



## SET A NATURAL EXAMPLE...

**Green roofs on  
small areas in the  
private sector**

**FLAG** YOUR ROOFING AND  
WATERPROOFING PARTNER

**OPTIGREEN<sup>®</sup>**   
ROOF GREENING

## Products and designs for green roof construction



### Optigreen seed type E and Sedum shoots

Seeds and plant components that form roots. Approx. 60-80 % ground coverage after 1 year.



### Optigreen Extensive Substrate Type E (60-80 mm)

Vegetation base layer. Special blend of plant soil for green roofs.



### Optigreen filter fleece Type 105

Prevents fine particles from being flushed out of the substrate into the drainage layer.



### Optigreen solid body drainage Type FKD 25 (25 mm)

Water reservoir and drainage layer for discharging excess water. Prevents waterlogging.



### Optigreen protective fleece Type RMS 300

Protects the root-resistant waterproofing or Optigreen root-resistant sheeting against damage.



### Flagon roof resistant membrane

Prevents roots from penetrating the substructure (only necessary if waterproofing is not root resistant).

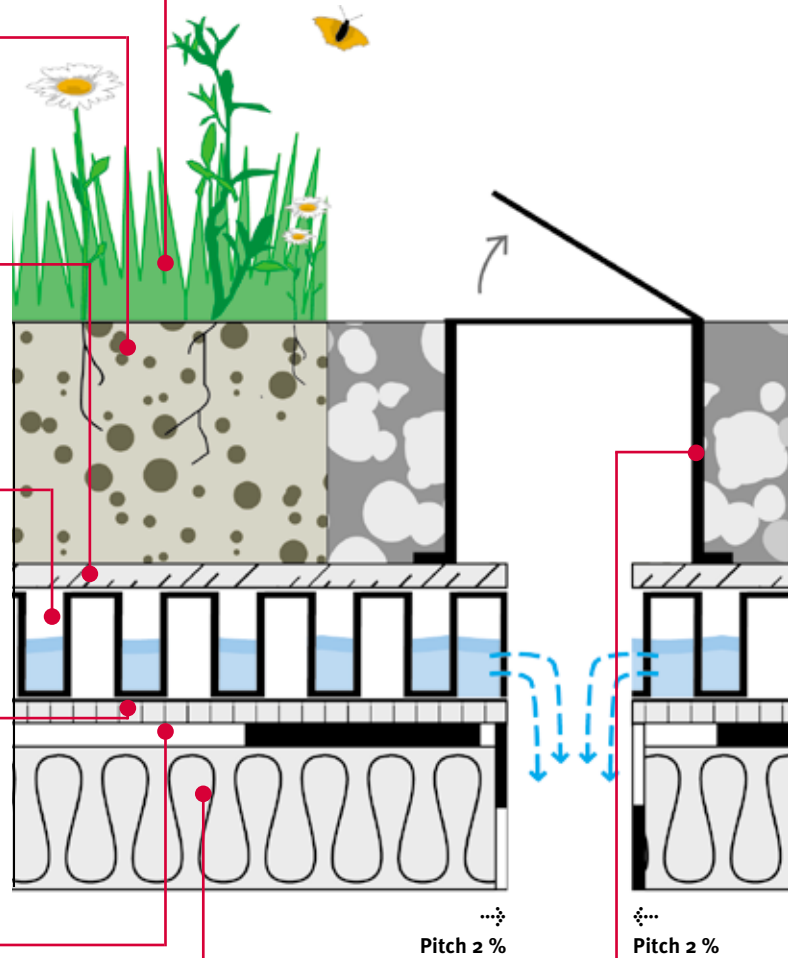
### Roof construction including waterproofing

Structure made from concrete, profiled sheeting or wood with sufficient weight-loading capacity and waterproofing. Usually without insulation for carports and garages.



### Optigreen small-area inspection chamber

Protects the roof drain from contamination. Lid removable for routine checks.

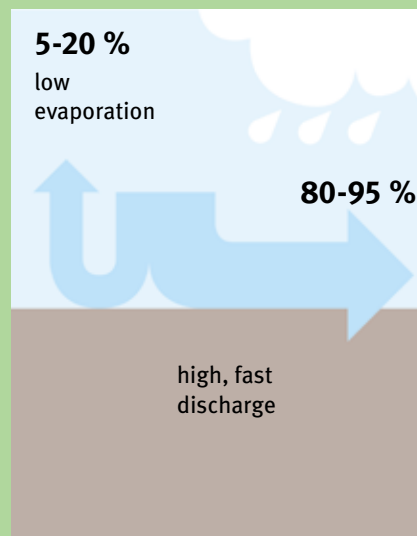


# What are the benefits of a green roof?

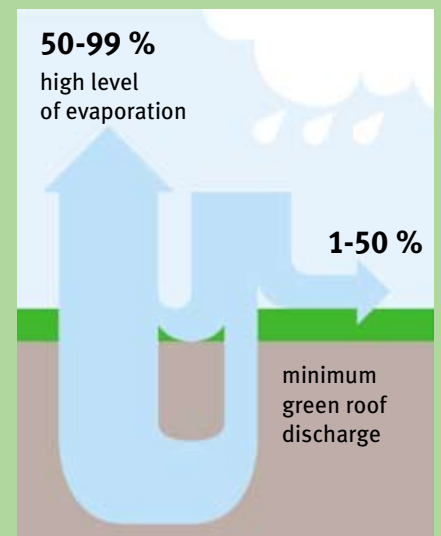


- More living space for humans and animals
- Ecological compensation
- Improves the microclimate
- Protects the waterproofing system against extreme weather such as hailstones, wind and ice, as well as increasing the life expectancy of the waterproofing system.
- Improves air quality and reduces noise pollution
- Well-being oasis on roof terraces
- Helps to reduce storm water run off by approx. 50%
- Aesthetic appeal

**Rainwater on household without a green roof**



**Rainwater household with a green roof**



**Burden on waterproofing system**



**Thermal and mechanical protection of the waterproofing system**



# Roof greening: most important information in brief



Intensive greening



Extensive greening

## Substructure, roof edge and drainage

The building structure must be designed for the additional weight of a green roof (see also under > Static and > Green roof construction).

The roof edges need to have slightly higher upstand than the planned green roof build-up, which is 100 mm with the Optigreen Garage Package. We recommend an upstand of 100 mm in accordance with flat roof guidelines.

As a basic construction requirement the green roof area must contain an internal rainwater outlet (at the lowest point of the roof pitch) or a lateral rainwater gutter. An emergency overflow should be planned where appropriate. Outlets must enable the efficient discharge of excess water without waterlogging. The internal rainwater outlet should be covered by an inspection chamber (included in the Optigreen Garage Package).

## Waterproofing systems and root resistance

In an ideal case the roof intended for greening would already have had root resistant waterproofing membrane installed by the roofing contractor in accordance with applicable FLL guidelines (FLL = German Research Institute for Landscape Development).

Depending on the use of the building, the owner may decide to use other materials (such as TPO single ply membranes sheeting, PE root resistant) to achieve the required level of impermeability and root protection.

The Optigreen PE root resistant sheeting shown on page 2 is not waterproof and is only used for root protection in conjunction with extensive greening. An Optigreen partner company or roofing contractor should be appointed to install the waterproofing or root resistant covering in accordance with applicable FLL guidelines.

## Static and incline

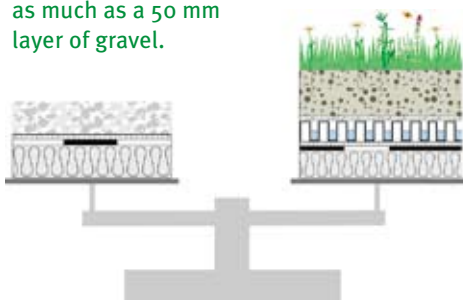
An additional load of approx. 100 kg/m<sup>2</sup> for extensive roof greening should be added to the calculated allowance for snow loads. (See also > Green roof construction).

The green roof build-up will become waterlogged if standing water reaches a depth of more than 20 mm. The roof should therefore have a slight incline of around 2 % towards the roof outlets or gutter. The Optigreen Garage Package is designed for flat roofs with an incline between 1° and 5°.

The Optigreen drainage mat Type 800 is used for pitches of more than 5° up to 15 degrees instead of the Optigreen solid body drainage FKD 25 and the Optigreen filter fleece Type 105.

Construction measures against shear force and slippage are required for steep roofs with a pitch of more than 15°. We strongly recommend obtaining the advice of an Optigreen partner company in conjunction with this type of green roof.

An extensive green roof with of 100 mm in height (right) weighs about as much as a 50 mm layer of gravel.



## Green roof construction

### What does "extensive greening" mean?

- low build-up height (80-150 mm)
- low load (from 80 kg/m<sup>2</sup>)
- low-growing plants
- low care and maintenance

### What does "intensive greening" mean?

- higher build-up (250-500 mm)
- heavier load (300-600 kg/m<sup>2</sup>)
- larger plant selection
- requires more care and maintenance
- utilizable and walkable

There are two types of green roofs: extensive and intensive. The Optigreen Garage Package on page 2 illustrates an extensive green roof: with a low build-up height (approx. 100 mm), low load (from approx. 100 kg/m<sup>2</sup>), low-growing plants and low maintenance.

In contrast, intensive green roofs (roof gardens) have a higher build-up (250-500 mm), are heavier (300-600 kg/m<sup>2</sup>) and require more maintenance. Their advantage lies in a much greater selection of plants, i.e. many shrubs and bushes that grow in the garden can also be planted on the roof. The green roof can be used as an additional „garden“ area.





Sedum 'Coral Carpet'



Weihenstephaner Gold



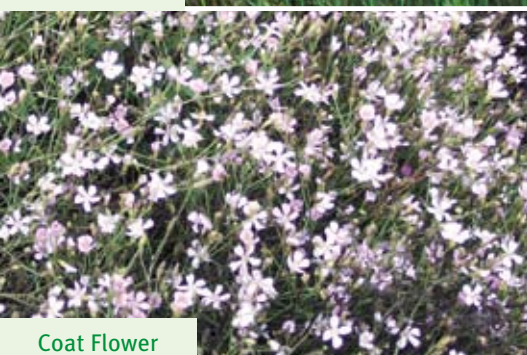
Creeping thyme



Maiden Pink



Grass Pink



Coat Flower

## Plants and planting

Plants for extensive greening are usually sown as seeds (a mix of various herbs and grasses) and Sedum shoots (plant components). It takes around one year after sowing seeds and shoots for more than half the roof area to bloom and grow. However, it is also possible to plant young plants in the form of flat round bushes adapted to dry conditions directly in the substrate. This type of planting requires more work and is more expensive, but has the advantage of providing a green roof without the wait. April to September is the recommended period for sowing and planting. Good watering is important after the planting, and the substrate should always be kept moist during the first few weeks. When there is adequate moisture, sowing in summer is also possible.

## Location

Sunny locations are best for extensive greening. Semi-shaded and shaded positions can also be successfully greened when plants are selected carefully and when the area is not prone to standing water.

## Care

**Watering:** regular watering during the germinating and early growth phases, then only during extended dry periods.  
**Fertilization:** A long-term fertilizer is applied to extensive green roofs in the spring (e. g. 50 g/m<sup>2</sup> of Optigreen Opticote).  
**Pruning:** Plants that have grown too high are cut back in autumn and any undesired growth removed.  
**Miscellaneous:** The drainage installations are checked for proper working order, i.e. free from plants and debris, during every roof inspection. Roots that have grown behind the root protection sheet around the roof edges must be removed.

## Building permission and subsidies

Building permission is not usually required for carport greening. Utilized roof areas always require approval from local building authorities. In general, you should always consult your local authority with regard to the necessary approval before installing a green roof. The authority will also be able to inform you of any available subsidies or rate reductions in conjunction with split communal waste water rates.

## Cost and service

Your Optigreen partner company will be pleased to submit a quote for the complete job. Materials for DIY green roofs are available from your Optigreen partner or from our online shop. Addresses/contact details for Optigreen partner companies and other information is available under:

[www.flaguk.co.uk](http://www.flaguk.co.uk)

# Many solutions for small and large roof areas



**Extensive greening on flat and pitched roofs**



**Extensive greening on steep roofs**



**Utilizable roof gardens with terrace**



**Intensive green roofs with playable lawns**



**Plant containers as green islands on the terrace**



**Plant containers as boundaries with railings**

Optigreen has decades of experience in installing green areas on buildings, and the Optigreen partner companies who carry out the work are regularly trained specialists who know and use the latest technology.

We will support you during the consultation and planning phase, construct your roof according to your ideas and maintain the green roof if desired.

Request our support and further documents (e. g. Planning Documentation for Green Roofs) from us under [www.flaguk.co.uk](http://www.flaguk.co.uk) or from your Optigreen partner company.



**YOUR ROOFING AND WATERPROOFING PARTNER**

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