



## The Flavent® Flat Roof Range

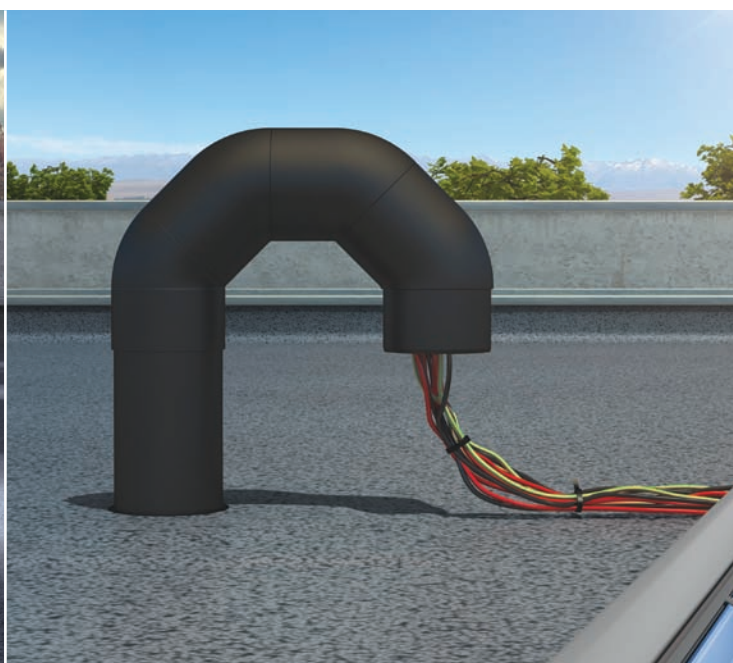
Professional Accessories for the Ventilation and Drainage of Flat Roofs

**KLOBER**



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# PROFESSIONAL SOLUTIONS BY PROFESSIONALS FOR PROFESSIONALS



Klöber GmbH is one of the leading specialists for high quality, innovative wall and roof components. Our offering includes components for pitched and flat roofs, walls and facades. The Klöber system solutions complement our proven product range and cover specific functions such as ventilation, wind and air tightness, insulation, energy efficiency, connection and fixing, as well as roof safety. By providing professional solutions that enhance the functional and aesthetic quality of buildings, we aim to give our business partners a competitive edge.

## Universal products and systems that offer outstanding value for money

We provide both standard and specialized products, all of which offer high quality, durability, long-lasting performance and outstanding value for money. Most of our products can be combined to create complete systems, meaning that we are a one-stop shop for all our customers' needs. Our products comply with the latest industry standards and legal requirements, and are designed for universal application. As a result, they can be fitted with the widest possible range of roof coverings and wall constructions. This makes them easier to specify, easier to work with and more reliable in terms of functionality.

## Decades of experience and a strong European presence

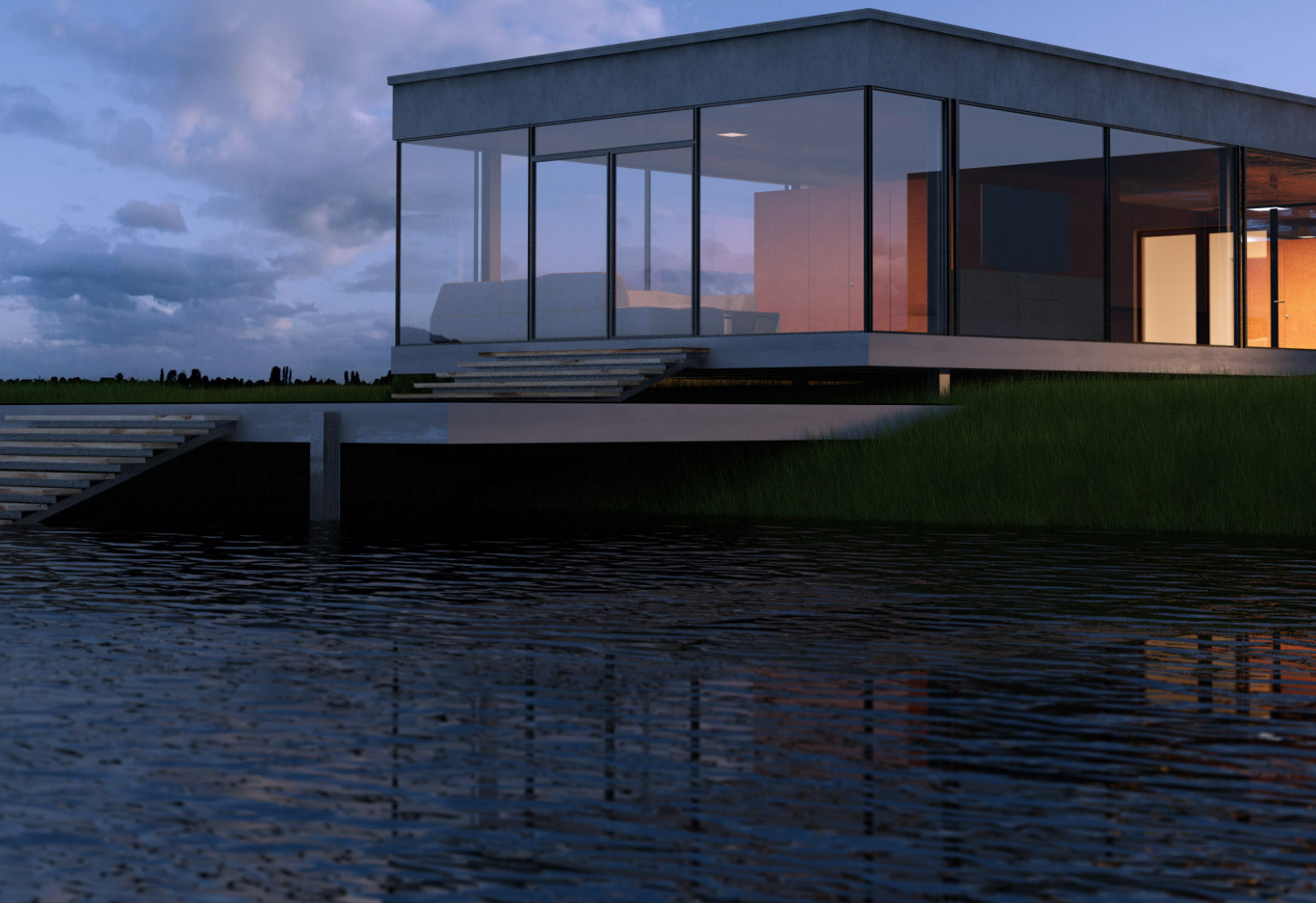
Klöber was founded in the German town of Schwelm in 1960. The company's international headquarters are located in the heart of Europe in Oberursel, near Frankfurt am Main. The company has subsidiaries in seven European countries, meaning it is close to its business partners and ideally placed to serve their requirements. Thanks to our decades of experience, extensive market knowledge and technical expertise, we are able to continuously develop our offering in line with the latest installation, construction and architectural trends. To do this, we work closely with leading research and development centers and roofers' and architects' associations.

## A safe choice when it comes to components for buildings

To help our business partners become even more successful, we also provide them with a comprehensive range of training programs and other services – relating to everything from selling to installation. In addition, we give them expert advice on upcoming regulations, trends and technology that affect installation practice and building trends.

Whatever their role in the construction and fitting out of the building shell may be: our products and solutions will help our business partners to gain a competitive edge, allowing them to feel confident that they have made the right decision.

# THE FLAT ROOF – MODERN AND ENERGY-EFFICIENT



Even in the times of the Babylonians 3,000 years ago there are reports of flat roofs and their use. For the last few years – not least due to the influence of modern concepts – the flat roof is finding its way back into architecture. Irrespective of whether the building concerned is a house, garage or extension – the clear language of its shape aesthetically convinces more and more building clients, and on the subject of energy-efficient building the flat roof can be found particularly with low energy or passive houses in the

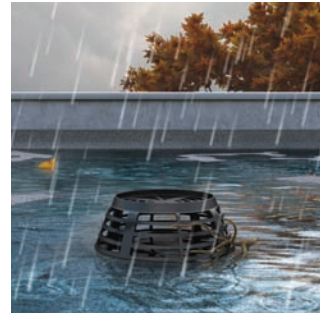
overall concept. Provided with thermally insulated and with perfect weather-proofing membranes it contributes to lowering the energy requirement and with it the costs.

With modern roofing materials and weather-proofing membranes of bitumen and plastic, flat roofs can be built secure in their functions for a long period of use. For this the fitting accessories play an important part.



## Be on the safe side with our range of products

**A Drainage of roof, parapet and balcony**  
All flat roofs need optimum drainage. Standing water can lead to considerably damage. Should the water not be able to run off completely because of defective flat roof drainage, long-term damage threatens the sub-construction, which can even result in total damage through mould or moisture.



**B Rainwater outlets**  
Rainwater outlets make secure laying of pipes and cables of all kinds from the interior of a building to the exterior. They are also wind and weather-resistant, and because they are mounted uniformly on the roof no water can penetrate or adversely affect the existing flat roof waterproofing.



**C Breather vents**  
Since in every building which is used, moist air occurs this must be removed by suitable ventilation. Two-part, ventilated flat roofs allow this via ventilation slots in the wall or via roof space supply and exhaust vents. In this way condensing moisture and formation of mould are prevented and the functionality of the thermal insulation remains intact.



**D Room and soil ventilation**  
Fresh air in the house keeps one healthy. In badly ventilated, highly thermally insulated rooms it can become not only stuffy but also damp. Kitchens and bathrooms, and also normal building use, therefore require suitable supply and exhaust ventilation. Through continuous ventilation, mould, mites and the rest have no chance.



Roofs must be ventilated depending on their construction, water must be removed and necessary penetrations through the functional layers such as antenna cables, photovoltaic systems or solar thermal pipes must be integrated in a waterproof way.

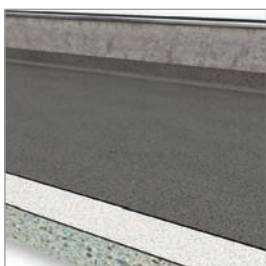
As one of the leading specialists in roof and wall components Klöber has expanded its expertise and its range of products for the flat roof.

# AN OVERVIEW OF THE KLÖBER FLAT ROOF RANGE



## Unventilated flat roof

With an unventilated roof (Single-piece warm roof) all functional levels lie on a roof deck without a layer of air. A major prerequisite is the building of air-tight connectors to the vapour barrier underneath, which prevents the entry of room moisture occurring through diffusion. Afterwards as a rule a layer of insulation is installed on which the roof waterproofing is then applied.

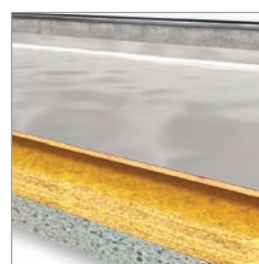


Today the majority of flat roof constructions are carried out as unventilated flat roof without a ventilation level for thermal insulation. In order to avoid a steam bubble with moisture trapped inside, breather vents are used.

## Ventilated flat roof

Ventilated flat roofs (two-part cold roofs) provide a functional roof construction through air circulation in compliance with the requirements of DIN 4108-3.

The lower supporting deck is built air-tight and made diffusion-resistant with a vapour barrier on which an insulation layer is laid between the bearing rafters, which allows suitable ventilation.



Ventilation slots at the roof edges or cold roof vents/roof space vents remove penetrating moisture securely and at the same time provide optimum supply and exhaust ventilation of the construction with the following supporting deck and waterproofing.





## Products for all weather conditions

Strong solar radiation or hard permafrost are completely unproblematic for the particularly UV-resistant flat roof articles of special hard PVC. They are stable in shape and keep their colour, do not become brittle, distortion-free and are particularly temperature-resistant. Klöber flat roof vents for kitchen, bath and WC are designed particularly rain-proof against driving rain and snowfall, without thereby losing ventilation cross section or effectiveness.

The raincaps – thanks to their quick-release clip fastening – provide maximum air extraction.

### A Roof, parapet and balcony drainage

Single- and two-piece rainwater outlets and parapet outlets



### B Rainwater outlets

Cable and pipe penetrations



### C Breather vents

Single- and two-piece expansion vents



### D Room and soil ventilation

Single- and two-piece vents



## Product features and benefits

We have attached great value to the fact that both our proven Flavent® portfolio and also our new Flavent® Plus range can be built and combined in modules in the supply and exhaust ventilation and in the drainage segment. The number of articles to be kept in store is reduced and costs are lowered.

The new product portfolio is distinguished by

- Outstanding thermal properties of the thermally insulated products with partly complementary heating strips,
- Fitting all flat roof structures and constructions. Use of the Flavent® rainwater outlets, penetrations and vent pipes, even with large thermal insulation thicknesses through extension possibilities in the thermal insulation layer or with roofs carrying load in the area of the exterior upper pipe.

High assembly security and long functional duration

- we achieve through large flange widths
- and appropriately preassembled surrounds for the most important flat roof sheeting.

Our new rainwater outlets for drainage can also:

- be supplied as heated and angled options,
- and provide great security, not least with tested high run-off values in the different nominal widths.

# THE PERFECT CONNECTOR COMBINATION FOR EVERY LOCATION

With the many possibilities of flat roof construction and waterproofing it is important in every case to have the correct connector for the roof penetrations used. Only the fitting connector to the weatherproofing layer used protects the flat roof reliably against the penetration of moisture and water.

For this the preassembled Klöber connectors offer a uniform connector and guarantee impermeable, hard-wearing and long-life connectors to bitumen and plastic roof sheeting.

All Klöber flat roof components are offered with PVC flange or preassembled connector skirts. In this way the component to be built in can be fixed securely on the sub-structure. The wide edge allows direct connection of the roof sheeting. [Our new, thermally insulated roof drainage portfolio is also offered with a smaller flange for connectors to plastic membranes and is thus particularly suitable for detail constructions.]

All Klöber flat roof penetrations are combinable besides the single-part construction, also in two parts. In connection with the fitting, under-part unventilated warm roofs can thus also be securely waterproofed with a two-part combination of articles.



### The tried and tested hard PVC flange

for the connection of PVC membranes, liquid plastics or for the complete surround. For the use of Flavent® flat roof penetrations with hard PVC connectors, PVC connector membranes do not have to be dressed up to the penetration and secured against slipping off if they are uniformly joined together.



### The bitumen skirt solution

with 4 mm thick polymer-bitumen connector membrane, provides maximum security and can be tied into the weatherproofing layers in next to no time. Bitumen sheeting membranes can be laid more easily on the industrially preassembled bitumen connector in this way. For the use of Flavent® flat roof penetrations with bitumen skirts, the connecting membranes do not have to be dressed up to the penetration and secured against slipping off.



### The ingenious screw connector





for high-polymer plastic roof sheeting and a secure loose-fixed connector according to ZVDH for roofs with waterproofing. The screw connector allows, with Flavent® plus rainwater outlets and Flavent® vents, a quick and waterproof connection with plastic roof sheeting of all kinds of plastics. Screw connectors must be positioned with roof vents above the roof covering, e.g. gravel layer or vegetation layer.



### The individually orderable connector sleeve for Flavent® plus rainwater outlets

for uniform connection of the roof waterproofing with complementary mechanical fixing for additional securing of the connector sleeve.

## POSSIBLE CONNECTORS

Material					
	PVC connector sleeve	Bitumen skirt	Screw connection** only in 100, 125 Dia.	Plastic connector sleeve	
Bitumen	✓*	✓		Bauder	Thermofol D
ECB (ethyl copolymer bitumen)			✓	Bauder	Thermoplan T FL
EPDM (ethy propylene India rubber)			✓	Polyfin	Polyfin 1020
EH-VAE (ethyl vinyl acetate copolymer)			✓	Polyfin	OCPlan 1025
FPO (free polyolefins)			✓	Sika	Sarnafil T66-15D
IIR (isoprene isobutylene India rubber)			✓	Sika	Sikaplan S 15
PEC (chlorinated polyethylene)			✓	Soprema	Flagon EP/S
PIB (polyisobutylene)			✓	Soprema	Flagon S
PVC (polyvinylchloride)	✓		✓	Wolfen	Wolfen IB
				Wolfen	Tectofin R

\* The PVC sleeve must be roughened with a wire brush. Do not use any bitumen undercoat.

\*\* More membranes on request.

# COMBINING KLÖBER FLAT ROOFING ACCESSORIES



## BONDING WITH TANGIT PVC ADHESIVE

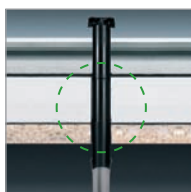
Two-piece flat roof combinations and the following special solutions are to be bonded so as to provide protection against backing up and provide strength with the PVC bonding adhesive Tangit, whereby the joint gap all round may not amount to more than 0.6 mm.

- all individual components without rolling ring seals are to be bonded with Tangit
- two-piece vent combination with base section
- extensions in the insulation level and extensions of the upper pipes
- with the use of sockets
- special solutions



## UPPER PIPE EXTENSIONS FOR FLAVENT® FLAT ROOF VENTS

To extend the Klöber breather vent/roof vent with green roof structures. Please ensure that the minimum height of 15 cm from the top of the vegetation to the vent outlet is maintained. The extensions are to be bonded with Tangit PVC adhesive



## INSULATION PACKAGE – EXTENSIONS FOR TWO-PIECE KLÖBER FLAT ROOF PENETRATIONS

For extending two-piece Klöber flat-roof penetrations with amply dimensioned insulation thicknesses. Please ensure that the extensions are only seldom used as additions, since the standard article is already prefabricated for adequate heights (see relevant dimension on the article.) The extensions are to be bonded together with the PVC adhesive Tangit.

## PROCESSING INSTRUCTIONS

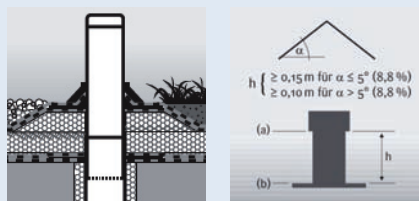
- Connectors and terminations should be manufactured of the same materials as the roof waterproofing. If different materials are used then these must be suitable for the purpose concerned and permanently compatible with each other.
- If roof sheeting connectors are used which are not joined uniformly together or are connected with the original Klöber PVC, bitumen or screw connector, these must be water-proof to their upper edge and secured against water running behind and meet the mechanical and thermal stresses and weathering to be expected.
- With connector surfaces/flanges the area to be stuck down must be free of grease, soiling and moisture.
- The distance of roof penetrations from each other and to other building components, e.g. wall connectors, movement joints or roof edges should amount to at least 0.30 m, so that the connectors concerned can be constructed professionally and permanently. The deciding factor here is the external limit of the flange.
- We should like to point out that exclusively homogenous plastic sealing membranes are to be used. The use of fleece-coated plastic sealing membranes with integrated reinforcement inlays is not permissible.

- A list of the plastic sealing membranes tested by Klöber can be found in the table on Page 10 and also in our download area. For the use of other plastic sheeting we ask you to consult our application technicians.
- The laying instructions of each membrane manufacturer should be observed.

## HEIGHT OF THE PENETRATION SURROUND

If no industrially preassembled metal fittings, synthetic material accessories, connection collars of plastic, elastomer membranes, liquid sealings are used the height of the penetration surround with regard to splashing water and flood protection over surface covering (such as e.g. gravel or vegetation layer) amounts to:

- at least 0.15 m with roof pitches up to 5° (8.8%)
- at least 0.10 m for roof pitches over 5° (8.8%)
- in areas with much snow a larger connector height may be necessary.



If the required heights are exceeded with the use of the standard vent, tight-fitting upper pipe extensions must be used.

# DRAINAGE WITH THE TRIED AND TESTED FLAVENT® RANGE

Optimum drainage of flat roofs is the alpha and omega for their performance and long life. Basically flat roofs must be drained at their lowest points, since standing water can cause considerable damage. Should the water not be able to run off because of defective drainage, there is a threat of soiling with algae and cracking in the roof waterproofing, rain leaks or static loads as a result of the amount of water standing on the roof.

We have further expanded our product range for roof drainage and now offer, in addition to the classic rainwater outlets, rainwater outlets for flat roofs with parapet drainage or balconies - in accordance with ZVDH technical rules for waterproofing.

## Flavent® rainwater outlets

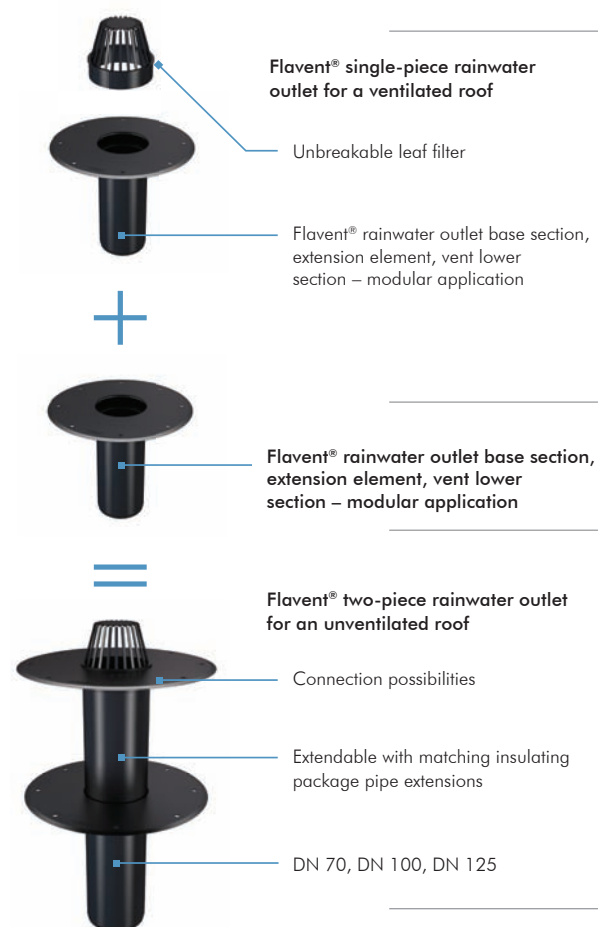
Our tried and tested products for optimum drainage of flat roofs.

### Product features and benefits

- Slender inlets for narrow roof penetrations
- Quick installation through individual flange connectors
- Variable in height
- Unbreakable leaf filter for optimum water drainage
- Usable for all thermal insulation thicknesses in combination with matching insulating package pipe extension

### Material and properties

- Hard PVC, black
- Weather, frost and UV-resistant
- Fire rating B2 (no direct flame contact)
- Temperature resistance -40°/+80°C
- Flow temperature max. +40°C (for short periods max. +80°C)



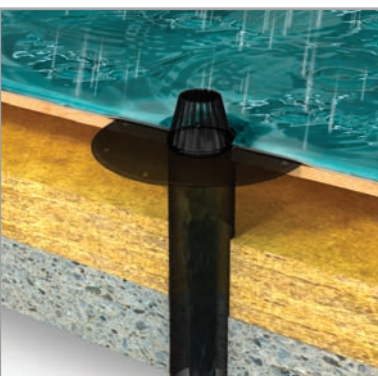
## Flavent® parapet rainwater outlet

Our tried and tested products for optimum drainage of parapet walls and balconies (use as parapet or emergency rainwater outlet).

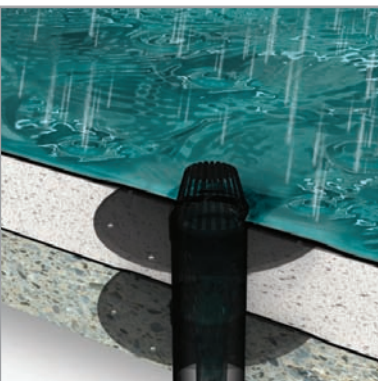
### Product features and benefits

- All kinds of possible uses e.g. for roofs, balconies and terraces
- Rainwater outlet for horizontal installation through a wall (parapet)

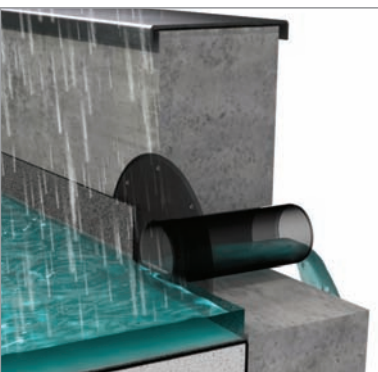




Installation example:  
Flavent® rainwater outlet for  
a ventilated roof with plastic  
waterproofing membrane



Installation example:  
Flavent® rainwater outlet for an  
unventilated roof with  
bitumen waterproofing  
membrane



Installation example:  
Flavent® parapet rainwater outlet  
for an unventilated roof with  
bitumen roof waterproofing



#### Connector diameters

- DN 70, DN 100, DN 125

#### Possible connectors

- PVC-connector flange
- Bitumen skirt
- Screw connector



#### Standards

- DIN EN 12056 part 3
- DIN 1986 part 100
- DIN EN 1253
- DIN 18195

#### Article numbers

- See table page 14-15

#### Add-on products

- Single-piece rainwater outlet height-increasing element or vent lower part
- Insulating package pipe extensions
- Tangit PVC adhesive

#### Processing














- Rainwater outlets and emergency overflows must be fixed in the substructure.
- Flanges of rainwater outlets in the waterproofing level should be set into the underlay
- For connection to a vapour barrier with an unventilated roof, two-piece articles should be used
- Roof details should be so formed and designed that they are always accessible for checking and maintenance











#### Technical instructions

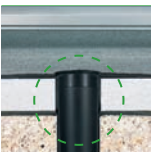


- Klöber connector flanges must be tailored to fit the roof waterproofing ( see table of connector types)
- The roof drainage must be so arranged, taking into account calculation standards, that rainfall is disposed of by the shortest route
- Roof surfaces with internal drainage must have with one rainwater outlet at least one emergency overflow or several rainwater outlets

Please note also the instructions in the laying instruction.

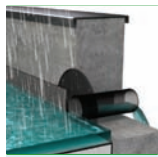
# FLAVENT® RAINWATER OUTLETS – PRODUCT OVERVIEW

 <i>Flavent® single-piece rainwater outlet</i>		DN 70	DN 100	DN 125
		<b>Ventilated roof</b>	<b>Leaf and gravel filter</b> (not included with delivery and to be ordered as an option)	 KF 6819
 <b>Hard PVC flange Rainwater outlet*</b>	 KF 6500		 KF 6510	 KF 6520
 <b>Bitumen skirt Rainwater outlet*</b>	 KF 6501		 KF 6511	 KF 6521
 <b>Screw connector Rainwater outlet</b> (Leaf and gravel filter KF 6880 already included in delivery)				 KF 6522 as DN 125, in combination with reducing piece DN 125 to 100 (KF 6765)

 <i>Flavent® two-piece rainwater outlet (in combination with single-piece rainwater outlet)</i>		DN 70	DN 100	DN 125
		<b>Unventilated roof</b>	 <b>Hard PVC flange Extension element*</b>	 KF 6500
 <b>Bitumen skirt Extension element*</b>	 KF 6501		 KF 6511	 KF 6521
 <b>Screw connector Extension element</b> (Leaf and gravel filter KF 6880 already included in delivery)				 KF 6522 as DN 125, in combination with reducing piece DN 125 to 100 (KF 6765)

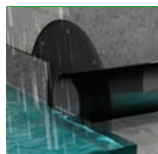
 <i>Flavent® insulation package pipe extensions for two-piece rainwater outlet</i>		DN 70	DN 100	DN 125
		<b>Insulation package pipe extensions</b> (can be shortened individually)	 > 215mm KF 6836	 Extensions necessary from insulation thickness... > 264mm KF 6837

# FLAVENT® PARAPET AND BALCONY OUTLETS – PRODUCT OVERVIEW



## Flavent® Parapet and balcony outlets

	DN 70	DN 100	DN 125
<b>Leaf and gravel filter</b> (not included with delivery and to be ordered as an option)			
	KF 6819	KF 6826	KF 6827
 <b>Hard PVC flange</b> Parapet rainwater outlet with pipe extension			
	KF 6530	KF 6540	KF 6550
 <b>Bitumen skirt</b> Parapet rainwater outlet with pipe extension			
	KF 6531	KF 6541	KF 6551



## Flavent® pipe extensions

	DN 70	DN 100	DN 125
<b>Pipe extension for wall penetration</b> (already included with delivery, can be shortened individually)			
	KF 6836	KF 6837	KF 6838

Additional comments:

\* Modular use as rainwater outlet, extension element, vent lower part.

All individual components are to be bonded with Tangit (except leaf and gravel filter and screw ring).

If reducing pieces are used only the smaller cross-section may be employed.

The technical drawings of all articles can be downloaded under [www.kloeber.de](http://www.kloeber.de).

# DRAINAGE WITH THE NEW FLAVENT® PLUS RANGE

Many kinds of options – combinable in modules

## Flavent® plus rainwater outlets

The flat roof is finding its way back into architecture again, since its clear form language is convincing more and more building clients aesthetically. And on the subject of energy-efficient building the flat roof – thermally insulated and with long-life waterproofing membranes and connectors, results in lower energy requirements and thereby costs.

As one of the leading specialists for roof and wall accessories Klöber has extended its expertise and its range of products for the flat roof. With our new product portfolio for the drainage of flat roofs we have set particular value on the highest quality and modular, combinable product variety. This increases their possibilities of use and reduces the time in storage.

### The decisive product features and benefits

- Fits all flat roof structures and constructions
  - single or two-piece with height increase element
  - angled or vertical
- Outstanding thermal properties of the thermally insulated products
- Heatable rainwater outlets can prevent icing in rainwater run-off areas
- Ready preassembled connector sleeves facilitate installation and increase security
- Available with PVC flange and with connector sleeves for bitumen and plastic roof membranes for high installation security and functional long life
- Maximum functionality through tested drainage values conforming to standards in the different nominal widths

### Material and properties

- Hard PVC, black
- Weather, frost and UV-resistant
- Fire rating B2 (no direct flame contact)
- Temperature resistance -40°/+80°C
- Flow temperature maximum +40°C (for short periods maximum +80°C)

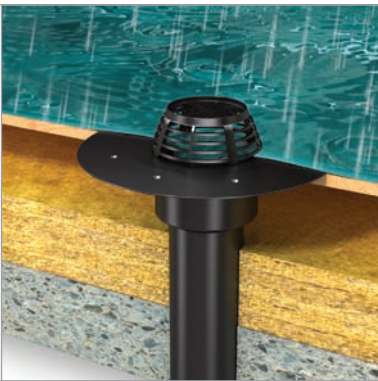


## DRAINAGE OF THE FLAT ROOF AND BASIC PRINCIPLES FOR DESIGN

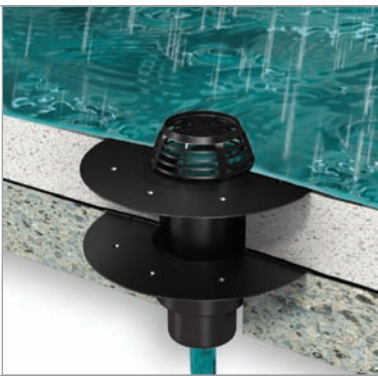
Against the background of increasing extreme weather conditions the design of drainage of a flat roof is of particular importance. To avoid rain penetration damage and static problems through to collapsing roofs, the most important standards for roof and building drainage are DIN EN 12056: Gravity drainage systems inside buildings must be taken into account with the Part 3 decisive for flat roofs: roof drainage, design and calculation, and the national complementary standard DIN 1986-100.

A basic prerequisite for the secure drainage of flat roof surfaces and for increasing the length of life is sufficient falls. The rainwater should be disposed of by the shortest route in this way.





Installation example:  
Flavent® plus single-piece  
rainwater outlet vertical for a  
ventilated roof



Installation example:  
Flavent® plus two-piece  
rainwater outlet vertical for an  
unventilated roof



#### Connector diameters

- DN 70, DN 100, DN 125

#### Possible connectors

- PVC connector sleeve
- Bitumen skirt
- Screw connector
- Screw connector with PVC sleeve at choice



#### Standards

- DIN EN 12056 part 3
- DIN 1986 part 100
- DIN EN 1253
- DIN 18195

#### Article numbers

- See table page 18-19

#### Add-on products











- Insulation package pipe extension
- Tangit PVC adhesive







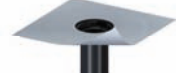
#### Technical instructions






- Specify sufficient falls
- Design flat roofs with internal drainage with at least one rainwater outlet and at least one emergency overflow (calculation for once-in-a-century rainfall according to DIN 1986-100 Appendix A)
- Position rainwater outlets at the lowest point of a roof (with profiled sheet metal, consider bending and distortion through imposed load)
- Make sure of sufficient installation distance to rising building components and joints
- If the roof surfaces are divided into sections (e.g. fire compartments) then these areas must also be drained individually
- Calculation of drainage systems according to DIN 12056-3 and DIN 1986-100, i.e. so arrange roof drainage that the rainfall can be disposed of by the shortest route
- Rainwater outlets must be maintained and therefore always be accessible
- Roof and emergency overflows must be fixed in the sub-construction
- Connector skirting of rainwater outlets on the waterproofing level should be set in the underlay
- Connector skirting must be tailored to fit the roof waterproofing
- For connecting the vapour barrier with unventilated flat roofs two-piece products should be used

**Please note also the instructions in the laying instruction.**

# FLAVENT® PLUS RAINWATER OUTLETS – PRODUCT OVERVIEW

	<i>Flavent® plus single-piece rainwater outlet</i>					
	VERTICAL	DN 70	DN 100	DN 125 non-heated      heated	DN 150	
Ventilated roof	 Hard PVC flange / screw connector Rainwater outlet		↑	 KF 6700	 KF 6701	↑
	 Bitumen skirt Rainwater outlet		In combination with reducing piece DN 125 to 100 (KF 6765)	 KF 6700-01	 KF 6701-01	In combination with expansion piece DN 125 to 150 (KF 6764)
	 Screw connector Rainwater outlet with plastic sleeve to choice (see table on page 10)		↓	 KF 6700-xx	 KF 6701-xx	↓

	<i>Flavent® plus two-piece rainwater outlet (in combination with single-piece rainwater outlet)</i>				
	DN 70	DN 100	DN 125	DN 150	
Unventilated roof	 Hard PVC flange / screw connector Extension element*		↑	 KF 6706	↑
	 Bitumen skirt Extension element*		In combination with reducing piece DN 125 to 100 (KF 6765)	 KF 6706-01	In combination with expansion piece DN 125 to 150 (KF 6764)
	 Screw connector Extension element with plastic sleeve to choice (see table on page 10)		↓	 KF 6706-xx	↓

	<i>Flavent® insulation package pipe extensions for two-piece rainwater outlet</i>				
	ACCESSORIES	DN 70	DN 100	DN 125	DN 150
	<b>Insulation package pipe extensions</b> (can be shortened individually, extension necessary from insulation thickness 165mm)			 KF 6808	
	<b>Expansion pieces</b>				DN 125 to 150 KF 6764
	<b>Reducing pieces</b>		DN 125 to 100 KF 6765		
	<b>Leaf and gravel filter</b> (already included in delivery)			 KF 6880	

# FLAVENT® PLUS RAINWATER OUTLETS – PRODUCT OVERVIEW



## Flavent® plus single-piece rainwater outlet

	ANGLED	DN 70*		DN 100	DN 125		DN 150
		non-heated	heated		non-heated	heated	
Ventilated roof	Hard PVC flange / screw connector Rainwater outlet			↑			↑
	Bitumen skirt Rainwater outlet			In combination with expansion piece DN 70 to 100 (KF 6767) reducing piece DN 125 to 100 (KF 6765)			In combination with expansion piece DN 125 to 150 (KF 6764)
	Screw connector Rainwater outlet with plastic sleeve to choice (see table on page 10)			↓			↓
		KF 6704	KF 6705		KF 6702	KF 6703	
		KF 6704-01	KF 6705-01		KF 6702-01	KF 6703-01	
		KF 6704-xx	KF 6705-xx		KF 6702-xx	KF 6703-xx	



## Flavent® plus two-piece rainwater outlet (in combination with single-piece rainwater outlet)

		DN 70	DN 100	DN 125	DN 150
Unventilated roof	Hard PVC flange / screw connector Extension element*		↑		↑
	Bitumen skirt Extension element*		In combination with expansion piece DN 70 to 100 (KF 6767) reducing piece DN 125 to 100 (KF 6765)		In combination with expansion piece DN 125 to 150 (KF 6764)
	Screw connector Extension element with plastic sleeve to choice (see table on page 10)		↓		↓
				KF 6706	
				KF 6706-01	
				KF 6706-xx	



## Flavent® insulation package pipe extensions for two-piece rainwater outlet

ACCESSORIES	DN 70	DN 100	DN 125	DN 150
<b>Insulation package pipe extensions</b> (can be shortened individually) extension necessary from insulation thickness 165mm)				
			KF 6808	
<b>Expansion pieces</b>				
		DN 70 to 100 KF 6767		DN 125 to 150 KF 6764
<b>Reducing pieces</b>				
		DN 125 to 100 KF 6765		
<b>Leaf and gravel filter</b> (already included in delivery)				
			KF 6880	

# BREATHER VENTS

In every used building humidity occurs which can also penetrate into the roof space after construction of the vapour barrier. For this reason so-called cold roofs must be ventilated in order to avoid damage to the building.

Moisture which penetrates into the roof construction with a defective waterproofing can also almost no longer escape. This results with wood structures in mould formation. With unventilated flat roofs, so-called warm roofs, it can result with bituminous waterproofing in the formation of bubbles on the roof surface, which then results in further consequential damage.

## Flavent® breather vents for roof space supply and exhaust ventilation

### Area of use

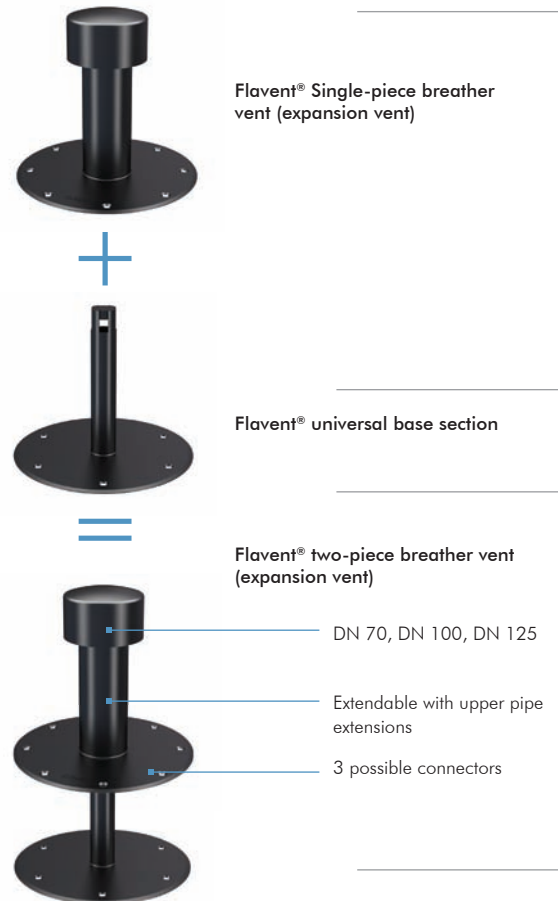
- Breather vents for air circulation above the insulation layer, with a ventilated roof construction according to DIN 4108
- Expansion vent for removing moisture trapped in the flat roof construction to avoid formation of bubbles
- As a renovation vent
- For drying out roofs

### Product features and benefits

- Optimum air circulation according to DIN 4108
- No cracking of the roof surface
- Penetrating moisture and condensate are removed
- Insulation performance remains intact
- Particularly high security against rain penetration
- Versatile in use and thus short time in storage
- Perfect connector to bitumen and plastic roof membranes
- Quick installation

### Material and properties

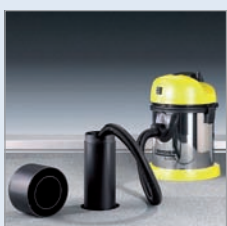
- Hard PVC, black
- Weather, frost and UV-resistant
- Fire rating B2 (no direct flame contact)
- Temperature resistance -40°/+80°C
- Flow temperature max. +40°C (for short periods max. +80°C)



### USE AS RENOVATION VENT

For the renovation of old or damaged roof vents. Advantages:

- Old vent can remain in the roof surface; demolition of the old roof is not necessary
- Time saving through simple imposition of the new vent
- Connections from inside are not damaged by the removal of the old vent

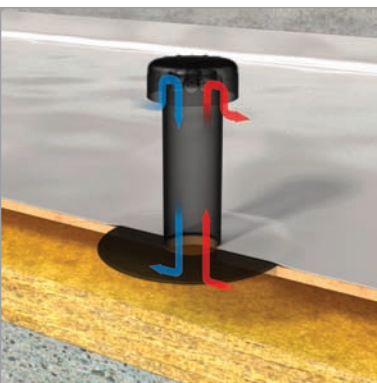


### USE AS ROOF DRYING VENT

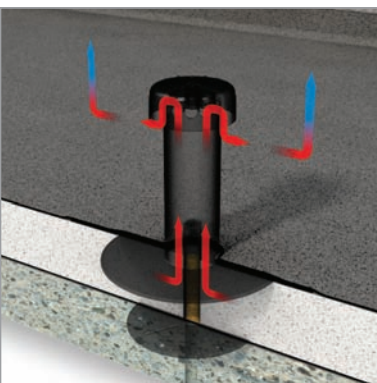
For the drying of dampened thermal insulation through the use of water suction.

Advantages:

- A cost-intensive demolition of the old roof is not necessary
- Drying in stages of the dampened insulation
- Economical structure of a new waterproofing with complementary insulation while keeping the old dried-out insulation



Installation example:  
Flavent® single-piece breather  
vent for ventilated roof with  
PVC roof membrane.



Installation example:  
Flavent® two-piece breather vent  
for unventilated roof with bitumen  
roof membrane.



#### Connector diameters

- DN 70, DN 100, DN 125

#### Possible connectors

- PVC-connector flange
- Bitumen skirt
- Screw connector (only in 100mm, 125mm diameters)



#### Standards

- DIN 4108

#### Add-on products

- Vent lower section
- Upper pipe extensions
- Tangit PVC adhesive

#### Article numbers

See table page 24

#### Technical instructions

- Use of expansion vents: With the installation of two-piece expansion vents, care must be taken that the lower section is filled with a fibre insulation in order that condensation water on the supporting shell of the roof deck is prevented
- Use of roof space **supply and exhaust vent**: A uniform rafter space ventilation should be aimed for, so vent cross-section and numbers of room space breather vents should be adjusted to the circumstances on site.
- With all imposed structures a vapour barrier should be specified

Please note also the instructions in the laying instruction.

# ROOM AND SOIL VENTILATION

The tried and tested Flavent® living space breather vents are technical air flow optimised solutions for motorised and static supply and exhaust ventilation of flat roofs. They convey unpleasant stuffy air

and moisture, e.g. from bathroom and kitchen, to the exterior and thus provide a pleasant room climate. For controlled living space ventilation Klöber vent pipes are also excellent.

## Flavent® breather and soil vents

Our tried and tested products for optimum living space supply and exhaust ventilation with flat roofs.

### Area of use

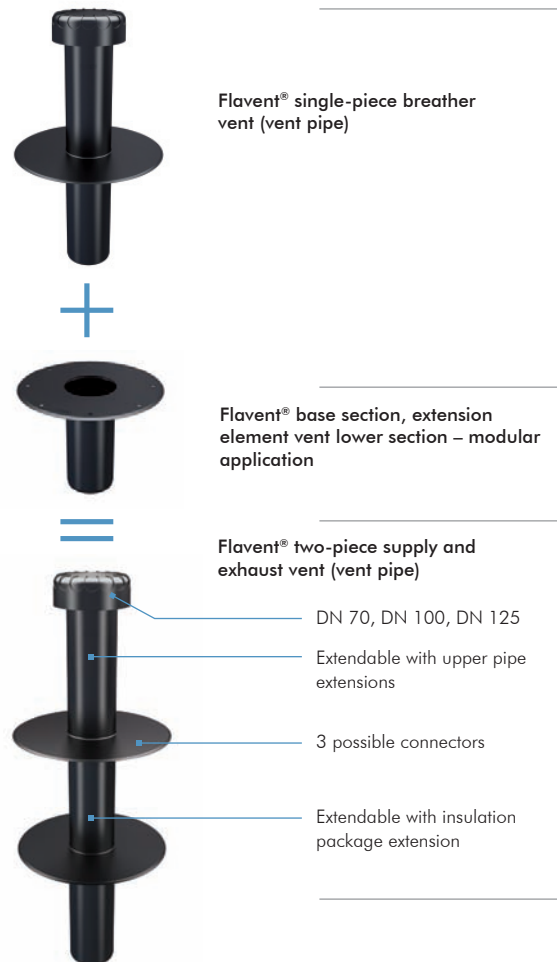
- Ventilation of bathrooms and toilets without a window to the outside (DIN 18017)
- Soiled water supply and exhaust ventilation (DIN1986)
- Ventilation for steam extraction hoods in kitchens
- Controlled living space ventilation

### Product features and benefits

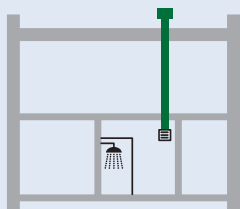
- Optimum ventilation properties as living space supply and exhaust vents and sewage pipe vents
- Perfect connector to bitumen and plastic roof membranes
- Particularly high security against rain penetration
- Construction for variable insulation thicknesses – optionally extendable by means of insulation package extension
- Quick installation through individual flange connectors

### Material and properties

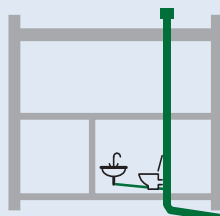
- Hard PVC, black
- Weather, frost and UV-resistant
- Fire rating B2 (no direct flame contact)
- Temperature resistance -40°/+80°C
- Flow temperature +40°C (for short periods max. +80°C)



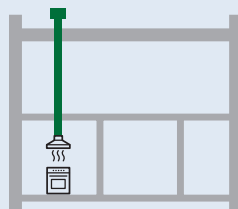
## VENTILATION SITUATIONS



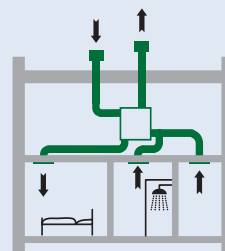
Ventilation of bathrooms and toilets without a window to the outside (DIN 18017)



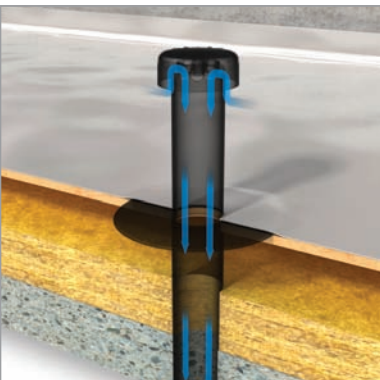
Soiled water ventilation (DIN1986)



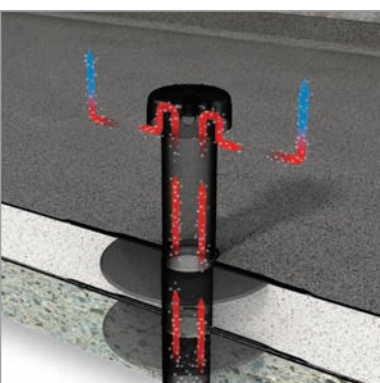
Ventilation for steam extraction hoods in kitchens



Controlled living space ventilation



Installation example:  
Flavent® single-piece breather/soil  
vent for ventilated roof with PVC  
roof membrane.



Installation example:  
Flavent® two-piece breather/soil  
vent for unventilated roof with  
bitumen roof membrane.



#### Connector diameters

- DN 70, DN 100, DN 125
- Special diameter in DN100 for pipes with cut-off sleeve

#### Possible connectors:

- Hard PVC flange
- Bitumen skirt
- Screw connector (only in DN 100, DN 125)



#### Standards

- DIN EN 12056 part 3
- DIN 1986 part 100
- DIN EN 1253
- DIN 18195
- DIN 18017

#### Add-on products

- Vent lower sections
- Upper pipe extensions
- Insulation package pipe extensions
- Tangit PVC adhesive

#### Article numbers

See table page 25

#### Technical instructions

- Whether single-piece or two-piece with height increase element for bitumen roofs or with screw ring system for plastic roofs, the living space breather vents in the usual nominal widths (DN 70, DN100, DN 125) obtain high ventilation performance.

#### Processing

- Ventilation pipes must be taken up at least 15 cm above the roof surface, in areas with much snow appropriately more.
- Connectors between roof penetration and ventilation pipe may be constructed flexibly with hose connectors of maximum 1 m length.















Please note also the instructions in the laying instruction.





## SPLIT OF VENTILATION CROSS-SECTION


Ø	In cm <sup>2</sup>	Number of Vents	Number of Vents	Number of Vents
		DN 70 *Vcs 38.00 cm <sup>2</sup>	DN 100 *Vcs 78.50 cm <sup>2</sup>	DN 125 *Vcs 113.00 cm <sup>2</sup>
120	113	3	2	1
130	133	3	2	1
140	154	4	2	1
150	177	5	2	2
160	202	5	3	2
170	227	6	3	2
180	254	7	3	2
190	284	7	4	3
200	314	8	4	3
210	346	9	4	3
220	380	10	5	3
230	415	11	5	4
240	452	12	6	4
250	491	13	6	4
260	531	14	7	5
270	573	15	7	5
280	616	16	8	5
290	661	17	8	6
300	707	18	9	6

\* The table shows the area of a large pipe and the possible division of the ventilation cross-section into smaller diameters through spiral ducting or so-called Y-pieces. The area of application concerns roof space supply and extract ventilation and also living space supply and extract ventilation. Calculation of number of vents on the basis of arithmetical rounding; Vcs = ventilation cross section.

# FLAVENT® BREATHER AND SOIL VENTS – PRODUCT OVERVIEW

		Flavent® single-piece breather vent			
		DN 70	DN 100	DN 100	DN 125
Ventilated roof	 Hard PVC flange	 KF 6000	 KF 6010	 KF 6020	 KF 6030
	 Bitumen skirt	 KF 6001	 KF 6011	 KF 6021	 KF 6031
	 Screw connector		 KF 6012	 KF 6022	 KF 6032
		Length extension restricted, separate manually, bond to stub	Length extension restricted, separate manually, bond to stub or bond with optional connection socket	Infinitely extendable	Infinitely extendable

		Flavent® lower part for two-piece breather vent			
		DN 70	DN 100	DN 100	DN 125
Unventilated roof	 Hard PVC flange Lower part DN 40	 KF 6100			
	 Bitumen skirt Lower part DN 40	 KF 6101			

		Flavent® upper pipe extensions			
		DN 70	DN 100	DN 100	DN 125
	<b>Upper pipe extensions</b> (can be shortened (reducible) individually)	 KF 6806	 KF 6807	 KF 6807	 KF 6808

Additional remarks:















\* Modular use as rainwater outlet, extension element, vent lower part.

All individual components are to be bonded with Tangit (except leaf and gravel protection birdcage and screw ring).










The technical drawings of all articles can be downloaded under [www.kloeber.de](http://www.kloeber.de).



# FLAVENT® BREATHER AND SOIL VENTS - PRODUCT OVERVIEW

		DN 70	DN 100	DN 100	DN 125
Ventilated roof	 <b>Hard PVC flange</b>	 KF 6040	 KF 6050	 KF 6060	 KF 6070
	 <b>Bitumen skirt</b>	 KF 6041	 KF 6051	 KF 6061	 KF 6071
	 <b>Screw connector</b>		 KF 6052	 KF 6062	 KF 6072
		length extension restricted, separate manually, bond to stub	length extension restricted, separate manually, bond to stub or optional with connection coupling	Refurbishment vent for socket-less pipes, infinitely extendable	

		DN 70	DN 100	DN 100	DN 125
Unventilated roof	 <b>Hard PVC flange Lower part*</b>	 KF 6500	 KF 6510	kein Unterteil notwendig	 KF 6520
	 <b>Bitumen skirt Lower part*</b>	 KF 6501	 KF 6511	kein Unterteil notwendig	 KF 6521

		DN 70	DN 100	DN 100	DN 125
	<b>Upper pipe extensions</b> (can be shortened individually)	 KF 6806	 KF 6807	 KF 6807	 KF 6808
	<b>Insulation package pipe extensions</b> (can be shortened individually)	 > 194 mm KF 6836	 > 275 mm KF 6837	 > 275 mm KE 8006	 > 235 mm KF 6838

# THE FLAVENT® ROOF OUTLET KIT FOR POWER CABLES

Besides the classic roof penetrations on flat roofs such as breather pipes, vents or rainwater outlets, there are also many applications which have to be installed through the roof or on the roof. These include power cables, such as e.g. antenna cables, connectors for photovoltaics, solar thermal and air conditioning systems.

The Flavent® “Swan’s neck” is Klöber’s new roof outlet kit. The set can be combined perfectly with all other Flavent® flat roof system components, such as e.g. with upper pipe extensions for roofs with loading or with insulation package extensions with unusually high insulation layers.

## Flavent® roof outlet kit for power cables

Our new products for optimum roof penetration of power cables with flat roofs.

### Product features and benefits

- Perfect connection to bitumen and PVC roof membranes
- Two-stage construction for variable insulation thicknesses – further extendable if necessary
- Quick and simple processing

### Material and properties

- Hard PVC, black
- Weather, frost and UV-resistant
- Fire rating B2 (no direct flame contact)
- Temperature resistance -40°/+80°C
- Flow temperature max. +40°C (for short periods max. +80°C)



Flavent® roof outlet kit



Flavent® base section rainwater outlet, extension element, vent lower section – modular application



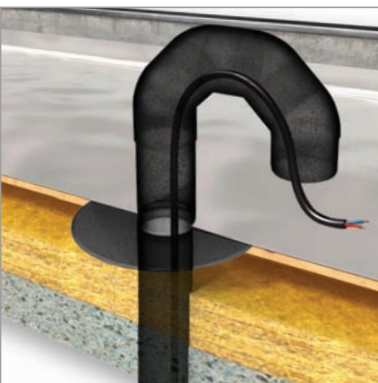
Flavent® two-piece roof outlet kit

DN 70, DN 100, DN 125

Extendable with upper pipe extensions

Hard PVC flange

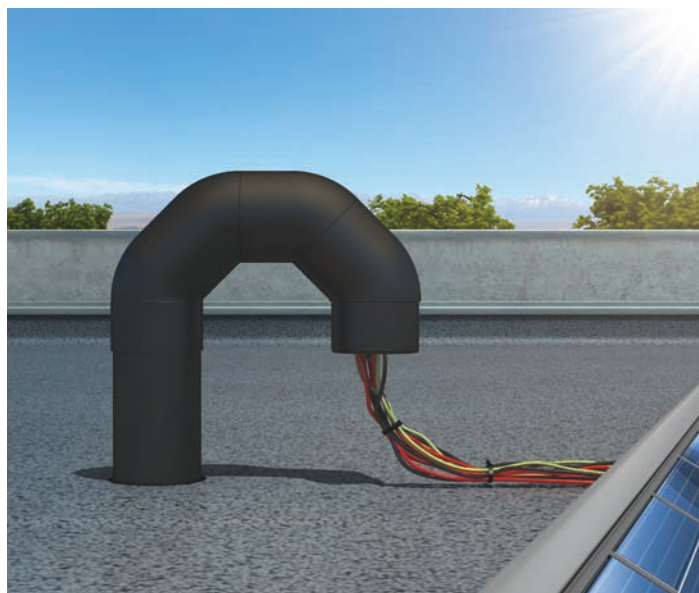
Extendable with insulation package pipe extensions



Installation example:  
Flavent® Single-piece roof  
outlet kit for a ventilated roof  
with PVC roof membrane



Installation example:  
Flavent® two-piece roof outlet kit in  
unventilated roof with bitumen roof  
membrane



#### Connector diameters

- DN 70, DN 100, DN 125

#### Possible connectors

- PVC connector flange
- Bitumen skirt



#### Standards

- DIN 18531 – roof waterproofing
- DIN 18195 – building structure waterproofing

#### Add-on products

- Vent lower section
- Upper pipe extensions
- Insulation package pipe extensions
- Tangit PVC adhesive

#### Article numbers

See table page 28

#### Included in supply

- Lower pipe, penetration upper section
- 2× pipe bend
- Upper pipe extensions

#### Technical instructions

- Roof penetrations should as far as possible be positioned at the high points of the roof surface in order not to prevent water drainage from the roof waterproofing and in order not to be splashed by additionally draining water.
- Roof penetrations are to be reduced through design measures to the necessary minimum and to be distributed between as few collecting shafts as possible.
- The distance from roof penetrations to each other and also to other building components or roof edges must be at least 30 cm.
- With roof pitches under 5° roof penetration connectors must be taken up at least 15 cm above the upper edge of the roof covering, secured against water running behind them and mechanically fixed against sliding away.
- Roof penetrations must be professionally constructed water-tight.

Please note also the instructions in the laying instruction.

# FLAVENT® ROOF OUTLET KIT - PRODUCT OVERVIEW



## Flavent® single-piece roof outlet kit for power cables

Ventilated roof

Hard PVC flange  
Rainwater outlet\*

DN 70



KF 6910

DN 100



KF 6920

DN 125



KF 6930



## Flavent® two-piece roof outlet kit for power cables

Unventilated roof

Hard PVC flange  
Lower part\*

Bitumen skirt  
Lower part\*

DN 70



KF 6500

DN 100



KF 6510

DN 125



KF 6520



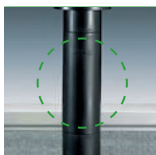
KF 6501



KF 6511



KF 6521



## Flavent® upper pipe extensions

Upper pipe extensions  
(can be shortened individually)

DN 70



KF 6806

DN 100



infinitely extendable  
KF 6807

DN 125



KF 6808



## Flavent® insulation package pipe extensions

Insulation package pipe extensions  
(can be shortened individually)

DN 70



> 194 mm  
KF 6836

DN 100



Extension necessary from insulation thickness ...  
> 275 mm  
KF 6837

DN 125

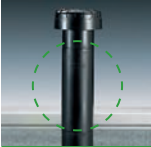
















> 235 mm  
KF 6838

All individual components are to be bonded with Tangit, whereby the joint gap all round may not amount to more than 0.6 mm.

Tangit is not included with delivery.

# REPLACEMENT ACCESSORIES

	Flavent®		DN 70	DN 100	DN 125
<b>Bonding adhesive Tangit</b> for sticking hard PVC connections, 125 g weight					
<b>Raincaps, clamp connector</b>	 KF 6809	 KE 8013	 for open socketless pipes KF 8015	 KF 6817	
<b>Head part / socket / basic carrier</b>	 Head part for extension vent KF 6866		 Slip in socket KF 6867	 Basic carrier for weather hood KF 6818	
<b>Screw connector</b> without under-screw pipe for living space supply and exhaust vent and refurbishment vent	 KF 6856				
<b>Under-screw pipe for screw connector</b>	 of living space supply and extract vent KF 6859		 of refurbishment vent for pipes without sockets KF 6816		
<b>Vent lower section</b> old range before 2005	 Hard PVC flange KF 6870	 Bitumen skirt KF 6871			

Additional comments:

\* Modular use as rainwater outlet, extension element, vent lower part.

All individual components are to be bonded with Tangit (except leaf and gravel protection birdcage and screw ring).

The technical drawings of all articles can be downloaded under [www.kloeber.de](http://www.kloeber.de).

# SPECIAL SOLUTIONS FOR PITCHED ROOFS

Venduct® vent pipes, roof antenna penetrations or exhaust gas adaptor with flat base-plate are outstandingly suitable for pitched sealed roofs.

The super-flat styled Venduct® vent hood with high ventilation cross-section of 150 cm<sup>2</sup> for vented, sealed pitched roof structures (standard practice for slate roof covering).

## Venduct® supply and extract vent

Our proven products for optimum supply and extract ventilation with pitched roofs.

### Product advantages

- Optimum ventilation properties
- Quick installation
- Educued warehouse storage time

### Material and properties

- Hard PVC, black
- Weatherproof, frost and UV-proof
- Fire rating B2 (no direct contact with flame)
- Resistance to temperatures -40°/+80°C
- Flow temperature max. +40°C (for short periods max. +80°C)



## PRODUCT OVERVIEW

Product code	KE 0254	KE 0256	KE 3255	KG 0254
Product specification	Venduct® base plate with upstand at edges	Venduct® base plate without upstand at edges	Venduct® base plate without upstand at edges	Venduct® vent hood with upstand at edges
Roof pitch	20° to 50°	20° to 50°	10° to 40°	min. 10°
Ventilation cross-section	78,50 cm <sup>2</sup>	78,50 cm <sup>2</sup>	78,50 cm <sup>2</sup>	150,00 cm <sup>2</sup>

## VENDUCT® ACCESSORIES:

For article no.	KE 0254	KE 0256	KE 3255	KG 0254
Breather pipe long DN 100	KE 8009-1	KE 8009-1	KE 8009-1	-
Breather pipe long DN 125	KE 8008-1	KE 8008-1	KE 8008-1	-
Breather pipe short DN 100	KE 8015-1	KE 8015-1	KE 8015-1	-
Antenna outlet DN 100	KE 8033	KE 8033	KE 8033	-
Thermae exhaust gas pipe adaptor DN 100	KE 8060	KE 8060	KE 8060	-
Thermae exhaust gas pipe adaptor DN 125	KE 8065	KE 8065	KE 8065	-

---

#### Area of use

- Ventilation of roof structures with different roofing products, e.g. slate, fibre-cement boards, bitumen shingles and bitumen welded membranes (DIN 4108)
- By means of special barriers the penetration of rain and snow is prevented
- Perfect connection to bitumen and PVC roof membranes

---

#### Area of application in combination with Venduct® accessories for pitched roofs

- Ventilation of bathrooms and toilets without outside windows (DIN 18017)
- Sewage supply and extract ventilation (DIN 1986)
- Extract vent for steam extraction hoods in kitchens
- Controlled living space ventilation
- Perfect connection to bitumen and PVC roof membranes



#### Connection diameters

- DN 100, DN 125

#### Standards

- DIN 1986 part 100
- DIN 18017
- DIN 4108

#### Add-on products

- Venduct® accessories for pitched roof
- Tangit PVC adhesive

#### Product codes

Venduct® vent hood

- KG 0254 (400mm x 400mm)

Venduct® base plate

- KE 0254 (400mm x 400mm)
- KE 0256 (600mm x 600mm)
- KE 3255 (500mm x 600mm)

#### Technical instructions

Venduct® vent hood

- Use roof space supply and extract vent. A uniform rafter space ventilation should be achieved, and so the ventilation cross-section and number of installed roof space supply and extract vents must be adjusted to suit the local circumstances.

Venduct® baseplate

- Venduct® vent pipes, antenna penetrations or exhaust gas adaptors with flat baseplate are outstandingly suitable for sloping, weatherproofed flat roofs.

#### Processing

- With connection areas/flanges the bonding area must be free of grease, pollutants and dampness.
- With bitumen membranes: the hard PVC flange must be roughened with a wire brush. Do not use any bitumen primer.

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For further information please visit our website [www.kloeber.de](http://www.kloeber.de) or contact our flat roof sales consultant.

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