

European Technical Approval ETA-11/0458

English translation prepared by DIBt - Original version in German language

Handelsbezeichnung
Trade name

"AESTUVER"

Zulassungsinhaber
Holder of approval

Fermacell GmbH
Düsseldorfer Landstraße 395
47259 Duisburg
DEUTSCHLAND

Zulassungsgegenstand
und Verwendungszweck
*Generic type and use
of construction product*

Brandschutzplatte
Fire protective board

Geltungsdauer:
Validity: vom
from
bis
to

27 June 2013
5 January 2017

Herstellwerk
Manufacturing plant

10

Diese Zulassung umfasst
This Approval contains

18 Seiten einschließlich 6 Anhänge
18 pages including 6 annexes

Diese Zulassung ersetzt
This Approval replaces

ETA-11/0458 mit Geltungsdauer vom 05.01.2012 bis 05.01.2017
ETA-11/0458 with validity from 05.01.2012 to 05.01.2017

I LEGAL BASES AND GENERAL CONDITIONS

- 1 This European technical approval is issued by Deutsches 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 Council Directive 93/68/EEC² and Regulation (EC) N° 1882/2003 of the European Parliament and of the Council³;
 - *Gesetz über das In-Verkehr-Bringen von und den freien Warenverkehr mit Bauprodukten zur Umsetzung der Richtlinie 89/106/EWG des Rates vom 21. Dezember 1988 zur Angleichung der Rechts- und Verwaltungsvorschriften der Mitgliedstaaten über Bauprodukte und anderer Rechtsakte der Europäischen Gemeinschaften (Bauproduktengesetz - BauPG) vom 28. April 1998⁴, as amended by Article 2 of the law of 8 November 2011⁵;*
 - Common Procedural Rules for Requesting, Preparing and the Granting of European technical approvals set out in the Annex to Commission Decision 94/23/EC⁶;
 - Guideline for European technical approval of "Fire Protective Products - Part 4: Fire protective board, slab and mat products and kits", ETAG 018-04.
- 2 Deutsches 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 Deutsches 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 Deutsches 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.

¹ Official Journal of the European Communities L 40, 11 February 1989, p. 12
² Official Journal of the European Communities L 220, 30 August 1993, p. 1
³ Official Journal of the European Union L 284, 31 October 2003, p. 25
⁴ *Bundesgesetzblatt Teil I 1998*, p. 812
⁵ *Bundesgesetzblatt Teil I 2011*, p. 2178
⁶ Official Journal of the European Communities L 17, 20 January 1994, p. 34

II SPECIFIC CONDITIONS OF THE EUROPEAN TECHNICAL APPROVAL

1 Definition of the product and intended use

1.1 Definition of the construction product

This European technical approval applies for the fire protective boards with the designation "AESTUVER".

"AESTUVER" fire protective boards are special cement-bonded, glass fibre-reinforced boards, produced from a mixture of cement, lightweight mineral aggregates and water. The fire protective boards are produced in a multi-layer design⁷.

Dimensions and apparent density of "AESTUVER" fire protective boards shall be gathered from Table 1.

Table 1 Dimensions and dry apparent density of "AESTUVER" fire protective board

Board thickness ⁸ mm	Length/width mm	Tolerance mm	Dry apparent density kg/m ³
10 ± 1	≤ 3000 x ≤ 1250	± 2	950 ± 15 %
15 ± 1			800 ± 15 %
20 ± 1			700 ± 15 %
25 ± 1			690 ± 15 %
30 ± 1			680 ± 15 %
40 ± 1			650 ± 15 %
50 ± 1			650 ± 15 %
60 ± 1			640 ± 15 %

1.2 Intended use

1.2.1 General

The "AESTUVER" fire protective boards may be used as membrane protection for building elements or as components of fire-resistant building elements.

1.2.2 Field of application

1.2.2.1 Use categories related to the intended use

As specified in Table 2 the "AESTUVER" fire protective boards are intended for the following fields of application of the use categories 1 to 10 according to ETAG 018-1:

⁷ The manufacturing process of "AESTUVER" fire protective boards is deposited with the Deutsches Institut für Bautechnik.

⁸ Intermediate board thicknesses are possible.

Table 2 Use categories related to the intended use

Intended use	Use category
Fire Protective Products as a horizontal membrane protection	Type 1
Fire Protective Products as a vertical membrane protection	Type 2
Fire Protective Products to protect load-bearing concrete elements	Type 3
Fire Protective Products to protect load-bearing steel elements	Type 4
Fire Protective Products to protect load-bearing flat concrete profiled sheet composite elements	Type 5
Fire Protective Products to protect load-bearing concrete filled hollow steel columns	Type 6
Fire Protective Products to protect load-bearing timber elements	Type 7
Fire Protective Products that contribute to the fire resistance of fire separating assemblies with no load bearing requirements	Type 8
Fire Protective Products that contribute to the fire resistance of technical services assemblies in buildings	Type 9
Further intended uses, related to fire compartmentation or protection of fire performance, not covered by types 1 to 9	Type 10

Within the framework of this European technical approval not all intended uses related to the resistance-to-fire performance have been evaluated. Appendix 1 of the approval lists designs for which an evaluation of the fire resistance was carried out. Concerning the fire resistance performance, this approval applies to claddings and building elements in accordance with the specifications of this Appendix 1 only.

1.2.2.2 Use categories related to weather exposure

The "AESTUVER" fire protective boards are intended for the following fields of application in use categories according to ETAG 018-1:

Type X: Fire protective boards intended for all uses (internal, semi-exposed and exposed)

Type Y: Fire protective boards intended for internal and semi-exposed use

Type Z₁: Fire protective boards intended for internal use, in high humidity environments

Type Z₂: Fire protective boards intended for internal use only.

1.2.3 Working life

The provisions made in this European technical approval are based on an assumed working life of the fire protective boards of 25 years (provided the fire protective boards are subject to an appropriate use according to the provisions of this approval). The indications given on the working life cannot be interpreted as a guarantee given by the producer, but are to be regarded only as a means for choosing the right products in relation to the expected economically reasonable working life of the works.

2 Characteristics of the product and methods of verification

2.1 Characteristics of products

2.1.1 Mechanical resistance and stability

Not relevant

2.1.2 ER2 Safety in case of fire

2.1.2.1 Reaction to fire

According to Decisions 96/603/EC and 2000/605/EC of the European Commission⁹, the uncoated "AESTUVER" fire protective boards are classified in class A1 according to EN 13501-1.

2.1.2.2 Resistance to fire

The resistance-to-fire performance of claddings and building elements executed by using the "AESTUVER" fire protective boards shall be gathered from Appendix 1.

2.1.3 ER3 Hygiene, health and the environment

2.1.3.1 Water permeability

The water permeability of the "AESTUVER" fire protective boards was determined in accordance with EN 12467, clause 7.3.3. The result corresponds to the specifications of EN 12467, clause 5.4.4.

2.1.3.2 Release of dangerous substances

The European technical approval is granted for the "AESTUVER" fire protective boards the chemical composition of which was completely available to Deutsches Institut für Bautechnik for evaluation.

Changes to the material, the composition or the properties of the fire protective boards shall be communicated to the approval body without delay, which shall decide whether a new assessment will be necessary.

Note: 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 Construction Products Directive, these requirements need also to be complied with, when and where they apply.

2.1.4 ER 4 Safety in use

2.1.4.1 Flexural strength

The flexural strength of the "AESTUVER" fire protective boards, expressed as mean value of the modulus of rupture (MOR) determined according to EN 12467, clause 7.3.2, shall be as follows:

- from a thickness of 10 mm at least 3.5 MPa,
- from a thickness of 15 mm at least 3.0 MPa,
- from a thickness of 30 mm at least 2.0 MPa,
- with a thickness of 60 mm at least 1.5 MPa.

⁹ Official Journal of the European Communities L 267/23 of 19.10.1996 and L258/36 of 12.10.2000

2.1.4.2 Dimensional stability

The relative change in length of the "AESTUVER" fire protective boards after a change in the relative humidity, tested according to EN 318, is for boards with a thickness of 10 mm and 20 mm

- 0.3 mm/m when the relative air humidity changes from 65 % to 85 % (swelling behaviour)
- -0.4 mm/m when the relative air humidity changes from 65 % to 30 % (shrinking behaviour).

The relative change in thickness of the "AESTUVER" fire protective boards after a change in the relative humidity (dimensional stability), tested according to EN 318, is

- for boards with a thickness of 10 mm
 - 0.0 % when the relative air humidity changes from 65 % to 85 % (swelling behaviour)
 - -0.1 % when the relative air humidity changes from 65 % to 30 % (shrinking behaviour)
- and for boards with a thickness of 20 mm
 - 0.1 % when the relative air humidity changes from 65 % to 85 % (swelling behaviour)
 - -0.1 % when the relative air humidity changes from 65 % to 30 % (shrinking behaviour).

2.1.4.3 Tensile strength perpendicular to the plane of the board

The average tensile strength perpendicular to the plane of the board determined according to EN 319 is for the fire protective boards "AESTUVER" with a thickness of

- 10 mm: at least 1.5 MPa
- 20 mm: at least 0.8 MPa.

2.1.4.4 Tensile strength parallel to the plane of the board

The average tensile strength parallel to the plane determined according to EN 789, clause 9, is for the fire protective boards "AESTUVER" with a thickness of

- 10 mm: at least 1.5 MPa
- 20 mm: at least 2.6 MPa.

2.1.4.5 Compressive strength

The average compressive strength determined according to EN 789, clause 8, is for the fire protective boards "AESTUVER" with a thickness of

- 10 mm: at least 24.4 MPa
- 20 mm: at least 9.3 MPa.

2.1.5 ER 5 Protection against noise

No performance determined

2.1.6 ER 6 Energy economy and heat retention

2.1.6.1 Thermal resistance

No performance determined

2.1.6.2 Water vapour transmission

The water vapour diffusion resistance coefficient μ for the "AESTUVER" fire protective boards determined according to EN ISO 12572, test condition A, is for boards with a thickness of

- 10 mm: 36
- 15 mm: 25
- 20 mm: 54.

2.1.7 Aspects of durability and serviceability

2.1.7.1 Resistance to deterioration caused by water

The resistance to deterioration caused by water shall be determined according to EN 12647, clause 7.3.5.

The "AESTUVER" fire protective boards are resistant to deterioration caused by water.

2.1.7.2 Resistance to soak/dry

The resistance to soaking/drying shall be determined according to EN 12647, clause 7.3.6.

The "AESTUVER" fire protective boards are resistant to soaking/drying.

2.1.7.3 Resistance to freeze/thaw

The resistance to freeze/thaw cycles shall be determined according to EN 12647, clause 7.4.1.

The "AESTUVER" fire protective boards are resistant to freeze/thaw cycles.

2.1.7.4 Resistance to heat/rain

The resistance to heat/rain shall be determined according to EN 12647, clause 7.4.2.

The "AESTUVER" fire protective boards are resistant to heat/rain.

2.1.8 Identification

2.1.8.1 Characteristics and product properties

The "AESTUVER" fire protective boards shall show the dimensions and the apparent density according to Table 1.

2.1.8.2 Composition

The materials used to produce the "AESTUVER" fire protective boards and their composition shall comply with the specifications deposited with Deutsches Institut für Bautechnik.

Changes shall be notified to Deutsches Institut für Bautechnik before the changes are introduced.

2.1.8.3 Flexural strength

The flexural strength of the "AESTUVER" fire protective boards, expressed as mean value of the modulus of rupture (MOR) determined according to EN 12467, clause 7.3.2 shall be as follows:

- from a thickness of 10 mm at least 3.5 MPa,
- from a thickness of 15 mm at least 3.0 MPa,
- from a thickness of 30 mm at least 2.0 MPa,
- with a thickness of 60 mm at least 1.5 MPa.

2.2 Additional components

Information on additional components which were tested within the framework of this European technical approval for evaluating the resistance to fire shall be gathered from Appendix 2.

Any changes in the material, the composition, the dimensions or the properties of the additional components shall be communicated to Deutsches Institut für Bautechnik without delay, which shall decide whether a new assessment will be necessary.

Additional components which are stated in this European technical approval in the context of evaluating the resistance to fire are not regulated via this approval and can, therefore not bear the CE marking.

3 Evaluation and attestation of conformity and CE marking

3.1 System of attestation of conformity

3.1.1 For fire compartmentation and/or fire protection of fire performance

According to the decision 1999/454/EC of the European Commission¹⁰ and the amendment according to the Decision 2001/596/EC of the European Commission¹¹, system 1 of the attestation of conformity applies.

The System of attestation of conformity is detailed 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;
 - (2) further testing of samples taken at the factory by the manufacturer in accordance with a prescribed test plan;
- (b) Tasks for the approved body:
 - (3) initial type-testing of the product;
 - (4) initial inspection of factory and of factory production control;
 - (5) continuous surveillance, assessment and approval of factory production control.

Note: Approved bodies are also referred to as "notified bodies".

For the initial type testing of the product (see Annex III.1.a of the CPD) the tasks for the approved body will be limited to the following characteristics, where relevant:

- Resistance to fire
- Mechanical resistance and stability
- Release of dangerous substances

For the initial inspection of the factory and of the factory production control (see Annex III.1.f) of the CPD), and for the continuous surveillance, judgement and assessment of the factory production control (see Annex III.1 g) of the CPD), parameters related to the following characteristics shall be of interest to the approved body, where relevant:

- Mechanical resistance and stability

3.1.2 Uses subject to reaction to fire regulations

According to the decision 1999/454/EC of the European Commission¹⁰ and the amendment according to the Decision 2001/596/EC of the European Commission¹¹, system 4 of the attestation of conformity applies.

The System of attestation of conformity is detailed as follows:

System 4: Declaration of conformity of the product by the manufacturer on the basis of:

Tasks for the manufacturer:

- (1) initial type-testing of the product;
- (2) factory production control.

¹⁰ Official Journal of the European Communities L 178/52 of 14/7/1999

¹¹ Official Journal of the European Communities L 209/33 of 2/8/2001

3.2 Responsibilities

3.2.1 Tasks for the manufacturer

3.2.1.1 Factory production control

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

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

The manufacturer shall maintain a traceable documentation of the production process from purchasing or delivery of raw or basic raw materials up to the storage and delivery of finished products.

The personnel involved in the production process shall be identified, sufficiently qualified and trained to operate and maintain the production equipment. Machinery and equipment shall be regularly maintained and this shall be documented. All processes and procedures of production shall be recorded at regular intervals.

Where necessary, measuring equipment shall be

- calibrated or verified at specific intervals, or prior to use, against measurement standards traceable to international or national measurement standards; where no such standards exists, the basis used for calibration shall be recorded;
- be adjusted or re-adjusted as necessary;
- be identified to enable calibration standard to be determined;

When the equipment is found not to conform to requirements the validity of previous measuring results shall be assessed and recorded. Appropriate action shall be taken on the equipment and any product affected.

The factory production control shall be in accordance with the control plan which is part of the technical documentation of this European technical approval. The control plan is laid down in the context of the factory production control system operated by the manufacturer and deposited with Deutsches Institut für Bautechnik.¹²

The results of factory production control shall be recorded and evaluated in accordance with the provisions of the control plan. The records shall include at least the following information:

- name of the construction product or the constituent material and the components,
- type of control or test,
- date of production and testing of the construction product or the constituent material or components,
- result of controls and testings and, if appropriate, comparison with requirements,
- signature of person responsible for factory production control.

¹²

The control plan is a confidential part of the European technical approval and only handed over to the approved body involved in the procedure of attestation of conformity. See section 3.2.2.

The records shall be archived for at least five years. They shall be submitted to the approved body responsible for continuous surveillance and Deutsches Institut für Bautechnik upon request.

If the test results are insufficient, the manufacturer shall take appropriate measures to rectify the shortcomings. Construction products which do not meet the requirements shall be treated such that they cannot be mistaken for products in compliance. After rectification of the shortcoming – where technically possible and required to verify rectification of the shortcoming – the test in question shall be repeated.

3.2.1.2 Other tasks for the manufacturer

The manufacturer shall, on the basis of a contract, involve a body which is approved for the tasks referred to in section 3.1 in the field of fire protective boards in order to undertake the actions laid down in section 3.2.2. For this purpose, the control plan referred to in section 3.2.1.1 shall be handed over by the manufacturer to the approved body involved.

3.2.2 Tasks for the approved bodies

The approved body shall perform the

- initial type-testing of the product,
- initial inspection of factory and of factory production control,
- continuous surveillance, assessment and approval of factory production control

in accordance with the provisions laid down in the control plan.

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

The approved certification 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.

In cases where the provisions of the European technical approval and its control plan are no longer fulfilled the certification body shall withdraw the certificate of conformity and inform Deutsches Institut für Bautechnik without delay.


3.3 CE marking

3.3.1 General

The CE marking shall be affixed on the product itself or on the packaging and on the accompanying commercial document, e.g. the EC declaration of conformity. The letters "CE" shall be followed by the identification number of the approved certification body, where relevant, and be accompanied by the following additional information:

- identification number of the notified body,
- the name and address of the producer (legal entity responsible for the manufacture) and of the plant where the product was manufactured
- 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,
- the number of the European technical approval,
- the number of the guideline for the European technical approval
- Product identification,
- use category(ies)
 - related to weather exposure
 - related to the intended use
- nominal board thickness.

3.3.2 Example of CE marking


xxxx
Fermacell GmbH Düsseldorfer Landstraße 395 47259 Duisburg 10
xx
xxxx-EC-xxx
ETA No. 11/0458
ETAG 018 Part 1 and 4 Fire Protective Board
"AESTUVER" Fire Protective Board
Use category(ies) Type X, Y, Z ₁ or Z ₂
Use category(ies) Type 1, 2, 3, 4, 5, 6, 7, 8, 9, 10
xx mm

Initials 'CE'
Number of Notified Body
Name and adress of the ETA- holder
Code of the manufacturing plant
Two last digits of year of affixing CE marking
Number of EC certificate of conformity
ETA Number
ETAG Reference
Product identification
Use category(ies) related to weather exposure
Use category(ies) related to the intended use
Nominal board thickness

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

4.1 Manufacturing

The "AESTUVER" fire protective boards shall be produced in manufacturing plant 10 in accordance with the manufacturing process deposited with Deutsches Institut für Bautechnik.

The European technical approval is issued for the product on the basis of agreed data/information, deposited with Deutsches Institut für Bautechnik, which identifies the product that has been assessed and judged. Changes to the product or production process, which could result in this deposited data/information being incorrect, should be notified to Deutsches Institut für Bautechnik before the changes are introduced. Deutsches Institut für Bautechnik will decide whether or not such changes affect the approval and consequently the validity of the CE marking on the basis of the approval and if so whether further assessment or alterations to the approval shall be necessary.

4.2 Installation of executions according to Appendix 2

4.2.1 Steel trapezoidal ceiling

The steel trapezoidal ceiling shall be executed in accordance with Appendix 2.

4.2.2 Installation

The arrangement and installation of the fire protective boards shall be executed in accordance with the specifications in Appendix 2.

4.2.3 Joint execution

The joints shall be executed in accordance with the specifications in Appendix 2.

4.2.4 Processing

The fire protective boards can generally be processed with all wood processing machines and hand tools and may be sawed, milled, rasped, ground and drilled. Use of power cutting and drilling tools is recommended. If power cutting tools are used, dust extraction is recommended. The manufacturer's instructions shall be observed for further details on processing.

4.2.5 Surface treatment

For any optional surface treatment of the fire protective boards the manufacturer's instructions shall be observed.

The fire reaction of the fire protective boards is not verified if the surfaces are coated with additional paint, laminates or cladding etc.

Verification of the fire resistance of fire protective boards coated with additional paint, laminates, cladding etc. is not part of this European technical approval.

5 Indications to the manufacturer

5.1 Packaging, transport and storage

The provisions of EN 12467 shall be observed for packaging "AESTUVER" fire protective boards. The construction products shall be stored in accordance with the manufacturer's specifications. The fire protective boards shall be protected against damage.

In addition, the fire protective boards shall be protected against detrimental effects of moisture, e.g. from precipitation or high levels of moisture from construction by covering the fire protective boards with plastic sheets, for example.

Damaged fire protective boards shall not be used.

5.2 Use, maintenance, repair

5.2.1 The fire protection properties of cladding or building elements executed using "AESTUVER" fire protective boards shall not be negatively affected by future changes to buildings or building elements.

5.2.2 The evaluation of serviceability is based on the assumption that damaged boards are replaced and not used. It is also assumed that components are replaced during maintenance work using material regulated via the European technical approval.

Prof. Gunter Hoppe
Head of Department

beglaubigt:
von Hoerschelmann

Fire-resistant executions which were verified via this European technical approval

Table 1.0 provides an overview of the fire-resistant executions the fire resistance of which was evaluated in the context of this European technical approval.

Executions designed in compliance with this table and with the specifications of this Appendix are verified in terms of their fire resistance in this European technical approval.

Table 1.0

Executions evaluated in this ETA	Classification according to EN 13501-2	Test method	Intended use according to ETAG 018-1 (use category)	Details	Date of addition to this ETA
Steel trapezoidal profile ceiling (load-bearing) with planking made of 15 mm thick "AESTUVER" fire protective boards	RE 120 REI 30	EN 1363-1 and EN 1365-2	Type 10	Appendix 2	5 January 2012 Revised: 27 th June 2013

"AESTUVER"

APPENDIX 1 - Overview of the fire-resistant executions verified by this European technical approval

Annex 1

2 Execution of a load-bearing steel trapezoidal profile ceiling with planking made of 20 mm thick "AESTUVER" fire protective boards in two layers (use category 10).

2.1 Classification

The execution listed in Table 1.0 was tested in accordance with EN 1363-1 and EN 1365-2 and fulfils the requirements of class REI 30 and RE 120 according to EN 13501-2.

2.2 Steel trapezoidal ceiling

For the steel trapezoidal ceiling steel trapezoidal profiles in accordance with EN 14782 shall be used in accordance with the specifications of Table 2.0.1.

Table 2.0.1

Sheet thickness [mm]	Spacing upper/lower flange [mm]	Permitted span [mm]
$\geq 0,75$	≤ 280	in accordance with static requirement, deflection $\leq l/300$ mm

The steel trapezoidal profiles can be arranged in positive or negative positions. The upper and lower flanges shall be sufficiently wide to secure the fire protective boards.

The suitability and design of the steel trapezoidal profiles and their fixings shall be determined by measurement or testing in accordance with the static requirements applicable in the Member State of destination.

2.3 Fastening of the steel trapezoidal ceiling

The fastening of the steel trapezoidal ceiling shall be carried out in accordance with the specifications of Table 2.0.2.

Table 2.0.2

	Fastening to the perimeter building element	Fastening the steel trapezoidal profiles to one another
Position of fixing	Right angle to the longitudinal profiles on the lower flange (double-sided), 2 screws per side	Parallel to the longitudinal profiles in the areas where the sheets overlap
Spacing of the fixing	≤ 280 mm	≤ 600 mm
Fixings	Suitable screws with sufficient corrosion protection and - shaft diameter $d \geq 5.5$ mm - head diameter $d \geq 10.5$ mm - length $l \geq 20$ mm	

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APPENDIX 2

Use category 10 – Cladding of a load-bearing steel trapezoidal profile ceiling
- Execution of the steel trapezoidal ceiling -

Annex 2

2.4 Installing of the fire protective boards

15 mm-thick "AESTUVER" fire protective boards shall be used without additional laminates or coatings on the surfaces.

The fire protective boards shall be fitted beneath the steel trapezoidal profiles in two layers in transverse direction to the supporting direction of the steel trapezoidal profiles.

The fire protective boards shall be butt-jointed. The joints between the fire protective boards shall be staggered in accordance with Annex 4.

2.5 Fastening of the fire protective boards

The fire protective boards shall be fastened on 4 sides to the lower flanges of the steel trapezoidal profiles as described in Table 2.0.3. An edge distance of at least 25 mm shall be maintained.

Table 2.0.3

	1st layer of boards	2nd layer of boards
Position of the fixing	On every second lower flange	On every lower flange
Spacing of the fixing	≤ 600 mm	≤ 300 mm
Fixings	Fermacell Powerpanel screws 3.9 x 40	Fermacell Powerpanel screws 3.9 x 55

The technical details on the Fermacell Powerpanel screws are deposited with Deutsches Institut für Bautechnik.

2.6 Connection to adjacent building elements

The fire protective boards shall be arranged so that their faces border separating fire-resistant building elements of at least the same fire resistance class as the steel trapezoidal profiles clad with fire protective boards.

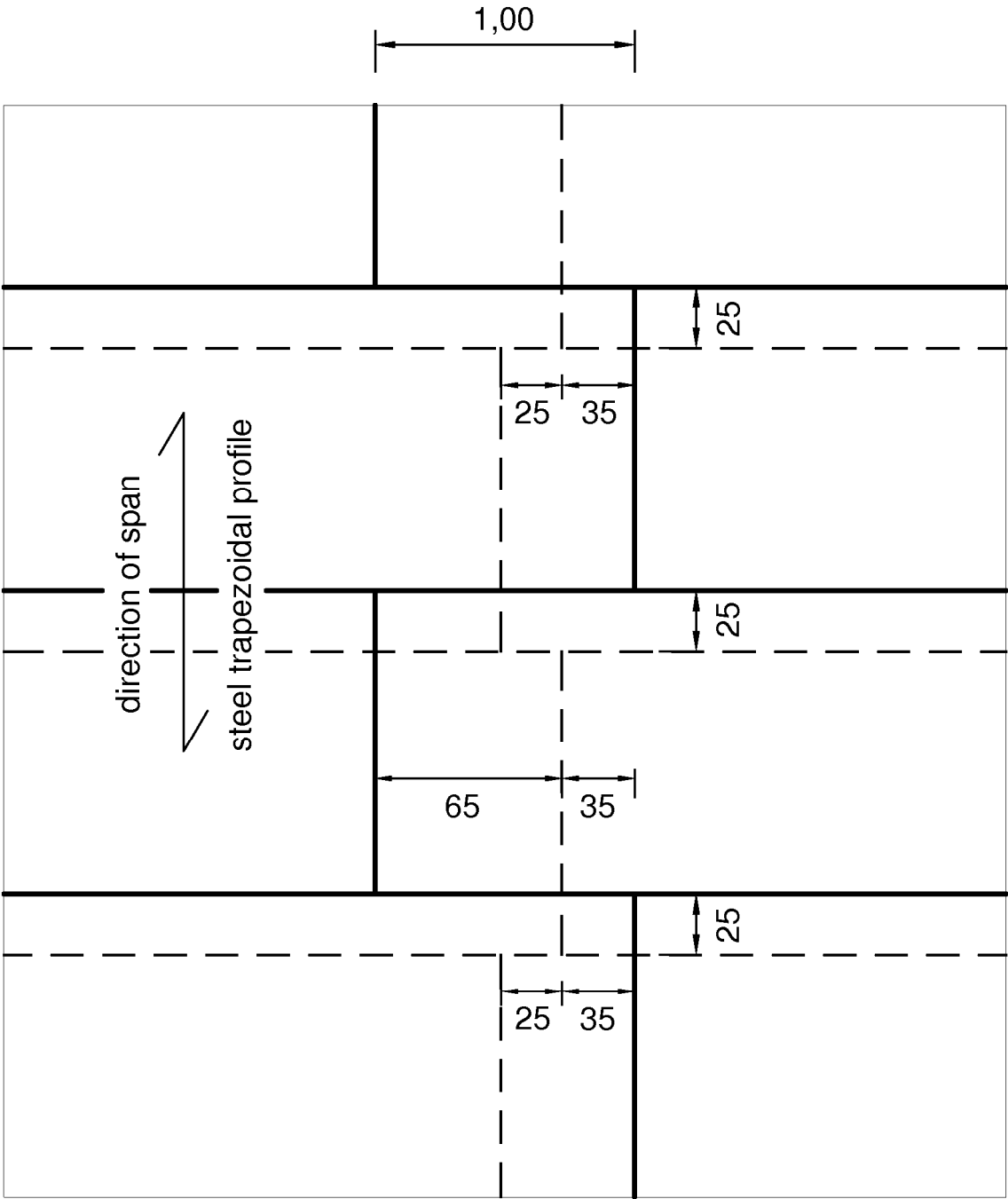
All joints between the faces of the fire protective boards and the adjacent separating fire-resistant building elements shall be filled with dimensionally stable mineral wool produced from molten stone on all sides and completely, and then sealed. The mineral wool shall be in accordance with EN 13162 and shall have a reaction-to-fire class A1/A2-s1,d0 in accordance with DIN EN 13501-1.

"AESTUVER"

APPENDIX 2

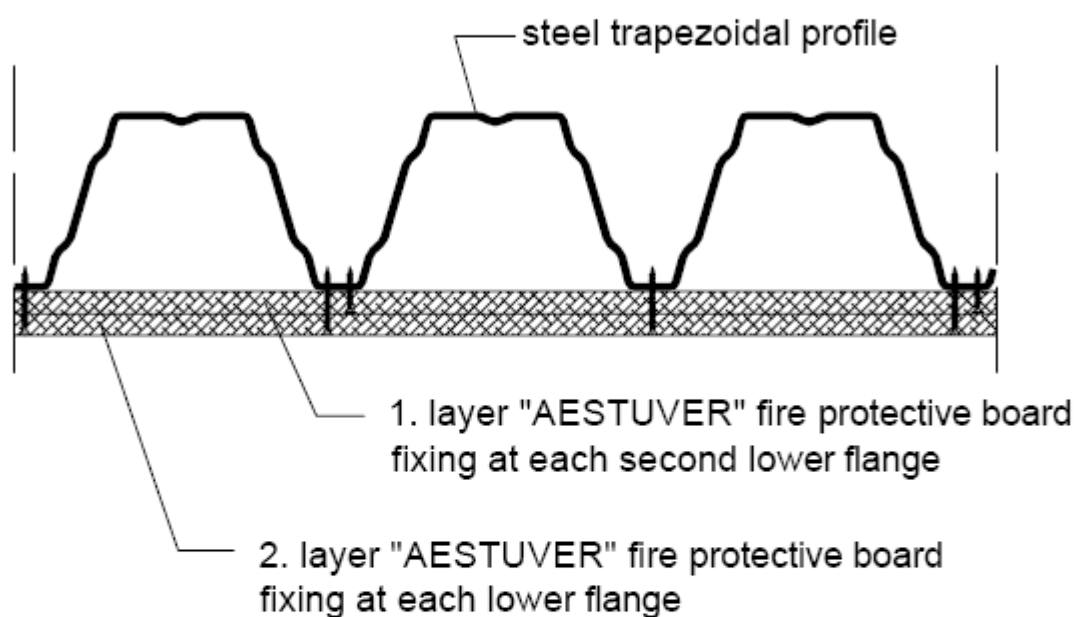
Use category 10 – Cladding of a load-bearing steel trapezoidal profile ceiling
- Execution of the fire protection boards -

Annex 3



- 1. layer "AESTUVER" fire protective board (to steel trapezoidal profile)
- - 2. layer "AESTUVER" fire protective board

"AESTUVER"	Annex 4
APPENDIX 2 Use category 10 – Cladding of a load-bearing steel trapezoidal profile ceiling - Top view -	



	1. layer of board	2. layer of board
Position of fixing	At each second lower flange	At each lower flange
Center distance of fixing material	≤ 600 mm	≤ 300 mm
Fixing material	"Fermacell Powerpanel screw" 3.9 mm x 40 mm	"Fermacell Powerpanel screw" 3.9 mm x 55 mm

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APPENDIX 2

Use category 10 – Cladding of a load-bearing steel trapezoidal profile ceiling
- Cross section -

Annex 5

REFERENCE LIST

- ETAG No 018-1 (Edition November 2004)
Guideline for European Technical Approval of fire protective products - Part 1: General
- ETAG No 018-4 (Edition November 2004)
Guideline for European Technical Approval of fire protective products - Part 4: Fire protective board, slab and mat products and kits
- | | |
|----------------------|---|
| EN 13501-1:2010-01 | Fire classification of construction products and building elements
- Part 1: Classification using data from reaction to fire tests |
| EN 13501-2:2008-01 | Fire classification of construction products and building elements
- Part 2: Classification using data from resistance tests, excluding ventilation services |
| EN 1363-1:1999-10 | Fire Resistance tests – Part 1: General requirements |
| EN 1365-2:2000-02 | Fire resistance tests for loadbearing elements – Part 2: Floors and roofs |
| EN 13162:2009-02 | Thermal insulation products for buildings – Factory made mineral wool (MW) products – Specification |
| EN 14782:2006-03 | Self-supporting metal sheet for roofing, external cladding and internal lining - Product specification and requirements |
| EN 318:2002-06 | Wood-based panels – Determination of dimensional changes associated with changes in relative humidity |
| EN 319:1993-08 | Particleboards and fibreboards – Determination of tensile strength perpendicular to the plane of the board |
| EN 789:2005-01 | Timber structures – Test methods – Determination of mechanical properties of wood based panels |
| EN 1062-3:2008-04 | Paints and varnishes – Coating materials and coating systems for exterior masonry and concrete Part 3: Determination of liquid water permeability |
| EN 12467:2006-12 | Fibre cement flat sheets – Product specification and test methods; |
| EN ISO 12572:2001-09 | Hygrothermal performance of building materials and products - Determination of water vapour transmission properties |

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APPENDIX 3

List of documents referred to

Annex 6