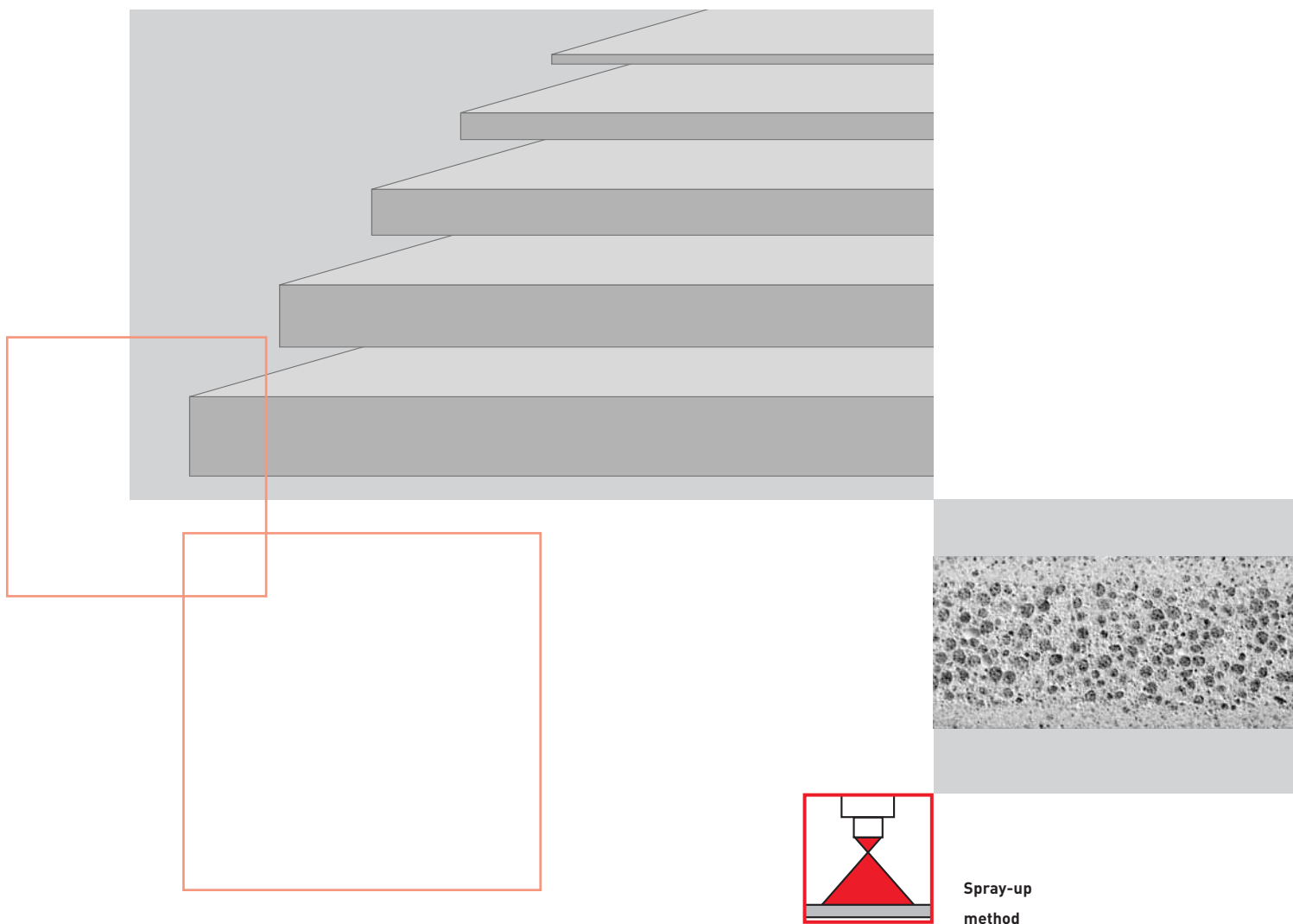




AESTUVER

**The universal
fire protection board**

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Thanks to a new matrix formulation, conventional components such as sand, cement and fibres have been replaced by new high-tech materials.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 reinforce-

ment, 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 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

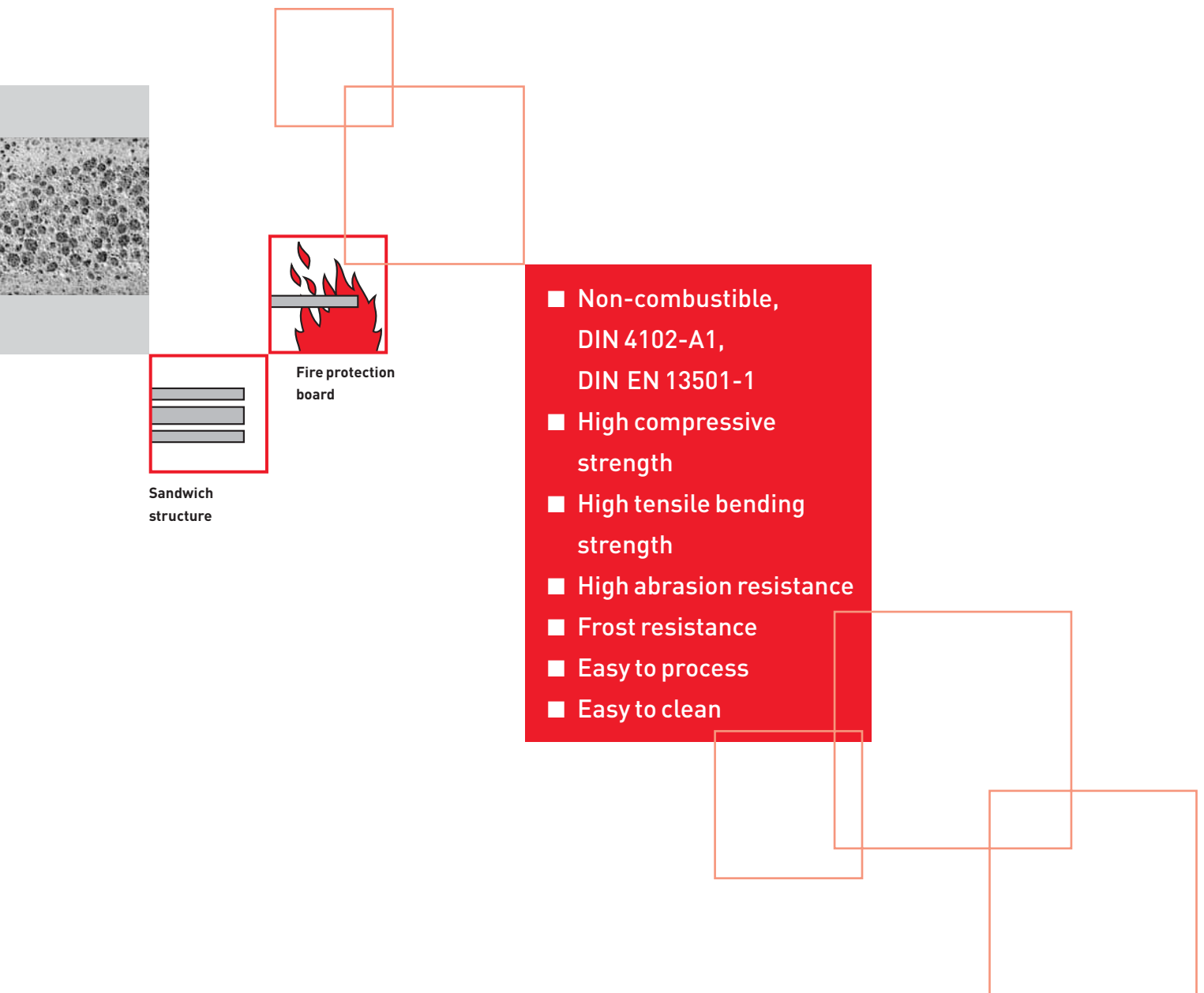
In contrast to the homogeneous board thicknesses produced with the spray-up method, the AESTUVER sandwich structure provides for board thicknesses of 15 mm and over. The advantage has to be seen in the fact that the core of the boards has a much lower apparent density than the external layers, which 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 1, DIN EN 13501-1, 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.

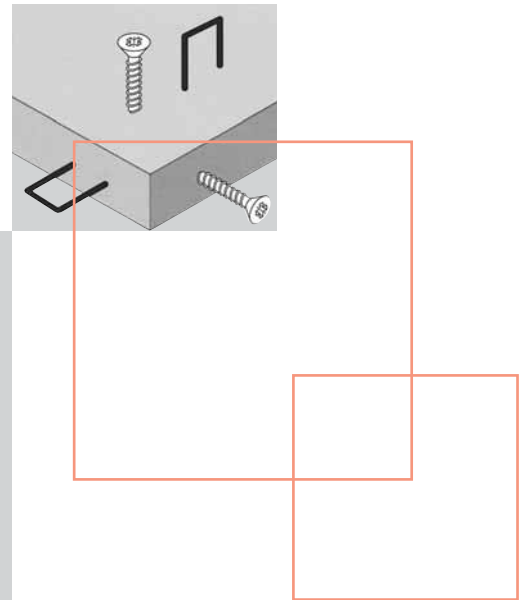
A large number of component systems have, in addition, been tested and classified in compliance with DIN 4102. These include fire-resistant protection for load-bearing structures, electric cables and




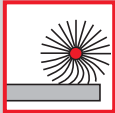
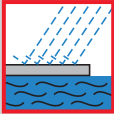
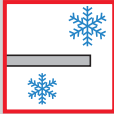
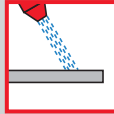
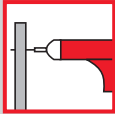
sheet-metal ductwork; self-supporting members, such as ventilation and cable ducts; and wall and ceiling structures for escape routes. Stringent requirements are not only made on the heat transmission and structural stability of escape routes. Due care must also be taken that no toxic gases or vision-obscuring 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.



AESTUVER

Product properties



			
Non-combustible	High compressive strength	High tensile bending strength	High abrasion resistance
			
Water-resistant	Frost-resistant	Easy to clean	Easy processing

Resistant to compression

AESTUVER fire-resistant boards for underground transport systems derive their high compressive strength from the dense and homogeneous board structure. The matrix-embedded glass fibres further enhance this property.

Resistant to tensile bending

The high tensile bending strength of AESTUVER fire-resistant boards for underground transport systems results from the use of long glass fibres which are uniformly distributed throughout the entire board.

Resistant to abrasion

AESTUVER fire-resistant boards for underground transport systems owe their abrasion resistance primarily to a uniformly compacted surface. The production process ensures an optimised exposed surface that has almost no visible pores. With its smooth finish, it provides very good protection against wear.

Water-resistant

AESTUVER fire-resistant boards for underground transport systems have excellent water-resistance qualities. This advantage results from the cement-bound matrix structure and its low water absorbency.

Even high moisture exposure does not significantly affect the physical properties of AESTUVER fire-resistant boards for underground transport systems. This explains why these boards do not have to be subjected to any additional waterproofing measures.

Frost- and deicing-salt resistant

The frost and deicing-salt resistance of AESTUVER fire-resistant boards for underground transport systems has been examined in long-term tests, and the boards have been attested excellent resistance properties.

Easy cleaning

Because of their regular, smooth and firm surface, the boards can be cleaned easily and with lasting effect, using different cleaning methods, water- or steam-jet cleaning, and adding cleaning agents (in accordance with recommendations).

Processing advantages

Thanks to their excellent mechanical properties, AESTUVER fire-resistant boards for underground transport systems can be used for a wide range of applications. The boards can be processed industrially to produce standard elements and

structural systems, and they can likewise be used for individual and tailor-made structural solutions on site. The smooth surface of the boards also provides an ideal base for painting and coating.

AESTUVER fire-resistant boards for underground transport systems can be sawn, milled, drilled, nailed or bolted without any problems. The low dust emission level adds to their excellent mechanical handling characteristics.

No health risks

Only fibres with uncritical dimensions (according to WHO) are used in the production of AESTUVER fire-resistant boards for underground transport systems. This makes the boards safe to use, because no fibres are deposited in the respiratory system or the lungs (risk of asbestosis), a known problem with the use of asbestos products.

Technical data

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 1, DIN EN 13501-1	
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	approx. 700 kg/m ³ ¹⁾
Thermal conductivity λ	approx. 0.185 W/(mK)	approx. 0.147 W/(mK) ¹⁾
Length and width tolerance of standard boards	± 1 mm	± 1 mm
Thickness tolerance of standard boards	± 1 mm	± 1 mm
Modulus of elasticity E ***	$\geq 4,500$ N/mm ²	$\geq 3,000$ N/mm ² ¹⁾
Tensile bending strength ***	≥ 7.5 N/mm ²	≥ 3.5 N/mm ² ¹⁾
Compressive strength (based on DIN 18555)	approx. 18 N/mm ²	approx. 9 N/mm ² ¹⁾
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 at equilibrium 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. 780	approx. 10
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

¹⁾ e.g. for boards 20 mm thick

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