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Member of EOTA

European Technical Approval

ETA-12/0320

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Obchodní název
Trade name

Stavební a izolační desky VELOX
VELOX Building and Insulation Boards

Držitel schválení
Holder of approval

VELOX - WERK s.r.o.
Bělotínská 288
Hranice I - Město
CZ-753 01 Hranice
Czech Republic

Typ a použití výrobku
*Generic type and use
of construction product*

Štěpkocementové desky
Cement-bonded boards made of wood chips

Platnost od do
Validity from to

12.09.2012
11.09.2017

Výrobna
Manufacturing plant

VELOX - WERK s.r.o.
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Toto Evropské technické schválení
obsahuje
*This European Technical Approval
contents*

17 stran včetně 2 příloh
17 pages including 2 annexes



European Organisation for Technical Approvals
Evropská organizace pro technické schvalování

I. LEGAL BASES AND GENERAL CONDITIONS

- 1 This European Technical Approval is issued by the Technical and Test Institute for Construction Prague (Technický a zkušební ústav stavební Praha, s.p. - TZUS) 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 Council Directive 93/68/EEC of 22 July 1993² and Regulation (EC) No. 1882/2003 of the European Parliament and of the Council³;
 - the Governmental Decree No. 190/2002 of the Collection of Law⁴;
 - Common Procedural Rules for Requesting, Preparing and the Granting of European Technical Approvals set out in the Annex of Commission Decision 94/23/EC⁵;
- 2 The Technical and Test Institute for Construction Prague 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.
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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 Union N° L 284, 31.10.2003, p. 1

⁴ Governmental Decree No. 190/2002 of the Collection of Law of the Czech Republic, 10.04.2002

⁵ 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 product and intended use

1.1 Definition of the construction product

The VELOX Building and Insulation boards (called "VELOX boards" in the further text) are a rigid insulation product manufactured from loose wood chips, bonded with cement and compressed to its final thickness.

There are produced two types of boards as follows:

- factory made insulation boards made from cement-bonded **wood chips** - identifying mark **WS** and covering three subtypes of board - red **WS** board bears the **WSC** sign, board containing a higher ratio of cement bears the **WSD** sign and board containing a batten in its middle bears the **WSL** sign;
- **Composite Wood chips** board (composite insulation product in which wood chips are bonded with cement, on one face to EPS (expanded polystyrene); the final thickness of the "two layer" product, produced in this way, is determined during manufacture) - identifying mark **WS-C/2 EPS**.

EPS used for manufacturing of composite wood chips boards is expanded polystyrene defined in EN 13163. EPS 70 (at least) is used in manufacturing of the composite boards.

Cement used for bonding is defined in EN 197-1.

Boards are produced in thickness of 25 mm, 35 mm and 50 mm.

1.2 Intended use

The VELOX boards are used for the thermal insulation of buildings and can be also bonded onto wood structures as well as for fire protection. Boards are suitable to be used as a part of shuttering system (not covered by this ETA) and can be used as a part of an ETICS covering wood structures to increase the thermal mass and for protection against summery overheating. However, in this case the ETICS must be assessed according to relevant ETA.

The provisions made in this ETA are based on an assumed intended working life of the elements of 25 years. The indications given on the working life cannot be interpreted as a guarantee given by the producer or by the Approval Body, 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 the product and methods of verification

The evaluation of the fitness for use of the elements for the intended use was performed in conformity with the CUAP 12.01/32, version February 2012.

2.1 Mechanical resistance and stability (ER 1)

Not relevant.

2.2 Safety in case of fire (ER 2)

2.2.1 Reaction to fire

The VELOX boards are classified to have reaction to fire B-s1, d0 classified in accordance with EN 13501-1+A1. The boundary conditions stated in test reports have to be met.

Reaction to fire of EPS is declared on the basis of its CE marking.

2.3 Hygiene, health and environment (ER 3)

2.3.1 Release of dangerous substances

Based on the written declaration of the manufacturer, the VELOX boards do not contain harmful or dangerous substances as defined in the EU database.

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.

2.3.2 Compatibility with other materials (chloride content)

Chloride content of the VELOX boards is stated in table 1. The test method in accordance with CUAP 12.01/32, Annex B was used.

Table 1: Declared level of chloride content

Type of board	Declared level
WS	Cl1
WSD	

2.3.3 Water vapor transmission

Water vapor transmission properties were determined in accordance with EN 12086.

Declared (maximal) value of the water vapor diffusion resistance factor $\mu = 30$.

2.3.4 Water absorption

The short-term water absorption was determined in accordance with EN 1609, method A.

Declared (maximal) value is $W_p = 8 \text{ kg/m}^2$.

2.4 Safety in use (ER 4)

2.4.1 Compressive stress or compressive strength

The compressive stress at 10% deformation was determined in accordance with the principles of method described in EN 826.

Declared level of compressive stress of the VELOX boards is stated in table 2.

Table 2: Declared level of compressive stress

Type of board	Declared level
WS	CS(10/Y) 1000
WSD	CS(10/Y) 2000

2.4.2 Compressive creep (for boards exposed to compression loads only)

Not relevant.

Boards shall not be exposed to compression loads.

2.4.3 Bending strength

The bending strength was determined in accordance with EN 12089, method A.

Declared level of bending strength of the VELOX boards is stated in table 3.

Table 3: Declared level of bending strength

Type of board	Declared level
WS	BS 1300
WSD	BS 2000

2.4.4 Behavior under point load (for boards exposed to compression loads only)

Not relevant.

Boards shall not be exposed to compression loads.

2.4.5 Dimensional stability under specified temperature and humidity

The dimensional stability was determined in accordance with the principles of method described in EN 1604.

During the test no relative change in thickness $\Delta\varepsilon_d$ exceeded 3.0 % and no relative change in length $\Delta\varepsilon_l$ and width $\Delta\varepsilon_b$ exceeded 0.5 %.

2.4.6 Dimensional stability (for boards exposed to compression loads)

Not relevant.

Boards shall not be exposed to compression loads.

2.4.7 Tensile strength perpendicular to the faces of the composite products

The tensile strength perpendicular to the faces was determined in accordance with the principles of method described in EN 1607.

Declared value of the tensile strength is 80 kPa (no single value shall be lower).

2.4.8 Shear strength and shear modulus of elasticity of the composite products

The shear strength and shear modulus of elasticity was determined in accordance with the principles of method described in EN 12090.

Declared values are as follows:

- characteristic value of the shear strength $\tau_k \geq 0.04 \text{ N/mm}^2$
- mean value of the shear modulus $G_m \geq 1.0 \text{ N/mm}^2$

2.5 Protection against noise (ER 5)

2.5.1 Sound absorption

No performance determined.

2.6 Energy economy and heat retention (ER 6)

2.6.1 Thermal conductivity

The thermal conductivity of the VELOX boards was determined in accordance with the principles of method described in EN 12667 with simultaneous consideration of EN 13168, clause 4.2.1. The verification of declared value of the thermal conductivity was performed in accordance with the annex A.

Declared value of the thermal conductivity λ_D of the VELOX boards is maximal 0.15 W/m·K.

2.7 Aspects of durability, serviceability and identification

2.7.1 Durability and serviceability

2.7.1.1 Thickness

The thickness of boards was determined in accordance with the principles of method described in EN 823.

The tickness is declared in the class T2.

2.7.1.2 Squareness

The squareness of boards was determined in accordance with the principles of method described in EN 824.

The squareness is declared in the level S3.

2.7.1.3 Flatness

The flatness of boards was determined in accordance with the principles of method described in EN 825.

The deviation of flatness did not exceed 7 mm/m.

2.7.1.4 Apparent density

The apparent density of boards was determined in accordance with the principles of method described in EN 1602.

Declared value of the apparent density is as follows:

- WS board: 670 kg/m³ ± 10 %
- WSD board: 790 kg/m³ ± 10 %

2.7.1.5 Mass per unit area

The mass per unit area of boards was determined in accordance with the principles of method described in EN 1602.

Declared value of the apparent density of the 35 mm thick boards is as follows:

- WS board: 21 kg/m² ± 10 %
- WSD board: 28 kg/m² ± 10 %

2.7.1.6 Length and width

The length and width of boards was determined in accordance with EN 822.

Tolerances for class *L* of the length have been satisfied.

The width is declared in the class *W2*.

2.7.2 Identification

Upper board of each delivery package is labeled with relevant data, e.g. type of board, batch number and the CE marking.

3 Evaluation and attestation of conformity and CE marking

3.1 System of attestation of conformity

According to the Decision 1999/91/EC⁶ amended by the Decision 2001/596/EC⁷ of the European Commission the system 1 of the attestation of conformity applies.

This system of attestation of conformity is defined as follows:

System 1: Certification of the conformity of the product by an approved certification body on the basis of:

a) Tasks for the manufacturer:

- (1) factory production control (FPC);
- (2) further testing of samples taken at the factory by the manufacturer in accordance with a prescribed test plan.

b) Tasks for the notified body:

- (3) initial type testing (ITT);
- (4) initial inspection of factory and of factory production control;
- (5) continuous surveillance, assessment and approval of factory production control.

3.2 Responsibilities

3.2.1 Tasks for the manufacturer

3.2.1.1 Factory production control

At the manufacturing plant the manufacturer has implemented and continuously maintains a factory production control. 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 ensures that the product is in conformity with the European Technical Approval.

The manufacturer shall only use initial/raw/constituent materials (as relevant) supplied with the relevant inspection documents as laid down in the prescribed Control plan⁸ and documentation. The incoming raw materials shall be subject to controls and/or tests by the manufacturer before acceptance. Checking of incoming materials shall include control and inspection documents presented by the manufacturer of the raw materials by determining the material properties.

The ETA holder makes sure that for the components that he does not manufacture by himself, the factory production control (FPC) carried out by other manufacturers guarantees compliance of the components with the European Technical Approval.

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

The records shall be kept at least for five years time and shall be presented to the approved body (notified body) involved in continuous surveillance. On request they shall be presented to the approval body.

3.2.1.2 Other tasks for the manufacturer

The manufacturer shall, on the basis of a contract, involve a body (bodies) which is (are) approved for the tasks referred to in section 3.1 in the field of the boards in order to undertake the actions laid down in section 3.3. For this purpose, the Control

⁶ Official Journal of the European Communities N° L 29/44 from 03.02.1999

⁷ Official Journal of the European Communities N° L 209/33 from 02.08.2001

⁸ The prescribed control plan is a confidential part of the European Technical Approval and only handed over to the approved body or bodies involved in the procedure of attestation of conformity. See section 3.2.2.

plan referred to in section 3.2.1.1 and 3.2.2 shall be handed over by the manufacturer to the notified body.

The manufacturer shall make a declaration of conformity, stating that the construction product is in conformity with the provisions of this European Technical Approval.

3.2.2 Tasks for the notified body

3.2.2.1 Initial type testing of the product

For initial type-testing, the results of the tests performed as part of the assessment for the European Technical Approval may be used unless there are changes in the manufacturing process or manufacturing plant. Otherwise, the necessary initial type-testing shall be agreed between the Technical and Test Institute for Construction Prague and the notified body.

3.2.2.2 Initial inspection of factory and of factory production control

The notified body shall ascertain that, in accordance with the prescribed Control plan, the factory, in particular the staff and equipment, and the factory production control are suitable to ensure a continuous and orderly manufacturing of the boards (components) according to the specifications mentioned in section II of the European Technical Approval.

The notified body involved by the manufacturer shall issue an EC certificate of conformity of the product stating the conformity with the provisions of this European Technical Approval.

3.2.2.3 Continuous surveillance, assessment and approval of the factory production control

The notified body shall visit the factory at least once a year for surveillance. It shall be verified that the factory production control and the specified manufacturing process are maintained, taking account of the prescribed Control plan. On demand the results of continuous surveillance shall be made available by the notified body to the approval body.

In cases where the provisions of the European Technical Approval and its Control plan are no longer fulfilled the notified body shall withdraw the certificate of conformity and inform TZUS Prague without delay.

The notified 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 either to the product itself, a label attached to it, the packing or on the accompanying commercial documents. The letters „CE“ shall be followed by the identification number of the notified body and be accompanied by the following additional information:

- the name and address of the producer (legal entity responsible for the manufacture)
- the last two digits of the year in which the CE marking was affixed,
- the number of the EC certificate of conformity for the product (for AoC system 1),
- the number of the European Technical Approval,
- nominal length, width, thickness
- declared level of squareness
- declared thermal conductivity / declared thermal resistance or design thermal conductivity / thermal resistance
- level of compressive strength by 10% deformation or compressive stress

- reaction to fire (Euroclass)
- declared level of tensile strength (only for WS-C/2 EPS)
- shear strength and shear modulus of elasticity (only for WS-C/2 EPS)
- declared level of point load (where relevant)
- declared level of chloride content
- declared level of permeability
- declared level of water absorption
- declared level of compressive creep (where relevant)
- declared level of bending strength
- declared level of sound absorption
- declared dangerous substances

4 Assumptions under which the fitness of the product for the intended use was favorably assessed

4.1 Manufacturing

The ETA is issued for the product on the basis of agreed data/information, deposited with the approval body, which identifies the product that has been assessed and judged. Changes to the product/production process, which could result in this deposited data/information being incorrect, should be notified to the approval body before the changes are introduced. The approval body 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 assessment or alterations to the ETA, shall be necessary.

4.2 Installation

When installing the manufacturer's installation instructions shall be observed. The manufacturer's installation instructions shall be assessed by the approval body. The element shall only be installed in structures where it is protected from wetting, weathering and moisture.

As to the application of the elements, the respective national regulations shall in addition be observed.

The safety-at-work and health protection regulations have to be observed.

Only the components described in clause 1.1 of characteristics according to clause 2 of this ETA can be used for the boards.

4.3 Design

The European Technical Approval only applies to the manufacture and use of the boards.

5 Indications to the manufacturer

5.1 General

It is the responsibility of the ETA holder to ensure that all necessary information on design and installation is submitted to those responsible for design and execution of the works constructed with the boards.

5.2 Packaging, transport and storage

Packaging of the product shall be such that the insulation board is protected from humidity and mechanical damage during transport and storage unless there are other measures for this purpose provided for by the manufacturer.

The manufacturer has to provide details concerning packaging, transport and storage which shall be assessed by the approval body.

The manufacturer's instruction for packaging, transport and storage shall be observed.

5.3 Use, maintenance and repair

Before use, the boards must be checked, whether they were not damaged during transport or storage. Damaged board must be replaced with the new one.

Necessary repairs should be done as soon as possible.

Maintenance includes at least:

- repairs of localised damaged areas due to accidents
- the aspect maintenance with products adapted and compatible (possibly after washing or ad hoc preparation).

It is important to carry out maintenance using readily available products and equipment, without causing any damage to the appearance.

During the assembly, the boards may not be exposed to the weather. Elements, which have become damp, must be dried and checked for damage before they are used and assembled. Only faultless elements may be used.

It is the responsibility of the manufacturer to ensure that these provisions are easily accessible to the employees concerned and that all necessary information on maintenance is handed over to the user.

The original document is signed by:

Jozef Pôbiš

Head of the Approval Body

ANNEX A

DETERMINATION OF THE DECLARED THERMAL CONDUCTIVITY AND THE CONVERSION FACTOR TO MOISTURE CONTENT

1 Determination of the λ fractile value at 10 °C, at dry conditions ($\lambda_{10,dry, 90/90}$)

Tests and calculation of the thermal conductivity should be done in accordance with EN 13168, clause 4.2.1 or EN ISO 10456.

1.1 Measurement of the λ_{dry} at 10 °C

1.1.1 Test specimens for the determination of the thermal conductivity λ at 10 °C shall be conditioned to dryness after storage for at least 72 hours at (70 ± 2) °C in an oven ventilated with air taken at (23 ± 2) °C and (50 ± 5) % relative humidity.

1.1.2 The thermal conductivity of the test specimens conditioned according to above shall be measured according to EN 12667 or EN 12939 for thick products at a mean temperature of (10 ± 0.3) °C.

During the measurement, precaution shall be taken to avoid moisture absorption by the specimen. It is acceptable, for instance, to put the test specimen into a thin plastic bag.

1.2 Calculation of the λ fractile value at 10 °C, at dry conditions ($\lambda_{10,dry, 90/90}$)

The λ fractile at 10 °C, at dry conditions ($\lambda_{10,dry}$) as a limit value representing at least 90 % of the production with a confidence limit of 90 % shall be calculated using the procedures as detailed in EN 13162 Annex A. It shall be noted that the λ_D shall be calculated in accordance with clause 3.

2 Determination of the moisture conversion factor ($f_{u,1}$)

For the determination of the moisture conversion factor $f_{u,1}$, two sets of measurements are needed.

2.1 Set 1

At least three measurements on dry test specimens, to determine $\lambda_{10,dry}$ and u_{dry} (moisture content mass by mass) are required.

Procedure Set 1

- Dry the three specimens following the procedure in 1.1.1.
- Determine for each test specimen the mass in dry condition. Average the three values to determine the m_{dry} .
- The u_{dry} , being the moisture content in dry condition, is by definition set to 0.
- Determine for each test specimen the λ value at 10 °C following the procedure in 1.1.2. Average the three values to determine the $\lambda_{10,dry}$.

2.2 Set 2

At least three measurements on test specimens conditioned at (23 ± 2) °C and (50 ± 5) % relative humidity, to determine $\lambda_{10,(23,50)}$ and $u_{23,50}$ (moisture content mass by mass).

Procedure Set 2

- Condition the three test specimens at (23 ± 2) °C and (50 ± 5) % relative humidity following the procedures detailed in EN 13169 clause 5.2, step 2.
 - Determine for each test specimen the mass at (23 ± 2) °C and (50 ± 5) % relative humidity. Average the three values to determine the mass at 23 °C and 50 % relative humidity as $m_{23,50}$.
- Calculate $u_{23,50}$ by the formula (A.1)

$$u_{23,50} = \frac{m_{23,50} - m_{dry}}{m_{dry}} \quad (\text{A.1})$$

where,

- $m_{23,50}$ is average value, the mass at 23 °C and 50 % relative humidity
- m_{dry} - average value, the mass according to *clause 2, Procedure Set 1*

Determine for each test specimen the λ value in accordance with EN 12667 or EN 12939 for thick products at a mean temperature of $(10 \pm 0,3)$ °C. Average the three values to determine $\lambda_{10,(23,50)}$.

Conditioning of the specimen should be done according to the procedures detailed in EN 13169 clause 5.2, step 2.

2.3 Calculation of the moisture conversion factor ($f_{u,1}$)

The moisture conversion factor $f_{u,1}$ shall be calculated by the formula (A.2), derived from ISO 10456, formula 4:

$$f_{u,1} = \frac{\ln \frac{\lambda_{10,(23,50)}}{\lambda_{10,dry}}}{u_{23,50} - u_{dry}} \quad (\text{A.2})$$

where,

- $\lambda_{10,(23,50)}$ is average value
- $\lambda_{10,dry}$ - average value, according to clause 2.1, Procedure Set 1;
- $u_{23,50}$ - determined according to formula A.1;
- u_{dry} - described in clause 2.1, Procedure Set 1 and is defined to be 0.

3 Calculation of the declared thermal conductivity λ_D

The declared thermal conductivity λ_D shall be calculated using the formula (A.3):

$$\lambda_{10(23,50)} = \lambda_{10,dry,90/90} * e^{f_{u,1}(u_{23,50} - u_{dry})} \quad (\text{A.3})$$

where,

- $\lambda_{10,dry,90/90}$ is determined according to clause 2.1;
- $f_{u,1}$ - determined according to formula A.2;
- $u_{23,50}$ - determined according to formula A.1;
- u_{dry} - determined according to clause 2.1, Procedure Set 1 and is defined to be 0.

The calculated value $\lambda_{10(23/50)}$ shall be rounded upwards to the nearest 0.001 W/(m·K) and declared as $\lambda_{D(23,50)}$.

4 Determination of the conversion factor ($f_{u,2}$) to high moisture content

For the determination of the conversion factor to high moisture content $f_{u,2}$, two sets of measurements are needed.

4.1 Set 1

At least three measurements on test specimens conditioned at (23 ± 2) °C and (50 ± 5) % relative humidity, to determine $\lambda_{10,(23,50)}$ and $u_{23,50}$ (moisture content mass by mass).

Procedure Set 1

- Determine the $\lambda_{10,(23,50)}$ and $u_{23,50}$ in accordance with above mentioned formulas A.3 and A.1.

4.2 Set 2

At least three measurements on test specimens conditioned at $(23\pm 2)^{\circ}\text{C}$ and $(80\pm 5)\%$ relative humidity, to determine $\lambda_{10,(23,80)}$ and $u_{23,80}$ (moisture content mass by mass).

Procedure Set 2

- Condition the three test specimens at $(23\pm 2)^{\circ}\text{C}$ and $(80\pm 5)\%$ relative humidity following the procedures detailed in EN 13169 clause 5.2, step 2.
- Determine for each test specimen the mass at $(23\pm 2)^{\circ}\text{C}$ and $(80\pm 5)\%$ relative humidity. Average the three values to determine the mass at 23°C and 80% relative humidity as $m_{23,80}$.
- Calculate $u_{23,80}$ by the formula A.4:

$$u_{23,80} = \frac{m_{23,80} - m_{dry}}{m_{dry}} \quad (\text{A.4})$$

where,

- $m_{23,80}$ is average value, the mass at 23°C and 80% relative humidity according to clause 4.2;
- m_{dry} - the mass according to clause 2, Procedure Set 1

Determine for each test specimen conditioned according B.4.1.2.1 the λ value in accordance with EN 12667 or EN 12939 for thick products at a mean temperature of $(10\pm 0.3)^{\circ}\text{C}$. Average of the three values to determine $\lambda_{10,(23,80)}$.

4.3 Calculation of the conversion factor to high moisture content ($f_{u,2}$)

The conversion factor to high moisture content $f_{u,2}$ shall be calculated by the formula A.5, derived from ISO 10456, formula 4:

$$f_{u,2} = \frac{\ln \frac{\lambda_{10,(23,80)}}{\lambda_{10,(23,50)}}}{u_{23,80} - u_{23,50}} \quad (\text{A.5})$$

where,

- $\lambda_{10,(23,80)}$ is average value;
- $\lambda_{10,(23,50)}$ - determined according to formula A.3
- $u_{23,80}$ - determined according to formula A.4
- $u_{23,50}$ - determined according to formula A.1

NOTE 1: For the determination of the moisture conversion factor $f_{u,1}$ and the conversion factor to high moisture content $f_{u,2}$, the test specimens shall be taken from the same production run.

NOTE 2: Thermal conductivity may also be measured at mean temperatures other than 10°C , providing that the accuracy of the relationship between the temperature and thermal properties is well documented.

ANNEX B

REFERENCE DOCUMENTS

- CUAP (Common Understanding of Assessment Procedure) 12.01/32, version February 2012: Cement-bonded board made of wood chips
- EN 822:1994 Thermal insulating products for building applications - Determination of length and width
- EN 823:1994 Thermal insulating products for building applications - Determination of thickness
- EN 824:1994 Thermal insulating products for building applications - Determination of squareness
- EN 825:1994 Thermal insulating products for building applications - Determination of flatness
- EN 826:1996 Thermal insulating products for building applications - Determination of compression behavior
- EN 1602:1996 Thermal insulating products for building applications - Determination of the apparent density
- EN 1604:1996 Thermal insulating products for building applications - Determination of dimensional stability under specified temperature and humidity conditions
- EN 1607:1996 Thermal insulating products for building applications - Determination of tensile strength perpendicular to faces
- EN 12089:1997 Thermal insulating products for building applications - Determination of bending behavior
- EN 12090:1997 Thermal insulating products for building applications - Determination of shear behavior
- 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
- EN 13163:2008 Thermal insulation products for buildings - Factory made products of expanded polystyrene (EPS) - Specification
- EN 13168:2008 Thermal insulation products for buildings - Factory made wood wool (WW) products - Specification
- EN 13172:2008 Thermal insulating products - Evaluation of conformity
- EN 13501-1:2007+A1:2009 Fire classification of construction products and building elements - Part 1: Classification using data from reaction to fire tests
- Test report No. 070-043209 regarding the tests of cement-bonded boards made of wood chips, issued by Technický a zkušební ústav stavební Praha, s.p., branch office in Ostrava, Czech Republic, 22 February 2012
- Report No. Pr-11-1.172 regarding the reaction to fire tests of cement-bonded boards made of wood chips, issued by PAVÚS, a.s., Czech Republic, 14 November 2011
- Report No. Pr-11-1.173 regarding the reaction to fire tests of cement-bonded boards made of wood chips, issued by PAVÚS, a.s., Czech Republic, 14 November 2011
- Report No. Pr-11-1.174 regarding the reaction to fire tests of cement-bonded boards made of wood chips, issued by PAVÚS, a.s., Czech Republic, 14 November 2011
- Report No. Pr-11-1.175 regarding the reaction to fire tests of cement-bonded boards made of wood chips, issued by PAVÚS, a.s., Czech Republic, 14 November 2011
- Report No. PK1-01-11-046-C-0 regarding the classification of reaction to fire of cement-bonded boards made of wood chips, issued by PAVÚS, a.s., Czech Republic, 15 November 2011

Report No. PK1-01-11-047-C-0 regarding the classification of reaction to fire of cement-bonded boards made of wood chips, issued by PAVÚS, a.s., Czech Republic, 15 November 2011

Declaration of the manufacturer regarding the dangerous substances, 15 January 2012