

## Terrace systems

Complete solutions for terraces and balconies



# Individual insulation solutions

## Bauder insulation systems for terraces and balconies

The right house insulation is becoming an increasingly important issue. The insulation of terraces and balconies is therefore also part of optimum thermal protection.

Bauder offers the ideal insulation solution for any requirement. The high-performance insulation materials BauderPIR FA TE and BauderVIP TE are suitable for the most diverse installation heights and offer unique insulation characteristics. In the complete system, your roof is not only perfectly insulated, but also receives an added benefit in terms of safety thanks to the high-quality waterproofing made of modified polymer bitumen or FPO synthetic material. Furthermore, it is checked for impact sound.

### ■ Optimum thermal insulation

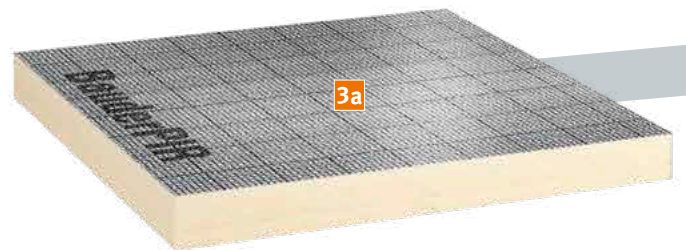
Thermal insulation is an important part of any terrace construction. Insulation materials with a particularly low thermal conductivity rating reliably protect the rooms underneath against heat loss and save energy.

A slope in the waterproofing layer can be created if BauderPIR FA Slope or BauderPIR T is applied as slope insulation with a 2% slope, for example, as an alternative to BauderPIR FA TE or BauderVIP TE.

The slope insulation can also be applied to the base insulation made of BauderPIR FA TE or BauderVIP TE.

### ■ Impact sound insulation in accordance with DIN EN ISO 140-8

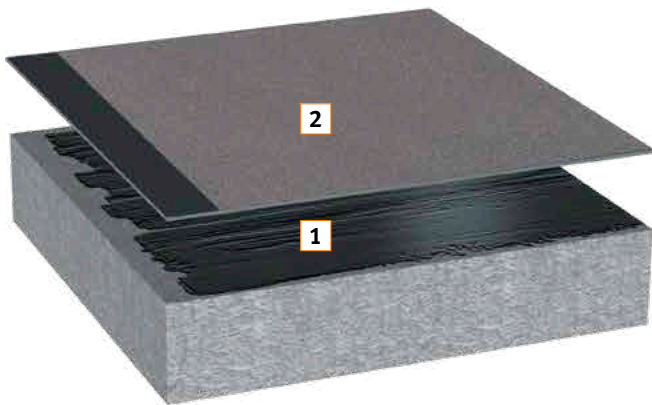
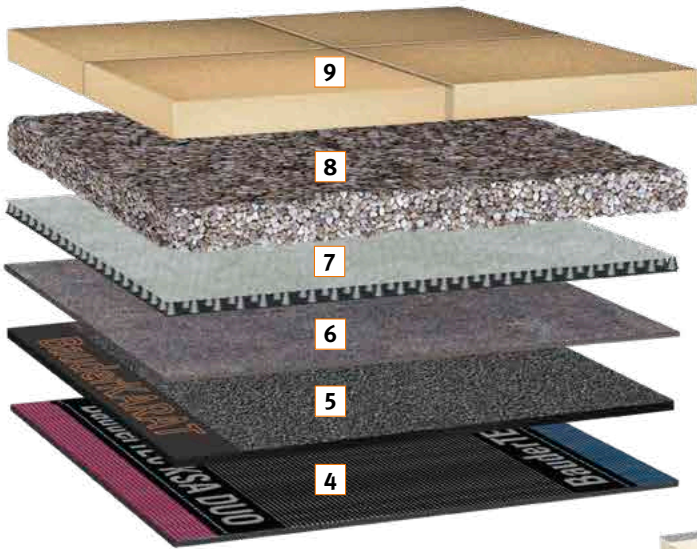
Impact sound insulation must also be taken into account at the planning stage in addition to thermal insulation. You can learn more about the tested Bauder system constructions on pages 14 - 15.



### 3a BauderPIR FA TE / BauderPIR FA Slope BauderPIR T Slope

The polyurethane insulation panels BauderPIR FA TE or BauderPIR FA Slope 2.0 ( $\lambda$  0.022) achieve a high insulation performance with a relatively low thickness. The panels are quick and easy to apply thanks to the low weight and the handy dimensions. BauderPIR T are non-laminated tapered insulation panels that can be used to create a preplanned slope without costly heavy constructions and to apply thermal insulation in one step.

- 9 **Terrace panels:** Are laid in a gravel bed to avoid the transfer of tension and level out any unevenness.
- 8 **Gravel chippings:** The gravel bed should have a grain size of 2/5 or 4/8 and a thickness of at least 4 cm.
- 7 **Bauder NF10 drainage panel as a drainage layer:** Surface drainage is used for the reliable drainage of rainwater.
- 6 **Bauder FSM 1100 protection mat as a protective layer:** The 8 mm thick protection mat protects the waterproofing.
- 5 **BauderKARAT/BauderSMARAGD waterproofing capping sheet:** 5.2 mm thick elastomer bitumen membrane as a capping sheet.



### 3b BauderVIP TE

It may be in special cases that particularly low installation heights have to be observed for terraces or balconies. Bauder has developed extra thin insulation panels with an exceptional insulation performance so that the thermal insulation is not neglected.

The vacuum insulating core in the BauderVIP TE panels achieves a very low thermal conductivity rating ( $\lambda$  0.007) that is not possible with conventional insulation materials. The insulation panels are already adapted to all conditions at the planning stage and produced individually in order to ensure optimum surface insulation.

**4** 1. **BauderTEC KSA DUO waterproofing layer:** Cold self-adhesive bitumen membrane, 3 mm thick, with a patented DUO edge for a cold or welded lap seal.

**3** **BauderPIR FA Slope, BauderPIR T Slope, BauderPIR FA TE or BauderVIP TE thermal insulation**

**2** **BauderFLEX DNA vapour barrier:** High-quality vapour barrier membrane.  
Prevents moisture penetration into the construction from below.

**1** **Bauder Burkolit V undercoat:** Bitumen primer

# BauderPIR FA TE

## Thermal insulation panels for terraces and balconies

Thermal insulation is an important part of all terrace systems.

BauderPIR insulation panels reliably protect the rooms beneath the terrace against loss of energy and achieve the best ever insulation ratings.

Without any thermal bridges and shrinkage – simply the best.



■ The statutory requirements for thermal insulation have become even more stringent with the German Energy Saving Ordinance (EnEV).

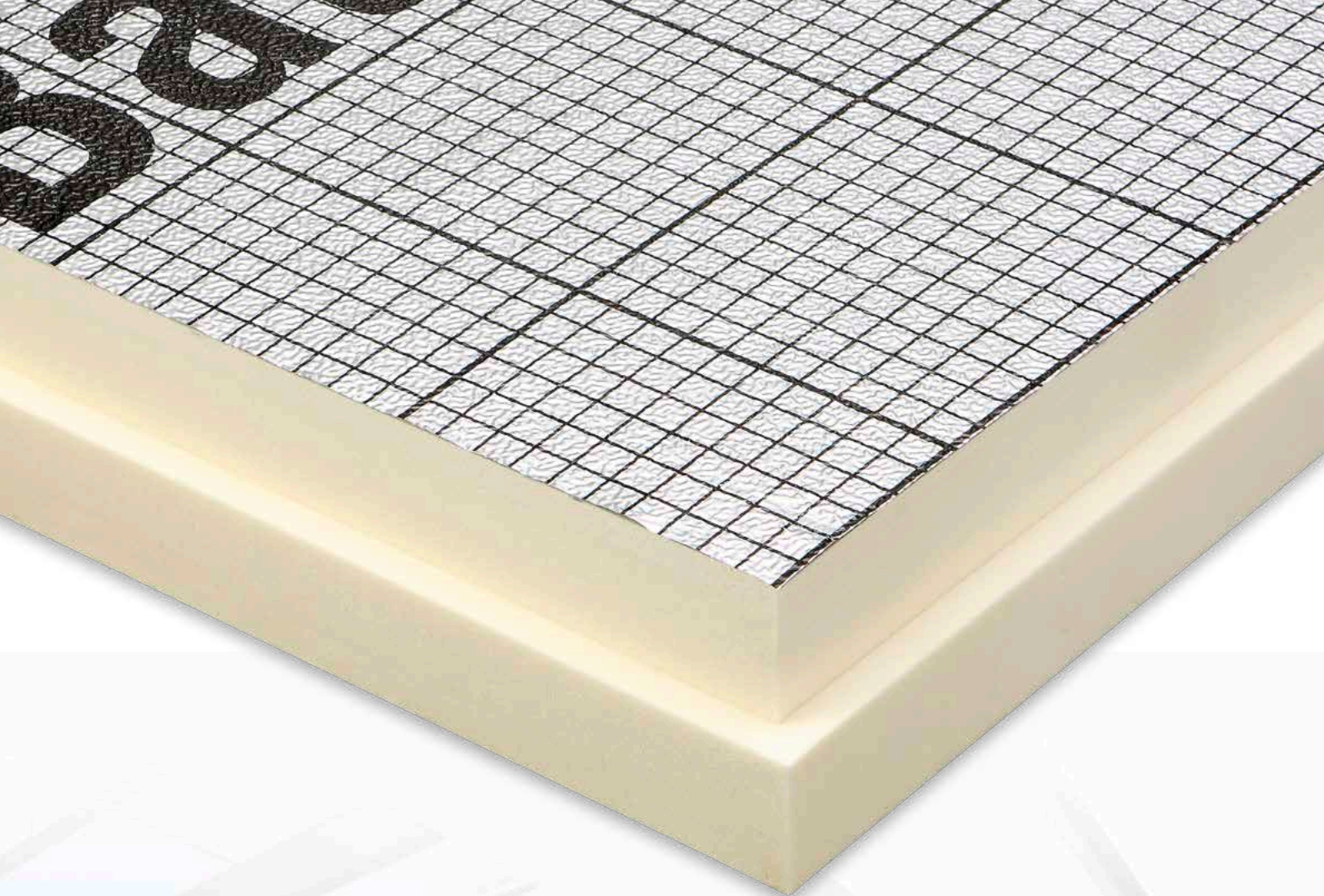
The choice of the right insulation material and careful manual application are even more important because subsequent repairs are time-consuming and expensive.

Important: Insulation materials with a high insulating effect achieve the necessary insulation ratings even with a low thickness. This plays an important role if the patio construction has height restrictions, especially in the case of refurbishments.

BauderPIR insulation panels have proven their worth in practice for decades. The insulation panels are available with or without a lap.

### Technical data:

BauderPIR	FA TE	FA TE F
Design	without lap	with lap
Panel dimensions	1,200 x 600 mm	
Thermal conductivity rating	$\lambda$ 0.022	
Compressive strength	$\geq$ 120 kPa	
Panel thicknesses	20 mm 30 mm 40 mm 50 mm 60 mm 70 mm 80 mm 100 mm 120 mm 140 mm 160 mm	60 mm 80 mm 100 mm 120 mm 140 mm 160 mm



#### **Thermal conductivity rating 022**

BauderPIR insulation panels have the lowest thermal conductivity of all conventional insulation materials with the same extremely low thickness. This significantly reduces the installation height.



#### **Dimensional stability**

The permanent compressive strength of BauderPIR is 24 kPA, the permanent pressure load stipulated for terraces, with a thickness compression of 2%. This corresponds to a possible load of 2.4 tons per square metre. The panels are dimensionally stable and withstand the highest loads. The optimum dimensions for terraces are 1,200 mm x 600 mm. We recommend bonding the insulation panels to the substrate to prevent the possible wobbling of paving slabs on terraces.



#### **Adaptable**

BauderPIR insulation panels can be trimmed easily and accurately with a knife or handsaw. The imprinted grid pattern serves as a cutting aid.



#### **Slope drainage**

Rainfall quickly drains away from the surface with the BauderPIR T or BauderPIR FA Slope 2.0 insulation panels cut into a wedge shape.



#### **Service**

Installation plans for the exact assignment of the slope areas give architects, developers and fitters assurance for professional installations.





# BauderVIP TE

## Maximum insulation performance with an extremely low installation height

BauderVIP TE is the terrace insulation system to use when a high insulation performance is required and the design of the terrace only permits an extremely low installation height. The highly insulating and very flat vacuum insulating core ( $\lambda$  0.007) makes it possible to comply with connection heights that would not otherwise be possible using normal insulation materials.

For the vacuum insulating core, silica is enclosed in a multi-layer aluminium composite foil and air is removed from the silica to create a vacuum. To protect the vacuum core during the construction processes and during use, it has a 3 mm thick rubber granulate mat on the underside and 17 mm of BauderPIR on the top.

Both protective layers are glued to the vacuum core.

The total U-value of a terrace is calculated from the surface ratios of the vacuum insulating core and the polyurethane rigid foam edge trims.

It can therefore only be calculated exactly when the layout plan has been created and the exact surface ratios are evident. Experience has shown that the total U-value varies slightly depending on the terrace layout.

### Examples:

Flat roof terrace, calculated without the raw ceiling: surface ratio of the polyurethane rigid foam edge trims 8% of the total surface

BauderVIP TE	20 / 40	30 / 50	40 / 60
U-value (W/m <sup>2</sup> K)	0.329	0.239	0.188
R-value (m <sup>2</sup> · K/W)	2.985	4.103	5.215
Vacuum core $\lambda = 0.007$ W/mK	20 mm	30 mm	40 mm

**The aluminium composite foil around the vacuum core must not be damaged – it is not possible to saw, drill or break the panels. Faulty panels should be replaced.**



### Thermal conductivity rating 007

The vacuum insulating core of the BauderVIP TE insulation panels achieves an exceptional insulation performance.



### Service

You can create your own layout plan for applying the BauderVIP TE insulation panels. The panels are then produced individually for the terrace or balcony.



### Adaptable

Up to 20 mm can be trimmed off two edges of the BauderVIP TE insulation panels for an optimum fit.

## BauderVIP TE

Maximum insulation performance  
with an extremely low installation height



**BauderVIP TE Special** is manufactured to order and is therefore perfectly adapted to the terrace area. The new **BauderVIP TE Standard**, on the other hand, consists of standard panels that can be optimally combined depending on the requirements. For two sides of the terrace, a corner and an edge element with one or two PIR edges are available for this purpose. On the respective opposite side, the surface is enclosed using BauderPIR FA TE compensating panels that are cut to size on site. The BauderVIP TE Standard insulation panels can be ordered directly from stock, shortening the delivery time considerably.



### Cutaway section of the construction of a BauderVIP insulation panel:

- A** Rubber granulate mat - 3 mm thick
- B** Vacuum core - depending on the version  
20 mm/30 mm/40 mm thick
- C** BauderPIR cut edge  
(only with BauderVIP TE Special and  
BauderVIP TE Standard edge/corner elements)
- D** rubber granulate mat - 3 mm thick





### 1 BauderVIP TE Standard

- Panels directly from stock, therefore a **faster delivery service**
- Adaptable for all terrace areas
- Easy application, can be cut on site
- Edge compensation using BauderPIR FA TE

### 2 BauderVIP TE Special

- Panels are manufactured individually **to order**
- Optimally adapted for patio areas
- Fast application as hardly any adjustments are needed on site

# BauderVIP TE

Maximum insulation performance with an extremely low installation height

## BauderVIP TE Standard

The layout plan is created with standard panels using the customer's drawing. An optimum choice of central, corner and edge panels ensures a quick and easy surface layout.

Edge compensation is performed on site with BauderPIR FA TE panels.

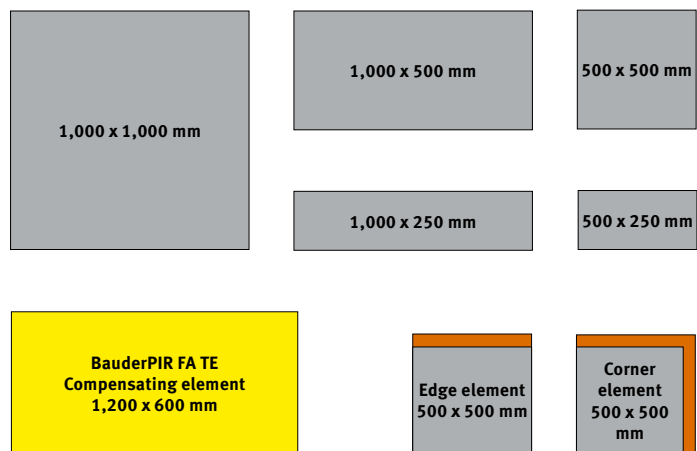
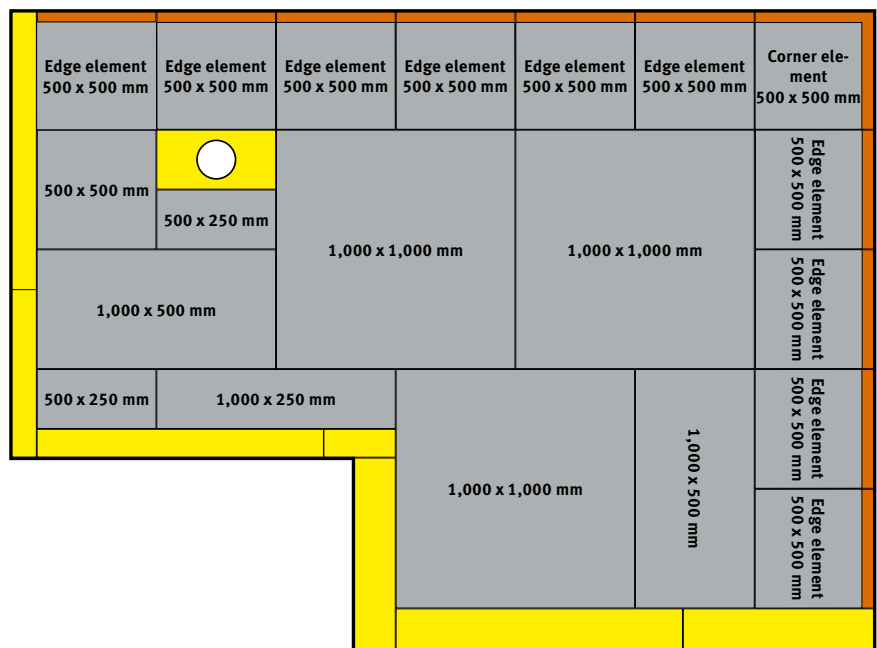
### Technical data:

- Panel thicknesses:
  - 40 mm (VIP core 20 mm)
  - 50 mm (VIP core 30 mm)
  - 60 mm (VIP core 40 mm)
- Vacuum core  $\lambda$ :
  - 0.007 W/mK
- Panel dimensions:
  - 1,000 x 1,000 mm
  - 1,000 x 500 mm
  - 1,000 x 250 mm
  - 500 x 500 mm
  - 500 x 250 mm

Corner panels with two PIR edges  
500 x 500 mm

Edge panels with one PIR edge  
500 x 500 mm

BauderPIR FA TE for edge compensation  
1,200 x 600 mm
- Compressive strength:
  - 190 kPa (with 10% compression in accordance with DIN EN 826)



Attention: Minimum calculation measurement of 0.4 m<sup>2</sup> per panel.  
A final quote can only be provided once plans have been drawn up.

## BauderVIP TE Special

Bauder creates a layout plan with an optimum surface layout based on a customer drawing. The individual panels are manufactured and installed according to this plan.

Edge compensation is not necessary, smaller adjustments can be made to the PIR edges of the panels.

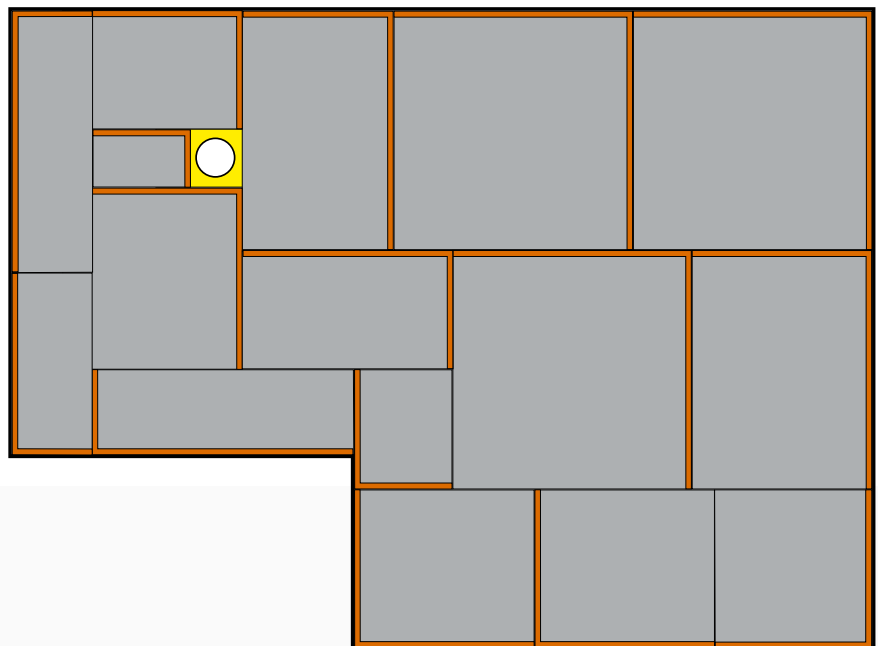
### Technical data:

- Panel thicknesses:
  - 40 mm (VIP core 20 mm)
  - 50 mm (VIP core 30 mm)
  - 60 mm (VIP core 40 mm)
- Vacuum core  $\lambda$ :
  - 0.007 W/mK
- Panels each with two **PIR edges** with the following dimensions:

1,000 x 1,000 mm  
1,000 x 500 mm  
1,000 x 250 mm  
500 x 500 mm  
500 x 250 mm

All the other panels needed are manufactured to order in the required dimensions.

- Compressive strength:
  - 190 kPa (with 10% compression in accordance with DIN EN 826)



Attention: Minimum calculation measurement of 0.4 m<sup>2</sup> per panel. A final quote can only be provided once plans have been drawn up.

## BauderVIP TE

### Maximum precision for the best results

Regardless of the VIP insulation system, construction tolerances and penetrations, such as fans or gullies, must already be recorded accurately at the planning stage, especially for the measurements. Only in this way can the insulation panels be optimally adapted to the conditions of the terrace in order to ensure an optimum insulation performance. Two of the four panel edges on the BauderVIP TE Special are made of polyurethane rigid foam that can be trimmed up to a maximum of 20 mm to allow adjustments on site. With BauderVIP TE Standard, the edge compensation is performed with terrace insulation panels.

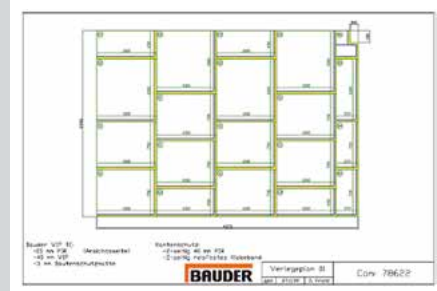




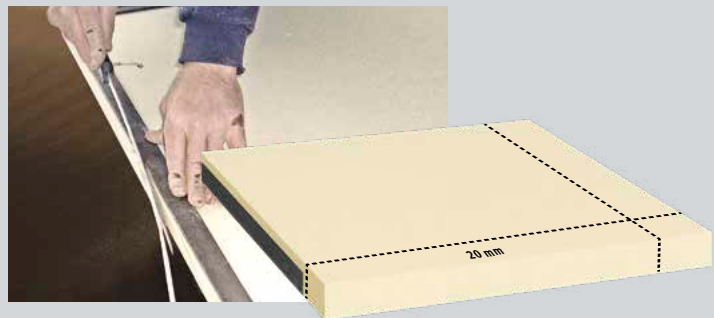
## BauderVIP TE

### Processing method

BauderVIP TE is applied loosely to the BauderFLEX DNA bitumen vapour barrier and glued with Bauder foam adhesive in accordance with the specified layout plan.



The substrate must be free of sharp objects so that the vacuum insulating core is not damaged. Where appropriate, a maximum of 20 mm can be trimmed off the PIR sides on the panels.



You can walk on BauderVIP TE panels that have already been applied. BauderTEC KSA DUO is applied on top.



**The core and the panel edges with the tape must not come into contact with the open flame. The vacuum insulating core must not be heated to a temperature above 80 °C.**

The entire surface of the BauderKARAT or BauderSMARAGD is welded as a capping sheet (for planted roof constructions). The 17 mm layer of BauderPIR protects the vacuum insulating core from the heat generated.

## Walk-on traffic areas

### System constructions for terraces and balconies

Comfort at home is not only achieved with the correct thermal insulation – impact sound insulation is also an important aspect when it comes to planning a terrace. System constructions by Bauder and the diverse insulation panels reliably protect living rooms beneath the terrace against energy loss and noise caused by footfall. In addition, the drainage system must be taken into account as part of the drainage of the roof area.

It is important to ensure perfect water drainage and to minimise spray water loading in door and window element areas in particular.

The right terrace construction can be chosen depending on the requirements and the roof configuration. The classic construction with a gravel bed on a protective layer can be chosen if there are no special requirements. There must be a direct connection of the drainage channel and roof drainage to a branch channel in this case due to the lower drainage performance of the gravel chippings.

The Bauder DSE 20/1 drainage and storage panel, for example, is particularly suitable for a combination of

walk-on and planted areas. Application of the drainage panel across the entire surface creates a highly porous drainage system on the underside that is not interrupted at any point.

The drainage panel in the area with vegetation cover is applied with a row of overlapping studs and filled directly with fine gravel. Extensive planting in the adjacent area is constructed with standard structures, for example, with filter fleece and substrate layers.

Terrace constructions with combined surface drainage and a branch channel achieve a significantly higher drainage performance and therefore offer the best possible planning reliability for all those involved.



**Bauder FSM 600 protection mat**  
High-quality protective layer, mechanically and thermally bonded



**Bauder NF 10 drainage panel**  
High-performance, pressure-resistant drainage panel, overall height of just 10 mm



**Bauder DSE 20/1 drainage / storage panel**  
Combined drainage and storage panel for areas with vegetation cover and planted areas



source ...



**Bauder drainage channels**  
High-performance, open box drain



**Bauder branch channel**  
Direct connection of the channel and gully top



**Bauder gully top**  
For installation above roof drains in areas with vegetation cover

# Walk-on traffic areas

## Impact sound insulation

For the following Bauder system constructions, the impact sound reduction for each was measured in the overall construction in accordance with DIN EN ISO 140-8.

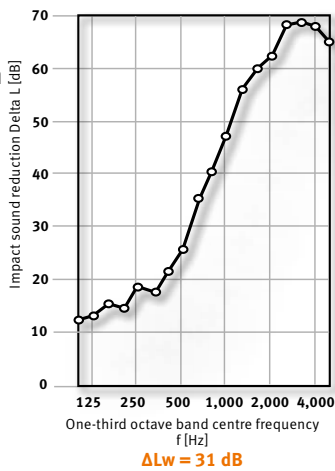
### Gravel bed on a protective layer



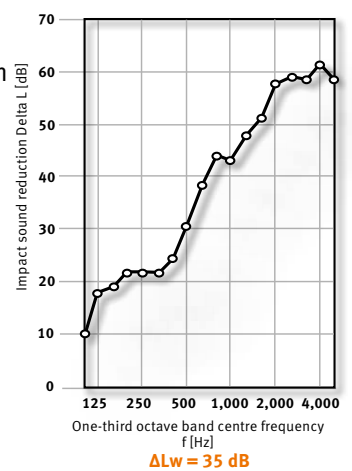
### Bauder NF10 gravel bed and surface drainage



- 1 Vegetation cover**  
Panel covering 40 mm
- 2 Bed**  
Gravel 4/8 50 mm
- 3 Protective layer**  
Bauder FSM 1100
- 4 Flat roof construction**  
BauderKARAT  
BauderTEC KSA DUO  
BauderPIR FA TE  
BauderFLEX DNA\*  
Concrete



- 1 Vegetation cover**  
Panel covering 42 mm
- 2 Bed**  
Gravel 2/5 40 mm
- 3 Drainage layer**  
Bauder NF 10
- 4 Protective layer**  
Bauder FSM 1100
- 5 Flat roof construction**  
BauderKARAT  
BauderTEC KSA DUO  
BauderPIR FA TE  
BauderFLEX DNA\*  
Concrete





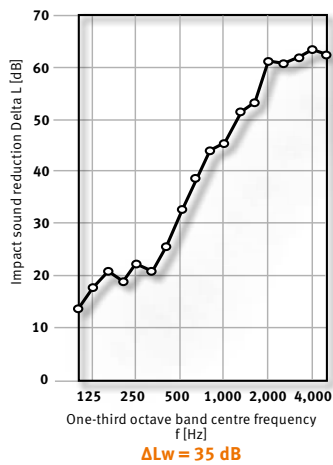
### Bauder DSE 20/1 gravel bed and surface drainage



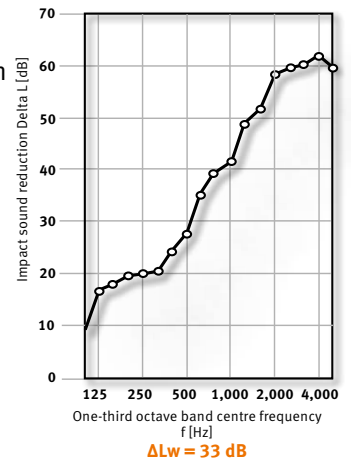
### Bauder NF 10 gravel bed and surface drainage on vacuum insulation



- 1 Vegetation cover**  
Panel covering 42 mm
- 2 Bed**  
Gravel 2/5 40 mm
- 3 Drainage layer**  
Bauder DSE 20/1
- 4 Protective layer**  
Bauder FSM 1100
- 5 Flat roof construction**  
BauderKARAT  
BauderTEC KSA DUO  
BauderPIR FA TE  
BauderFLEX DNA\*  
Concrete



- 1 Vegetation cover**  
Panel covering 42 mm
- 2 Bed**  
Gravel 2/5 40 mm
- 3 Drainage layer**  
Bauder NF 10
- 4 Protective layer**  
Bauder FSM 1100
- 5 Flat roof construction**  
BauderKARAT  
BauderTEC KSA DUO  
BauderVIP TE  
BauderFLEX DNA\*  
Concrete



\* The measurement results obtained apply for the installation of both BauderFLEX DNA or Bauder Super AL-E.

The test certificates can be requested from the Bauder Application Engineering Department or from your Bauder technical consultant.

## Walk-on traffic areas

### System constructions for terraces and balconies

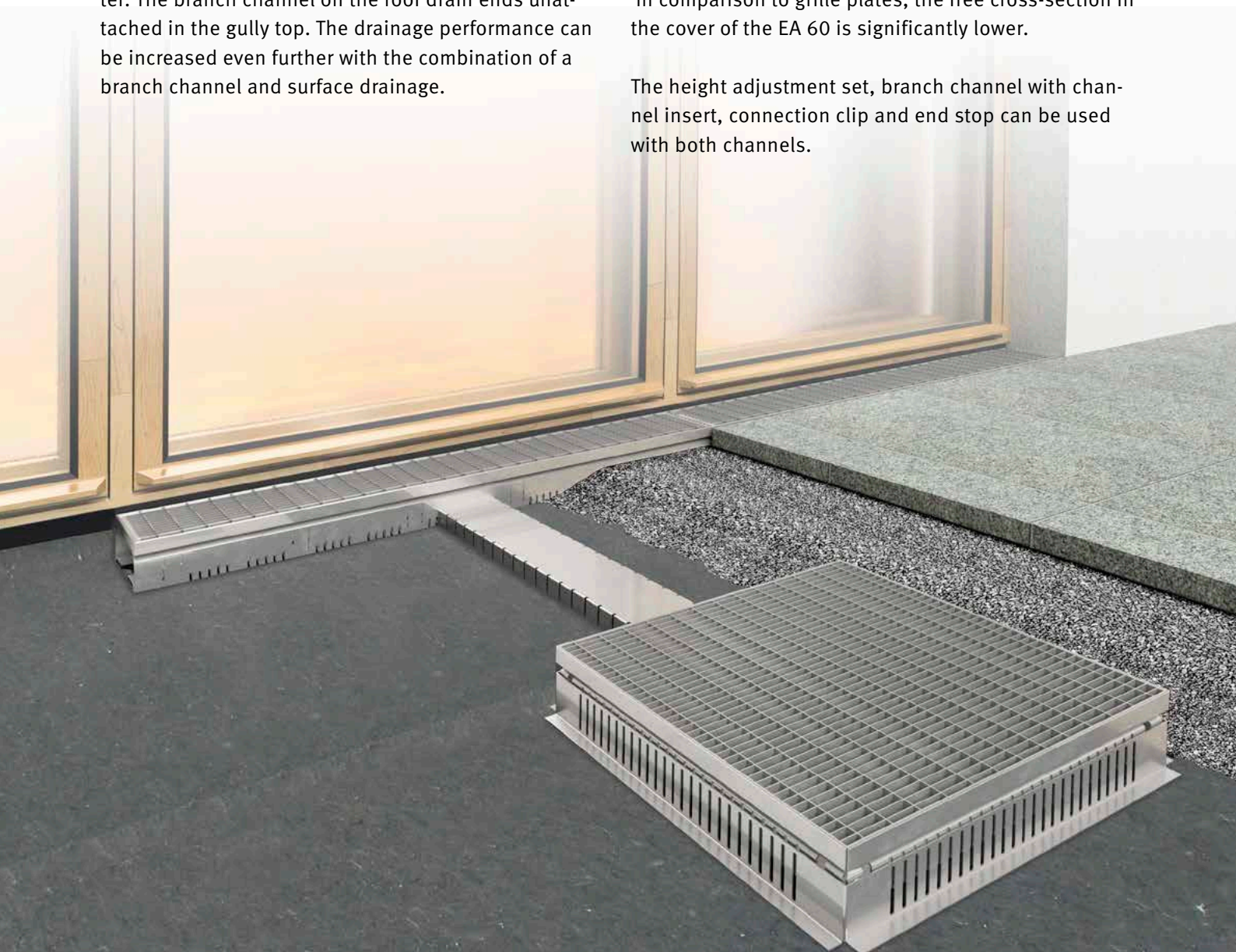
Drainage channels are often used to reduce the connection heights on doors. The technical regulations call for a direct connection of the channels to the roof drainage. Layers below vegetation cover are not considered sufficiently drainable on flat roofs. For example, surface drainage or branch channels are possible.

A key advantage of branch channels is that they can be cleaned. In addition, the free cross-section of branch channels that is effective for drainage leads to high flow speeds and consequently a high drainage performance. A channel insert that serves as a connecting piece to the branch channel provides a clean transition and protects against the penetration of foreign matter. The branch channel on the roof drain ends unattached in the gully top. The drainage performance can be increased even further with the combination of a branch channel and surface drainage.

The MR 150/60 drainage channel in an overall width of 150 mm and height of 60 mm can be adjusted by 75 to 120 mm to the vegetation cover with the height adjustment set. The grille plate reduces the spray water loading. Alternatively, a channel with a stainless steel perforated grille and an aluminium bottom part can be used as an alternative with the EA 150/60.

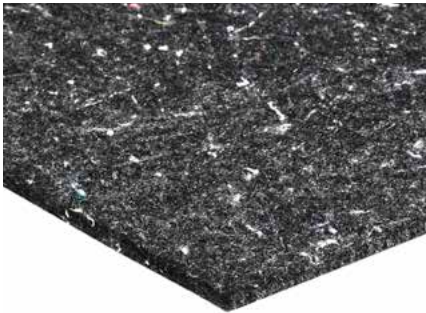
In comparison to grille plates, the free cross-section in the cover of the EA 60 is significantly lower.

The height adjustment set, branch channel with channel insert, connection clip and end stop can be used with both channels.



# Product overview

## Bauder FSM 600 / FSM 1100 protection mat



	FSM 600	FSM 1100
Material	Polyester, polypropylene	
Thickness	4 mm	8 mm
Weight	600 g/m <sup>2</sup>	1100 g/m <sup>2</sup>
Water absorption	3 l/m <sup>2</sup>	6 l/m <sup>2</sup>
Dimensions	2 x 30 m	2 x 15 m
<b>Item/order no.</b>	<b>7450 0600</b>	<b>7450 1100</b>

## Bauder NF 10 drainage panel



Studded sheet weight	approx. 620 g/m <sup>2</sup>
Filter fleece weight	approx. 130 g/m <sup>2</sup>
Thickness	10 mm
Total weight	approx. 750 g/m <sup>2</sup>
Compressive strength	400 kN/m <sup>2</sup>
<b>Item/order no.</b>	<b>7468 0010</b>

## Bauder box-shaped drainage channels



Drainage channel	MR 150/60	EA 150/60
Material	Galvanised steel, grille plate	Aluminium bottom part, stainless steel cover
Width	150 mm	150 mm
Height	60 mm	60 mm
Length	1,000 mm	1,000 mm
<b>Item/order no.</b>	<b>7432 0000</b>	<b>7432 0010</b>

Matching accessory parts: Connection clip (7432 0100), end stop (7432 0101) and height adjustment set (7432 0110)

## Bauder branch channel



	Branch channel	Channel insert
Material	Galvanised steel	Galvanised steel
Dimensions	1,000 x 100 x 30 mm	1,00/30 x 100 x 80 mm
<b>Item/order no.</b>	<b>7432 0120</b>	<b>7432 0130</b>

## Bauder MR 250 / MR 400 gully top



Gully top	MR 250	MR 400
Material	Galvanised steel	Galvanised steel
Dimensions	250 x 250 mm	400 x 400 mm
Height adjustment range	80 - 125 mm	80 - 125 mm
Cover	Grille plate	Grille plate
<b>Item/order no.</b>	<b>7432 0250</b>	<b>7432 0400</b>

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