

# Product Data Sheet

## HYDROSOIL® SEDUM EXTENSIVE LIVING ROOF

### **Comprising a water retention and drainage layer with bonded filter fleece, engineered growing medium and sedum 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 (for gardens, amenity, play and educational areas, for example).
- 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 for 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® SEDUM

HYDROSOIL® WILDFLOWER

HYDROSOIL® SEED

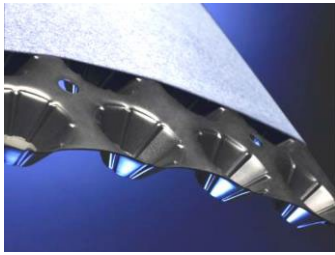
HYDROSOIL® PLUGPLANT

### Hydrosoil® Sedum Extensive Living Roof

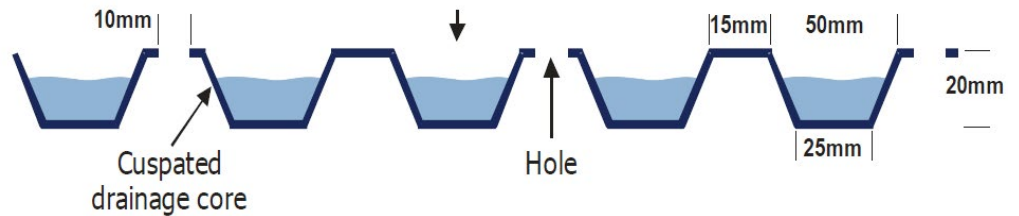
- Water retention and drainage layer (20mm).
- Filter layer (1mm).
- Substrate layer (60mm / 80mm).
- Sedum blanket (30mm).



## 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 is dimpled and 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 (cuspated, perforated)	Test Standard	Units	Value
Polymer	High Density Polyethylene		
Cuspate 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 <sup>2</sup>			49
Perforations diameter		mm	10
Thickness @ 2kPa	EN ISO 9863-1	mm	21
Water flow through perforations	EN ISO 11058	l/(m <sup>2</sup> .s)	24
Water storage capacity		l/m <sup>2</sup>	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 <sup>2</sup> .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 <sup>2</sup> )	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 <sup>2</sup> .s)	100	EN ISO 11058
Weathering 50 MJ/m <sup>2</sup> (1 month)	>90% retained strength	EN ISO 12224

## Substrate layer (60mm)

Moisture retentive, low nutrient and free draining; made from 100% recycled material. Suitable for use on extensive sedum roof systems and all plant finishes. Allows root penetration. Organic material PAS100 certified.

Physical properties	
Composition	Recycled crushed brick/mineral and organic material (green waste)
Brick grading	Various grading of brick suitable for extensive green roofs
Colour	Dark brown
Suggested depth	50 - 100mm
Sizes	25 litre sacks and bulk bags

Technical properties	
Weight (dry)	750kg/m <sup>3</sup>
Weight (saturated)	920kg/m <sup>3</sup>
Compaction	Approx 5% (+/-3%)
pH	7.5 – 8.5

Hydrosoil Sedum with 60mm Substrate is 102kg/m<sup>2</sup> wet and with 80mm substrate is 126kg/m<sup>2</sup> wet.

### Sedum blanket for extensive living roof (30mm)

Vegetation blanket pre-cultivated in the UK with a carefully selected mix of 12 species chosen specifically for extensive living roofs. These are grown on a 25mm substrate base on a carrier membrane and provide instant vegetative cover for extensive sedum blanket systems.

Physical properties	
Composition	Base: Geotextile fabric / coir blanket. Growing medium: 25mm Vegetation: mature sedum plants grown from seed and rhizome
Plant height	20-50mm, depending on growing stage of sedum
Weight (dry)	15kg / m <sup>2</sup>
Weight (saturated)	20kg / m <sup>2</sup>
Consignment size	50m <sup>2</sup> per pallet
Colour	Seasonal variation
Size	1m x 2m

Recommended minimum substrate depth is 50mm. The sedum blanket is low maintenance with shallow roots and non-invasive vegetative cover.

## Sedum species

12 Sedum Species are sown (subject to seasonal variations) to provide interest and colour throughout the growing season. In addition to offering a variety of colour, the different plants have many different leaf types and flowers, resulting in a blend of attractive textures when planted together.

Sedum selskianum

Sedum hybridum

Sedum montanum

Sedum Pulchellum

Sedum ellacombianum

Sedum acre

Sedum album

Sedum sexangulare

Sedum spurium

Sedum floriferum

Sedum reflexum

Sedum middendorffianum



## Maintenance

It is recommended that sedum roofs are maintained annually to remove invasive / unwanted species to ensure system sustainability and functionality. 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.

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