

# Product Data Sheet

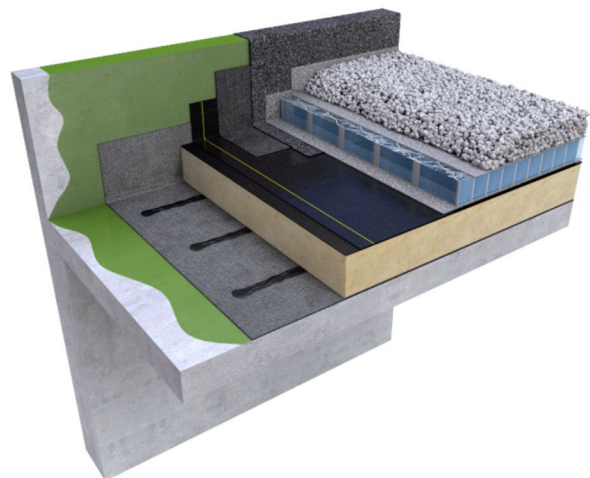
## AQUAMODUL™ BLUE ROOF SYSTEM

### **Provides attenuation, filtration and controlled release of rainwater from roofs and podium constructions into the drainage system – an integral element of good SuDS design**

Axter Aquamodul blue roof system provides attenuation capacity within a flat roof or podium construction of a development and can be combined with living roof and mixed amenity finishes.

It comprises a combined drainage and attenuation void within the roof build up, and an outlet system designed to release the attenuated water at a controlled discharge rate, as permitted in the planning consent of the site.

Aquamodul is suitable for use on a wide range of substrates and is compatible with most waterproofing systems. It can be used beneath many different roof and amenity finishes including intensive and biodiverse living roofs, terraces, ballasted, hard and soft landscaped, trafficked and un-trafficked areas, or combinations of them all.



It is recommended for use as part of a warm roof system as this will ensure the designed thermal performance of the flat roof is maintained.

## Key benefits

- Controlled storage and release of stormwater in line with SuDS best practice/ legislation.
- Reduction in roof penetrations and rainwater outlets (RWOs) required.
- Overall time and cost savings versus traditional methods.
- Reduced on-site disruption, elimination of excavated material.
- Often removes need for underground attenuation tanks.
- Reduced carbon footprint.
- Zero fall; no need to screed to fall.
- Contributes to the BREEAM rating and Code for Sustainable Homes.
- Improves quality of discharged stormwater.

## Aquamodul blue roof system description

The key components in an Aquamodul blue roof are a rainwater attenuation void (combination of geocomposites and attenuation cells), filtration layers and a series of restrictor chambers.

The drainage geocomposite system with integral filter geotextiles attenuates excess water not absorbed by the vegetation in soft landscape areas, or run off from ballast and paving in hard landscaped areas. Water filters through the green roof and builds up in to the drainage void formed by the geocomposite layers below.

This water is gradually dispersed through the zero falls system to the restrictor chamber and discharged to the roof outlet at the rate permitted for the site. The stormwater attenuation requirements are met within the roof construction, eliminating or reducing the need for underground storage.

Each Aquamodul blue roof system is bespoke, comprising a series of engineered components tailored to meet the attenuation and discharge rates of the site.

Contact Axter Ltd for project specific blue roof designs and specifications, calculations and installation advice.

Aquamodul blue roof system	
Blue roof geocomposite layer	Supplied in roll form Roll sizes are typically 920mm wide and vary in length from 20m to 50m.
Blue roof attenuation cells	To create a temporary void for rainwater Supplied in panels 600mm x 600mm or 1200mm x 1200mm in two of depths and strengths to suit the application Panels are either butt jointed or connected using butterfly clips as specified (up to 6 per m <sup>2</sup> ).
Blue roof restrictor chamber	Installed over each roof outlet to control rate of water discharge Stainless steel, embedded and lockable for vehicular and pedestrian access areas (e.g. podium decks) Polypropylene for maintenance areas only (e.g. living and ballasted roofs)

## Installation

### General advice

Aquamodul blue roof system must be installed by accredited installation contractors.

Installation instructions should be read in conjunction with the project specific contract specifications and drawings. They are intended to provide guidance in normal installation situations. If there are any questions related to the design, unusual installation challenges, or any doubt, please consult Axter for further advice. In all situations, responsibility for installation remains with the accredited installer.

### Supply and deliveries

Aquamodul blue roof primarily comprises a rainwater attenuation void (combination of geocomposites and attenuation cells), filtration layers and restriction chambers. Some materials are provided un-palletised as standard but can be palletised upon request to aid lifting to roof levels. Deliveries are typically made on articulated vehicles unless requested otherwise. Rigid vehicles are available upon request. Off-load is by others.

For full details of Axter and third party delivery conditions, contact Axter Ltd.

### Equipment required

- Suitable lifting equipment for off-load and subsequent distribution of materials.
- Sharp knife, tape measure.
- Double sided joining tape.
- Mastic & staple guns.
- Large hand saw, reciprocating saw and emery board/file.

### Warm and inverted roofs

Axter recommend the installation of the Aquamodul blue roof as part of a warm roof system, as this will ensure the designed thermal performance of the flat roof is maintained.

However, in the unusual event that an inverted blue roof system is required, the water flow reducing layer (WFRL) must be installed above the inverted insulation layer in accordance with Axter recommendations by the accredited Aquamodul contractor. The WFRL is critical to the thermal performance of the insulation and the storage performance of the inverted roof and the attenuation performance of the Aquamodul blue roof system. NB, no correction to fx is permitted for inverted blue roofs. Please contact Axter technical department for further assistance.

### Aquamodul blue roof geocomposite layer

Aquamodul blue roof geocomposites are typically installed above the attenuation cells to provide protection, separation, drainage, filtration, additional rainwater attenuation, and a water reservoir to help support vegetation in areas susceptible to drying out (e.g. living roofs).

Each geocomposite layer is supplied in roll form for ease of installation. Roll sizes are typically 920mm wide and vary in length from 20m to 50m.

## Aquamodul blue roof attenuation cells

Aquamodul blue roof attenuation cells create a temporary void for rainwater.

Panels are either butt jointed or connected using butterfly clips as specified (up to 6 per m<sup>2</sup>).

Panel dimensions: 600mm x 600mm or 1200mm x 1200mm panels in two depths/strengths.

## Inspection

BS 6229:2018 Flat roofs with continuously supported flexible waterproof coverings – Code of practice states that all flat roofs must be safely inspected at least twice a year. In achieving this requirement, working at height regulations must be considered and complied with. If a building is of a height which can cause an injury from a fall, including roofs under 2m, then edge protection is required.

Specific attention should be given to the Aquamodul elements such as the outlets which should be checked a minimum of twice annually. As with any flat roof, the design should allow for the safe removal of materials from the roof.

## Maintenance

The level of maintenance required is dependent on the final finish. Paved podium decks and extensive living roofs are relatively low maintenance whereas intensive living roofs require increased maintenance. All finish types require a defined maintenance programme.

Aquamodul blue roof systems are often combined with living/biodiverse roofs. Biodiverse living roofs have an undulating, biodiverse growing medium (between 80–150mm depth), where the vegetation is provided either by selected wildflower/grasses seeds and/or plug plant species and/or by self-colonisation of local fauna and flora. Habitats are often created with log/stone/sand piles and by specific nesting boxes for insects, birds and bats, as required by local planning requirements, Biodiversity Action Plan (BAP) or project specific Ecology Reports. Please refer to Axter living roof maintenance guides for further details.

An increased amount of dead vegetation is created by wildflower and grass mixes, which will need to be cut back and removed, reducing the bio-mass on the roof and encouraging germination from the dead flower heads. In the early Spring, the first signs of life returning to the vegetation on the roof are led by any grasses present with other species following shortly thereafter.

General maintenance is normally carried out twice annually, during the Spring and Autumn months. However, additional maintenance may be required, which will be dependent upon the location of the roof - such as the removal of weeds, seedlings, and accumulated leaf litter from overhanging trees. A defined maintenance strategy and implementation programme is essential to maintain system warranties.

## Warranty

Axter will guarantee the performance of the Aquamodul blue roof system for the specified Warranty period on satisfactory completion of the installation of the Aquamodul blue roof system. For more information please refer to our Aquamodul warranty documentation or contact us.

**Aquamodul™ blue roof 130**

System properties				
Thickness at 2kPa	(mm)	130	±10%	EN ISO 9863-1
Maximum saturated weight	(kg/m <sup>2</sup> )	130	approx.	EN ISO 9864
Stormwater attenuation volume	(l/m <sup>2</sup> )	113		
Drainable void space	%	83		
Growing medium recharge value	(l/m <sup>2</sup> .s)	25		Per 100mm depth
Resistance to weathering	Greater than 60% retained tensile strength			EN 12224
Resistance to chemicals	Excellent			EN 14030
Upper filter / separator geotextile properties				
Pore size O <sub>90</sub>	(µm)	120	±30%	EN ISO 12956
Breakthrough head	(mm)	0	Nominal	BS 6906 Part 3
CBR puncture resistance	(N)	1600	-20%	EN ISO 12236
Dynamic perforation cone drop	(mm)	32	+20%	EN ISO 13433
Type and material	Non-woven needle-punched and heat-treated long staple fibre polypropylene Protector: non-woven felt of polypropylene. Min. weight of 120g/m <sup>2</sup>			
Blue roof system use and compatible surface finishes				
Standard system <b>Aquamodul E 130mm</b>	Suitable for Light Vehicles and low volume HGV loading, large plant installations. Landscaped or paved finish where additional strength is required			

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 such as services, PV panels or paved areas, 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 the user. This system can be used in conjunction with rainwater harvesting systems. Any petrochemical pollution waste discharged from the system to be treated by others.

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