UBAtc
Union belge pour l'Agrément technique de la construction

member of EOTA and UEAtc

European Technical Assessment

ETA 13/0380
Version 01
Date of issue: 2018-12-17

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**Technical Assessment Body issuing the European Technical Assessment: UBAtc.
UBAtc has been designated according to Article 29 of Regulation (EU) No 305/2011 and is member of EOTA (European Organisation for Technical Assessment)**

Trade name of the construction product:	Isosystems "Brick" Gebrik, Gecaro, Thermoreal, E-Brick
Product family to which the construction product belongs:	Veture kits – Prefabricated units for external wall insulation
Manufacturer and manufacturing plant:	Isosystems AG Malmedyer Weg 62 BE-4770 Amel/Schoppen
Website:	www.isosystems.be
This European Technical Assessment is issued in accordance with Regulation (EU) No 305/2011, on the basis of:	ETAG 017 – Veture kits – Prefabricated units for external wall insulation - used as EAD, November 2005
This version replaces:	ETA 13/0380, issued on 27 June 2013
This European Technical Assessment contains:	7 pages, including 5 Annexes, which form an integral part of this assessment

EOTA

European Organisation for Technical Assessment

Legal bases and general conditions

1 This European Technical Assessment is issued by UBAtc (Union belge pour l'Agrément technique de la construction, i.e. Belgian Union for technical Approval in construction), in accordance with:

- Regulation (EU) N° 305/2011[1] of the European Parliament and of the Council of 9 March 2011 laying down harmonised conditions for the marketing of construction products and repealing Council Directive 89/106/EEC
- Commission Implementing Regulation (EU) N° 1062/2013[2] of 30 October 2013 on the format of the European Technical Assessment for construction products
- ETA-Guideline 017 used as European Assessment Document (EAD)

2 Under the provisions of Regulation (EU) No 305/2011, UBAtc is not authorized to check whether the provisions of this European Technical Assessment are met once the ETA has been issued.

3 The responsibility for the conformity of the performances of the products with this European Technical Assessment and the suitability of the products for the intended use remains with the holder of the European Technical Assessment.

4 Depending on the applicable Assessment and verification of constancy of performance (AVCP) system, (a) notified body(ies) may carry out third-party tasks in the process of assessment and verification of constancy of performance under this Regulation once the European Technical Assessment has been issued.

5 This European Technical Assessment allows the manufacturer of the construction product covered by this ETA to draw up a declaration of performance for the construction product.

6 CE marking should be affixed to all construction products for which the manufacturer has drawn up a declaration of performance.

7 This European Technical Assessment is not to be transferred to other manufacturers, agents of manufacturers, or manufacturing plants other than those indicated on page 1 of this European Technical Assessment.

8 The European Technical Assessment holder confirms to guarantee that the product(-s) to which this assessment relates, is/are produced and marketed in accordance with and comply with all applicable legal and regulatory provisions, including, without limitation, national and European legislation on the safety of products and services. The ETA-holder shall notify the UBAtc immediately in writing of any circumstance affecting the aforementioned guarantee. This assessment is issued under the condition that the aforementioned guarantee by the ETA-holder will be continuously observed.

9 According to Article 11(6) of Regulation (EU) N° 305/2011, when making a construction product available on the market, the manufacturer shall ensure that the product is accompanied by instructions and safety information in a language determined by the Member State concerned which can be easily understood by users. These instructions and safety information should fully correspond with the technical information about the product and its intended use, which the manufacturer has submitted to the responsible Technical Assessment Body for the issuing of the European Technical Assessment.

10 Pursuant to Article 11(3) of Regulation (EU) N° 305/2011, manufacturers shall adequately take into account changes in the product-type and in the applicable harmonised technical specifications. Therefore, when the contents of the issued European Technical Assessment do not any longer correspond to the product-type, the manufacturer should refrain from using this European Technical Assessment as the basis for their declaration of performance.

11 All rights of exploitation in any form and by any means of this European Technical Assessment is reserved for UBAtc and the ETA-holder, subject to the provisions of the applicable UBAtc regulations.

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13 Subject to the application introduced, this European Technical Assessment is issued in English and may be issued by the UBAtc in its official languages. The translations correspond fully to the English reference version circulated in EOTA.

14 This European Technical Assessment, ETA 13/0380, was first issued on 17 December 2018 and replaces European Technical Approval, ETA 13/0380, issued on 27 June 2013. Contrary to that ETA, this European Technical Assessment is based on ETA-Guideline 017, used as EAD.

[1] OJEU, L 88 of 2011/04/04
[2] OJEU, L 289 of 2013/10/31

Technical Provisions

1 Technical description of the product

The Isosystem Brick kit, hereafter named Veture kit, consists of units made of polyurethane insulation foam into which natural clay brick slips are bonded during the hardening process of the foam. The units are screw fixed to the wall (Veture kit type B according to ETAG 017). The edges of the units are grooved. The grooves are injected with polyurethane foam after fixing to the wall and covered with brick slips. The joints between the brick slips may be sealed with a jointing mortar. The Veture kit is also put on the market under the following names: Gebrik, Gecaro, Thermoreal and E-Brick.

Detailed information and the data of the components are given in the Annexes of this ETA.

Table 1: Components of the KIT

Components	Dimensions (mm)	Thickness (mm)
Veture kit, with associated methods of fixing		
Veture unit Brick: panels of expanded polyurethane foam insulation onto which brick slips are casted during the hardening process of the foam.	(H x L) 500 x 1000 To 750 x 1500	60 (PU: 40, 45)
Plastic washers Iso-fixation could be insert in the veture unit	Ø 60	
Screws & plugs SDF-S, SDP-S and WS L-G according to ETAG 014	Ø 8 - 10	
PU-foam ISOSYSTEM PU-« PUB »		
Isosystems Adhesive ISO-col		
Ancillary materials		
Remains under the ETA-holder responsibilities.		

2 Specification of the intended use(s) in accordance with the applicable European Assessment Document (hereinafter EAD)

This kit is intended for use as external insulation of buildings' walls. The walls are made of masonry (bricks, blocks, stones …) or concrete (cast on site or as prefabricated panels) with reaction to fire classification A1 or A2-s1,d0 according to EN 13501-1 or A1 according to the EC decision 96/603/EC as amended. The kit is designed to give the wall to which it is applied satisfactory thermal insulation.

The kit shall be designed and installed in accordance with the ETA holder's installation instructions and this ETA. The kit consists of components defined by the ETA holder and manufactured either by the ETA holder or his supplier(s).

The kit is made of non-load-bearing construction components. It does not contribute directly to the stability of the wall on which it is installed, but it may contribute to durability by providing enhanced protection from the effect of weathering.

The suitability of the system onto the building shall be evaluated case by case taking into account the water vapour transmission properties of the kit and the construction, the straightness of the façade and the cohesive strength of the substrate.

The kit may be used on new or existing (retrofit) vertical walls. It may also be used on horizontal or inclined surfaces that are not exposed to precipitation.

The kit is not intended to ensure the air tightness of the building structure.

The provisions made in this European Technical Approval (ETA) are based on an assumed intended working life of at least 25 years. The indications given on the working life cannot be interpreted as a guarantee given by the producer but are to be regarded only as a means for choosing the right products in relation to the expected economically reasonable working life of the works.

3 Performance of the product and references to the methods used for its assessment

3.1 Reaction to fire

The reaction to fire has been classified B – s1,d0 according to Commission Delegated Regulation (EU) 2016/364[3].

Note: A European reference fire scenario has not been laid down for facades. In some Member States, the classification of external wall claddings according to EN 13501-1 might not be sufficient for the use in facades. An additional assessment of external wall claddings according to national provisions (e.g. on the basis of a large-scale test) might be necessary to comply with Member State regulations, until the existing European classification system has been completed.

3.2 Watertightness

The resistance to driving rain has been assessed according to EN 12865. There is no water penetration under pulsating air at a pressure of 1500 Pa.

The Veture kit may be considered to be a Veture kit Type II, according to ETAG 017, clause 6.3.1.

3.3 Water permeability

The penetration and the diffusion of water has been visually assessed from the results of the assessment for watertightness (3.2), hygrothermal behaviour (3.16) and freeze-thaw (3.17). the conclusion of the assessment is 'No penetration or diffusion of water'.

3.4 Water vapour permeability

The water vapour permeability has been determined according to EN ISO 12572:2001, method C.

Table 2: Water vapour permeability

	Thickness of the panel 60 mm
S_d value (m)	1,94 – 7,64
µ- value	89 - 249
W_{Veture} (veture vapour permance) (k/m².s.Pa)	1,03E^{-10} - 2,66E^{-11}

3.5 Moisture behaviour – Capillarity test

The water absorption has been assessed according to ETAG 017, clause 5.3.4.1.

Table 3: Water absorption

Veture kit	Mean value (kg/m²)	
	After 1h[1]	After 24 h[2]
Water absorption	0,607	0,903

[1] value after 1 hour, minus the water absorption after 3 minutes

[2] value after 24 hours, minus the water absorption after 3 minutes

[3] Commission Delegated Regulation (EU) 2016/364 of 1 July 2015 on the classification of the reaction to fire performance of construction products pursuant to Regulation (EU) No 305/2011 of the European Parliament and of the Council (OJ L 68, 15.3.2016, p. 4)

The water absorption is less than 1 kg/m², after one hour, and more than 0,5 kg/m², after 24 hours.

3.6 Wind load resistance - Wind suction test

The wind suction assessment has been executed according to ETAG 017, clause 5.4.1.1.

Table 4: Wind section assessment

Number of anchorages / m²	Failure load (Pa)	Maximum deflection (mm)	Failure type
8	4500	8,5	The Veture unit is pulled off a fastener

3.7 Bond strength between skin and insulation product

The bond of the brick slips to the insulation has been assessed according to ETAG 017, clause 5.4.2.1 on the rig before and after hygrothermal and freeze/thaw cycles.

The result of the assessment is≥ 0,08 MPa and $F_{mean,c}$ ≥ 75% of $F_{mean,n}$.

Table 5: Bond strength between the external layers and the insulation panel

Ageing	Mean value (MPa)	Minimum value (MPa)	Rupture[1] (%)	Ratio[2] (%)
Initial	0,16	0,13	100 C I	-
After hygrothermal cycles	0,19	0,15	90 C I – 10 AS	119
After hygrothermal cycles followed by frost-thaw tests	0,16	0,14	50 C I – 50 AS	100

[1] Type of rupture: AS: adhesive rupture, CI: cohesive rupture in the insulation, CA: cohesive rupture

[2] % of the initial value

3.8 Pull-through test of fixings through insulation product

The Pull-through resistance of fixings of the systems has been assessed according to ETAG 017, clause 5.4.2.2.1.

Table 6: Pull-through resistance of fixings

	Average value (N)	Characteristic value (N)
Fixation with ISO Fixation	749	627
Fixation without ISO Fixation	816	710

3.9 Dead load test

The dead load resistance has been assessed according to ETAG 017, clause 5.4.2.3.

A load of 640 N (twice the own weight) has been applied on the Veture unit.

The maximum difference between the displacement after one hour is 0,06 mm.

3.10 Displacement test

Assessment not required according to ETAG 017, clause 5.4.2.4, because the Veture kit fulfils the criterion E x d < 50.000N/mm.

Note: E: modulus of elasticity of the skin- jointing mortar; d : thickness of the skin

3.11 Resistance to horizontal loads

The resistance to horizontal loads has been assessed according to ETAG 017, clause 5.4.4. Loads of 500 N and 1000 N were applied on two locations of 25 x 5 mm² at a distance of 44 cm. the result of the assessment is no deformation.

3.12 Impact resistance

The resistance to impact has been assessed according to EOTA TR 001 and ISO 7892:1988.

Table 7: Impact resistance

Impact resistance Impactor	Impact (J)	Use category*
Hard body (0,5 kg)	3	I
Hard body (1,0 kg)	10	
Soft body (3,0 kg)	10 and 60	
Soft body (50,0 kg)	300 and 400	

* Use categories:

I	A zone readily accessible at ground level to the public and vulnerable to hard body impacts but not subjected to abnormally rough use. (e.g.: Façade bases in buildings sited in public locations, such as squares, schoolyards or parks. Cleaning gondolas may be used on the façade).
II	A zone liable to impacts from thrown or kicked objects, but in public locations where the height of the KIT will limit the size of the impact; or at lower levels where access to the building is primarily to those with some incentive to exercise care (e.g.: Façade bases in buildings not sited in public locations (e.g. squares, schoolyards, parks) or upper façade levels in buildings sited in public locations that occasionally can be hit by a thrown object (e.g. ball, stone, etc.). Cleaning gondolas can be used on the façade).
III	A zone not likely to be damaged by normal impacts caused by people or by thrown or kicked objects (e.g.: Upper façade levels in buildings (not including base) not sited in public locations, that occasionally can be hit by a thrown object (e.g. ball, stone, etc.). Cleaning gondolas cannot be used on the façade).
IV	A zone out of reach from ground level (e.g. High façade levels that cannot be hit by a thrown object. Cleaning gondolas cannot be used on the façade).

3.13 Shatter properties

After the impact assessment, no presence of sharp or cutting edges were observed.

3.14 Protection against noise

No performance assessed.

3.15 Thermal conductivity and thermal resistance

The thermal conductivity (R-value) has been calculated from the thermal resistance of the insulation product, the tabulated R-value of the skin and the thermal bridges caused by the mechanical fixings.

Table 8: Thermal resistance and transmittance

	PU thickness (mm)	R_{veture} (m².K/W)	ΔU [(W/m²/.K]
VETURE UNIT	40	1,38	n.χ_{p} (*)
	45	1,55	

(*) n: number of anchors – χ_p: point thermal transmittance of one anchor

3.16 Hygrothermal behaviour

The hygrothermal behaviour of the Veture kit has been assessed according to ETAG 017, clause 5.7.1.

None of the following defects occurred during, nor at the end of the test programme:

- deterioration such as cracking or delamination of the skin that allows water penetration through the insulation;
- deterioration or cracking of seals between the Veture units;
- detachment of the skin;
- Irreversible deformation.

The mean bond strength after hygrothermal cycles is greater than 75% of the initial bond strength (see 3.7).

3.17 Freeze-thaw behaviour

The freeze-thaw behaviour of the Veture kit has been assessed according to ETAG 017, clause 5.7.2.

None of the following defects occurred during, nor at the end of the test programme:

- deterioration such as cracking or delamination of the skin that allows water penetration through the insulation;
- deterioration or cracking of seals between the Veture units;
- detachment of the skin;
- Irreversible deformation.

The mean bond strength after freeze-thaw cycles is greater than 75% of the initial bond strength (see 3.7).

3.18 Dimensional stability

3.18.1 Skin

The linear thermal expansion of the brick slips with jointing mortar is 6 x 10^{-6} m/(m.K).

3.18.2 Insulation product

The linear thermal expansion of the insulation product is 5 - 8 x 10^{-5} m/(m.K).

3.18.3 Thermal shock cycles.

The Veture unit is not sensitive to dimensional variations.

3.19 Chemical and biological resistance.

The Veture unit is not sensitive to dimensional chemical and biological attack.

3.20 Corrosion

The skin is not sensitive to corrosion and the fixations are galvanized.

3.21 UV radiation

The skin is not known to be suspected of being sensitive to UV-radiation.

4 Assessment and verification of constancy of performance (hereinafter AVCP) system applied, with reference to its legal base

In accordance with Regulation (EU) N° 305/2011, Article 65, Directive 89/106/EEC is repealed, but references to the repealed Directive shall be construed as references to the Regulation.

According to the Commission Decision 2001/308/EC[4] and Commission Delegated Regulation (EU) 2016/364[5] the applicable systems of AVCP are specified in Table 9.

Table 9 – Applicable AVCP systems

Product(s)	Intended uses	Level(s) or class(es) (reaction to fire)	Assessment and verification of constancy of performance system(s)[a]
Vetures	In external wall not subject to fire regulations	Any	3
	For uses subject to fire regulations	(A1,A2,B,C)[1]	1
		(A1,A2,B,C)[2] & D, E, F	3
		(A1 to F)[3] & NPD[4]	4

[a] Systems1 and 2+ :See Regulation (EU) N° 305/2011, Annex V

[1] Products/materials for which a clearly identifiable stage in the production process results in an improvement of the reaction to fire classification (e.g. an addition of fire retardants or a limiting of organic material)

[2] Products/materials not covered by footnote [1]

[3] Products/materials that do not require to be tested for reaction to fire (e.g. products/materials of class A1 according to Commission Decision 96/603/EC, as amended)

[4] 'No Performance Declared' in accordance with Regulation (EU) N° 305/2011, Article 6(f)

5 Technical details necessary for the implementation of the AVCP system, as provided for in the applicable EAD

5.1 General

All the necessary technical details for the implementation of the AVCP system are laid down in the Control Plan deposited with the UBAtc, with which the factory production control shall be in accordance.

5.2 Tasks for the ETA-holder

The tasks for the manufacturer have been described in ETAG 017, clause 8.2.1.

5.3 Tasks for the manufacturer or the notified body

The assessment tests will have been conducted by the UBAtc or under its responsibility (which may include a proportion conducted by an independent laboratory or by the ETA-applicant, witnessed by the UBAtc). The UBAtc will have assessed the results of these tests in accordance with chapter 3 of this ETA, as part of the ETA issuing procedure.

The results of assessment testing shall be used by notified bodies (cf. Regulation (EU) 305/2011, Annex V, clause 1.6).

5.4 Tasks for the notified body

The tasks for the manufacturer have been described in ETAG 017, clause 8.2.3.

[4] See OJEU L 107, 18/04/2001, p. 25

[5] See OJEU L 68, 15/03/2016, p. 4

6 Bibliography

EN 822 Thermal insulating products for building applications - Determination of length and width

EN 823 Thermal insulating products for building applications - Determination of thickness

EN 824 Thermal insulating products for building applications - Determination of squareness

EN 825 Thermal insulating products for building applications - Determination of flatness

EN 1602 Thermal insulating products for building applications - Determination of the apparent density

EN 1604 Thermal insulating products for building applications - Determination of dimensional stability under specified temperature and humidity conditions

EN 1607 Thermal insulating products for building applications - Determination of tensile strength perpendicular to faces

EN 12004-1 Adhesives for ceramic tiles – Part 1: Requirements, assessment and verification of constancy of performance, classification and marking.

EN 12086 Thermal insulating products for building applications - Determination of water vapour transmission properties

EN 12087:2013 Thermal insulating products for building applications - Determination of long term water absorption by immersion

EN 12090 Thermal insulating products for building applications - Determination of shear behaviour

EN 12667 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

EN 12865 Hygrothermal performance of building components and building elements - Determination of the resistance of external wall systems to driving rain under pulsating air pressure

EN 13165 Thermal insulation products for buildings - Factory made rigid polyurethane foam (PU) products – Specification

EN 13501-1 Fire classification of construction products and building elements - Part 1: Classification using data from reaction to fire tests

EN ISO 10545-3 Ceramic tiles - Part 3: Determination of water absorption, apparent porosity, apparent relative density and bulk density

EN ISO 10545-12 Ceramic tiles - Part 12: Determination of frost resistance

EN ISO 12572 Hygrothermal performance of building materials and products - Determination of water vapour transmission properties - Cup method

ISO 7892 Vertical building elements - Impact resistance tests - Impact bodies and general test procedures

UBAtc asbl is a non-profit organization according to Belgian law. It is a Technical Assessment Body notified by the Belgian notifying authority, the Federal Public Services Economy, SMEs, Self-Employed and Energy, on 17 July 2013 in the framework of Regulation (EU) No 305/2011 of the European Parliament and of the Council of 9 March 2011 laying down harmonised conditions for the marketing of construction products and repealing Council Directive 89/106/EEC and is member of the European Organisation for Technical Assessment, EOTA (www.eota.eu).

This European Technical Assessment has been issued, in Sint-Stevens-Woluwe, by UBAtc asbl on the basis of the technical work carried out by the Assessment Operator, BCCA.

On behalf of UBAtc asbl,

Peter Wouters,
Director

On behalf of the Assessment Operator, BCCA, responsible for the technical content of the ETA,

Benny De Blaere,
Director general

The most recent version of this European Technical Assessment may be consulted on the UBAtc website (www.ubatc.be).

Annex 1 - Brick Veture unit characteristics

Table 1.1 – Standard Dimensions of the units

1200,0	600,0		
1250,0	687,6		
1350,0	675,0	60	≥ 40
1375,0	687,6		
1391,4	714,5		

Annex 2 - Isosystems PU insulation foam characteristics

Table 2.1 – Standard Dimensions of the units

Description and characteristics	Reference	
Reaction to fire	EN 13501-1	E
Thermal conductivity λ_D	EN 12667 EN 13165	0,029 W/m.K
Density	EN 1602	≥ 35 Kg/m³
Thickness	EN 823	± 2 mm
Length	EN 822	± 2 mm
Width	EN 822	± 2 mm
Squareness	EN 824	≤ 3 mm/m
Flatness	EN 825	≤ 5 mm
Dimensional stability (48h 70°C, 90% R.H.) – With brick slips – Without brick slips	EN 1604	 DS(70,90)1 DS(70,90)2
Water absorption (vol%)	EN 12087:2013, method 1A	≤ 3,0 %
Water vapour diffusion resistance factor (μ)	EN 12086	50 - 100
Tensile strength perpendicular to the faces in dry conditions	EN 1607	≥ 80 kPa
Shear strength	EN 12090	≥ 0,02 N/mm²
Shear modulus of elasticity	EN 12090	≥ 0,10 N/mm²

Annex 3 - Isosystems Clay brick slip characteristics

Table 3.1 – Standard Dimensions of the brick slips

5	240	52	
51	240	52	
6	240	65/66,4	
71	240	71	
8	240	89,1	
13	240	130	
61	240	65/66,4	
GC	265	127,5	15 à 30
R4	440	40	
R5	440	50	
R6	440	65	
UK	215	65	
WF	215	50	
UKKP	102,5	65	
WFKP	102,5	50	

Table 4.1 – Characteristics of the clay brick

Water absorption (vol%)	EN ISO 10545-3	≤ 25
Frost-thaw resistance	EN ISO 10545-12	Resistant

Annex 5 - Isosystems PU injection foam

Table 5.1 – Thermal performance

Thermal conductivity	EN 12667 / EN 13165	0,040 W/m.K

Annex 6 - Isosystems Brick adhesive

Type C2TES1 according to EN 12004-1.