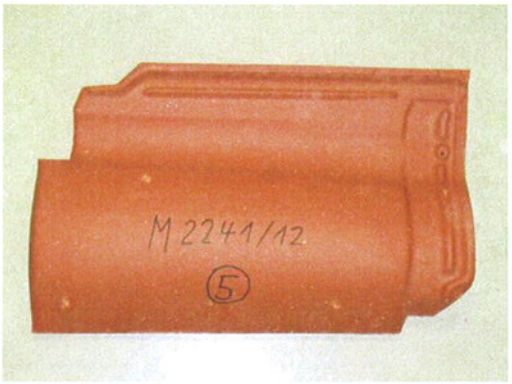
M 2241/12
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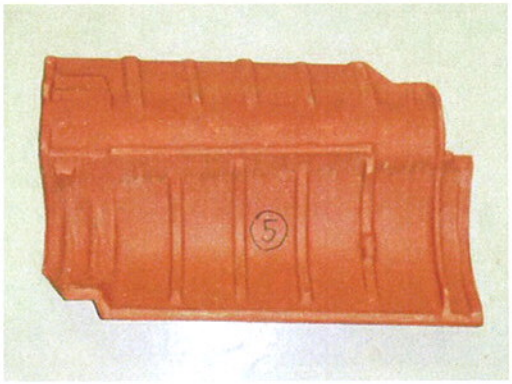
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M 2241/12
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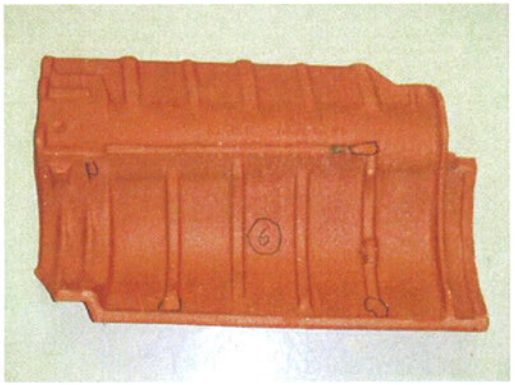

6

1.2 Sample preliminary treatment

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

Sample no.	Plant code	Water absorption $W_{u,R}$		
		m_{tr} [g]	m_w [g]	$W_{u,R}$ [%]
1	KE.B.E MADE IN EU	4155	4387	5,3
2	KE.B.E MADE IN EU	4221	4504	6,3
3	KE.B.E MADE IN EU	4198	4473	6,1
4	KE.B.E MADE IN EU	4215	4493	6,2
5	KE.B.E MADE IN EU	4231	4490	5,8
6	KE.B.E MADE IN EU	4252	4475	5,0
Average				5,8

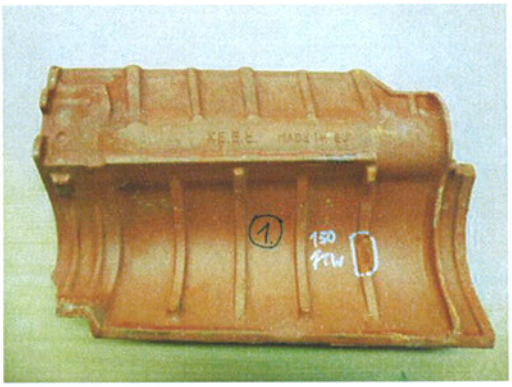
1.3 Test results

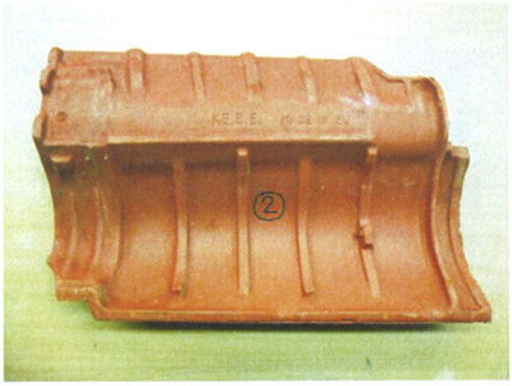
In accordance with DIN EN 539-2, Point 9.4.2.4 the back sides of the samples were covered with a wet linen cloth after which they were subjected to 150 freeze/thaw cycles at an average ice formation period of 40 minutes.

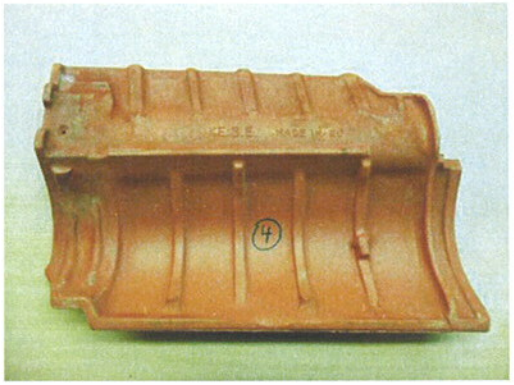
Sample no.	Number of executed freeze/thaw cycles	Nature and extent of changes caused by the effects of the freeze to		
		30 freeze/thaw cycles performance class 1	90 freeze/thaw cycles performance class 2	150 freeze/thaw cycles performance class 3
1	150	no	no	surface damage (chip - back side acceptable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

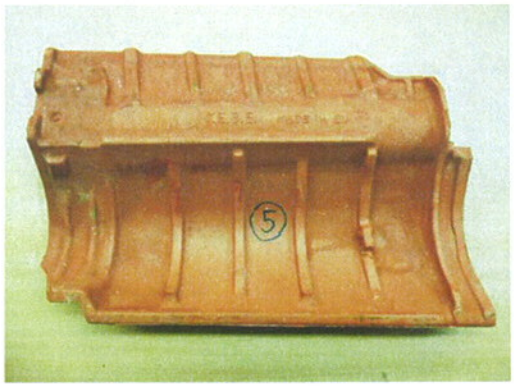
The freeze/thaw cycles were performed at our accredited test center in Augsburg.

1.4 Photos (after 150 freeze/thaw cycles









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, 28 November 2012

kiwa
Partner for progress

Test Certificate

Client

KE.B.E SA
61100 Nea Santa
Kilkis
GREECE

Order no.:

M 2074 / 2012

Order dated	:	4th 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	:	16th May 2012
Test time period / date	:	1th June - 26th 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

Prüf- und Ingenieurleistungen bautest

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.
The reproduction and publication of this test report, or any part thereof, requires our written permission.
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_{tr} [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

Prüf- und Ingenieurleistungen bautest

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.

Prüf- und Ingenieurleistungen bautest

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

Prüf- und Ingenieurleistungen
bautest