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Authorised and notified according to Article 10 of the 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

Member of EOTA

European technical approval ETA-11/0318

(English language translation, the original version is in German language)

Handelsbezeichnung *Trade name*	**thermalan iso, swisswool iso, tirolwool iso**
Zulassungsinhaber *Holder of approval*	**Jacob Emendoerfer Nachf.** **Baur Vliesstoffe GmbH** **Schulfeldstraße 4** **D-91550 Dinkelsbühl-Sinbronn** **Deutschland**
Zulassungsgegenstand und Verwendungszweck *Generic type and use of construction product*	**Dämmmatten und Rollen aus Schafwolle zur Wärme und/oder Luftschalldämmung** *Thermal and/or acoustic insulation mats and rolls made of sheep wool*
Geltungsdauer vom *Validity from* bis *to*	**20.12.2011** **19.12.2016**
Herstellwerk *Manufacturing plant*	Jacob Emendoerfer Nachf. Baur Vliesstoffe GmbH Schulfeldstraße 4 D-91550 Dinkelsbühl-Sinbronn Deutschland
Diese Europäische technische Zulassung umfasst *This European technical approval contains*	**9 Seiten einschließlich 0 Anhänge** *9 pages including 0 Annexes*

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I LEGAL BASES AND GENERAL CONDITIONS

1 This European technical approval is issued by the Österreichischen Institut für Bautechnik 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[1], modified by the Council Directive 93/68/EEC of 22 July 1993[2];
- Wiener Bauprodukte- und Akkreditierungsgesetzes, LGBl. für Wien Nr. 30/1996, zuletzt geändert durch das Gesetz LGBl. für Wien Nr. 24/2008
- Common Procedural Rules for Requesting, Preparing and the Granting of European technical approvals set out in the Annex of Commission Decision 94/23/EC[3].

2 The Österreichisches Institut für Bautechnik is authorized to check whether the provisions of this European technical approval are met. Checking may take place in the manufacturing plant. 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 manufacturers other than those indicated on page 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 Österreichische Institut für Bautechnik, in particular after information by the Commission on the basis of Article 5 (1) of 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 Österreichisches Institut für Bautechnik. 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 the approval body in its official language. This version corresponds to the version circulated within EOTA. Translations into other languages have to be designated as such.

1 Official Journal of the European Communities N° L 40, 11.02.1989, p. 12
2 Official Journal of the European Communities N° L 220, 30.08.1993, p. 1
3 Official Journal of the European Communities N° L 17, 20.01.1994, p. 34

II SPECIFIC CONDITIONS OF THE EUROPEAN TECHNICAL APPROVAL

1 Definition of products and intended use

1.1 Definition of products

This European technical approval applies to the following insulation products:

thermalan iso, swisswool iso, tirolwool iso

This product is manufactured in the form of rolls of:

nominal thickness:	from 10 mm to 120 mm
nominal length:	up to 20.000 mm
nominal width:	up to 2.400 mm

This product is manufactured in the form of mats or boards of:

nominal thickness:	from 10 mm to 120 mm
nominal length:	from 400 mm to 2.400 mm
nominal width:	from 200 mm to 1.200 mm

These with wool preservatives and flame retardants modified product consists of mainly horizontal arranged sheep wool layers which are thermal bonded with additional polyester fibers of approximately 20 %.

The insulation material is not faced.

The dimensions correspond to the delivery program of the manufacturer.

The sheep wool used in the manufacturing process has to fulfil the following quality criteria

depth of the staple	20 – 120 mm

1.2 Intended use

The **thermalan iso, swisswool iso, tirolwool iso** sheep wool insulation mats, boards and rolls are used as non loadable insulating material mainly for the following intended uses:

Area of application for walls
- Insulation material for external walls in timber frame constructions and similar structures
- Partition insulation as thermal and acoustic insulation
- Installation of the building services layer
- Insulation in ventilated facades

Area of application for roofs
- Pitched roofs with ventilation
- Pitched roofs without ventilation (full rafter insulation)
- Pitched roof construction with insulation under the load bearing rafters
- Flat roof with upper covering and ventilated cavity under the waterproofing

Area of application for ceilings / floors
- Ceilings under non habitable attics (thermal insulation between or above the load-bearing structure)
- Cavity insulation material between floor-joists under floor constructions
- Cavity insulation material in intermediate ceilings

The wool insulation product shall not be used in structures where it will be exposed to wetting or weathering and in such with direct contact to soil.

The provisions made in this ETA are based on an assumed intended working life of the insulation product of 50 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 product in relation to the expected economically reasonable working life of the works.

2 Characteristics of products and methods of verification

2.1 Composition and manufacturing process

The insulation product shall as far as its composition and manufacturing process is concerned correspond to the product subject to the approval tests. Details of composition and manufacturing process are deposited at the Österreichischen Institut für Bautechnik.

2.2 Dimensions

The thickness of the product is determined according to European standard EN 823[4]. The test is carried out with a load of 50 Pa.

The deviation from nominal thickness does not exceed:

- 5 % or[5] - 5 mm
excess permitted

The reached class of the product is **T1** according EN 13162[6]

The **length** of the products is determined according to European standard EN 822[7]. The deviation from nominal length does not exceed ±2 %.

The **width** of the products is determined according to European standards EN 822. The deviation from nominal width does not exceed ±1,5 %.

2.3 Squareness

The squareness of the boards is determined according to European standard EN 824[8]. The deviation from squareness on length and width does not exceed 5 mm/m.

2.4 Density

The density of the product is determined according to European standard EN 1602[9]. The density is at least **26 kg/m³** and does not exceed **30 kg/m³** (+15% of the nominal density)

The nominal density is **26 kg/m³**.

2.5 Water absorption

The water absorption of the product is determined according to European standard EN 1609, method A[10]. The mean water absorption at a density of 29,1 kg/m³ did not exceed **0,27 kg/m²**.

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4 EN 823: 1994: Thermal insulation products for building applications - Determination of thickness

5 The highest value is relevant

6 EN 13162:2001 Thermal insulation products for buildings - Factory made mineral wool (MW) products - Specification

7 EN 822: 1994: Thermal insulation products for building applications - Determination of length and width

8 EN 824: 1994: Thermal insulation products for building applications - Determination of squareness

9 EN 1602: 1996: Thermal insulation products for building applications - Determination of the apparent density

10 EN 1609: 1996 Thermal insulation products for building applications - Determination of short-term water absorption by partial immersion

2.6 Water vapour diffusion resistance factor

The water vapour permeability of the product is determined in accordance with EN 12086[11] climatic condition A. The water vapour permeability does not exceed **μ = 2**.

2.7 Dimensional stability under specified temperature and humidity

The dimensional stability of the products is determined according to European standard EN 1604[12]. The test is carried out after conditioning at a temperature of (70 ± 2)°C and (50 ± 5) % relative humidity for 48 h.

The change of dimensions in length $\Delta\varepsilon_l$ is - 0,2 %.
The change of dimensions in width $\Delta\varepsilon_b$ is - 0,3 %.
The change of dimensions in thickness $\Delta\varepsilon_d$ is + 10,5 %.

2.8 Tensile strength parallel to faces

The tensile strength of the products is determined according to European standard EN 1608[13]. Tensile strength of the insulation products is sufficient to support twice the weight of the product.

2.9 Airflow resistance

The airflow resistance of the products is determined according to European standard EN 29 053, method A[14]. The mean longitudinal airflow resistance at a mean density of 29,4 kg/m³ is at least **3,9 kPa s/m².**

2.10 Thermal conductivity

The thermal conductivity of the product **thermalan iso, swisswool iso, tirolwool iso** is determined according to EN 12667[15]. The declared value of thermal conductivity is determined according to EN 10 456[16].

The fractile value of thermal conductivity for the density range of 26 kg/m³ - 30 kg/m³ is $\lambda_{(10,dry,90/90)}$ **= 0,0360 W/(m•K)** representing at least 90 % of the production with a confidence limit of 90%

The limit value of thermal conductivity for the density range of 26 kg/m³ - 30 kg/m³ is $\lambda_{(10,dry,limit)}$ **= 0,0360 W/(m•K)** representing the total production. The manufacturer is responsible for keeping the limit during production.

The declared value of thermal conductivity for the density range of 26 kg/m³ - 30 kg/m³ is $\lambda_{D(23,50)}$ **= 0,036 W/(m•K)** – **category 1** determined by conversion of the $\lambda_{(10,dry,90/90)}$ value.

[11] EN 12086: 1997 — Thermal insulating products for building applications - Determination of water vapour transmisson properties

[12] EN 1604: 1996 — Thermal insulation products for building applications - Determination of dimensional stability under specified temperature and humidity conditions

[13] EN 1608: 1996 — Thermal insulation products for building applications - Determination of tensile strength parallel to faces

[14] EN 29 053: 1993 — Acoustics - Materials for acoustical applications - Determination of airflow resistance

[15] EN 12667: 2001 — 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

[16] EN ISO 10 456: 2000 — Thermal insulation - Building materials and products - Determination of declared and design values

The declared value of thermal conductivity for the density range of 26 kg/m³ - 30 kg/m³ kg/m³ is $\lambda_{D(23,50)}$ **= 0,036 W/(m•K)** – **category 2** determined by conversion of the $\lambda_{(10,dry,limit)}$ value.

For conversion of humidity the following applies:
the moisture content mass by mass at 23 °C/50 % relative humidity:

$u_{23,50}$ = 0,0704 kg/kg

the moisture content mass by mass at 23 °C/80 % relative humidity:

$u_{23,80}$ = 0,117 kg/kg

the moisture content conversion coefficient mass by mass:

$f_{u1\ (dry-23/50)}$ = - 0,0241 kg/kg

$f_{u2\ (23/50-23/80)}$ = - 0,0153 kg/kg

2.11 Reaction to fire

The reaction to fire of the products is determined according to EN 13501-1[17]. The product reached the following classification.

	density range (kg/m³)	minimum thick-ness (mm)	class
thermalan iso, swisswool iso, tirolwool iso	26-30	30	**E**

2.12 Corrosion developing capacity on metal construction products

The test and the assessment of the corrosion developing capacity on metal has been verified according to the EOTA testing procedure (Annex E des CUAPs „Factory-made thermal insulation material and/or acoustic insulation material made of vegetable or animal fibres; edition July 2009“). No corrosion developing potential of the insulation material was determined.

2.13 Resistance to biological actions

The test and the assessment of the resistance to growth of mould fungus has been verified according to the EOTA testing procedure (Annex C des CUAPs „Factory-made thermal insulation material and/or acoustic insulation material made of vegetable or animal fibres; edition July 2009“). The reached **class** of the products is **0**.

The test and the assessment of the resistance to attack by vermin has been verified according to ISO 3998[18] short term test and the EOTA testing procedure (Annex D des CUAPs „Factory-made thermal insulation material and/or acoustic insulation material made of vegetable or animal fibres; edition July 2009“). The tests are **passed.**

2.14 Retention of additives

The test and the assessment of the retention of additives have been verified according to the EOTA testing procedure (Annex F of CUAP „Factory-made thermal insulation material made of vegetable or animal fibres; edition July 2009.”). No decrease in the reaction to fire behavior and no resistance to mould growth were determined.

[17] EN 13501-1: 2002 Classification of construction products and construction types about its fire behavior – Part 1: Classification with the results of the test about fire behaviour of construction products

[18] ISO 3998: 1977 Textiles – Determination of resistance to certain insect pests

2.15 Dangerous substances

The with wool preservatives and flame retardants modified product consists of mainly horizontal arranged sheep wool layers which are thermal bonded with additional polyester fibers and complies with the provisions of guidance paper H[19].

It does not contain substances which have to be classified as dangerous according to Directive 67/548/EEC and/or listed in the "Indicative list on dangerous substances" of the EGDS and can be classified as product **type 3** according the EOTA testing procedure (clause 4.3.2 of CUAP „ In-situ formed loose filled thermal insulation material and/or acoustic insulation material made of vegetable or animal fibres; edition July 2009").

A declaration of conformity in this respect was made by the manufacturer.

In addition to 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 EU Construction Products Directive, these requirements need also to be complied with, when and where they apply.

2.16 Critical moisture content

No performance determined.

3 Evaluation of conformity and CE marking

3.1 Attestation of conformity system

System 3 for **thermalan iso, swisswool iso, tirolwool iso** for which the following is valid:

- intended use "any"
- reaction to fire class E

The system is described in Council Directive (89/106/EEC) Annex III, 2 (ii), Second possibility and is detailed as follows:

a) Tasks of the manufacturer
   - factory production control

b) Tasks of the approved body
   - initial type-testing of the product

3.2 Responsibilities

3.2.1 Tasks for the manufacturer; factory production control

The manufacturer has a factory production control system in his plant and exercises permanent internal control of production.

All the elements, requirements and provisions adopted by the manufacturer are documented in a systematic manner in the form of written policies and procedures. The factory production control system ensured that the products are always in conformity with the European technical approval.

[19] Guidance paper H: A harmonized approach relating to Dangerous substances under the construction products directive, 18 February 2000

In the framework of factory production control the manufacturer shall carry out tests and controls in accordance with the control plan[20] which is fixed with this European technical approval.

Details of the extent, nature and frequency of testing and controls to be performed within the factory production control shall correspond to this control plan which is part of the technical documentation of this European technical approval.

The results of factory production control are recorded and evaluated. The records include at least the following information:
- designation of the products and of the basic materials
- type of control or testing
- date of manufacture of the products and date of testing of the products or basic materials or components
- result of control and testing and, if appropriate, comparison with requirements
- signature of person responsible for factory production control

On request the records shall be presented to the Österreichisches Institut für Bautechnik.

3.2.2 Tasks for approved bodies

3.2.2.1 Initial type-testing of the products

For initial type-testing the results of the tests performed as part of the assessment for the European technical approval shall be used unless there are changes in the production line or plant. In such cases the necessary initial type-testing has to be agreed between the Österreichisches Institut für Bautechnik and the approved bodies involved.

3.3 CE marking

The CE marking shall be affixed on the products, the packaging or the attached label.

The symbol "CE" shall be accompanied by the following information:
- name or identifying mark of producer and manufacturing plant
- the last two digits of t.he year in which the CE marking was affixed
- number of the European technical approval
- identification of products (commercial name)
- nominal dimensions of length, width and thickness
- thickness tolerance
- dimensional stability
- density range
- declared value of thermal conductivity
- class of reaction to fire [21]
- water vapour diffusion resistance
- water absorption
- airflow resistance

4 Assumptions under which the fitness of the products for the intended use was favourably assessed

4.1 Manufacturing

The thermal insulation products shall correspond as far as their composition and manufacturing process is concerned to the products subject to the approval tests. Composition and manufacturing process are deposited at the Österreichischen Institut für Bautechnik.

[20] The control plan has been deposited at the Österrreichisches Institut für Bautechnik

[21] European classification of reaction to fire of building materials according to the Commission Decision 2000/147/EG of 8 February 2000 implementing Article 20 of Directive 89/106/EEC on construction products.

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4.2 Installation

4.2.1 Parameters for the design of construction works or parts of construction works

4.2.1.1 Design value of thermal conductivity
The design value of thermal conductivity shall be defined in accordance with the relevant national provisions.

4.2.1.2 Value of water vapour diffusion resistance
The construction shall be designed and installed in such a way that no harmful condensation occurs within the works.

4.2.2 Parameters for the installation in the construction works or parts of construction works

The fitness of the sheep wool for the intended use is given under the following condition:

- In external walls, which towards the outside end with a curtain wall (ventilated façade), the insulation product shall be built in only, if it is protected by a facing towards the ventilation plane. An application directly behind the ventilation plane is inadmissible
- Installation carried out by appropriate installer under the supervision of the project representative
- Installation in accordance with the manufacturer's specifications (directions of use)

4.2.3 Use of the insulation products as airborne sound insulation

In case of use of the products as airborne sound insulation it is necessary to determine the airborne sound insulation for the specific construction work in question in accordance with the relevant technical rules in force.

5 Recommendations for the manufacturer

5.1 Recommendations on packaging, transport and storage

Packaging of the products has to be such that they are protected from moisture during transport and storage unless other measures are foreseen by the manufacturer for this purpose.

5.2 Recommendations on installation

The product has to be protected from moisture during installation.

The processing guidelines of the manufacturer have to be followed.

5.3 Accompanying information

In the information accompanying CE marking the manufacturer shall indicate that the products shall be protected from humidity during transport, storage and installation.

Further it is the responsibility of the manufacturer to ensure that the information on the installation procedure is shown clearly on the package and/or on an enclosed instruction sheet.

On behalf of Österreichisches Institut für Bautechnik

The original document is signed by:

Rainer Mikulits
Managing Director