

European Technical Assessment

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**Technical Assessment Body issuing the European Technical Assessment: UBA_{tc}.
UBA_{tc} 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"
E-Brick, Gecaro, Thermoreal, Gebrik & Probrick

Product family to which the construction product belongs

VETURE KITS – Prefabricated units for external wall insulation and their fixing devices

Manufacturer

Wall & Façade Solutions srl
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Manufacturing plant(s)

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This European Technical Assessment is issued in accordance with Regulation (EU) No 305/2011, on the basis of:

European Assessment Document (EAD):
EAD 040914-00-0404

This European Technical Assessment contains

7 pages including 5 Annexes which form an integral part of this assessment

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European Organisation for Technical Assessment

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 - Commission Implementing Regulation (EU) No 1062/2013² of 30 October 2013 on the format of the European Technical Assessment for construction products
 - European Assessment Document: EAD 040914-00-0404: Vecture kits – prefabricated units for external wall insulation and their fixing devices.
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- 14 This European Technical Assessment was first issued by UBAtc on 27 June 2013 as a European Technical Approval. This ETA was replaced on 17 December 2018 by European Technical Assessment 13/0380 based on ETA-Guideline 017 used as EAD. This ETA was amended on 12 July 2023, changing the legal name of the ETA holder and updating the content without technical changes from ETA-Guideline 017 to the EAD 040914-00-0404.

¹ OJEU, L 88 of 2011/04/04

² OJEU, L 289 of 2013/10/31

1 Technical description of the product

The ISOSYSTEM BRICK kit ³, hereafter named VETURE kit consists of elements made of polyurethane insulation foam into which natural clay brick slips are bonded during the hardening process of the foam. The elements are screw fixed to the substrate (VETURE kit family B according to EAD 040914-00-0404). The edges of the elements are grooved. The grooves are injected with polyurethane foam after fixing to the substrate and covered with clay brick slips. The joints between the clay brick slips can be sealed with a jointing mortar. The VETURE kit is also put on the market under the following names: E-brick, Gecaro, Thermoreal, Gebrik and Probrick.

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

Table 1 : Components of the VETURE kit

Components	Dimensions (mm)	Thickness (mm)
Veture kit with associated methods of fixings		
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 EAD 330196-00-0604	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 EAD

2.1 Intended uses

This veture 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 veture kit is designed to give the wall to which it is applied satisfactory thermal insulation.

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

The VETURE kit is not intended to be used:

- in contact with the ground;
- under the effects of seismic actions.

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

2.1 Assumptions

2.1.1 Manufacturing directives

This European Technical Assessment is issued for the veture kit Isosystems "Brick" on the basis of agreed data/information, deposited with the UBAtc, which identifies the product that has been assessed. Changes to the product/production process which could result in the deposited data/information being incorrect should be notified to the UBAtc before the changes are introduced.

2.1.2 Design and installation

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

The veture 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 can 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 VETURE kit and the construction, the straightness of the façade and the cohesive strength of the substrate.

2.1.3 Working life/Durability

The provisions made in this ETA are based on an assumed intended working life of at least 25 years.

When assessing the product, the intended use as foreseen by the manufacturer shall be taken into account. The real working life may be, in normal use conditions, considerably longer without major degradation affecting the basic requirements for works.

The indications given as to the working life of the construction product cannot be interpreted as a guarantee neither given by the product manufacturer or its representative nor by EOTA when drafting this EAD nor by the Technical Assessment Body issuing an ETA based on this EAD, but are regarded only as a means for expressing the expected economically reasonable working life of the product.

³ "kit" means a construction product placed on the market by a single manufacturer as a set of at least two separate components that need to be put together to be

incorporated in the construction works (Art. 2 n°2 of CPR).

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

3.1 Safety in case of fire (BWR2)

3.1.1 Reaction to fire

The reaction to fire has been classified B – s1,d0 according to EN ISO 13501-1.

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.

3.1.2 Façade fire performance

No performance assessed.

3.1.3 Propensity to undergo continuous smouldering

This characteristic is not applicable as the insulation product is made of polyurethane foam.

3.2 Hygiene, health and the environment (BWR3)

3.2.1 Watertightness

VETURE unit Type II.

The resistance to driving rain has been tested according to EN 12685.

Result: There is no water penetration under a pulsating air at a pressure of 1500 Pa.

3.2.2 Water absorption by capillarity

The water absorption by capillarity has been tested according to EAD 040914-00-0404, Annex B.

Table 2 : Water absorption

Veture kit	Water absorption	
	After 1 h (*)	After 24 h (**)
	(kg/m ²)	(kg/m ²)
Mean value	0,607	0,903

(*) value after 1 h minus the water absorption after 3 min.

(**) value after 24 h minus the water absorption after 3 min.

3.2.3 Water vapour permeability

The equivalent water vapour diffusion resistance of the VETURE unit has been tested according to EN ISO 12572 and the equivalent water vapour diffusion resistance of the VETURE kit has been calculated according to EAD 040914-00-0404, Annex C.

Table 3 : Water vapour permeability

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

3.2.4 Accelerated ageing behaviour (moisture behaviour)

The accerelated ageing behaviour of the VETURE kit has been assessed by means of bond strength test of the specimens taken from the assembled kit submitted to:

- the hygrothermal cycles given in clause D.1 of EAD 040914-00-0404, Annex D.
- the freeze-thaw cycles given in clause D.2 of EAD 040914-00-0404, Annex D as the water absorption is greater than 0,5 kg/m² after 24 hours.

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 or the VETURE unit.
- irreversible deformation.

The bond strength mean value of the VETURE unit after hygrothermal and freeze/thaw cycles is greater than 75% of the initial bond strength (see 3.3.2).

The ruptures after hygrothermal cycles is at least 90% cohesive.

3.2.5 Content, emission and/or release of dangerous substances

No performance assessed.

3.3 Safety and accessibility in use (BWR4)

3.3.1 Wind load resistance

The wind suction test has been executed according to clause E.1 of EAD 040914-00-0404, Annex E.

Table 4 : Wind load resistance

Number of anchorages / m ²	Failure load (Pa)	Maximum deflection (mm)	Failure type
8	4500	8,5	The veture unit is pulled off a fastener

3.3.2 Bond strength

The bond strength between the skin (clay brick slips) and the thermal insulation product has been tested according to EAD 040914-00-0404, Annex F.

The bond strength tests have been carried out in normal conditioning (without ageing) and after hygrothermal and freeze/thaw cycles.

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

Ageing	Mean value (MPa)	Minimum value (MPa)	Rupture (*) (%)	Ratio (**) (%)
Initial	0,16	0,13	100 CI	-
After hygrothermal cycles	0,19	0,15	90 CI 10 AS	119
After hygrothermal cycles followed by frost-thaw tests	0,16	0,14	50 CI 50 AS	100

(*) Type of rupture: AS: adhesive rupture, CI: cohesive rupture in the insulation, CA: cohesive rupture

Result: $\geq 0,08$ MPa and $F_{mean,c} \geq 75\%$ of $F_{mean,n}$

3.3.3 Tensile strength

No performance assessed.

3.3.4 Pull-through resistance

The pull-through resistance of fixings of the systems has been tested according to clause G.1 of EAD 040914-00-0404, Annex G.

Table 6 : Pull-through resistance of fixings

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

3.3.5 Resistance of the grooves

This characteristic is not applicable for VETURE kits family B.

3.3.6 Dead load resistance

The dead load resistance has been determined according to EAD 040914-00-0404, Annex I with an additional insulation layer of 200mm behind the VETURE KIT.

A load of 640 N (two times the own weight) has been applied on the VETURE unit.

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

3.3.7 Displacement behaviour

No performance assessed.

3.3.8 Resistance to horizontal point loads

The resistance to horizontal loads has been determined according to EAD 040914-00-0404, Annex K. A load of 500 N is applied on two locations of 25 x 5 mm² at a distance of 440 mm.

Result: no deformation.

3.3.9 Impact resistance

The resistance to impact has been tested according to EAD 040914-00-0404, Annex L.

After the impact test there has been no presence of sharp or cutting edges.

Table 7 : Impact resistance

Impact resistance passed	Use category
Hard body (0,5 kg) impact of 3 J	I
Hard body (1,0 kg) impact of 10 J	
Veture kit Soft body impact (3,0 kg) impact of 10 and 60 J	
Soft body impact (50,0 kg) of 300 and 400 J	

Use category

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 can 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).

3.4 Protection against noise (BWR5)

3.4.1 Airborne sound insulation

No performance assessed.

3.5 Energy economy and heat retention (BWR6)

3.5.1 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

PU thickness (mm)	R_{veture} (m ² .K/W)	ΔU [(W/m ² /.K)]
40	1,38	$n \cdot \chi_p$ (*)
45	1,55	

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

3.6 Durability

3.6.1 Dimensional stability by humidity

No performance assessed.

3.6.2 Dimensional stability by temperature

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

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

3.6.3 Thermal shock

The VETURE unit is not sensitive to dimensional variations.

3.6.4 Chemical and biological resistance

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

3.6.5 Corrosion

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

3.6.6 UV radiation resistance

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

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

For the products covered by the EAD 040914-00-0404, the applicable European legal act is Decision 2001/308/EC.

The applicable AVCP system is 3 for any use, except for uses subject to regulations on reaction to fire (based on the Commission decision 2001/308/EC).

For uses subject to regulations on reaction to fire the applicable AVCP systems regarding reaction to fire are 1, or 3, or 4 depending on the conditions defined in the said Decision.

5 Technical details necessary for the implementation of the AVCP system, as foreseen in EAD 040914-00-0404

5.1 Tasks for the manufacturer

The cornerstones of the actions to be undertaken by the manufacturer of the product in the procedure of assessment and verification of constancy of performance are laid down in Table 3.2.1a of EAD 040914-00-0404, clause 3.2.

1.2 Tasks for the notified body

The intervention of the notified body under AVCP system 1 is only necessary for reaction to fire for 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).

The cornerstones of the actions to be undertaken by the notified body of the product in the procedure of assessment and verification of constancy of performance are laid down in Table 3.3.1 of EAD 040914-00-0404, clause 3.3 and are translated in a control plan deposited with UBAtc.

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 by UBAtc asbl, in Sint-Stevens-Woluwe, on the basis of the technical work carried out by the Assessment Operator, BCCA.

On behalf of UBAtc asbl,

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


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

ANNEX 1 – Brick veture unit characteristics

Table A1.1 : Standard dimensions of the units

Length	Width	Thickness veture unit	Thickness insulation
(mm)	(mm)	(mm)	(mm)
1200,0	600,0	60	≥ 40
1250,0	687,6	60	≥ 40
1350,0	675,0	60	≥ 40
1375,0	687,6	60	≥ 40
1391,4	714,5	60	≥ 40

ANNEX 2 – ISOSYSTEMS PU insulation foam characteristics

Table A2.1 : Standard dimensions of the units

Description characteristics and	Reference	
Reaction to fire	EN 13501-1	E
Thermal conductivity λ_D	EN12667 EN 13165	0,029 W/m.K
Density	EN 1602	≥ 35 Kg/m ³
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	EN 1604	DS(70,90)1
- Without brick slips		DS(70,90)2
Water absorption (vol%)	EN 12087 method 2A	≤ 3,0 %
Water vapour diffusion resistance factor (μ)	EN 12086	50 - 100
Tensile strength perpendicular to the faces in dry conditions	EN 1607	kPa
Shear strength	EN 12090	≥ 0,02 N/mm ²
Shear modulus of elasticity	EN 12090	≥ 0,10 N/mm ²

ANNEX 3 – ISOSYSTEMS Clay brick slip characteristics

Table A3.1 : Standard dimensions of the clay brick slips

Format	Length	Width	Thickness
	(mm)	(mm)	(mm)
5	240	52	15 à 30
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	
R4	440	40	
R5	440	50	
R6	440	65	
UK	215	65	
WF	215	50	
UKKP	102,5	65	
WFKP	102,5	50	

Table A3.2 : Characteristics of the clay brick slips

Characteristic	Standard	Result
Water absorption	EN ISO 10545-3	≤ 25 vol%
Frost-thaw resistance	EN ISO 10545-12	Resistant

ANNEX 4 – ISOSYSTEMS PU injection foam

Table A4.1 : ISOSYSTEMS PU injection foam

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

ANNEX 5 – ISOSYSTEMS BRICK adhesive

Type C2TES1 according to EN 12004.