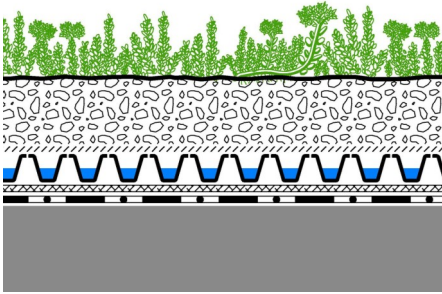


# Installation Instructions

## System Build-up "Sedum Carpet" with Floradrain® FD 25-E

### Preliminary Remarks



- The following installation instructions describe the essential steps of applying this system build-up. Please note, however, the relevant standards and guidelines.
- Please be aware of this being a multi-layer build-up applicable up to a roof inclination of approx. 8°.
- When working on roofs, which also includes the installation and maintenance of a green roof, applicable accident prevention regulations must be observed. Required fall protection devices need to be used according to site conditions.
- Before starting the installation works the roof surface needs to be cleaned and checked for any kind of damages or leakages (visual inspection, possibly testing the waterproofing seams with a scribe ...). Any damage or leaks must be repaired immediately.
- During the construction works any damage to the roofing, as by falling objects, structural overload by material storage, walking, etc. is to be avoided. Appropriate safety devices are to be provided and to be taken into account.
- If material is to be stored on the roof, make sure that the roof surface is not structurally overloaded at any point.
- Please also note that the green roof materials are very light (except for the system substrate) and thus installation at risk of storm is not recommendable.
- If the roof is already equipped with a root resistant waterproofing, point 1 (Root Barrier WSF 40) can be skipped and you can go straight to point 2 (Protection Mat SSM 45 / TSM 32).

### Examples



# Installation Instructions

## System Build-up "Sedum Carpet" with Floradrain® FD 25-E

### 1. Root Barrier WSF 40

If the waterproofing is not root resistant the Root Barrier WSF 40 (Order No. 1040) is to be applied over the entire roof surface.

At roof edges and rising components the Root Barrier WSF 40 is to be taken up at least to the finished surface. Ideally, the projecting part of the WSF 40 is secured by an overhang sheet or a metal profile.

#### Laying:

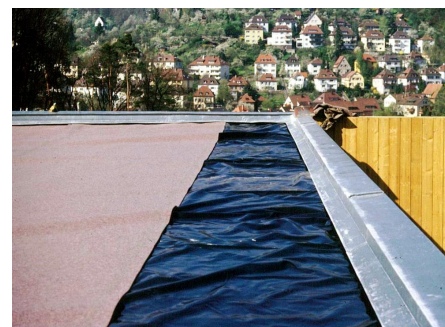
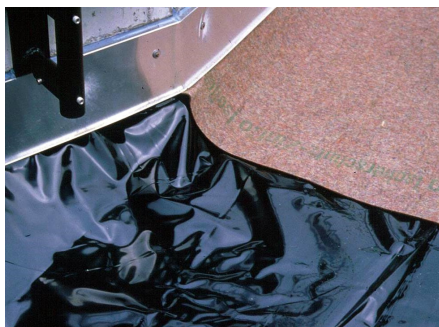
The Root Barrier WSF 40 is to be laid loosely with 1.5 m of overlap.

#### Cutting:

The Root Barrier WSF 40 can be cut using a cutter (with a hard blade) or a pair of stable utility scissors. When cutting, make sure not to damage the

waterproofing under any circumstances! However, in case of any damage, this must be reported and repaired immediately.

A circular piece of the root barrier needs to be cut out around roof outlets, approx. 10 mm larger than the outlet itself (a simple cross cut is not enough!).



### 2. Protection Mat SSM 45 / TSM 32

#### Laying:

The Protection Mat SSM 45 (Order No. 2045) respectively TSM 32 (Order No. 2032) is to be laid loosely with approx. 100 mm of overlap either on top of the Root Barrier WSB 100-PO (Order No. 1084) or directly over a root resistant waterproofing. At roof edgings and other vertical building components it is to be taken up at least to the finished surface.

A temporary fixation with a double-sided adhesive tape is possible.

To protect the mat from UV-radiation or from wind uplift it is to be covered immediately after installation. Short-term protection against wind uplift can also be accomplished by moistening the mat.

#### Cutting:

It is recommended to cut the mats with a pair of stable utility scissors. When

cutting, make sure not to damage the waterproofing under any circumstances! However, in case of any damage, this must be reported and repaired immediately.

A circular piece of the protection mat needs to be cut out around roof outlets, approx. 10 mm larger than the outlet itself (a simple cross cut is not enough!).



ZinCo Green Roof Systems Ltd.

Wittas House · 2 Rivers Industrial Estate · Station Lane · Witney OX28 4BH · United Kingdom

Phone +44 (0)1993 229700 · Fax +44 (0) 2031 631915

office@zinco-greenroof.co.uk · www.zinco-greenroof.co.uk

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# Installation Instructions

## System Build-up "Sedum Carpet" with Floradrain® FD 25-E

### 3. Floradrain® FD 25-E

#### Laying:

The Floradrain® FD 25-E elements (Order No. 3028) are to be installed loosely either butt-jointed or with 1–2 stud rows of overlap. If installed butt-jointed the single elements can be stabilized additionally using connectors (Order No. 9620) which are to be pressed into the diffusion openings (holes in the studs).

If applied in green roof build-ups the elements are installed with their openings facing upwards. In case of paved walking areas the holes are facing downwards to prevent water storage within the elements.



To protect the FD 25-E from UV-radiation it is to be covered immediately after installation. Furthermore a protection against wind up-lift is necessary. If the further build-up is not to be applied right afterwards the elements can be weighed down temporarily by filling them with water.

#### Cutting:

The drainage elements can be cut using a cutter (with a hard blade) or a hot wire. When cutting, make sure not to damage the already installed layers under any circumstances! However, in case of any damage, this



must be reported and repaired immediately.

A hole which matches the aperture of the inspection chamber in size is to be cut into the drainage board at every roof outlet.

#### Installation Inspection Chamber:

Prior to the installation the flanges of the inspection chamber need to be pulled out in the direction of the arrows until it clicks. Then one inspection chamber is placed above each roof outlet usually on top of the drainage element. Previously, a hole of the diameter of the outlet is to be cut in all layers of the build-up. A simple cross-cut is not sufficient.



### 4. Filter Sheet SF

#### Laying:

The filter sheet is laid loosely over the drainage element Floradrain® FD 25-E with some 200 mm of overlap. Along rising walls and other building components the Filter Sheet SF (Order No. 2100/2102) can be taken up. To protect the filter sheet from UV-radiation or from being blown away it is

to be covered immediately after installation.

#### Cutting:

The filter sheet can be cut using a cutter (with a hard blade) or a pair of stable utility scissors. When cutting, make sure not to damage any materials that have already been installed under any

circumstances! However, in case of any damage, this must be reported and repaired immediately.

A circular piece of the filter sheet needs to be cut out around roof outlets, approx. 10 mm larger than the outlet itself (a simple cross cut is not enough!).



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# Installation Instructions

## System Build-up "Sedum Carpet" with Floradrain® FD 25-E

### 5. Application of the System Substrate "Sedum Carpet"

Depending on the size, accessibility and load bearing capacity of a roof one of the methods of substrate application listed below is particularly suitable.

*Regardless of the method, make sure that the roof is not structurally overloaded at any point (for example, by substrate mounts)!*

*Slabs or Big Bags can only be placed on sufficiently stable ground.*

#### Big Bag:

Big Bags are suitable for middle size and larger roof areas if a crane is available. They are hung with their four loops on the crane and are emptied directly on the roof surface – without being placed

on the roof – by opening the outlet valve on their lower side. By swinging the crane boom a rough distribution can already be achieved. The levelling is then carried out with a rake.



#### Silo Trailers:

The system substrate "Rockery Type Plants" can be "blown" directly from a silo trailer on the roof surface. This method is particularly suitable for large areas and those which are not accessible by crane.

Using this method the substrate can be very well distributed during application. However you have to make sure that sensitive building components (e.g. facades, skylights, ...) are protected from possible dirt during application.



#### Bulk Material:

Bulk material is suitable wherever material can be applied with a chute. By

swinging the crane boom the substrate can already be distributed roughly.



### 6. Plant Application

#### Preliminary Note:

The pure "Sedum Carpet" can be realized both with sprouts as well as with small plug plants. Small plug plants allow for a designed carpet. Planting plug plants facilitates a vegetation rich in species. Whenever an immediate green cover is desired or if wind erosion might be an issue (e.g. in

exposed locations), the application of pre-cultivated vegetation mats is recommended.

Sedum sprouts offer a rational form of greening during favorable seasons for roof areas which are not too exposed. Generally at least four different Sedum species (not varieties!) should be selected. This ensures a stable

vegetation. *Sedum caucolicum* should form only a small proportion. *Sedum spurium* is preferably planted in slightly humid habitats and is therefore not suitable for very thin layered build-ups. The weight proportions of *Sedum album* and *sexangulare* in sprout mixtures should not be too large.



# Installation Instructions

## System Build-up "Sedum Carpet" with Floradrain® FD 25-E

### 6. Plant Application and Maintenance

#### Plant Application

##### Plug Plants

When applying plug plants larger areas between one and several square meters are planted with the same species/variety. The size of a continuous area with one species (usually no more than 2–3 m<sup>2</sup>) depends on the roof size. Appealing colourful carpets can be realized by an irregular repetition of these areas. Generally, the plants are to be watered thoroughly before being spread on the roof surface. After laying out the single plants they can be planted in a professional way. Afterwards the complete green roof build-up needs to be irrigated thoroughly.

##### Application of Spouts

Sedum sprouts can be applied dry on the system substrate "Sedum Carpet". Then the sprouts are to be pressed or rolled and the overall build-up is to be watered thoroughly. An additional irrigation system will ensure the growth of the sprouts even during dry periods. Especially the large-leaved species (*Phedimus*, *Hylotelephium* – see plant table) need a good contact to the ground to be able to take roots. Fixation with adhesive might be necessary to prevent wind erosion. The adhesive can also be applied wet (hydroseeding process without seeds). Sprouts should not be spread by hydroseeding because leaves and sprout structure could be damaged in a way they dehydrate.

##### Vegetation Mats

(Especially for wind exposed corner and edge areas)

Vegetation mats should preferably be laid out on the day of their arrival on site. If this is not possible, they have to be rolled out and watered. They are to be applied on fine levelled substrate after fertilization by means of a coated long-term fertilizer. The mats are to be applied butt jointed without overlapping and to be pressed to the ground. Stretching of the mats should be avoided in order to minimize shrinkage. After laying the whole area is to be watered thoroughly. It is important that moisture below the mats attracts the roots and stimulates root growth. A superficial drying should be avoided in order to prevent shrinkage. Should these occur nevertheless, substrate and Sedum sprouts need to be refilled.

##### Planting Period:

Generally the green roof build-up can be applied throughout the whole year. The application of plants is more or less seasonally determined depending on the kind of application. Sedum sprouts can be harvested and brought out during spring and autumn time. Planting is possible from spring to autumn, while plantings in May / June will provide the best results. Late plantings could result in damage by frost, especially if the plants are insufficiently rooted in the substrate.

#### Requirements:

Sedum sprouts: 60–100 g/m<sup>2</sup>

Plug plants: ab 16 pcs/m<sup>2</sup>

Small plug plants: from 20 pcs/m<sup>2</sup>

Vegetation mats: as required

(e.g. for wind exposed areas)

#### Maintenance:

According to the FLL Green Roof Guidelines object-based maintenance goals are to be defined, tailored to the application type, the type of vegetation, and the development status and development direction. A general goal for the green roof build-up "Sedum Carpet" is to achieve a dense carpet rich in species, which is to be maintained in the long term. Unwanted weeds are to be removed regularly and timely. Targeted fertilization with a coated long-term fertilizer (Plantfit 4M) will help to strengthen the Sedum plants and to reduce growth of moss.

At least one, if possible two maintenance visits per year are to be foreseen.

If the "Sedum Carpet" is to be applied on pitched roofs or in particular on steep pitched roofs, it is essential to put even more emphasis on dense ground coverage and an increased intensity of maintenance.



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