

Product Data Sheet

HYDROSOIL® WILDFLOWER EXTENSIVE LIVING ROOF

Comprising a water retention and drainage layer with bonded filter fleece, engineered growing medium and wildflower blanket

Axter's living or green roof systems are designed to accommodate the most varied ecological and environmental requirements. The combination of long-term system performance with horticultural expertise ensures full compliance with national, local and project specific environmental biodiversity and attenuation criteria.

A living roof, as well as being an aesthetically pleasing addition to a building, offers many other advantages:

- Increased biodiversity, creating habitat for birds, bees and invertebrates.
- More usable space on the roof (e.g. for gardens, amenity, play and educational areas).
- Less urban heat island effect.
- Reduced rainwater run off flow rates.
- Better air filtration.
- Increased sound insulation and thermal efficiency.



Extensive living roofs are not usually trafficked but are intended to be visual or ecological features. Typically, they have thin substrate layers to minimise depth and weight and are designed to be low maintenance with slow growing vegetation. They are often created to provide habitat for flora or fauna and to enhance building performance by reducing rainwater flow rates and increasing thermal efficiency.

Key benefits

- Provides biodiversity the flora and fauna.
- Visually appealing; minimal maintenance required
- Can be installed on flat or sloping roofs.
- Thin soil substrate.
- Self-sustaining vegetation such as succulents, grasses and wildflowers.

Soils or substrates for extensive living roofs are usually of a low nutrient type thus suppressing the growth of invasive weed species and of minimal thickness. Plants are selected for their ability to thrive in such conditions and to establish a self-sustaining living roof. Sedum and wildflower mats, pre-grown trays or plug plants can all be incorporated into an extensive design.

Hydrosoil® Extensive Living Roof options:

HYDROSOIL® WILDFLOWER

HYDROSOIL® SEDUM

HYDROSEED®

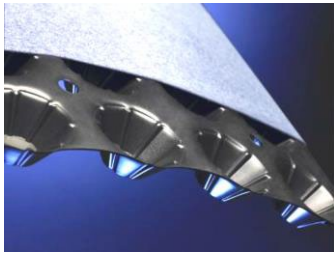
HYDROSOIL® PLUGPLANT

Hydrosoil® Wildflower Extensive Living Roof

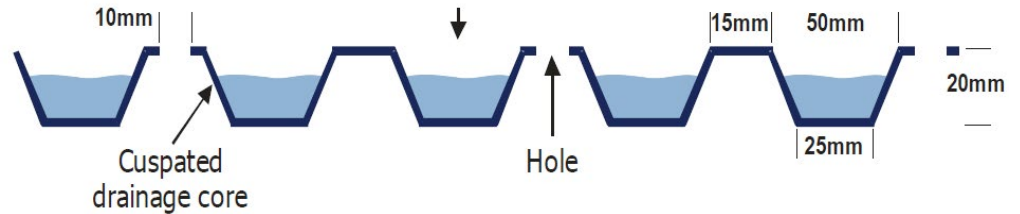
- Water retention and drainage layer (20mm).
- Filter layer (1mm).
- Substrate layer (100mm).
- Wildflower blanket (30mm).



Water retention and drainage layer (20mm)



High compressive strength, rigid HDPE board acting as both drainage and water retention layer, with a geotextile filter layer bonded to one side. The board contains high capacity dimples (height approx. 20mm) for water retention and perforations to drain surplus water. It is resistant to root penetration and to chemicals.



| Drainage sheet (cusped, perforated) | Test Standard | Units | Value |
|-------------------------------------|---------------------------|-----------------------|-----------|
| Polymer | High Density Polyethylene | | |
| Cusped height | | mm | 20 |
| Compressive strength | EN ISO 25619-2 | kPa | 115 |
| Tensile strength (MD/CMD) | EN ISO 10319 | kN/m | 17 |
| Static Puncture (CBR) | EN ISO 12236 | kN | 2.6 |
| Perforations per m ² | | | 49 |
| Perforations diameter | | mm | 10 |
| Thickness @ 2kPa | EN ISO 9863-1 | mm | 21 |
| Water flow through perforations | EN ISO 11058 | l/(m ² .s) | 24 |
| Water storage capacity | | l/m ² | 4 |
| Roll dimensions | | m | 0.97 x 50 |
| Roll diameter (approx.) | | m | 1.1 |
| Roll weight (approx.) | | kg | 60 |

Geotextile

| | | | |
|--|---------------|-----------------------|-----|
| Polymer | Polypropylene | | |
| Water permeability (V _{H50}) | EN ISO 11058 | l/(m ² .s) | 100 |
| Apparent opening size | EN ISO 12956 | µm | 80 |

Filter layer (1mm)

Fleece filter layer for use on all sedum and biodiverse living roof systems. Manufactured using UV stabilised polypropylene, it provides high tensile properties and excellent durability. Its high density and strength, resulting from re-orientation of the molecules within the fibres during manufacturing, increase its environmental resistance and mechanical properties. It is resistant to root penetration and to chemicals.

The filter layer should be covered within one month of installation.

Expected durable service life of the material is up to 50 years in soils with $4 < \text{pH} < 9$ and soil temperatures $< 25^{\circ}\text{C}$, based on a durability assessment.



| Physical properties | |
|----------------------------|--|
| Composition | Non-woven geotextile made from 100% virgin polypropylene high tenacity fibres, heat treated, needle punched, containing UV inhibitor |
| Weight (g/m ²) | 123 |
| Colour | White |
| Unit supplied | Rolls: Unit width (lm) 1.13 x Unit length (lm) 100 |
| Roll weight (kg) | 14 |
| Thickness @ 2kPa (mm) | 0.8 |

| Technical properties | Value | Standard |
|---|------------------------|--------------|
| Tensile strength (kN/m) – MD/CMD | 9.0 – 9.8 | EN ISO 10319 |
| Elongation at max load (%) MD/CMD | 60 / 65 | EN ISO 10319 |
| CBR static puncture (kN) | 1.4 | EN ISO 12236 |
| Cone drop penetration (mm) | 32 | EN ISO 13433 |
| Apparent opening size (µm) | 80 | EN ISO 12956 |
| Water permeability (l/m ² .s) | 100 | EN ISO 11058 |
| Weathering 50 MJ/m ² (1 month) | >90% retained strength | EN ISO 12224 |

Substrate layer (100mm)

Moisture retentive, low nutrient substrate, free draining when saturated. Made from 100% recycled material. Suitable for use on extensive wildflower and biodiverse roof systems. Allows root penetration. Green waste meeting PAS 100 standards.

| Physical properties | |
|---------------------|--|
| Composition | Recycled crushed brick/mineral and composted green waste (certified PAS 100) |
| Brick grading | Various grading of brick suitable for extensive green roofs |
| Colour | Dark brown |
| Suggested depth | 80 - 150mm |
| Sizes | 25 litre sacks and bulk bags |

| Technical properties | |
|----------------------|----------------------|
| Weight (dry) | 790kg/m ³ |
| Weight (saturated) | 970kg/m ³ |
| Compaction | Approx 15% (+/-3%) |
| pH | 7.5 – 8.5 |

Recommended minimum substrate depth is 100mm.
Hydrosoil Wildflower with 100mm Substrate is 145kg/m² wet.

Wildflower blanket (30mm)

Vegetation blanket pre-cultivated in the UK with a carefully selected mix of 38 species chosen specifically to encourage bio-diversity in extensive living roofs, podiums and landscaping projects. These are grown on a 25mm substrate base on a carrier membrane and provide instant vegetation cover for wildflower systems. The plants flower from spring through to late autumn offering an aesthetic variety of colour and habitat which attract pollinators. This biodiverse Wildflower blanket can be used to meet local and national Biodiversity Action Plans and BREEAM ecology credits.

| Physical properties | |
|---------------------|---|
| Composition | Base: Geotextile fabric / coir blanket Growing medium: 25mm Biodiversity Mix Vegetation: plants grown from native provenance seed |
| Total height | 150mm plant height, pre-delivered and mown. Height up to approx. 1000mm when fully established. |
| Weight (dry) | 15kg / m ² |
| Weight (saturated) | 25kg / m ² |
| Consignment size | 40m ² per pallet |
| Colour | Seasonal variation |
| Size | 2m x 1m |

Wildflower species

38 wildflower and grass species native to the UK are sown (subject to seasonal variations):

| | |
|---|--|
| Agrimony (Agrimonia Eupatoria), | Vipers Bugloss (Echium Vulgare) |
| Bird's Foot Trefoil (Lotus Corniculatus) | Wild Marjoram (Origanum Vulgare) |
| Bladder Campion (Silene Vulgaris) | Thyme (Thymus Polytrichus) |
| Crested Dog's Tail (Cynosurus Cristatus) | Yarrow (Achillea Millefolium) |
| Common Quaking Grass (Briza Media) | Common Poppy (Papaver Rhoeas) |
| Common Sorrel (Rumex Acetosa) | Cluster Bellflower (Campanula Glomerata) |
| Common Toadflax (Linaria Vulgaris) | Harebell (Campanula Rotundifolia) |
| Cowslip (Primula Veris) | Red Fescue (Festuca Rubra) |
| Hoary Plantain (Plantago Media) | Brown Top Bent (Agrostis Capillaris) |
| Kidney Vetch (Anthyllis Vulneraria) | Lesser Knapweed (Centaurea Nigra) |
| Lady's Bedstraw (Galium Verum) | Black Medic (Medico Lupulina) |
| Ox-Eye Daisy (Leucanthemum Vulgare) | Red Campion (Silene Dioica) |
| Perforate St John's Wort (Hypericum Perforatum) | Betony (Stachys Officinalis) |
| Red Clover (Trifolium Pratense) | Catsear (Hypochaeris) |
| Rough Hawkbit (Leontodon Hispidus) | Yellow Rattle (Rhianthus Minor) |
| Salad Burnett (Sanguisorba Minor) | Field Scabious (Knautia Arvensis) |
| Self Heal (Prunella Vulgaris) | Meadow Buttercup (Ranunculus Acris) |
| Small Scabious (Scabiosa Columbaria) | Cornflower (Centaurea Cyanus) |
| Sweet Vernal Grass (Anthoxanthum Odoratum) | Corn Marigold (Chrysanthemum Segetum). |

Maintenance

An annual maintenance programme for wildflower living roofs is recommended, to include two visits per year, one in the spring (remedial) and one in the autumn (cutting), when vegetation should be trimmed after flowers have seeded.

The substrate must be watered before and after planting and the wildflower blanket must be kept moist for at least three months after installation and as weather conditions require. Further information is available in Axter's Living Roof Maintenance Guide.

Design considerations

A living roof calls for a robust waterproofing system able to withstand the increased loads and suitable for the building structure.

Axter has an extensive choice of BBA / ETA certified, tried and test, high performance waterproofing systems designed to fulfil this function (Cityflor, Wilotekt-Plus, Force 3000 Traffic, Force 4000 Dalle Traffic and Starcoat PMMA).

Each living roof is different, so we design bespoke solutions drawing on our many waterproofing options and including in the specification the planting selections best suited to the environment to ensure all roof and surrounding area criteria are met.

The following points must be included in the living roof design:

- Roof to be capable of supporting the design load.
- Adequate provision to drain excess rainwater.
- Safe access for maintenance.
- Robust and durable roof waterproofing.
- Root resistant membranes must be considered.

For further assistance with living roof design, specification, installation and maintenance, contact Axter.

Axter Ltd reserves the right to make changes without notice at any time to the above products. The values given are indicative and correspond to nominal results obtained in laboratories and testing institutes. Any additional installations must be discussed with Axter prior to their implementation.

Final determination of the suitability of any information is the sole responsibility of the user. Consult Axter to discuss the use of this or any other product but responsibility for selection of a material and its application in any specific project remains with the user.

Axter Ltd reserves the right to modify and update this data at any time without prior notice. Only the latest version of this document is valid, available for download at www.axter.co.uk/downloads. Once downloaded, documents are uncontrolled. Users should always confirm they are referring to the latest version prior to use. Further assistance is available from Axter Ltd's Technical Support Team, email: technical@axterltd.co.uk, telephone: 01473 935008.

The intended use of this product should be verified with Axter Ltd prior to adoption to ensure its suitability and compliance with specifications, project requirements, industry regulations, legislation, good practice, installation techniques and all other relevant guidance. Axter Ltd accepts no liability for non-compliant use of this product.