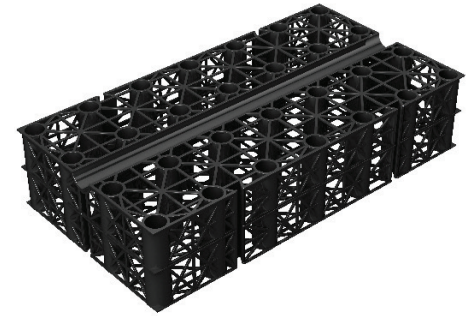


Product code: PVPP150

Permavoid is a geocellular interlocking system designed for shallow ground water storage or infiltration, to be used in place of traditional aggregate sub-base, or to provide source control above ground at both roof and podium level, removing the need for heavier and less efficient systems. The system has an exceptionally high compressive and tensile strength and bending resistance with a proprietary jointing system to create a horizontal structural 'raft' within the pavement that is ideal for the shallow attenuation of surface water. The system can also be combined in layers using interlocking shear connectors to increase depth in 85mm and 150mm increments. This is particularly useful in designing infiltration systems, allowing flexibility in balancing the soil permeability/infiltration area of the Permavoid storage units and residual temporary attenuation.



## Applications

The Permavoid units are suitable for use as a stormwater attenuation and/or infiltration. The system comprises of single, interconnected cells which can be installed in the ground as part of sub-base formation, or above ground as part of roof or podium attenuation systems for source control. Permavoid is suitable for use in a range of applications including residential, industrial estates, car parks, sports pitches, roofs, basements, pedestrian areas and rainwater harvesting.

## Key Benefits

- High strength, high capacity, shallow, sub-base replacement system
- Stormwater attenuation and/or infiltration system
- Used as part of a sustainable drainage system (SuDS) scheme to offer stormwater storage at shallow construction depths
- 100% recyclable
- Units are manufactured from 100% recycled polypropylene (PP)

## Performance

The structural load bearing capacity of the Permavoid units have been tested in accordance with the following European Standard: BS 7533-13:2009. The system's structural design life expectancy, based upon creep test data (tested in accordance with CIRIA guidelines) is as follows; for lightly loaded areas such as car parks a design life of 50 years is achievable. For areas with prolonged HGV loading a typical design life may only be 25 years, depending on the design of the pavement surfacing and structural layers over the tank.

## Installation

All calculations for Permavoid units are based upon site-specific load cases, pavement construction types and thicknesses, soil cover and ground conditions and the suitability must therefore be approved for each project.

## Technical Support

Detailed guidance and assistance is available.

For further information, please contact our Technical Team on +44 (0) 1509 615 100 or email [civils@polypipe.com](mailto:civils@polypipe.com) or visit [www.polypipe.com/civils-technical-hub](http://www.polypipe.com/civils-technical-hub)

| ELEMENT                                   | VALUE   |
|---|---|
| <b>PHYSICAL PROPERTIES</b>                |   |
| Weight per unit                           | 3kg   |
| Weight per square metre                   | 12kg  |
| Length                                    | 708mm   |
| Width                                     | 354mm   |
| Depth                                     | 150mm   |
| <b>SHORT TERM COMPRESSIVE STRENGTH</b>    |   |
| Vertical                                  | 715kN/m <sup>2</sup>                            |
| Lateral                                   | 156kN/m <sup>2</sup>                            |
| <b>SHORT TERM DEFLECTION</b>              |   |
| Vertical                                  | 1mm per 126kN/m <sup>2</sup>                    |
| Lateral                                   | 1mm per 15kN/m <sup>2</sup>                     |
| <b>TENSILE STRENGTH</b>                   |   |
| Of a single joint                         | 42.4kN/m <sup>2</sup>                           |
| Of a single joint at (1% secant modulus)  | 18.8kN/m <sup>2</sup>                           |
| Bending resistance of unit                | 0.71kN/m  |
| Bending resistance of single joint        | 0.16kN/m  |
| <b>OTHER PROPERTIES</b>                   |   |
| Volumetric void ratio                     | 95%   |
| Average effective perforated surface area | 52%   |
| Intrinsic permeability (k)                | Minimum 1.0 x 10 <sup>-5</sup>                  |
| Ancillary                                 | Permavoid Permatie<br>Permavoid Shear Connector |
| Material                                  | Polypropylene (PP)                              |

| <b>HYDRAULIC PERFORMANCE</b>              |   |    |    |    |    |    |
|---|---|----|----|----|----|----|
| 3 units wide, 1 unit deep (1.06m x 0.15m) |   |    |    |    |    |    |
| <b>FREE DISCHARGE</b>                     |   |    |    |    |    |    |
| Gradient (%)                              | 0 | 1  | 2  | 3  | 4  | 5  |
| Flow Rate (l/m/s)                         | 8 | 13 | 15 | 17 | 19 | 21 |

Permavoid Modular Cell 150 can be utilised in these SuDS techniques

| TECHNIQUES       |              |       |                |             |   |                                |                              |              |        |               |                  |                  |               |
|------------------|--------------|-------|----------------|-------------|---|--------------------------------|------------------------------|--------------|--------|---------------|------------------|------------------|---------------|
| Blue-Green roofs | Podium Decks | Trees | Sports Pitches | Cycle Paths | Permeable Paving<br>(sub base & podium) | Bioretention &<br>Rain Gardens | Attenuation<br>Storage Tanks | Infiltration | Swales | Filter Drains | Detention Basins | Ponds & Wetlands | Filter Strips |
|                  | ✓            |       | ✓              | ✓           | ✓                                       | ✓                              | ✓                            | ✓            | ✓      | ✓             |                  |                  |               |

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