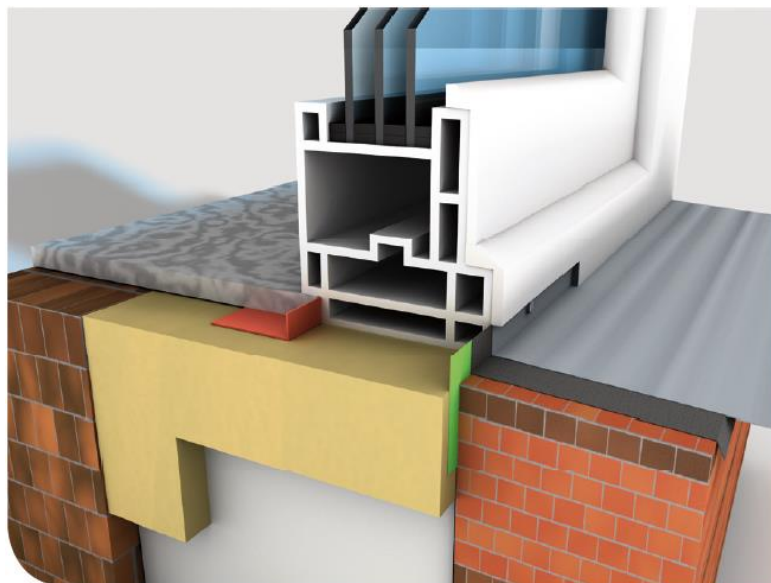


The Phonotherm® curtain wall installation system allows windows to be positioned in front of the structural brickwork in the insulating plane of composite thermal insulation systems, for energy efficiency. Easy and accurate cutting of the Phonotherm® curtain wall installation system elements to length and gluing them onto the structural brickwork allows installers to easily create their customised window embrasures on site – fully independent of building shell tolerances. Windows may also later be exchanged without damaging the structural brickwork. Installers may install the Phonotherm® curtain wall installation system elements in front of the opening in the structural brickwork wall, with accurately defined contours and dimensions to create their own dimensionally accurate window embrasures with precisely defined abutment joints. This offers the installer optimal conditions for fitting the windows and will also insulate and seal abutment joints.



Die Phonotherm® curtain wall installation system elements are glued to the structural brickwork using VOWA TFS, a high-strength MS Polymer based adhesive, followed by screwing down with conventional certificated \varnothing 10 mm x 140 mm frame dowels. Any external forces such as wind loads, own weight and net loading will now be absorbed by the structural brickwork. The window as such is fitted into the Phonotherm® curtain wall installation system with conventional \varnothing 7.5 mm x 102 mm frame screws without dowels. Our Winflex® TriSave multi-function tapes are ideal for sealing and insulating the abutment joint: Winflex® TriSave, Winflex® TriSave eco or Winflex® TriSave es. Accurate dimensioning of the embrasure is made possible by the Phonotherm® curtain wall installation system, allowing the width of the all-round abutment joint to be perfectly matched to the functional range of our Winflex® TriSave tapes. Our Fasatan® eco is recommended for forming the drip groove underneath the outside window sill and our Winflex® inside for sealing joints between the Phonotherm® curtain wall installation system and the building structure. The requisite air tightness and thermal and acoustic insulation will thus be easy to achieve and the abutment joint will remain dry.

Advantages of the Phonotherm® curtain wall installation system:

- simply gluing already allows excellent transfer of loads
- window can be replaced afterwards without damaging the façade
- compliant with EnEV [Energy Saving Regulation] and the EU Building Directive for thermal insulation
- excellent acoustic insulation



Tests on Phonotherm® curtain wall installation systems:

- General building supervisory test certificate No. P-2013-B-4724 – MPA Dresden
- General National Technical Approval Z-23.11-1952 – German Institute for Building Technology
- Structural component testing pursuant to ift Directives MO-01/1 – ift Test Report No. 16-003073-PR01-1
- Structural component testing pursuant to ift Directives MO-02/1 – ift Test Report No. 16-003073-PR01-2
- Verification of the sound reducing index – ift Test Report No. 17-003960-PR01
- Bonding – different surfaces before and after climatic stress – ift Test Report No. 17-002027-PR01
- Bonding – frame elements to frame element before and after climatic stress – ift Test Report No. 17-002027-PR02
- Load bearing strength at different projections – ift Test Report No. 17-002027-PR03
- Load bearing strength of a frame screws in the curtain wall system element – ift Test Report No. 17-002027-PR04
- Test reports Nos. R-42000197507-02 – MPA North Rhine-Westphalia, thermal conductivity 220007210 – MPA North Rhine-Westphalia, water vapour diffusion

Phonotherm® Curtain wall installation system elements dimensions:

Dimension:	Projection:	Height:	Length:
1350 / 50	50 mm	140 mm	1350 mm
1350 / 90	90 mm		
1350 / 120	120 mm		
1350 / 140	140 mm		
1350 / 160	160 mm		

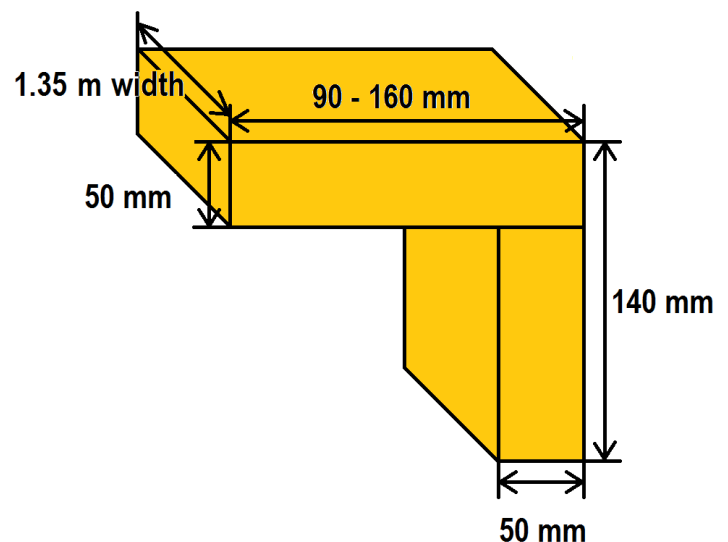
More dimensions / projections available on request

Load transfer:

A spirit level is used to accurately install the sill section of the curtain wall installation system. This allows the window frame and base profile to be directly positioned on the sill section of the curtain wall installation system, no blocks needed. No blocks are needed in this area and vertical forces will be directly and linearly (area load, not point loads) introduced into the sill section of the curtain wall installation system. Loads will thus be transferred as follows:

Load transfer (kg / running metre)				
Type of substrate	90 mm	120 mm	140 mm	160 mm
Concrete	210	210	210	210
Aerated concrete	65	65	65	65
Limestone	210	210	210	210
Brick	210	210	210	210
Wood	210			

The given load transfer figures were extrapolated to 100 cm embrasure elements with 140 mm high flange. The impacting forces must be reliably transferred to the supporting structure. The suitability and load capacity of the wall material must be observed (especially composite materials).



Please note:

BOSIG delivers brackets made from the material "Phonotherm® RG 550" according to AbZ Z-23.11-1952 und AbP P-2013-B-4724. These brackets are type tested according to MO-01/1 and MO-02/1. The manner how to use on the concrete structure (structure height, wind load zone, substrate) and with concrete windows (window class, window size, kind of glazing) must be determined by an authorized architect or planner. Also preliminary tests should be done. The data given in the BOSIG installation instructions and in the BOSIG technical information are examples, which do not replace the concrete construction planning!

Weighted Sound Reducing Index of the Phonotherm® curtain wall installation system:

With a connecting joint of 7 – 10 mm width, sealed with our pre-compressed multifunction joint sealing tape Winflex TriSave eco 7 – 15 mm for 90 mm frame width, an outstanding Weighted Sound Reducing Index $R_{S,w}$ of 59 dB results.

Antifall Guard – ETB-certification:

Antifall guard certification (ETB-certification) is carried out simply and versatile by usage of a licensed and approved antifall guard clamp. This fixing clamp is installed on one side by a conventional frame screw between window frame and Phonotherm® curtain wall installation system element. The load bearing ability of such a frame screw in the Phonotherm® curtain wall installation system element is with 3.8 kN considerably higher as the value 2.8 kN for each fixing point, which is requested in ETB regulations (certificated by ift Test Report No. 17-002027-PR04). The antifall guard clamp is drawn to the load-bearing masonry and therein fixed according the certificate of the antifall guard clamp.

Technical data

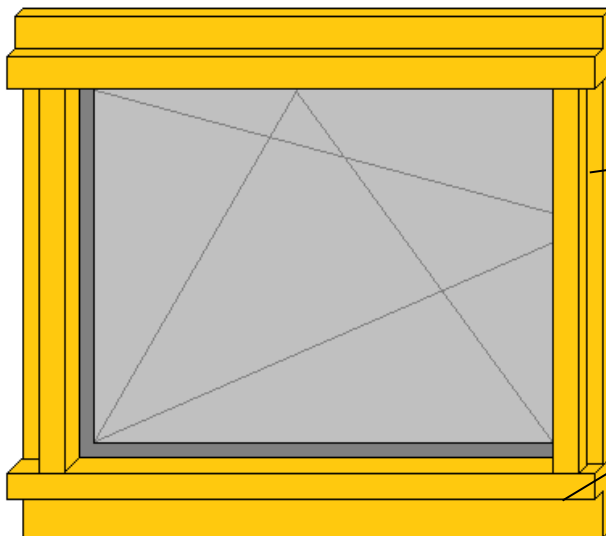
Phonotherm® curtain wall installation system elements:

Material	CFC, HCFC and formaldehyde-free polyurethane hard foam material	
Raw density	550 ± 50 kg/m ³	
Bending strength	ca. 7.8 N/mm ²	based on DIN EN 310, distance between supports 15 x material thickness
Thermal conductivity λ_{10}	ca. 0.076 W/(mK)	
E-modulus	ca. 500 N/mm ²	
Screw withdrawal resistance	ca. 650 N	based on DIN EN 320, test screw SPAX® T-STAR plus 4,0 x 60 mm
Compressive strength	ca. 5.0 N/mm ²	according to DIN EN 826
Average at 10% compression, individual values may fall below the permitted value of about 10 %		
Moisture dependent length change	ca. 1 %	
Elongation coefficient	ca. 28.375 10 ⁻⁶ /K	based on DIN 51045-1
in the range – 20 to + 60°C		
Water vapour diffusion resistance factor	μ ca. 12	
Fire behaviour	Class E, normal flammability, B2, no burning drips	according to DIN EN 13501-1 according to DIN 4102
Thermal stability	- 40°C to + 80°C	
Resistant to ageing	resistant to putrefaction and rotting	

Application notes

1. Installation of Phonotherm® curtain wall installation system elements:

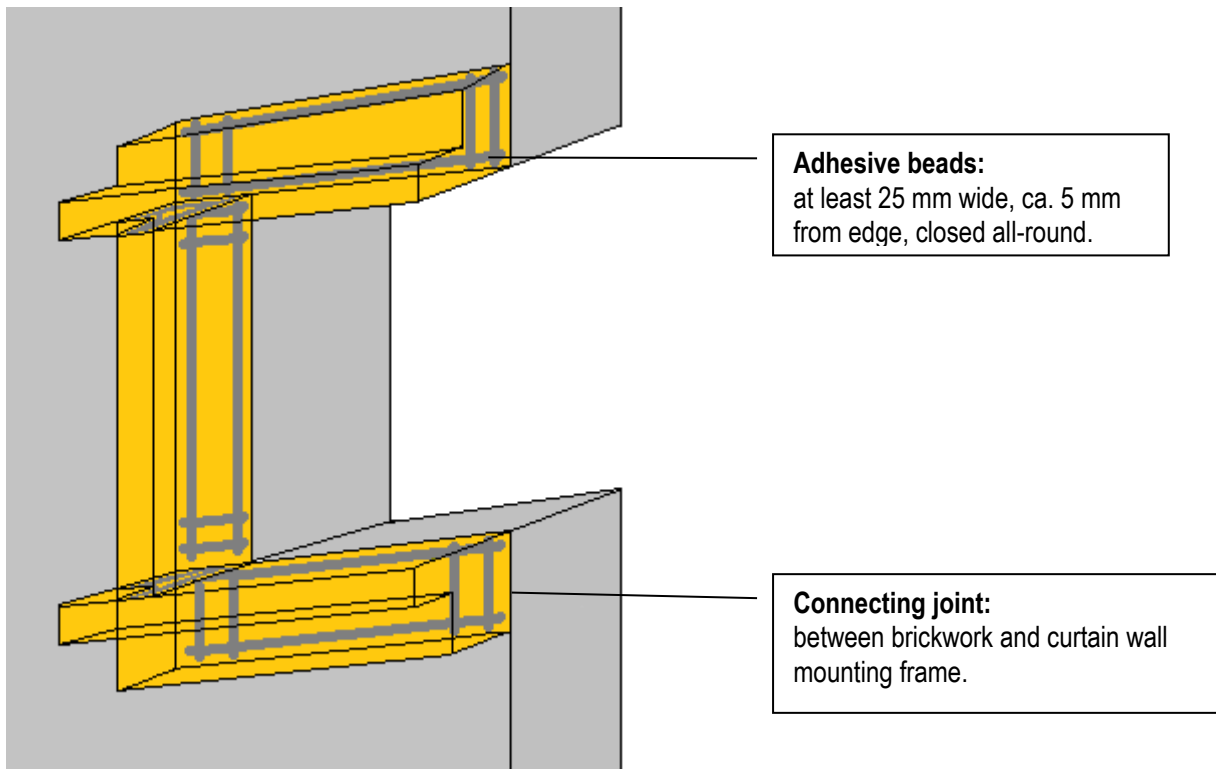
Cut the Phonotherm® curtain wall installation system elements to the correct length. The length depends on the dimensions of the window frame. You will need a length of Phonotherm® curtain wall installation system elements each for the header (lintel) and sill of length window frame width + 280 mm + 2 x joint width, generally ≥ 20 mm; for the sides you will need another 2 of length window frame including base profile height + 1 x joint width in the lintel area, generally ≥ 10 mm. The base profile is mounted directly onto the bottom Phonotherm® curtain wall installation system element, no blocks needed. The off-cuts (at least 500 mm) you create may simply be butt-joined using the high-strength VOWA TFS adhesive. Components longer than the standard 1350 mm Phonotherm® curtain wall installation system elements may also be created in this way. The Phonotherm® curtain wall installation system elements may simply be cut to length using a conventional tungsten carbide tipped circular saw or, even better, woodworking mitre saw.



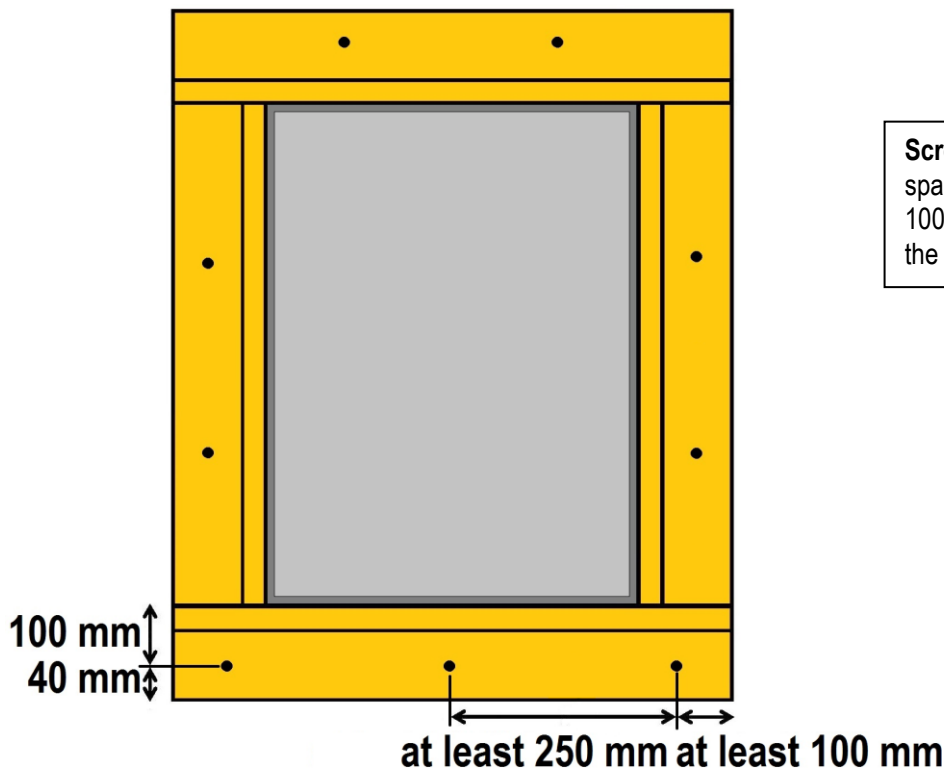
Curtain wall installation element, side:
Window height incl. base profile + 10 mm
(without support blocks) results in 10 mm
abutment joint at the lintel.

**Curtain wall installation element bottom
and top:**
Window width +300 mm results in 10 mm
abutment joint on each side.

The surface of the wall onto which the Phonotherm® curtain wall installation system elements are glued must be dry and clean, without frost, ice, grease, oils or other release agents. Any release agents and bitumen residues must be removed. Remove loose or weakly adhering particles such as plaster residues. Refer to the VOWA TFS technical data sheet in this respect. To glue in the Phonotherm® curtain wall installation system, apply the high strength VOWA TFS adhesive to the surface of the casing in the form of 2 parallel beads and then press onto the brickwork. Two adhesive beads are also required at the faces. Adhesive beads flattened by pressing the casing onto the brickwork must produce at least 25 mm wide and 1 to 2 mm thick adhesive substance ca. 5 mm from the edge of the casing. The adhesive beads span the circumference and all the butt joints are glued at the faces to ensure that the Phonotherm® curtain wall installation system seals air-tight against the wall. The minimum application temperature of the adhesive is 5°C (structural component temperature).



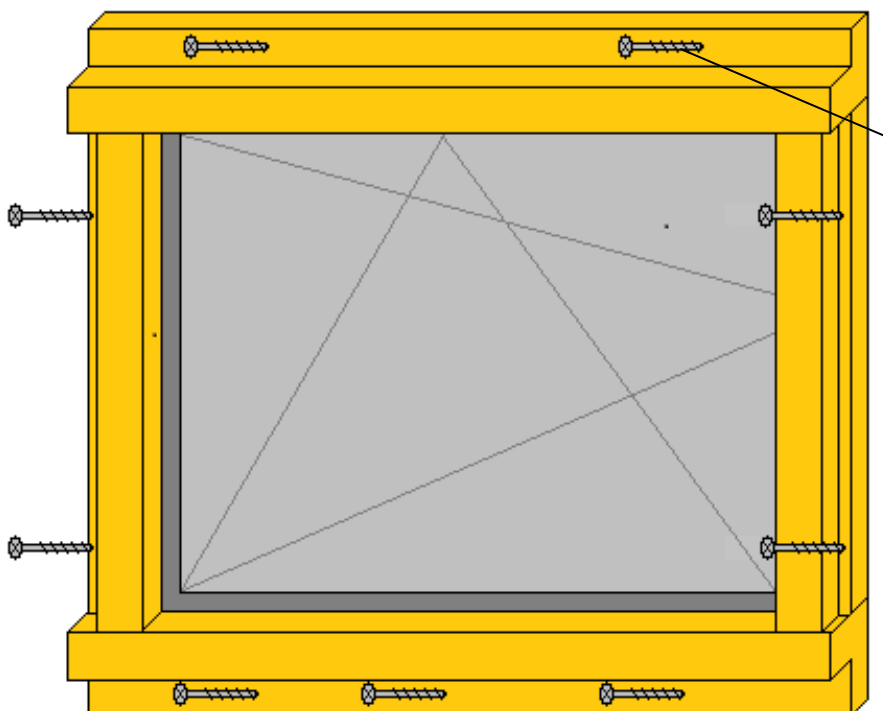
The bottom curtain wall installation system element is now positioned aligned with the wall, levelled, put into the water and then pressed on firmly. This will result in a minimum adhesive width and thickness of 25 mm and 2 mm. Any unevenness of the brickwork will be compensated for by adhesive. Use at least 3 certificated Ø 10 mm x 140 mm frame dowels to secure the bottom curtain wall installation system element. To do this, pilot bore the brickwork and curtain wall installation system element using a 10 mm drill. Alternatively use at least 3 conventional Ø 7.5 mm x 102 mm frame screws without dowels with round head to secure the bottom curtain wall installation system element. To do this, pilot bore the brickwork using a 6 mm drill and the curtain wall installation system element using a 7.5 mm drill. Suction the holes clean before screwing. Position the horizontal screws at least 100 mm from the edge. Position the vertical screws 100 mm from the frame edge facing the window opening and 40 mm from the frame edge facing the wall. The pitch of the screws must be at least 250 mm.



Screw spacing from edges:
spaced at least 100 mm or
100 mm / 40 mm from the edges of
the curtain wall installation system.

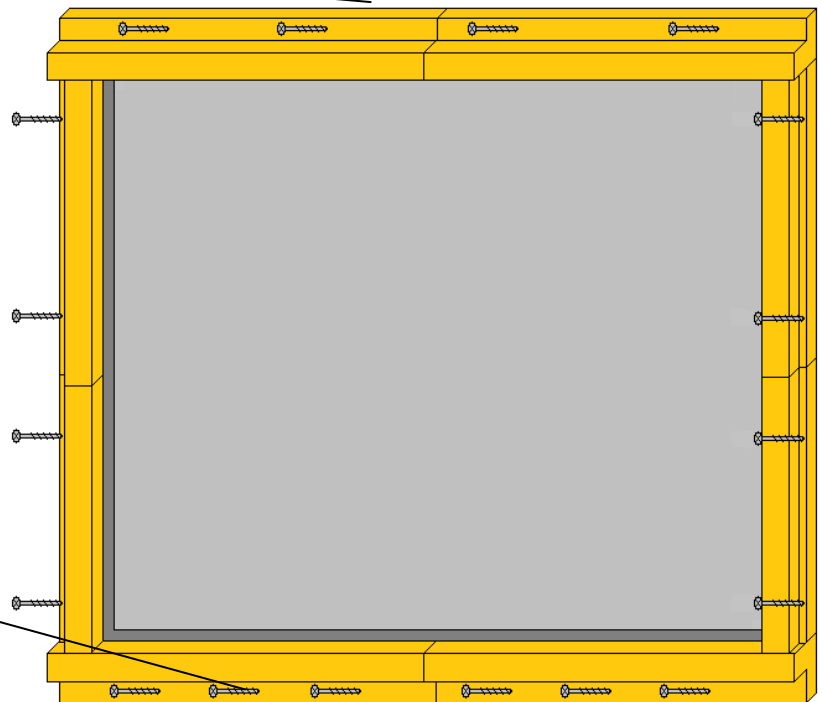
Now apply the high strength VOWA TFS adhesive to the lateral and top Curtain wall installation system elements. Also glue the butt joints and faces at the corners in the same way. Then screw down the lateral and top Curtain wall installation system elements as described.

Screw on as follows: Use certificated \varnothing 10 mm x 140 mm frame dowels. Pilot drill \varnothing 10 mm screw holes. Or use conventional \varnothing 7.5 mm x 102 mm frame screws without dowels with round head. Pilot bore the brickwork using a 6 mm drill and the curtain wall installation system element using a 7.5 mm drill. Heed the given spacing to the edges. Use at least 1 screw per curtain wall installation system element.



Screwing on:
using HRD-H10, \varnothing 10 mm frame
dowels

Protection against water penetration:
Seal off with VOWA TFS adhesive



Screwing on:
Arrangement for butt-joined curtain wall installation system elements

With butt jointed Phonotherm® curtain wall installation system elements, in the balustrade short lengths and extensions must be at least 450 mm in length. They are screwed down using 2 certificated $\text{Ø} 10 \text{ mm} \times 140 \text{ mm}$ frame dowels or with 2 conventional $\text{Ø} 7.5 \text{ mm} \times 102 \text{ mm}$ frame screws without dowels with round head. From 800 mm of length on, the segments of the curtain wall installation system elements are screwed at least with 3 screws.

At the soffit and at the lintel, using also shorter parts is possible. These parts are screwed at least with 1 screw..

Finally, protect the upper edge of the top Phonotherm® curtain wall installation system elements against water penetration by sealing with VOWA TFS.

2. Installation of the window:

Apply Winflex® inside all-round on the inside of the window, wide enough to close the abutment joint of the Phonotherm® curtain wall installation system frame and the abutment joint between wedges and wall. Then apply suitably dimensioned Winflex® TriSave multifunction tape to the sides and top of the window frame. Now insert the window frame, resting the base profile directly on the bottom wedge. Use conventional $\text{Ø} 7.5 \text{ mm} \times 102 \text{ mm}$ frame screws without dowels to secure the window. Assume a ca. 40 to 45 mm screw-in depth into the Phonotherm® curtain wall installation system elements. Drill $\text{Ø} 6 \text{ mm}$ pilot holes here.

We recommend using a Phonotherm® 200 base profile together with a BOSIG EPS insulating wedge or a BOSIG wood fibre insulating wedge under the window sill for optimal insulation of the sill abutment.

Fasatan® eco should in any event be used to form a drip groove under the external sill. Winflex® inside is then glued on the brickwork of the embrasure behind the Phonotherm® curtain wall installation system to form the inside connection.

The window sill supports may then be fastened directly underneath the bottom Curtain wall installation system element.

Attention! Important Note:

Above information are based on best present knowledge of current technology, but do not guarantee faultless processing of our products. The information is based on practical results of our tests, but is not binding and does not constitute warranties of characteristics in terms of Federal Supreme Court jurisdiction. Our information does not constitute a legally binding assurance of certain properties or suitability for a specific purpose. Supplementary information by our specialists are merely recommendations, for which no liability is accepted.

Due to the many possible applications of our products, we recommend subjecting the project to a thorough suitability test on original materials before release for further application.

Since our information are non-binding we do not warranty their correctness. For this reason we accept no liability for possible improper processing based on information submitted by our employees.

This technical data sheet replaces all previous versions and is valid until a new version is issued, or until Dec. 31, 2024. Please request the latest version after Jan. 01, 2025.

Dr. Hermann, Anwendungstechnik / Application Technology, Gingen / Fils

BOSIG GmbH

D – 73333 Gingen, Brunnenstraße 75 - 77

Telephone +49(0)7162-40 99-0 Fax +49(0)7162-40 99-200

www.bosig.de
info@bosig.de