

VTT Expert Services Oy  
PL 1001  
02044 VTT  
Puh. +358 20 722 4911  
Telekopio +358 20 722 7003



Rakennustuotedirektiivin (89/106/EEC) artiklan 10,  
neuvoston direktiivi 21. joulukuuta 1988,  
mukaisesti notifioitu tuotehyväksyntälaitos

EOTAN JÄSEN

## Eurooppalainen tekninen hyväksyntä ETA-09/0082 European Technical Approval

**Kauppanimi:**

Trade name

**Hyväksynnän haltija:**

Holder of approval:

**Tuotetyyppi ja sen käyttötarkoitus:**

Generic type and use of construction  
product:

**Voimassaoloaika:** Validity from/to

**Tämä versio korvaa:** This version  
replaces:

**Valmistuspaikat:**

Manufacturing plants:

**Termex puhallettavat puukuitueristeet**

**Termex in-situ formed loose fill cellulose fibre insulations**

**Termex-Eriste Oy**

**Po Box 34**

**43101 Saarijärvi**

**Finland**

**PAIKALLA PUHALLETTAVA SELLULOOSAKUIDUSTA  
VALMISTETTU LÄMMÖNERISTE**

**IN-SITU FORMED LOOSE FILL THERMAL INSULATION  
MATERIAL MADE OF CELLULOSE FIBRES**

**From January 14, 2011 to May 24, 2014**

**ETA-09/0082 valid from March 10, 2010 to May 24, 2014**

Termex –Eriste Oy, Saarijärvi, Finland

Ekocell Oy, Jokela, Finland

**Tämä hyväksyntä sisältää**

This European Technical Approval  
contains

sivuja/liitteitä

pages/annexes

7 sivua, ei liitteitä

7 pages including no annexes



Eurooppalainen tekninen hyväksyntäorganisaatio  
European Organisation for Technical Approvals

## I LEGAL BASES AND GENERAL CONDITIONS

1. This European Technical Approval is issued by the VTT Expert Services Oy in accordance with:
  - Council Directive 89/106/EEC of 21 December 1988 on the approximation of laws, regulations and administrative provisions of Member States relating to construction products<sup>1</sup>, modified by the Council Directive 93/68/EEC<sup>2</sup> and Regulation (EC) N° 1882/2003 of the European Parliament and of the Council<sup>3</sup>,
  - Laki rakennustuotteiden hyväksynnästä (230/2003) luvut 3 ja 10, Ympäristöministeriön asetus rakennustuotteiden hyväksynnästä 3 § sekä Ympäristöministeriön 18.12.2009 antama valtuutus päätös (19/629/2009).
  - Common Procedural Rules for Requesting, Preparing and the Granting of European Technical Approvals set out in the Annex of Commission Decision 94/23/EC<sup>4</sup>;
2. The VTT Expert Services Oy is authorised to check whether the provisions of this European Technical Approval are met. Checking may take place in the manufacturing plant(s). Nevertheless, the responsibility for the conformity of the products to the European Technical Approval and for their fitness for the intended use remains with the holder of the European Technical Approval.
3. This European Technical Approval is not to be transferred to manufacturers or agents of manufacturer other than those indicated on Annex 1; or manufacturing plants other than those indicated on page 1 of this European Technical Approval.
4. This European Technical Approval may be withdrawn by the VTT Expert Services Oy pursuant to Article 5 (1) of the Council Directive 89/106/EEC.
5. Reproduction of this European Technical Approval including transmission by electronic means shall be in full. However, partial reproduction can be made with the written consent of the VTT Expert Services Oy. In this case partial reproduction has to be designated as such. Texts and drawings of advertising brochures shall not contradict or misuse the European Technical Approval.
6. The European Technical Approval is issued by VTT Expert Services Oy in English. This version corresponds to the version circulated within EOTA. Translations into other languages have to be designated as such.

---

<sup>1</sup> Official Journal of the European Communities N° L 40, 11.2.1989, p. 12

<sup>2</sup> Official Journal of the European Communities N° L 220, 30.8.1993, p. 1

<sup>3</sup> official Journal of the European Union N° L 284, 31.10.2003, p. 25

<sup>4</sup> Official Journal of European Communities N° L 17, 20.1.1994, p. 34

## II SPECIFIC CONDITIONS OF THE EUROPEAN TECHNICAL APPROVAL

### 1. Definition of the product and intended use

#### 1.1 Definition of the construction product

In-situ formed Termex loose fill cellulose fibre thermal insulations consists of wood fibres derived from wood by paper production and crushing. During the manufacturing process the product is provided with a fire retardant and an additive for enhancing the biological resistance (boric acid and borax). The final product can also contain a binding agent (PVA) according to the below.

The thermal insulation products are produced four different types:

Type of the insulation	Type 1	Type 2	Type 3	type 4
Trade name	Puhallus-Termex	Vino-ontelo-Termex	Sidox-Termex	Pystyontelo-Termex
Use area	Blown freely into open space, horizontal and slightly tilting targets	Blown into closed space, horizontal or tilted highest 60 ° compared to horizontal	Blown with binding agent into open space	Blown into closed space which is tilted more than 60 ° compared to the horizontal
Minimum density, kg/m <sup>3</sup>	≥ 26	≥ 42	≥ 32	≥ 55

The maximum density of the Type 1 insulation is 36 kg/m<sup>3</sup> and the maximum density of the other products 65 kg/m<sup>3</sup>.

#### 1.2 Intended use

The products are intended to be used as thermal insulation in walls, partitions, floors, intermediate floors and ceilings according to the use area of the product type.

The insulation can be used in constructions where it is not exposed to wetting, weathering, heavy moisture transport, condensation or compression loads. The blowing is carried out in dry conditions.

The provisions made in this ETA are based on an assumed working life of the thermal insulation of 50 years provided that the conditions laid down in this section and sections 4.2/5.1/5.2 for the packaging, transport, storage, installation, use maintenance and repair are met. 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.

## 2. Characteristics of product and methods of verification

The methods of verification and characteristics of the insulation evaluated in this ETA are as follows:

CUAP Paragraph	Characteristic	Assessment of the characteristic			
	<b>ER1 Mechanical resistance and stability</b>	Not relevant			
4.1.1	Corrosion developing capacity on metal constructions	No pits in copper sheets, 2 and 4 pits in the zinc sheets			
	<b>ER2 Safety in case of fire</b>				
4.2.1	Reaction to fire, EN ISO 11925-2 , EN 13823	Type 1	Type 2	Type 3	Type 4
		Class D-s2,d0	NPD	NPD	NPD
	<b>ER 3 Hygiene, health and environment</b>				
4.3.1	Water vapour diffusion resistance, EN 12086	NPD			
4.3.2	Content and release of dangerous substances	<b>No dangerous substances *)</b> Products contain Boric acid and Borax			
2.4.6	Air flow resistance,( kPa s/m <sup>2</sup> ) EN 29053	Type 1	Type 2	Type 3	Type 4
		5,0	10	15	37
<b>4.4</b>	<b>ER 4 Safety in use</b>	Not relevant			
<b>4.5</b>	<b>ER 5 Protection against noise</b>	NPD			
<b>4.6</b>	<b>ER 6 Energy economy and heat retention</b>				
4.6.1.1.1	Thermal conductivity, $\lambda_{10, dry, 90/90}$ of the products with different densities, EN 12667(testing) and 90/90 % calculation	Type 1	Type 2	Type 3	Type 4
		0,038 W/mK	0,038 W/mK	0,039 W/mK	0,040 W/mK
4.6.1.1.2	Moisture conversion factor for $\lambda_{DECLARED (23,50)}$ $f_{u1}$	0,12	0,20	0,12	0,30
4.6.1.1.3	Thermal conductivity , $\lambda_{DECLARED (23,50)}$	0,039	0,040	0,040	0,043
<b>4.7</b>	<b>Aspects of durability, serviceability and identification</b>				
4.7.1 ans 4.7.2	Biological resistance, According to EOTA testing procedure and EN ISO 846	0 (no mould growth before or after the handling test)			
4.7.3	Water absorption, EN 1609	NPD			
4.7.4	Settlement				
	Maximum settlement, % ISO/CD 18303	Type 1	Type 2	Type 3	Type 4
	Method A - Settling by impact excitation	20 (Saarijarvi factory) 25 (Jokela factory)			
	Method C – Settling by vibration			0	0
	Method D - Settling by specified climatization		0		

\*In addition of the specific clauses relating to dangerous substances contained in this European Technical Approval, there may be other requirements applicable to the products falling within its scope (e.g. transposed European legislation and national laws, regulations and administrative provisions). In order to meet the provisions of the Construction Products directive, these requirements need also to be compiled with, when and where they apply.

### **3. Evaluation and attestation of conformity and CE marking**

#### **3.1 System of attestation of conformity**

According to the decision 99/91/EC of 25.01.1999 of the European Commission the system 3 of attestation of conformity applies, since reaction to fire classification is E.

This system of attestation of conformity is defined as follows:

System 3: declaration of conformity of the product by the manufacturer on the basis of:

- (a) Tasks for the manufacturer:
  - (1) Factory production control,
- (b) Tasks for the notified body:
  - (3) Initial type testing of the product

#### **3.2 Responsibilities**

##### **3.2.1 Tasks of the manufacturer**

###### *3.2.1.1 Factory production control*

The manufacturer shall have permanent internal control of production. All the elements, requirements and provisions adopted by the manufacturer shall be documented in a systematic manner in the form of written policies and procedures, including records of results. This production control system shall ensure that the product is in conformity with this European technical approval.

The manufacturer may only use initial materials stated in the technical documentation of this European technical approval.

The factory production control shall be in accordance with the control plan of 12.8.2008 relating to the European Technical approval ETA -09/0082 issued on 25 May 2009 which is part of the technical documentation of this European technical approval. The control plan is laid down in the context of the factory production control system operated by the manufacturer and deposited with VTT Expert Services Oy<sup>5</sup>.

The results of factory production control shall be recorded and evaluated in accordance with the provisions of the "Control plan".

###### *3.2.1.2 Other tasks of the manufacturer*

The manufacturer shall involve a body which is notified for the tasks referred to in section 3.1 in the field of insulating materials to undertake the actions laid down in section 3.2.2. For this purpose, the control plan referred to in sections 3.2.1.1 and 3.2.2 shall be handed over by the manufacturer to the approved body involved.

The manufacturer shall make a declaration of conformity, stating that the construction products are in conformity with the provisions of the European technical approval ETA-09/0082 issued on 25 May 2009.

##### **3.2.2 Tasks of approved bodies**

The approved body shall perform the

- Initial type testing of the product

In accordance with the provisions laid down in control plan.

For initial type testing the results of the tests performed as part of the assessment for this European Technical Approval shall be used provided nothing changes in the production or factory. Otherwise the necessary type testing shall be agreed between VTT Expert Services Oy and approved bodies involved.

The approved body shall retain the essential points of its actions referred to above and state the results obtained and conclusions drawn in a written report.

### 3.3 CE-marking

The CE-marking shall be affixed on the each packaging or on the delivery tickets put into the packages. The symbol "CE" shall be accompanied by the following additional information:

- Identification of the product: Commercial trade name as indicated in this ETA
- Name and address of the ETA holder (legal entity responsible for the manufacture)
- The last two digits of the year in which the CE marking was affixed
- The number of the European Technical Approval, ETA-09/0082
- Installation density depending on the area of application
- The declared value of thermal conductivity at 23 °C and 50 % RH
- The settlement percentage
- The class of reaction to fire or NPD
- The products corrosion developing capacity on metal parts of construction
- Other properties manufacturer wants to declare and which are included in the ETA

## 4. Assumptions under which the fitness of the product for the intended use was favourably assessed

### 4.1 Manufacturing

Manufacturing of the loose fill cellulose fibre thermal insulations is based on the defined production method, use of defined raw materials and tolerances. If changes take place manufacturer is responsible to clarify if the change has influence on the properties of the product tested to VTT Expert Services Oy before the changes are introduced. VTT Expert Services Oy will decide whether or not such changes affect the ETA and consequently the validity of the CE-marking on the basis of the ETA and if so whether further assessments or alterations of the ETA shall be necessary.

### 4.2 Installation

The insulation is installed on to the building according to the instructions of the manufacturer. The suitability of the insulation to the planned purpose shall be evaluated taking into account what has been said in chapter 1.2.

Machine installations of the insulating material shall be performed by companies trained and listed by the manufacturer. In case of processing under the action of water it shall be ensured that the main share of water is evaporated before closing the cavity. Time period necessary for this depends on the climatic conditions of the surroundings. Only building materials allowing an evaporation of moisture may be used as facing.

When calculating the thermal resistances of the insulations the nominal thickness of the insulation layer according to the following shall be applied:

Use area	Insulation type	Density, kg/m <sup>3</sup>	Planned thickness
Blown freely into open space, horizontal and slightly tilting targets	Type 1	26 - 36	Equal to blown thickness plus 20 % (Saarijärvi factory) and plus 25 % (Jokela factory)
Blown into closed space, horizontal or tilted highest 60 ° compared to horizontal	Type 2	42 - 65	Clear span of the filled cavity
Blown with binding agent into open	Type 3	32 -65	Equal to blown thickness

space			
Blown into closed space which is tilted more than 60 ° compared to the horizontal	Type 4	55 - 65	Clear span of the filled cavity

The density is determined by calculation from the mass of material brought in and the full volume. The executing company shall check the density.

## 5. Indications to the manufacturer

### 5.1 Packaging transport and storage

The insulation products are transported to the building site in truck containers. The products shall be stored protected from rain and at temperatures between – 40 and + 80 °C before the installation.

### 5.2 Use, maintenance and repair

In the information accompanying the CE marking the manufacturer shall specify that the product shall be installed following the installation instructions given by the manufacturer (machine processing by trained companies according to 4.2 only) and that the product is to be protected from moisture during transport storage and installation.

On behalf of VTT Expert Services Oy

Espoo 14.1.2011



Liisa Rautiainen  
Assessment Manager



Lina Markelin-Rantala  
Lead Assessor