

SUBSTRATE GREEN ROOF SYSTEMS

Example System Configurations

Substrate-based extensive green roofs can incorporate a variety of vegetation and hard landscaping finishes.

Vegetation Mats

The installation of a pre-grown vegetation mat allows instant coverage of the roof. Native wildflower blanket, Bauder WB, meets the growing demand to satisfy the requirements of BREEAM and should meet the biodiversity action plan for the site.

Bauder SB vegetation is a mature sedum blanket with a broad mix of sedums, 12-14 species, and is typically grown for a year prior to installation for excellent coverage.

Plug Planting

This method gives the client both a much greater choice of plant species and the opportunity to plan the layout. The individual immature plants or 'plugs' are planted into the substrate, which can then grow on to give good cover over the next few years.

Seeding

An economical and practical method for vegetating larger roof areas. Our seed mixes are designed for the harsh conditions on a roof. Plant establishment and coverage will take 18-24 months, depending upon the time of year sowing takes place and the weather conditions during the period of establishment.

Biodiverse Options

Bauder's range of seed, plug and blanket can be used in combination to create the matrix of habitat and surface finishes required. Bauder has allied with Buglife (the invertebrate charity, buglife.org.uk) to produce roofs designed with dead wood, sand/stone piles as well as dew ponds etc to give a truly sustainable insect friend environment.



Vegetation Mat



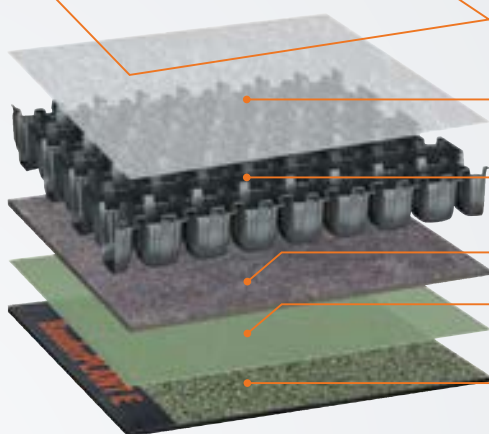
Seeded Roof



Plug Plants



Biodiverse Habitat



Bauder Filter Fleece

filtration layer that prevents substrate fines from washing into the drainage layer.

Bauder DSE40

40mm water storage layer that provides multi directional drainage.

Bauder FSM600 Protection Mat

recycled polyester and polypropylene fibre mix.

Bauder PE Foil (specified in some projects)

polyethylene foil separation and slip layer manufactured from recycled granules.

Bauder Waterproofing (all four types are suitable)

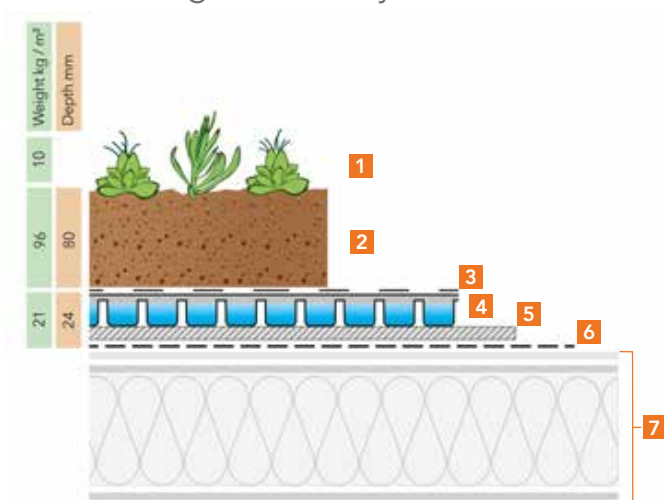
show here with root resistant, SBS modified bitumen membrane reinforced with 250g/m² recycled spunbond polyester.



www.bauder.co.uk/technical-centre

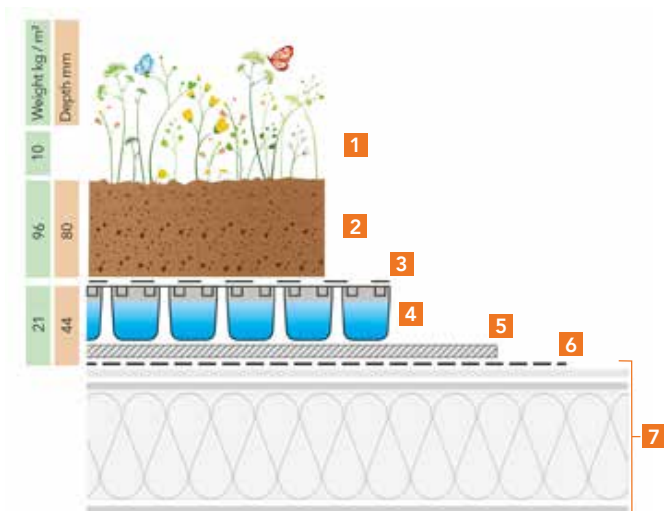
DESIGN & WEIGHT LOADINGS

Substrate green roof systems



Sedum plug plants on extensive substrate with DSE20

A broad range of individual sedum plug plants can be used to produce a particular design or planting layout suited to the roof conditions. Plugs are typically planted 15-25 per m² and normally in groups of 5-7s of similar species. Sedum plants are very drought tolerant and DSE20 with 80mm of FLL compliant Bauder Extensive Substrate gives adequate water storage to support the vegetation.



British native species vegetation on biodiverse substrate with DSE40

Often to ensure particular key species establish on a roof individual native species plug plants are used. The vegetation can be established either with a mix of plugs or seed or a combination of the two. When wildflower plugs are used substrate depth needs to be adequate to support the plants and water storage sufficient to maintain plant life. This is achieved with DSE40 water storage board and at least 100mm of substrate which conforms to FLL / GRO guidelines.

LEGEND

- 1. Vegetation** to suit the project and site locality.
- 2. Bauder Extensive or Biodiverse Substrate** Light weight growing medium. Manufactured and used in accordance with FLL / GRO guidelines.
- 3. Bauder Filter Fleece** filtration layer prevents substrate fines from washing into the drainage layer.
- 4. Bauder water storage and drainage DSE20 or DSE40**, capacity to suit the vegetation and project.
- 5. Bauder FSM600** 4mm thick protection layer.
- 6. Bauder PE Foil** A polyethylene foil separation and slip layer manufactured from recycled granules required on some project specifications.
- 7. Bauder Waterproofing System** High performance waterproofing membranes suitable for green roof systems.

BAUDER PLANTING & VEGETATION



Bauder WB Native Wildflower Blanket

The vegetation blanket meets GRO recommendations and is specifically designed to flourish in the difficult conditions found on roofs.

The blend of 38 British native wildflowers, herbs and grasses, that are included on most BAP lists, are sown on a 100% natural biodegradable coir blanket.



Bauder SB Sedum Blanket and XF301 Sedum System

Both of these vegetation blankets provide dense sedum foliage cover featuring up to 14 species of sedum.

The plants provide colour and are selected to suit our climate. The blankets are grown for 12 months. The Bauder SB Sedum Blanket is grown on a 100% biodegradable coir carrier and provides 90% ground coverage at installation.



Plug Planting

The use of small seedling plants have a number of advantages, each individual species can be chosen and the location and density of the planting can be controlled.

We can supply a wide range of British provenance plug plant species for a project.



Seeding

Seeding is a proven way to establish vegetation, however at roof level, the environment makes this a challenge without the correct provisions. We supply a range of British and Scottish provenance seed mixes which have a unique blend of seed species, adhesive to bind the seed to the substrate, organic fertiliser for nutrients and mycorrhizal fungi to increase the root surface area and establish the plants as they grow.

BIODIVERSE LANDSCAPES

These have been referred to, in the past as ‘brown’ or ‘naturalised’ roofs, and now come under the Biodiverse heading. Over the last few years there has been a dramatic growth in the requirement for biodiversity at roof level.

The issues are complex with each Local Authority producing their own Biodiversity Action Plan (BAP) and target species ensuring it complies with the ecological requirements to achieve maximum BREEAM credits and fulfils all the planning requirements.

Our technical team can produce comprehensive specifications for the roof and, if required, detailed roof plans and management plans.

Biodiverse Roof Plans

In discussions with architects, we can interpret the ecological requirements to show detail ‘layout’ drawings for the mounding of substrate and location of planting and surface finishes, ensuring the loading of the roof is compatible with the roof structure.



Biodiverse Green Roof Management Plans

Increasingly, local authorities require 3-5 year site specific management plans to ensure the roof establishes correctly and produces the habitat it was designed to deliver.

A further service offered by us is the Project Specific Management Plan. This enables the planning requirements to be discharged with our maintenance and monitoring team carrying out the work.

Vegetation

All BAP's are focused on the enhancement of the local ecosystems, to this end the provenance and suitability of the plant stock is key.

Our vegetation blankets are grown in the UK and all wildflower plugs are of British provenance.

Our Flora Seed Mix range uses seed from sources that are signatures to the Flora Locale code of practice. The seed mixes have been developed to offer suitable solutions for the variety of roof environments. They balance the requirement to have grasses and low ground cover to bind the substrate to prevent erosion with wildflowers to offer a nectar source to the many insects that inhabit biodiverse roofs.

Bauder Flora Seed Mix Range

Bauder Flora 3: General Purpose Mix

Broad range of species, generally low growing, including shade tolerant plants. Particularly suited for the BioSOLAR green roof system.

Bauder Flora 5: Urban Seed Mix

Specifically designed for city rooftops, there is a high percentage of annuals to give good colour in the first year.

Bauder Flora 7: Chalk Grassland

This mix has species particularly found on chalk soils, annuals are not included as they are not generally found on chalk grassland.

Bauder Flora 9: Coastal Mix

Designed for the harsh and saline conditions typically found around the coast of Britain.

Bauder Flora 11: Scottish Mix

The mix contains wildflower and grass species particularly suited to the Scottish environment. All the seed is of Scottish provenance.



WB NATIVE WILDFLOWER BLANKET

Supply Form	Thickness (Nominal)	Coverage	Saturated Weight	Size
Roll	30-35mm	2m ²	≥30 kg/m ²	1x2m

For extensive green roofs



Extensive Substrate

Lightweight growing medium for extensive green roofs with sedum based planting schemes. Manufactured to FLL and GRO guidelines and comprises recycled crushed brick, expanded clay shale and composted organic material. Extensive substrate weighs 1.2 tonnes per cubic metre.



Biodiverse Substrate

Lightweight growing medium for biodiverse, wildflower and native species green roofs manufactured to FLL and GRO guidelines and comprises recycled crushed brick, expanded clay shale and composted organic material made from over 90% recycled content. Extensive substrate provides aeration qualities with some inherent water retention and weighs 1.2 tonnes per cubic metre.



Seed Bed Substrate

This substrate is a top dressing growing medium which is installed at a minimum depth of 25mm over either Bauder Intensive or Extensive Substrates, when the roof is to be either seeded or to receive vegetation cuttings. This substrate is made from recycled crushed brick and composted pine bark.