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European technical approval ETA-11/0005 (English language translation, the original version is in German language) Handelsbezeichnung: **BIOFIB** CHANVRE, Trade name: Zulassungsinhaber: CAVAC BIOMATERIAUX Holder of approval: Le Fief Chapitre **85 400 STE GEMME La PLAINE** France Zulassungsgegenstand Dämmmatte aus Hanf und Flachs zur Wärme- und/oder und Verwendungszweck: Luftschalldämmung Generic type and use of Thermal and/or acoustic insulation mat made of hemp and construction produt: flax fibres Geltungsdauer vom: 17.02.2011 validity from: bis: 16.02.2016 to: Herstellwerk: CAVAC BIOMATERIAUX Le Fief Chapitre Manufacturing plant: 85 400 STE GEMME La PLAINE France Diese Europäische 9 Seiten inklusive 0 Anhängen technische Zulassung umfasst: This European technical approval 9 pages including 0 Annexes



contains:

European Organisation for Technical Approvals Europäische Organisation für Technische Zulassungen Organisation Européenne pour l'Agrément technique



LEGAL BASES AND GENERAL CONDITIONS

- 1 This European technical approval is issued by the Österreichisches 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 products¹, modified by the Council Directive 93/68/EEC² and regulation (EC) no. 1882/2003 of the European Parliament and of the Council³;
 - Wiener Bauprodukte- und Akkreditierungsgesetzes, LGBI. F
 ür Wien Nr. 30/1996, zuletzt ge
 ändert durch das Gesetz, LGBI. f
 ür Wien Nr. 24/2008.;
 - Common Procedural Rules for Requesting, Preparing and the Granting of European technical approvals set out in the Annex to Commission Decision 94/23/EC⁴;
- 2 The Österreichisches Institut für Bautechnik is authorised 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 manufacturer other than those indicated on page 1; or manufacturing plants other than those laid down in the context of this European technical approval.
- 4 This European technical approval may be withdrawn by the Österreichisches Institut für Bautechnik, in particular pursuant to information by the Commission according to Article 5(1) of Council Directive 89/106/EEC.
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- 6 The European technical approval is issued by the approval body in its official language. This version corresponds fully to the version circulated within EOTA. Translations into other languages have to be designated as such.

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¹ Official Journal of the European Communities no. L 40, 11.2.1989, p. 12

² Official Journal of the European Communities no. L 220, 30.8.1993, p. 1

Official Journal of the European Union no. L 284, 31.10.2003, p. 1.

Official Journal of the European Communities no. L 17, 20.1.1994, p. 34.



II SPECIFIC CONDITIONS OF THE EUROPEAN TECHNICAL APPROVAL

1 Definition of products and intended use

1.1 Definition of the construction product

This European technical approval applies to the following insulation products.

BIOFIB'CHANVRE

This product is manufactured in the form of mats of:

nominal thickness:	from 45 mm to 180 mm
nominal length:	from 1200 mm to 1350 mm
nominal width:	from 300 mm to 600 mm

These flame retardant and fungicide modified products consist of hemp and flax fibres with a content of polyester fibres of appr. **10** % and a maximum flax content of appr. **20**%

The insulation material is not faced.

The dimensions correspond to the delivery program of the manufacturer.

The hemp and flax straw used in the manufacturing process has to fulfill the following quality criteria:

Level of retting	6 - 10
weed content	< 5 % vol.

1.2 Intended use

The hemp/flax insulation mats **BIOFIB CHANVRE** are used as non loadable insulating material mainly for the following intended uses:

Area of application for walls

- Insulation material for external walls in light wood constructions (nogging piece construction, timber frame construction)
- Solid construction with external insulating system for low energy- and passive solarbuildings (external fixed wooden load-bearing system with intermediate insulating wool and panelling)
- Partition-insulation as thermal insulation

Area of application for roofs

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

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Area of application for ceilings/floors

- Ceilings under non habitable attics (thermal insulation between or above the loadbearing structure)
- Insulation material between floor-joists under floor constructions

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

The corrosion developing capacity of the insulation product has not been determined. Suitable measures might be necessary to avoid corrosion of metal parts of the construction in contact.

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 products shall as far as its composition and manufacturing process is concerned correspond to the products 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 products is determined according to European standard EN 823⁵. The test is carried out with a load of 50 Pa.

The deviation from nominal thickness does not exceed:

-5 % or⁶ -5 mm excess permitted

The reached class of the product is **T1**.

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 \pm 2,5 %.

2.3 Density

The density of the products is determined according to European standard EN 1602⁸. The density is at least **39,3 kg/m³** and does not exceed **45,5 kg/m³**.

The nominal density is 40 kg/m³

⁵ EN 823: 1994: Thermal insulation products for building applications - Determination of thickness

⁷ The highest value is relevant

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

⁸ EN 1602: 1996: Thermal insulation products for building applications - Determination of the apparent density OIB-290-021/09-027



2.4 Water absorption

The water absorption of the products is determined according to European standard EN 1609, method A[°].

The mean water absorption at a mean density of 42.5 kg/m³ did not exceed 3.05 kg/m².

2.5 Water vapour diffusion resistance factor

The water vapour diffusion resistance factor μ =1 (see 4.2.1.2).

2.6 Dimensional stability under specified temperature and humidity

The dimensional stability of the products is determined according to European standard EN1604¹⁰. The test is carried out after conditioning at a temperature of $(70 \pm 2)^{\circ}$ C and $(50 \pm 2)^$ 5) % relative humidity for 48 h.

The change of dimensions in length $\Delta \varepsilon_{l}$ is ± 0,0 %. The change of dimensions in width $\Delta \varepsilon_{b}$ is ± 0,3 %. The change of dimensions in thickness $\Delta \varepsilon_d$ is ± 1,5 %.

2.7 Tensile strength parallel to faces

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

2.8 Airflow resistance

The airflow resistance of the products is determined according to European standard EN 29053, method A¹².

The longitudinal airflow resistance at a density of 40 kg/m³ is at least 4,2 kPa s/m².

2.9 Thermal conductivity

The thermal conductivity of the products is determined according to EN 12667¹³. The declared value of thermal conductivity is determined according to EN 10 456¹⁴.

The fractile value of thermal conductivity for the density range of 39,3 kg/m³ - 45,5 kg/m³ is λ_(10,dry,90/90) = 0,0397 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 39,3 kg/m³ - 45,5 kg/m³ is = 0,0395 W/(mK) representing the total production. The manufacturer is $\lambda_{(10,dry,limit)}$ responsible for keeping the limit during production.

⁹ EN 1609: 1996: Thermal insulation products for building applications - Determination of short-term water absorption by partial immersion 10 EN 1604: 1996: Thermal insulation products for building applications - Determination of dimensional stability under specified temperature and humidity conditions 11 EN 1608: 1996: Thermal insulation products for building applications - Determination of tensile strength parallel to faces 12 EN 29 053: 1993: Acoustics - Materials for acoustical applications - Determination of airflow resistance 13 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 14 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 39,3 kg/m³ - 45,5 kg/m³ is $\lambda_{D(23,50)} = 0,040 \text{ W/(m K)} - \text{category 1}$ determined by conversion of the $\lambda_{(10,dry,90/90)}$ value.

The declared value of thermal conductivity for the density range of 39,3 kg/m³ - 45,5 kg/m³ is $\lambda_{D(23,50)} = 0,040 \text{ W/(m^{-}K)} - \text{category 2}$ 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} = 0,0555 kg/kg
- the moisture content mass by mass at 23 °C/80 % relative humidity: u_{23,80}
- the moisture content conversion coefficient mass by mass: $f_{u1 (d)}$

 $u_{23,50} = 0,0555 \text{ kg/kg}$ $u_{23,80} = 0,130 \text{ kg/kg}$

 $f_{u1 (dry - 23/50)} = 0,110 kg/kg$

f_{u2 (23/50 - 23/80)}=0,0958 kg/kg

2.10 Reaction to fire

The reaction to fire of the products is determined according to EN 13501-1¹⁵. The products reached the following classification.

	density range (kg/m ³)	thickness (mm)	Class
BIOFIB CHANVRE	39,3 – 45,5	≥ 45	E

2.11 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 of CUAP "Factory made thermal insulation material and/or acoustic insulation material made of vegetable or animal fibres; edition June 2003/ Revision 2009."). The reached **class** of the product is **1**

2.12 Corrosion developing capacity on metal construction products

directive, 18 February 2000

No performance determined

2.13 Retention of additives

The test and the assessment of the retention of additives have been verified according to the EOTA testing procedure (CUAP Annex F of CUAP " Factory made thermal insulation material and/or acoustic insulation material made of vegetable or animal fibres; edition June 2003/ Revision 2009."). No decrease in the reaction to fire behavior nor resistance to mould growth was determined.

2.14 Dangerous substances

The flame retardant and fungicide modified product consists of hemp and flax fibres and a content of polyester fibres of appr. **10** % complies with the provisions of guidance paper H^{16} .

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 2 according the EOTA testing procedure (clause

Guidance paper H:

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¹⁵ EN 13501-1:2002:

Classification of construction products and construction types about its fire behaviour. Part 1: Classification with the results of the test about fire behaviour of construction products A harmonised approach relating to Dangerous substances under the construction products

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4.3.2 of CUAP "Factory-made thermal insulation material made of vegetable or animal fibres; edition October 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.

2.15 Critical moisture content

No performance determined

3 Evaluation of conformity and CE marking

3.1 Attestation of conformity system

System 3 for **BIOFIB CHANVRE** for which the following is valid:

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

The system of attestation of conformity 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.

In the framework of factory production control the manufacturer shall carry out tests and controls in accordance with the control plan¹⁷ 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 plan¹⁷ 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

¹⁷ The control plan has been deposited at the Österrreichisches Institut für Bautechnik and is handed over only to the approved bodies involved in the attestation of conformity procedure



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

3.2.2 Tasks for approved bodies

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 the 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
- nominal density
- water absorption
- airflow resistance
- declared value of thermal conductivity
- class of reaction to fire¹⁸
- dimensional stability at a specified temperature (70°C ± 2°C) and relative humidity (50% ± 5 %) for 48 h

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.

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

For evaluating the diffusion equivalent thickness of air layer of the thermal insulation products the value of $\mu = 1$ of water vapour diffusion resistance factor shall be used¹⁹. The construction shall be designed and installed in such a way that no harmful condensation occurs within the works.

 ¹⁸ 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.

For the construction work in question always the less favourable value shall be used.



- 4.2.2 Parameters for the installation in the construction works or parts of construction works
 - The fitness of the hemp and flax insulation material for the intended use is given under the following condition:
 - Installation carried out by appropriate personnel 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