



PRODUCT DETAILS

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| Product name | Proteus Pro-Living® Substrate - Extensive |
| Product type | Green roof component |

PRODUCT DESCRIPTION

Proteus Pro-Living® Substrate - Extensive is composed of recycled crushed brick and PAS100 compost. The substrate is free draining, porous, lightweight and is especially suited for drought-tolerant planting schemes such as sedum mixes between **80-150mm** and wildflower mixes between **120-150mm**.

Proteus Pro-Living® Substrate - Extensive meets and exceeds all present GRO guidelines.

APPLICATION

Proteus Pro-Living® Substrate - Extensive is designed for extensive green roofs, it is installed at regular depth across the roof during installation to support a range of sedum and wildflower mixes.

INSTALLATION

Proteus Pro-Living® Substrate - Extensive should be installed at a depth of **80-150mm** and directly onto a **25mm** deep drainage board.

The depth of substrate is determined by the planting scheme and the weight loading capability of the roof which must be assessed by a qualified structural engineer.

TECHNICAL INFORMATION

| Characteristic | Value | Unit |
|----------------------------------|-------|-------------------|
| Bulk density oven dried | 0.83 | g/cm ³ |
| Bulk density at 10% VMC | 0.97 | g/cm ³ |
| Bulk density at field capacity | 1.26 | g/cm ³ |
| Field Capacity | 37.6 | % v/v |
| Particle Density | 1.79 | g/cm ³ |
| Total Porosity | 46.4 | % |
| Porosity at Field Capacity | 31.3 | % |
| Effective Porosity | 15.1 | % |
| Saturated Hydraulic Conductivity | 48 | mm/min |
| Nitrogen | 13.1 | mg/l |
| Phosphate | > 165 | mg/l |
| Potassium | > 241 | mg/l |

| Characteristic | Value | Unit |
|----------------|-------|-------|
| Organic matter | 2.8 | % |
| pH | 7.7 | - |
| EC | - | mS/cm |

| Particle Size Distribution | | |
|----------------------------|---------------|--------------|
| Particle | Size (mm) | Quantity (%) |
| Stones | > 8 | 61.2 |
| Coarse gravel | 8 - 4 | 28.5 |
| Fine gravel | 4 - 2 | 1.2 |
| Very coarse sand | 2 - 1 | 0.5 |
| Coarse sand | 1.0 - 0.5 | 0.6 |
| Medium sand | 0.5 - 0.25 | 1.3 |
| Fine sand | 0.250 - 0.125 | 1.2 |
| Very fine sand | 0.125 - 0.050 | 0.7 |
| Silt | 0.050 - 0.002 | 2.7 |
| Clay | < 0.002 | 2.0 |

SIZE, FINISH AND COLOUR

| Product Code | Weight (kg) | Max Water capacity (Volume-%) |
|--------------|-------------|-------------------------------|
| GRSUEX25 | 25 | 55 |
| GRSUEX100 | 1000 | 55 |

SHELF LIFE AND HANDLING

Always use relevant safe manual handling techniques relevant to a products size and weight.

PACKAGING

Supplied in bags or shrink wrapped on pallets. The product is bagged specifically for projects to ensure material is kept dry and free from growth or detritus.

LIMITATIONS OF USE

For professional use only.

GUARANTEES

Defects arising from lack of maintenance or abnormal use may fall outside of the cover of the Proteus Waterproofing guarantee.

DISPOSAL

Disposal of **Proteus Pro-Living® Substrate - Extensive** should be done in a manner that is compliant with UK regulations and best practices. This includes ensuring that the material is properly classified and described, that it is not mixed with hazardous waste, and that it is disposed of in a manner that is environmentally responsible.

MAINTENANCE

All green roofs will require maintenance; it is important that access is considered at the design stage. Maintenance should be conducted by qualified personnel. This will help ensure the initial establishment and continued health of the green roof system. It is strongly recommended that the installing contractor remains responsible for the maintenance of the green roof during this establishment stage (between 12 - 15 months) and prior to the assignment of maintenance duties to the building owner's representative.

Maintenance contractors, with specialist training in green roof care from organisations such as [Green Roof Organisation](#), should be used where possible. When designing a green roof, it is important that the green roof system is specified accounting for any budgetary constraints. The costs of roof maintenance should therefore form part of the life cycle cost analysis for the building, allowing the most appropriate green roof specification to be realised.

General maintenance actions

All maintenance actions carried out at roof level must be in full compliance with the appropriate health and safety regulations, and particularly those specifically dealing with working at height.

BS 4428 Code of practice for general landscape operations (excluding hard surfaces) and BS 7370-4 Grounds maintenance - Recommendations for maintenance of soft landscape provide guidelines for maintenance actions.

Irrigation and watering

Irrigation is typically required for the initial establishment of the green roof for a period of 6 - 8 weeks depending on natural rainfall during this time. However, once vegetation cover is achieved, irrigation can be reduced. All green roofs will need watering in periods of extended drought, i.e. more than 6 weeks without any rain. Care should be taken not to overwater green roofs, as this may harm the plants or overload the roof.

Fertilising

[Green Roof Organisation](#) does not recommend regular or high use of fertiliser on the low-nutrient growing mediums used on green roofs as they can encourage invasive weeds and grasses and may leach into the watercourse. Each green roof should be assessed prior to any addition of fertiliser.

Note: Fertiliser should be slow and long release, and only be applied if downpipes are isolated from mains sewage system. Intensive and simple intensive roofs are based on a more fertile growing medium and the planting installed will require regular fertilisation.

General Vegetation Maintenance

- Always remove species with large growth habits or aggressive root systems
- Any wind-blown seeds or cuttings should be removed before they have the opportunity to take root

- Many grass species can be invasive and should be removed from extensive green roofs, unless designed into the planting scheme
- The ecological and aesthetic requirements of the site should guide the management of dominant species and habitat over time
- Cut back taller flowering species to approx. 150mm above substrate surface in autumn/winter after seeding
- Excess dead plant matter should be removed to avoid encouraging fungal disease. However, for maximum wildlife support, care should be taken not to remove all vegetation straight after flowering as many insects over-winter in hollow plant stems. For this reason, rotational cutting (where not all vegetation is cut simultaneously) and removal is advised

Clearance / Removal

Generally, the removal of dead material is desirable as it allows plants the space to develop a greater coverage, improving the finished appearance of the roof, whilst also reducing the risk of fungal disease forming and spreading. However, in some biodiverse applications, removing plant debris could be counter-productive in creating habitat.

Intensive roof <100mm | low nutrition substrate

- **Irrigation:** Post-establishment, irrigation is not generally required for extensive green roofs. However, the facility to water should be in place, if possible
- **Fertilisation:** Extensive green roofs typically have low nutrient requirements. If required, they can be fertilised on an annual basis, each spring, using a slow-release fertiliser
- **Plant management:** Removal of undesirable plant species and fallen leaves should take place twice each year
- **General:** Drainage outlets (including inspection chambers) and shingle/gravel perimeters to be cleared of vegetation, twice yearly. [Green Roof Organisation](#) guidance should be followed, unless stated otherwise

Extensive roof 100mm – 200mm | low to medium nutrition substrate

- **Irrigation:** Periodic irrigation/watering is expected, depending upon the plant specification and the climatic and microclimatic conditions prevailing at roof level
- **Fertilisation:** With a wider range of planting, using a more fertile growing medium, more regular fertilisation may be required
- **Plant management:** Removal of undesirable vegetation on the greened area twice yearly
- **General:** Drainage outlets (including inspection chambers) and shingle/gravel perimeters to be cleared of vegetation, twice yearly. [Green Roof Organisation](#) guidance should be followed, unless stated otherwise

GUIDELINES AND STANDARDS

It is the responsibility of the Contractor to thoroughly familiarise themselves with all relevant Codes of Practice and Building Regulations to the works or referred in the specification.

Proteus Waterproofing take no responsibility for misinterpretation or lack of knowledge for third parties.

The works shall be carried out in accordance with the requirements of:

- **BS 6229** Flat roofs with continuously supported flexible waterproof coverings - Code of practice
- **BS 8217** Reinforced bitumen membranes for roofing - Code of practice
- **BS 8000-0** Workmanship on construction sites - Introduction and general principles
- **BS 8000-4** Workmanship on building sites - Code of practice for waterproofing
- **LRWA** [Design Guide for Specifiers](#)
- **S2T** [Safe to Torch](#)
- **GRO** [Code of Best Practice](#)