

EPS Qju Insulation Board 3871

034 ETICS, with groove and tongue, for use in the Brillux ETIC System EPS Qju



Field of application

Insulation board approved in system build-up for use in the Brillux ETIC System EPS Qju.

Properties

- Facade insulation board made of expanded polystyrene hard foam
- Groove and tongue + relief-milling for holding the Qju Fixing Bracket 3701
- Diffusible
- Aging-resistant
- Easy to apply.

Material description

Rated thermal conductivity λ_B	0.034 W/(m·K) in accordance with DIN 4108-4
Rated value of the thermal conductivity λ_D	0.033 W/(m·K) in accordance with EN 13163
Reaction to fire	Flammable or flame-retardant in the Brillux ETIC System EPS Qju.
Water vapor diffusion resistance value μ	20/70 in accordance with DIN EN 12086
Tensile strength perpendicular to the board plane	≥ 100 kPa in accordance with DIN EN 1607
Irreversible elongation	< 0.15 % (measure of post-shrinkage)

Material description

Length and width tolerance	± 2 mm/m																														
Thickness tolerance	± 1 mm																														
Board evenness	± 3 mm/m																														
Perpendicularity	± 2 mm/m																														
Edge formation	With groove and tongue all around at a constant distance from the front edge of the board and special relief-milling																														
Insulation board format	Length: 100 cm / Width: 50 cm (Working dimension: 98.8 cm / 48.8 cm)																														
Thicknesses/packaging	<table><thead><tr><th>Insulation board thicknesses</th><th>m² per pack</th></tr></thead><tbody><tr><td>5 cm</td><td>approx. 4.5 m²</td></tr><tr><td>6 cm</td><td>approx. 4.0 m²</td></tr><tr><td>8 cm</td><td>approx. 3.0 m²</td></tr><tr><td>10 cm</td><td>approx. 2.0 m²</td></tr><tr><td>12 cm</td><td>approx. 2.0 m²</td></tr><tr><td>14 cm</td><td>approx. 1.5 m²</td></tr><tr><td>16 cm</td><td>approx. 1.5 m²</td></tr><tr><td>18 cm</td><td>approx. 1.0 m²</td></tr><tr><td>20 cm</td><td>approx. 1.0 m²</td></tr><tr><td>22 cm</td><td>approx. 1.0 m²</td></tr><tr><td>24 cm</td><td>approx. 1.0 m²</td></tr><tr><td>26 cm</td><td>approx. 0.5 m²</td></tr><tr><td>28 cm</td><td>approx. 0.5 m²</td></tr><tr><td>30 cm</td><td>approx. 0.5 m²</td></tr></tbody></table> <p>Further insulation board thicknesses on request.</p>	Insulation board thicknesses	m ² per pack	5 cm	approx. 4.5 m ²	6 cm	approx. 4.0 m ²	8 cm	approx. 3.0 m ²	10 cm	approx. 2.0 m ²	12 cm	approx. 2.0 m ²	14 cm	approx. 1.5 m ²	16 cm	approx. 1.5 m ²	18 cm	approx. 1.0 m ²	20 cm	approx. 1.0 m ²	22 cm	approx. 1.0 m ²	24 cm	approx. 1.0 m ²	26 cm	approx. 0.5 m ²	28 cm	approx. 0.5 m ²	30 cm	approx. 0.5 m ²
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Storage

Store in a dry place and protect from moisture. Do not leave it unprotected and exposed to intensive sunlight for an extended period of time.

Use

Substrate preparation	Follow the instructions in the respective EPS Qju system description.
Bonding	<p>Bond the EPS Qju Insulation Board 3871 with Qju Adhesive Foam 3700 according to the specifications in the respective EPS Qju system description. Follow the instructions in the Data Sheet for the Qju Fixing Component 3700.</p> <p>Protect insulation boards attached to the facade from weathering, e.g., direct sunlight at high summer temperatures, rain and hail, by taking appropriate measures or rework as soon as possible with reinforcement plaster/mortar.</p>
Application temperature	Do not install at air and object temperatures above +30 °C; including the curing time.
Cutting insulation boards to size	Individual insulation boards can be cut to size with the ETICS Cutting Tool 105-30S 1463 or the Hard Foam Saw 3798. Further information can be found in the Brillux tool product range.

Depending on the substrate situation, a distinction is made between the following for anchoring the EPS Qju insulation boards:

- a) bonded and structurally anchored
- b) bonded and anchored with statically-relevant anchoring

a) bonded and structurally anchored

Additional structural anchoring of the bonded ETICS hard foam insulation boards with ETICS anchors is recommended on solid, load-bearing substrates, e.g., concrete or brickwork with intact, fixed adhesive coating, decorative plaster, among others.

Anchor quantity

Based on the long-term practical experience and application, a total of 6 anchors/m² has proved to be adequate. Please also refer to "Anchor arrangement" below.

b) bonded and anchored with statically-relevant anchoring

Statically relevant anchoring must be implemented on all substrates, for which an expert examination and assessment has revealed that they do not have sufficient tear strength, in accordance with the national technical approval Z-33.43-257. Approved ETICS anchors must be used for this purpose. Substrate unevennesses of up to max. 2 cm/m can be bridged for statically-relevantly anchored ETICS insulation boards. 2 cm/m.

Determining wind load

The wind loads for statically-relevant anchoring must be calculated in accordance with DIN EN 1991-1-4/NA. The anchor quantities can be stipulated in line with the information below in accordance with calculated max. wind loads depending on the anchor load class.

Anchor selection depending on substrate

Substrate (with use category)	ETICS Sunk Anchor STR U 2G 3811 ¹⁾	ETICS Impact Anchor H1 eco 3856	ETICS Screw Fasteners STR-H plus 3730
(A) Standard concrete	X	X	
(B) Solid bricks	X	X	
(C) Hollow/perforated bricks	X	X	
(D) Lightweight aggregate concrete	X		
(E) Aerated concrete	X		
Standardized or approved timber board materials			X ²⁾

¹⁾ Can be used for the recessed mounting an insulation board thickness of ≥ 8 cm.

²⁾ Can only be used for structural anchoring.

Please follow the instructions on anchor installation, anchor lengths and approved anchoring substrates with anchor load classes in the Data Sheets of the respective ETICS anchors. The stipulated anchor quantities apply to the use of anchor plates Ø = 60 mm and anchoring under the fabric.

Determining the anchor quantities

Cross-the-board assumption of anchor quantities
 The anchor quantity can also be stipulated across the board for buildings with a rectangular layout with the aid of Tables 1a and 1b below as a function of the building height by solely determining the wind zone. A detailed calculation of the wind load must be performed for all other buildings. This results in a reduction of the number of anchors in some cases.

In accordance with the determined wind load
 The number of anchors for the statically-relevant anchoring of the EPS Qju Insulation Boards 3871 can be determined using the calculated wind loads based on table 2 below.

Table 1a
Across-the-board anchor quantities for statically-relevant anchoring of the EPS Qju Insulation Board 3871 as a function of the building height with recessed and flush anchoring

Required amount of anchors per m² (surface and edge area) depending on the calculated wind zone and the insulation thickness ¹⁾

Building height	≤ 10 m		> 10 m to ≤ 18 m		> 18 m to ≤ 25 m	
	≥ 6	≥ 12	≥ 6	≥ 12	≥ 6	≥ 12
Insulation thickness [cm]	≥ 0.15	≥ 0.167	≥ 0.15	≥ 0.167	≥ 0.15	≥ 0.167
Wind Zone 1 Inland	6	6	8	6	8	8
Wind Zone 2 Inland	8	6	8	8	10	8
Wind Zone 2 Coasts of and islands in the Baltic Sea	10	8	10	10	12	10
Wind Zone 3 Inland	8	8	10	8	12	10
Wind Zone 3 Coasts of and islands in the Baltic Sea	10	10	12	12	14	12
Wind Zone 4 Inland	10	8	12	10	14	12
Wind Zone 4 Coasts of and islands in the Baltic Sea	14	12	14	12	16	14
Wind Zone 4 Islands in the North Sea	14	12	2)	2)	2)	2)

¹⁾ Anchor arrangement according to the overview below.

²⁾ The simplified calculation procedure cannot be used here according to the standard. Precise calculations based on the calculated wind load are required.

In the cross-the-board assumption of anchor quantities presented here, more anchors may be used than would be required following a precise calculation.

Table 1b

Across-the-board anchor quantities for statically-relevant anchoring of the EPS Qju Insulation Board 3871 depending on the building height with recessed anchoring using ETICS Sunk Anchor STR U 2G 3811 and an insulation thickness of ≥ 14 cm

Required amount of anchors per m² (surface and edge area) depending on the calculated wind zone and the insulation thickness ¹⁾

Building height	≤ 10 m		> 10 m to ≤ 18 m		> 18 m to ≤ 25 m	
Insulation thickness [cm]	≥ 14		≥ 14		≥ 14	
Anchor load class [kN] ³⁾	≥ 0.20	≥ 0.25	≥ 0.20	≥ 0.25	≥ 0.20	≥ 0.25
Wind Zone 1 Inland	4	4	6	4	6	6
Wind Zone 2 Inland	6	4	6	4	8	6
Wind Zone 2 Coasts of and islands in the Baltic Sea	6	6	8	6	8	8
Wind Zone 3 Inland	6	6	8	6	8	8
Wind Zone 3 Coasts of and islands in the Baltic Sea	8	6	10	8	10	8
Wind Zone 4 Inland	8	6	10	8	10	8
Wind Zone 4 Coasts of and islands in the Baltic Sea	10	6	10	8	12	10
Wind Zone 4 Islands in the North Sea	10	8	2)	2)	2)	2)

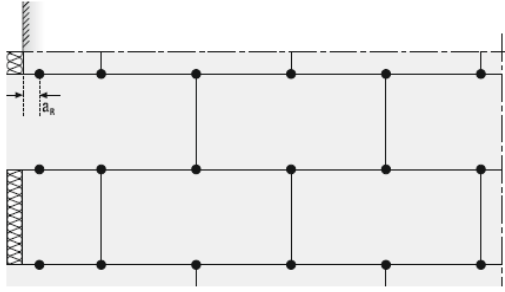
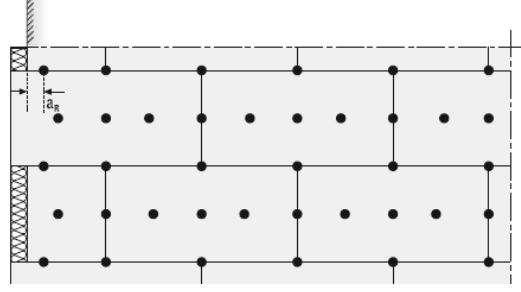
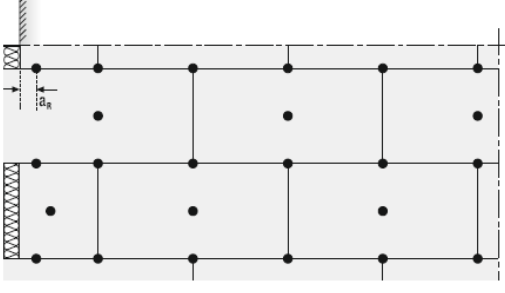
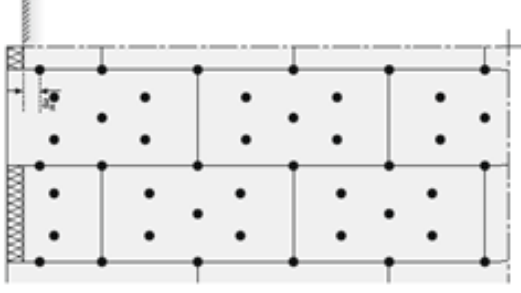
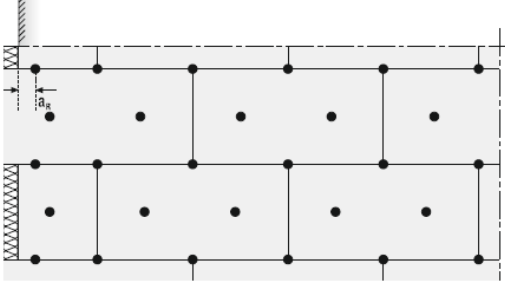
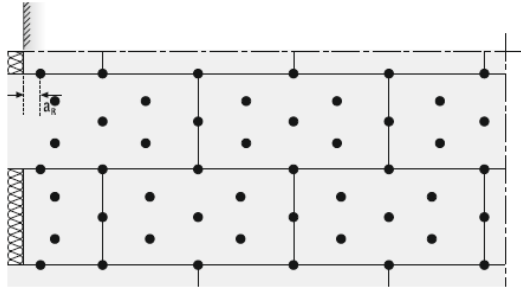
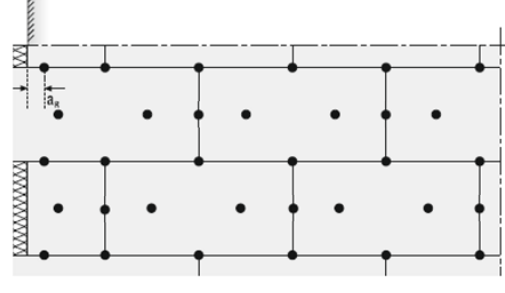
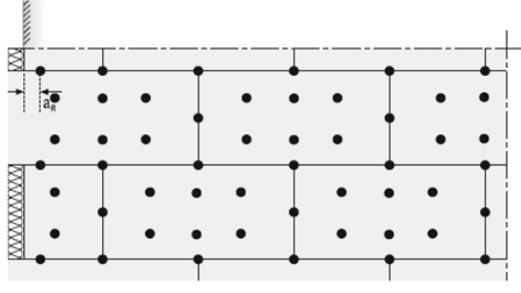
¹⁾ Anchor arrangement according to the overview below.

²⁾ The simplified calculation procedure cannot be used here according to the standard. Precise calculations based on the calculated wind load are required.

³⁾ The specifications provided in Table 1a above apply to anchor load classes of < 0.20 .

In the across-the-board assumption of anchor quantities presented here, more anchors may be used than would be required following a precise calculation.

Anchor arrangements for statically-relevant anchoring of the EPS Qju Insulation Board 3871

Anchors/m ²	Anchor arrangement	Anchors/m ²	Anchor arrangement
4		12	
6		14	
8		16	
10		18	

Differing anchor arrangements are possible, but generally result in higher anchor quantities/m². In this context, the Brillux Consulting Service should be consulted.

Table 2

Load-bearing capacity table for statically-relevant anchoring of the EPS Qju Insulation Board 3871 *)

Anchor plate	Insulation board thickness [cm]	Anchor load class ¹⁾ [kN]	Maximum absorbable wind load [kN/m ²]	Anchor number Anchor/m ²
Standard diameter 60 mm	≥ 6	≥ 0.15	-0.600	4
		≥ 0.167	-0.668	
	≥ 14 for recessed mounting ²⁾	≥ 0.20	-0.800	
		≥ 0.25	-1.000	
Standard diameter 60 mm	≥ 6	≥ 0.15	-0.900	6
		≥ 0.167	-1.000	
	≥ 14 for recessed mounting ²⁾	≥ 0.20	-1.200	
		≥ 0.25	-1.500	
		≥ 0.30	-1.600	
Standard diameter 60 mm	≥ 6	≥ 0.15	-1.213	8
		≥ 0.167	-1.336	
	≥ 14 for recessed mounting ²⁾	≥ 0.20	-1.600	
		≥ 0.25	-2.000	
		≥ 0.30	-2.200	
Standard diameter 60 mm	≥ 6	≥ 0.15	-1.600	10
		≥ 0.167	-1.670	
Standard diameter 60 mm	≥ 6	≥ 0.15	-1.820	12
		≥ 0.167	-2.004	
Standard diameter 60 mm	≥ 6	≥ 0.15	-2.200	14
		≥ 0.167	-2.338	
Standard diameter 60 mm	≥ 6	≥ 0.15	-2.573	16
		≥ 0.167	-2.672	
Standard diameter 60 mm	≥ 6	≥ 0.15	-2.913	16
		≥ 0.167	-3.006	

¹⁾ This sometimes results in higher load-bearing capacity values in individual cases. Anchor arrangement in accordance with the overview above. The Brillux Consulting Service may be contacted for more information.

¹⁾ The determined load for each anchor is decisive for lower load-bearing capacity values.

[Load-bearing capacity for each anchor (calculated pull-out value) x number of anchors = max. absorbable wind load]

²⁾ With ETICS Sunk Anchor STR U 2G 3811

Anchoring

Thermal bridge effect through the anchoring

When anchoring, the thermal bridge effect of the anchors needs to be taken into account as follows:

$$U_c = U + \chi \cdot n \quad [\text{in } W/(m^2 \cdot K)]$$

Where:

U_c = the corrected heat transfer coefficient of the component

U = the heat transfer coefficient of the undisturbed component in $W/(m^2 \cdot K)$

χ = point heat transfer coefficient of an anchor in W/K

n = amount of anchors l/m^2 (average for the facade areas)

It may be possible not to take the thermal bridge effect of the anchors into account, provided that the maximum amount of anchors n per m^2 of wall surface (the average for the facade areas), as a function of the insulation thickness and the heat transfer coefficient of the anchor, complies with the specifications in the table below.

It may also be possible to ignore this aspect in individual cases if it can be proven that the increase in the undisturbed component's heat transfer coefficient, which results from the thermal bridge effect of the anchors, does not exceed 3%.

Number of anchors per m^2 , up to which no consideration is required in the U value with a rated thermal conductivity of the insulation material of $\lambda = 0.034 \text{ W/(m}\cdot\text{K)}$

χ in W/K	Insulation thickness cm					
	$t \leq 5$	$5 < t \leq 10$	$10 < t \leq 15$	$15 < t \leq 20$	$20 < t \leq 25$	$25 < t$
0.002	9	5	3	3	2	2
0.001	16 ¹⁾	10	7	5	4	3

¹⁾ Maximum amount of anchors without any reciprocal interference

Notes

Solvent-free priming

Polystyrene hard foam is attacked by solvents. Therefore, only solvent-free primers should be used.

Cables on the exterior wall

If cables are installed on the exterior wall, it is important to mark their paths on the insulation board to avoid damage (resulting from additional mechanical mounting) to them.

Further information

Follow the instructions on the data sheets of the products used.

Remark

This Data Sheet is based on extensive development work and years of practical experience. The translation corresponds to the current German version, in compliance with the German laws, regulations, standards and guidelines. Its content does not constitute a contractual legal relationship. The user/buyer is not released from the responsibility of checking our products to ensure they are suitable for the intended application. In addition, our general terms of business apply.

When a new version of this Data Sheet with updated information is published, the previous version no longer applies. The current version is available on our website. Version II

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