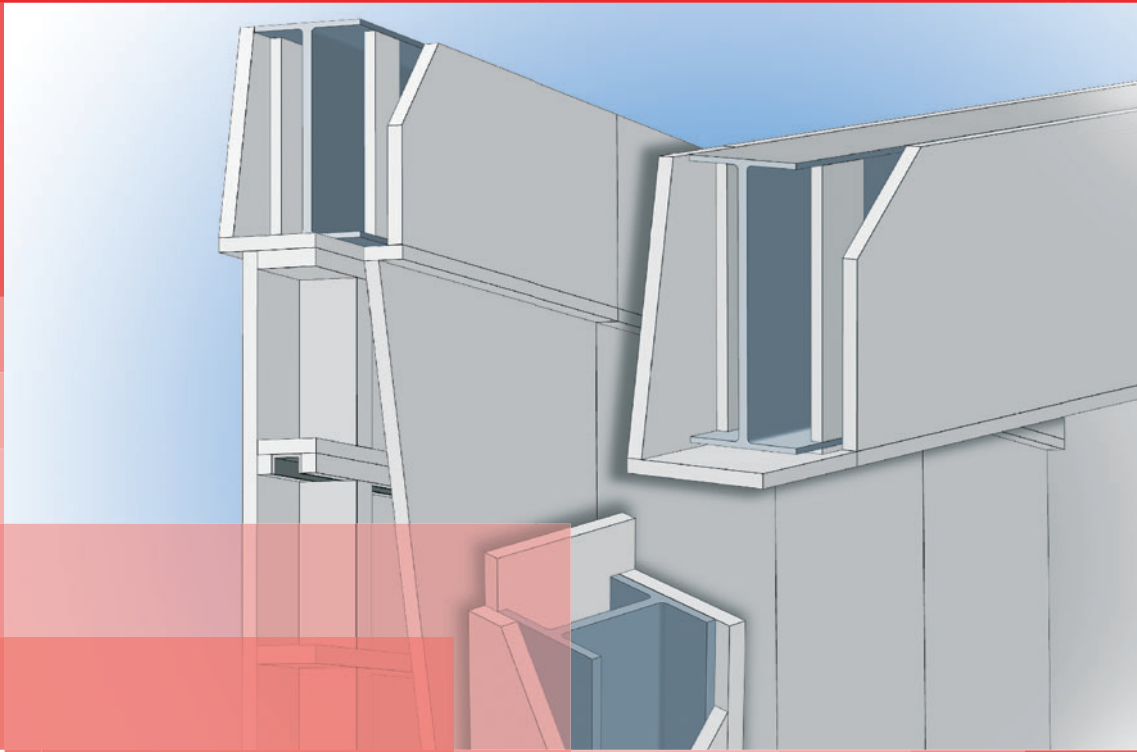


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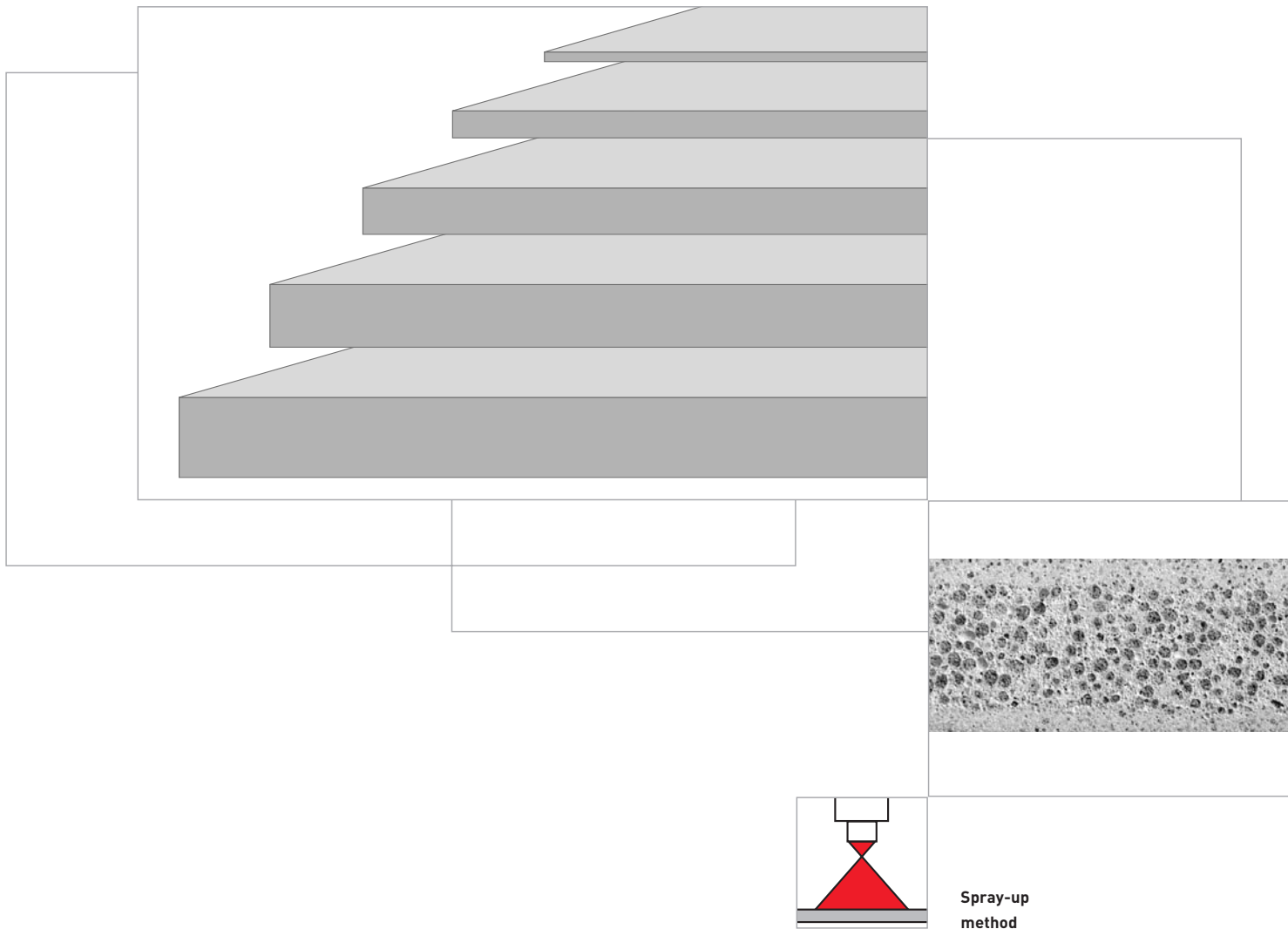


AESTUVER

**The universal
fire protection board**

xella

AESTUVER – the universal fire protection board.



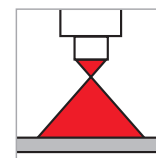
AESTUVER – a new-generation building material.

In developing AESTUVER, the matrix structure of conventional building boards was put into question. Thanks to a new matrix formulation, conventional components such as sand, cement and fibres have been replaced by new high-tech materials. Instead of sand, which brings a number of disadvantages when used in fire protection boards, the AESTUVER matrix is enriched with expanded glass granules. Their apparent density is only 1/10 that of sand, while offering clearly better structural properties. For reinforcement, AESTUVER glass-fibre

reinforced lightweight concrete boards use alkaline-resistant glass fibres instead of cellulose or plastic fibres for excellent compressive and tensile bending strength.

The AESTUVER spray-up method.

With the proven AESTUVER spray-up method, a production technique is available which allows longer glass fibres to be embedded in the concrete. These have much better reinforcing properties. In the spray injection process, the endless glass fibre is cut into sections up to 5 cm long, and it is directly added to the mortar jet. Glass fibre and matrix application is an



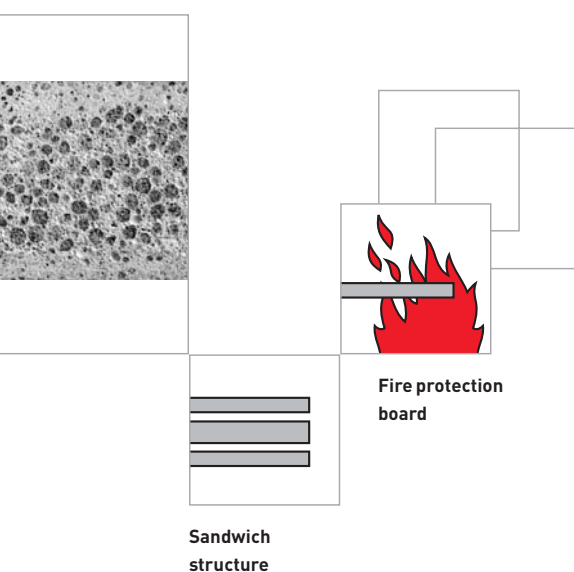
Spray-up method

automatic process, in which uniform layers are produced at a high pressure.

Thanks to this technique, AESTUVER boards feature a dense and regular fibre structure across the entire cross section of the board. It also allows thin boards of a high compressive and tensile bending strength and a high abrasion resistance to be produced. Smooth and robust surfaces, in conjunction with homogeneous edges, make AESTUVER boards a highly versatile product for a wide range of applications and processing requirements

The AESTUVER sandwich structure.

In contrast to the homogeneous board thicknesses produced with the spray-up method, the AESTUVER sandwich structure provides for board thicknesses of 15 mm and over. The advantage has to be seen in the fact that the core of the boards has a much lower apparent density than the external layers, which under real conditions have to take most of the stress. Since this allows the weight to be kept quite low, a 40-mm AESTUVER board will weigh much less than a gypsum fibreboard of the same thickness.



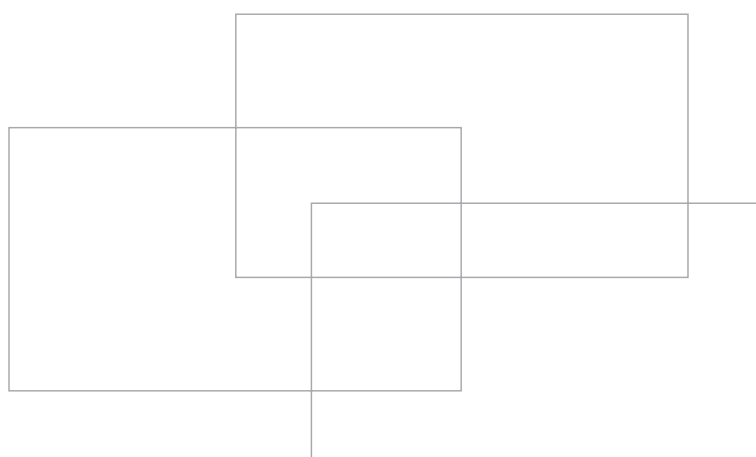
AESTUVER as fire protection boarding.

According to DIN 4102, Part 4 (1981), AESTUVER fire protection boards can be classified as a non-combustible class A1 building material, which does, for that reason, not require any special certification. They can thus be regarded as a building material generally suited for preventive fire engineering requirements.

A large number of component systems have, in addition, been tested and classified in compliance with DIN 4102. These include fire-resistant protection for load-bearing structures, electric cables and sheet-metal ductwork; self-supporting members, such as ventilation and cable ducts; and wall and

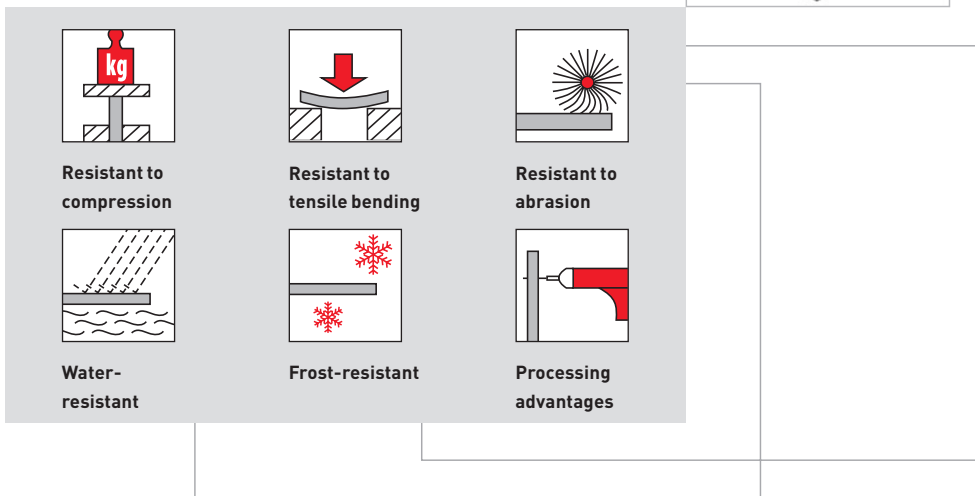
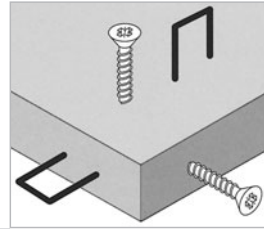
ceiling structures for escape routes. Stringent requirements are not only made on the heat transmission and structural stability of escape routes. Due care must also be taken that no toxic gases or vision-obscuring smoke are released in these areas. Since AESTUVER boards are made from non-combustible components, no toxic gases will be set free in a fire. AESTUVER products make sure that technical installations, which are often found in rescue routes and which represent a major fire load, are safely isolated.

- Non-combustible, DIN 4102-A1
- High compressive strength
- High tensile bending strength
- High abrasion resistance
- Frost resistance
- Easy to process



AESTUVER

Product properties.



Resistant to compression.

AESTUVER boards derive their high compressive strength from a matrix formulation that incorporates expanded glass granules and long glass fibres. Factors adding to this property are the dense and homogeneous board structure.

Resistant to tensile bending.

The high tensile bending strength of AESTUVER boards results from the use of long glass fibres. In an automatic production process, these are uniformly distributed and aligned in the board plane.

Resistant to abrasion.

AESTUVER boards owe their abrasion resistance primarily to a uniformly compacted surface. Thanks to the production process used, the exposed surface is optimised and has almost no visible pores. Because of the smooth finish, it provides very good protection against abrasion.

Water-resistant.

Unlike cellulose-reinforced fibre boards, AESTUVER boards feature very good water-resistance qualities. They gain this advantage from their special

matrix structure. The hollow micro-glass balls and glass fibres incorporated in the matrix do not absorb any water and can, therefore, not rot. Tests made to compare the water absorbency of AESTUVER boards and cellulose-reinforced calcium-silicate boards have shown that AESTUVER boards float on the water surface, while conventional fibre boards soak up the water and sink to the bottom. The increase in weight resulting from the absorbed moisture is a factor that should not be underestimated when using conventional fibre boards. Even when stored under water, AESTUVER boards do not change their physical properties in any significant way.

Frost-resistant.

Frost resistance has been tested extensively in test series involving 100 freeze-thaw cycles. Fire protection AESTUVER boards have been attested very good frost resistance.

Processing advantages.

The excellent mechanical properties of AESTUVER boards recommend this material for a wide range of applications. AESTUVER boards may be processed industrially to produce

standard elements and structural systems, and they may likewise be used for individual and tailor-made structural solutions on site. The smooth surface of the boards, in addition, provides an ideal base for painting, wallpapering, and coating. In view of their high mechanical strength, AESTUVER boards may be sawn, milled, drilled, stapled and screwed in place without any problems. The low dust emission level adds to their very good mechanical handling characteristics. While cellulose fibre boards give off a fine dust when machined, the waste produced by AESTUVER boards is much coarser and can be removed fairly easily, while significantly reducing the problem of clogged filter bags.

No health risks.

The fibres used for the production of AESTUVER boards are uncritical in their dimensions (in compliance with WHO specifications). This is why the handling and processing of these boards is considered to be safe. With AESTUVER boards there is no risk of fibres blocking the respiratory system or the lungs, as is known to be the case with asbestos, which, when inhaled, may give rise to asbestosis.

AESTUVER fire protection boards

Properties	Single-layer board	Sandwich board
Material	Glass-fibre reinforced lightweight concrete, asbestos-free	
Building material class	A1, non-combustible in compliance with DIN 4102, part 4, 2.2.1d	
Standard board dimensions*, mm	1,250 x 2,600	1,250 x 2,600
Standard board thickness*, mm	8, 10, 12	15, 20, 25, 30, 40, 50, 60
Apparent density (dry)	approx. 980 kg/m ³	Covering layer 980 kg/m ³ Core 600 kg/m ³
Characteristic thermal conductivity λ_R	approx. 0.185 W/(mK)	Covering layer 0.185 W/(mK) Core 0.115 W/(mK)
Moisture content (air dry)	approx. 7 %	approx. 7 %
Moisture absorption (95 % RH)	≤ 5 % by wt.	≤ 5 % by wt.
Length and width tolerance of standard boards	± 1 mm	± 1 mm
Thickness tolerance of standard boards	± 1 mm	± 1 mm
Modulus of elasticity E ***	≥ 4,500 N/mm ²	e.g. for boards 20 mm thick ≥ 3,000 N/mm ²
Tensile bending strength ***	≥ 7.5 N/mm ²	e.g. for boards 20 mm thick ≥ 3.5 N/mm ²
Compressive strength (based on DIN 18555)	approx. 18 N/mm ²	approx. 9 N/mm ²
Alkalinity (pH value)	approx. 12	approx. 12
Pest and mould infestation	AESTUVER fire protection boards do not rot or mould, and are not susceptible to attack by pests.	
Surface finish	Exposed face: smooth-formed finish	Rear: slightly polished

AESTUVER: weights and dimensions

Board thickness * mm	Standard sizes	Apparent density kg/m ³ Dry	Board weight kg/m ² Weight at 7 % moisture
8	1,250 x 2,600**	approx. 980	approx. 8
10	1,250 x 2,600**	approx. 980	approx. 10
12	1,250 x 2,600**	approx. 980	approx. 13
15	1,250 x 2,600**	approx. 730	approx. 12
20	1,250 x 2,600**	approx. 700	approx. 15
25	1,250 x 2,600**	approx. 690	approx. 18
30	1,250 x 2,600**	approx. 680	approx. 22
40	1,250 x 2,600**	approx. 650	approx. 28
50	1,250 x 2,600**	approx. 650	approx. 34
60	1,250 x 2,600**	approx. 640	approx. 41

* Additional board thickness and sizes upon request

** Size 1,250 x 3,000 available upon request

*** Specifications for other board thicknesses upon request

Subject to technical modification. Issued: 09/2005
The most recent issue shall have effect.
Please call us, should you find any information to be missing in this issue.

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