



Österreichisches Institut für Bautechnik  
Schenkenstrasse 4 | 1010 Vienna | Austria  
T +43 1 533 65 50 | F +43 1 533 64 23  
mail@oib.or.at | www.oib.or.at



## European technical approval

**ETA-13/0147**

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

Handelsbezeichnung  
*Trade name*

**NAPOROWall, Capatect Hanffaserdämmplatte, MABOWall,  
Isolagreen panel**

Zulassungsinhaber  
*Holder of approval*

**Naporo Klima Dämmstoff GmbH  
Industriezeile 54  
5280 Braunau am Inn  
Österreich**

Zulassungsgegenstand  
und Verwendungszweck

**Druckbelastbare Dämmplatte aus Hanf**

*Generic type and use of  
construction product*

*Thermal insulation material in form of boards exposed to com-  
pression loads made of hemp*

Geltungsdauer vom  
*validity* from  
bis  
to

**12.04.2013**

**11.04.2018**

Herstellwerk  
*Manufacturing plant*

**Plant 1**

Diese Europäische  
technische Zulassung umfasst  
*This European technical  
approval contains*

**11 Seiten inklusive 0 Anhängen**

*11 pages including 0 Annexes*



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

## I 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 products<sup>1</sup>, modified by the Council Directive 93/68/EEC<sup>2</sup> and regulation (EC) no. 1882/2003 of the European Parliament and of the Council<sup>3</sup>;
  - Oberösterreichisches Bautechnikgesetz, LGBl. für Oberösterreich Nr. 67/1994, zuletzt geändert durch das Landesgesetz LGBl. für Oberösterreich Nr. 68/2011
  - Common Procedural Rules for Requesting, Preparing and the Granting of European technical approvals set out in the Annex to Commission Decision 94/23/EC<sup>4</sup>;
- 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.
- 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 fully 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 no. L 40, 11.2.1989, p. 12

<sup>2</sup> Official Journal of the European Communities no. L 220, 30.8.1993, p. 1

<sup>3</sup> Official Journal of the European Union no. L 284, 31.10.2003, p. 1.

<sup>4</sup> 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 product.

#### **NAPOROWall, Capatect Hanffaserdämmplatte, MABOWall, Isolagreen panel**

It is manufactured in the form of boards in the following dimensions:

nominal thickness:	from 20 mm to 200 mm
nominal length:	from 300 mm to 2400 mm
nominal width:	from 300 mm to 2400 mm

Thicknesses greater than 100 mm are reached by gluing together two boards by mortar

The flame retardant modified product consists of hemp fibres with a content of hemp shives of appr. **42 %** and a content of polyester or polyactide (PLA) fibres of appr. **15 %**

The insulation material is not faced.

The dimensions correspond to the delivery program of the manufacturer.

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

Level of retting	<b>1-8</b>
weed content	<b>&lt; 0,5 % vol.</b>

#### **1.2 Intended use**

The hemp insulation board NAPOROWall, Capatect Hanffaserdämmplatte, MABOWall, Isolagreen panel can be used as load bearing insulation material for the following intended uses:

##### **Area of application for walls**

- External insulation for external wall insulation of wood or solid constructions
- Internal insulation for external wall insulation of wood or solid constructions

##### **Area of application for roofs and ceilings/floors**

- Insulation on wooden rafters and beams
- Insulation of the top ceiling subject to foot traffic
- Internal insulation of flat roofs and pitched roofs
- Insulation of floors

The insulation product shall only be used in structures where it will not 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 products 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 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 823<sup>5</sup>. The test is carried out with a load of 50 Pa.

The deviation from nominal thickness in the thickness range of 20 mm to 100 mm does not exceed:

$$\begin{array}{l} -3\% \text{ or }^6 -3 \text{ mm} \\ +5 \% \text{ or }^7 +5 \text{ mm} \end{array}$$

The reached class of the product according to EN 13162 is **T4**.

The deviation of the nominal thickness of glued together products does not exceed  $\pm 5 \%$ .

The **length** of the products is determined according to European standard EN 822<sup>8</sup>. The deviation from nominal length does not exceed  $\pm 1 \%$ .

The **width** of the products is determined according to European standards EN 822<sup>7</sup>. The deviation from nominal width does not exceed  $\pm 1 \%$ .

The **flatness** of the products is determined according to European standards EN 825<sup>9</sup>. The deviation from flatness does not exceed  $\pm 1 \text{ mm}$ .

### 2.3 Squareness

The squareness of the boards is determined according to European standard EN 824<sup>10</sup>. The deviation from squareness on length and width does not exceed 5 mm/m

### 2.4 Density

The density of the products is determined according to European standard EN 1602<sup>11</sup>. The density is at least **83 kg/m<sup>3</sup>** and does not exceed **113 kg/m<sup>3</sup>**.

The nominal density is **100 kg/m<sup>3</sup>**

### 2.5 Water absorption

The water absorption of the products is determined according to European standard EN 1609, method A<sup>12</sup>. The mean water absorption at a density of 113 kg/m<sup>3</sup> did not exceed **8,0 kg/m<sup>2</sup>**.

---

<sup>5</sup> EN 823:1994 Thermal insulation products for building applications - Determination of thickness

<sup>6</sup> The highest value is relevant

<sup>7</sup> The smallest value is relevant

<sup>8</sup> EN 822:1994 Thermal insulation products for building applications - Determination of length and width

<sup>9</sup> EN 825:1994 Thermal insulation products for building applications - Determination of flatness

<sup>10</sup> EN 824:1994 Thermal insulation products for building applications - Determination of squareness

<sup>11</sup> EN 1602:1996 Thermal insulation products for building applications - Determination of the apparent density

<sup>12</sup> 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<sup>13</sup> climatic condition A. The mean water vapour permeability at a mean density of 113 kg/m<sup>3</sup> does not exceed  $\mu = 3,9$ .

## 2.7 Dimensional stability under specified compressive load and temperature

The dimensional stability of the insulation material is determined according to European standard EN 1605<sup>14</sup>. The test is carried with test condition 2 on a 50mm thick board at a temperature of 70 °C and a loading of 40 kPa.

The mean change of dimensions in thickness after loading category A is  $\varepsilon_1 = -53,4 \%$  and after loading category B,  $\varepsilon_2 = -62,4 \%$ .

## 2.8 Dimensional stability under specified temperature and humidity

The dimensional stability of the products is determined according to European standard EN 1604<sup>15</sup>. The test is carried out after conditioning at a temperature of  $(70 \pm 2)^\circ\text{C}$  and  $(90 \pm 5) \%$  relative humidity for 48 h.

The change of dimensions in length  $\Delta\varepsilon_l$  is +1 %.

The change of dimensions in width  $\Delta\varepsilon_b$  is +1 %.

The change of dimensions in thickness  $\Delta\varepsilon_d$  is +6,5 %.

## 2.9 Tensile strength perpendicular to faces

The tensile strength perpendicular to faces of the products is determined according to European standard EN 1607<sup>16</sup>.

The reached tensile strength class according to EN 13162 for a density of 83 kg/m<sup>3</sup> is **TR 10**.

## 2.10 Tensile strength perpendicular to faces in wet conditions

The tensile strength perpendicular to faces of the products in wet conditions is determined according to ETAG 004.

The reached tensile strength class according to EN 13162 for a density of 83 kg/m<sup>3</sup> is **TR 5**.

## 2.11 Tensile strength parallel to faces

The tensile strength parallel to faces of the products is determined according to European standard EN 1608<sup>17</sup>. The mean tensile strength reached by the insulation products is **151 kPa**.

## 2.12 Shear strength and shear modulus

The shear strength and shear modulus of the products is determined according to European standard EN 12090<sup>18</sup> following the provisions laid down in EN13162, Annex C. The mean shear strength reached by the insulation products is at least **13,2 kPa**.

---

<sup>13</sup>	EN 12086:1997	Thermal insulating products for building applications - Determination of water vapour transmission properties
<sup>14</sup>	EN 1605:1996	Thermal insulating products for building applications - Determination of deformation under specified compressive load and temperature conditions
<sup>15</sup>	EN 1604:1996	Thermal insulation products for building applications - Determination of dimensional stability under specified temperature and humidity conditions
<sup>16</sup>	EN 1607:1996	Thermal insulation products for building applications - Determination of tensile strength perpendicular to faces
<sup>17</sup>	EN 1608:1996	Thermal insulation products for building applications - Determination of tensile strength parallel to faces
<sup>18</sup>	EN 12090:1997	Thermal insulating products for building applications - Determination of shear behaviour

### 2.13 Compressive stress

The compressive behaviour of the products is determined according to European standard EN 826<sup>19</sup>. The compressive stress class according to EN 13162 of the 60mm thick insulation material at 10 % deformation is **CS(10) 10**.

### 2.14 Determination of behaviour under point load

The behaviour under point load of the insulation material is determined according to European standard 12430<sup>20</sup>. The mean point load of the 80mm thick insulation material at which a deformation of 20 % occurs is **90,2N**.

### 2.15 Airflow resistance

The airflow resistance of the products is determined according to European standard EN 29053, method A<sup>21</sup>. The mean longitudinal airflow resistance at a density of 83 kg/m<sup>3</sup> is at least **6,75 kPa s/m<sup>2</sup>**.

### 2.16 Sound absorption

The sound absorption coefficient  $\alpha_s$  is determined according to EN ISO 354<sup>22</sup> with mounting type A. Both the practical sound absorption coefficient  $\alpha_{pi}$  and the weighted sound absorption  $\alpha_w$  are calculated according to EN ISO 11654<sup>23</sup>.

	NAPOROwall, Capatect Hanffaserdämmplatte, MABOwall, Isolagreen panel 10mm		NAPOROwall, Capatect Hanffaserdämmplatte, MABOwall, Isolagreen panel 200mm	
frequency (Hz)	$\alpha_s$	$\alpha_{pi}$	$\alpha_s$	$\alpha_{pi}$
125	0,03	0,05	0,54	0,55
250	0,09	0,10	1,00	0,90
500	0,21	0,20	0,98	1,00
1000	0,32	0,35	1,13	1,00
2000	0,49	0,50	1,11	1,00
4000	0,71	0,70	1,13	1,00

product	density (kg/m <sup>3</sup> )	thickness (mm)	$\alpha_w$	class
NAPOROwall, Capatect Hanffaserdämmplatte, MABOwall, Isolagreen panel	113	10	0,3	<b>D</b>
NAPOROwall, Capatect Hanffaserdämmplatte, MABOwall, Isolagreen panel	113	200	1,0	<b>A</b>

<sup>19</sup> EN 826:1996 Thermal insulation products for building applications - Determination of compression behaviour  
<sup>20</sup> EN 12430:1998 Thermal insulating products for building applications - Determination of behaviour under point load  
<sup>21</sup> EN 29 053: 1993 Acoustics - Materials for acoustical applications - Determination of airflow resistance  
<sup>22</sup> EN ISO 354:2003 Akustik - Messung der Schallabsorption in Hallräumen  
<sup>23</sup> EN ISO 11654:1997 Akustik - Schallabsorber für die Anwendung in Gebäuden - Bewertung der Schallabsorption

## 2.17 Thermal conductivity

The thermal conductivity of the products is determined according to EN 12667<sup>24</sup>. The declared value of thermal conductivity is determined according to EN 10456<sup>25</sup>.

The fractile value of thermal conductivity for the density range of 83 kg/m<sup>3</sup> - 113 kg/m<sup>3</sup> is  $\lambda_{(10,dry,90/90)} = 0,0374 \text{ W/(m}\cdot\text{K)}$  representing at least 90 % of the production with a confidence limit of 90%.

The limit value of thermal conductivity for the density range of 83 kg/m<sup>3</sup> - 113 kg/m<sup>3</sup> is  $\lambda_{(10,dry,limit)} = 0,0370 \text{ W/(m}\cdot\text{K)}$  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 83 kg/m<sup>3</sup> - 113 kg/m<sup>3</sup> is  $\lambda_{D(23,50)} = 0,040 \text{ W/(m}\cdot\text{K)}$  – **category 1** determined by conversion of the  $\lambda_{(10,dry,90/90)}$  value.

The declared value of thermal conductivity for the density range of 83 kg/m<sup>3</sup> - 113 kg/m<sup>3</sup> is  $\lambda_{D(23,50)} = 0,039 \text{ W/(m}\cdot\text{K)}$  – **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:  $u_{23,50} = 0,054 \text{ kg/kg}$
- the moisture content mass by mass at 23 °C/80 % relative humidity:  $u_{23,80} = 0,094 \text{ kg/kg}$
- the moisture content conversion coefficient mass by mass:  $f_{u1} \text{ (dry - 23/50)} = 0,783 \text{ kg/kg}$   
 $f_{u2} \text{ (23/50 - 23/80)} = 1,897 \text{ kg/kg}$

## 2.18 Reaction to fire

The reaction to fire of the products is determined according to EN 13501-1<sup>26</sup>. The products reached the following classification.

	density range (kg/m <sup>3</sup> )	thickness (mm)	Class
<b>NAPOROWall, Capatect Hanffaserdämmplatte, MABOWall, Isolagreen panel</b>	83-113	≥ 10	<b>E</b>

## 2.19 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 **0**.

## 2.20 Corrosion developing capacity on metal construction products

No performance determined.

<sup>24</sup> 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

<sup>25</sup> EN ISO 10456: 2000: Thermal insulation - Building materials and products - Determination of declared and design values

<sup>26</sup> 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

## 2.21 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 October 2009.”). No decrease in the reaction to fire behavior nor resistance to mould growth was determined.

## 2.22 Dangerous substances

The flame retardant modified product consists of hemp fibres and a content of hemp shives of appr. **42 %** and a content of polyester or polylactide (PLA) fibres of **15 %** and complies with the provisions of guidance paper H<sup>27</sup>.

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 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.

## 2.23 Critical moisture content

No performance determined

## 3 Evaluation of conformity and CE marking

### 3.1 Attestation of conformity system

System 3 for **NAPOROWall, Capatect Hanffaserdämmplatte, MABOWall, Isolagreen panel** 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.

<sup>27</sup> Guidance paper H

A harmonised 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<sup>28</sup> 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<sup>17</sup> 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

#### 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
- tensile strength perpendicular to faces
- tensile strength perpendicular to faces in wet conditions
- water vapour diffusion resistance factor
- shear strength
- water absorption
- airflow resistance
- declared value of thermal conductivity
- class of reaction to fire<sup>29</sup>

---

<sup>28</sup> The control plan has been deposited at the Österreichisches Institut für Bautechnik and is handed over only to the approved bodies involved in the attestation of conformity procedure

<sup>29</sup> 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.

#### **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  $\mu = 3,9$  of water vapour diffusion resistance factor shall be used

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 hemp 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

Rainer Mikulits  
Managing Director

blank page