Geosynthetics Australia

*Technical Bulletin*

# Geocomposite Strip Drains - GeoDrainSP vs Megaflo

The purpose of this technical bulletin is to assist designers in their evaluation of **GeoDrainSP** 300mm wide strip filter drain vs. Megaflo 300 geocomposite drain.

Geocomposite strip drains are a direct replacement for perforated pipe and/or stone drainage applications, including trench drains, French drains, perimeter drains, and edge drains. Combined installation and material cost is usually less than half that for aggregate drains.

GeoDrainSP and Megaflo are both fully enclosed in a continuous filament, polyester non-woven geotextile. The filter fabric allows a high volume of water into core while restraining soil particles. The high tear and puncture strength of the geotextile insures no damage during backfilling or use. By contrast, slotted PE pipe socks allow fines to enter and block up the drain.

**Table 1 Comparison of the physical and performance properties of commercially available products (300mm wide core)***

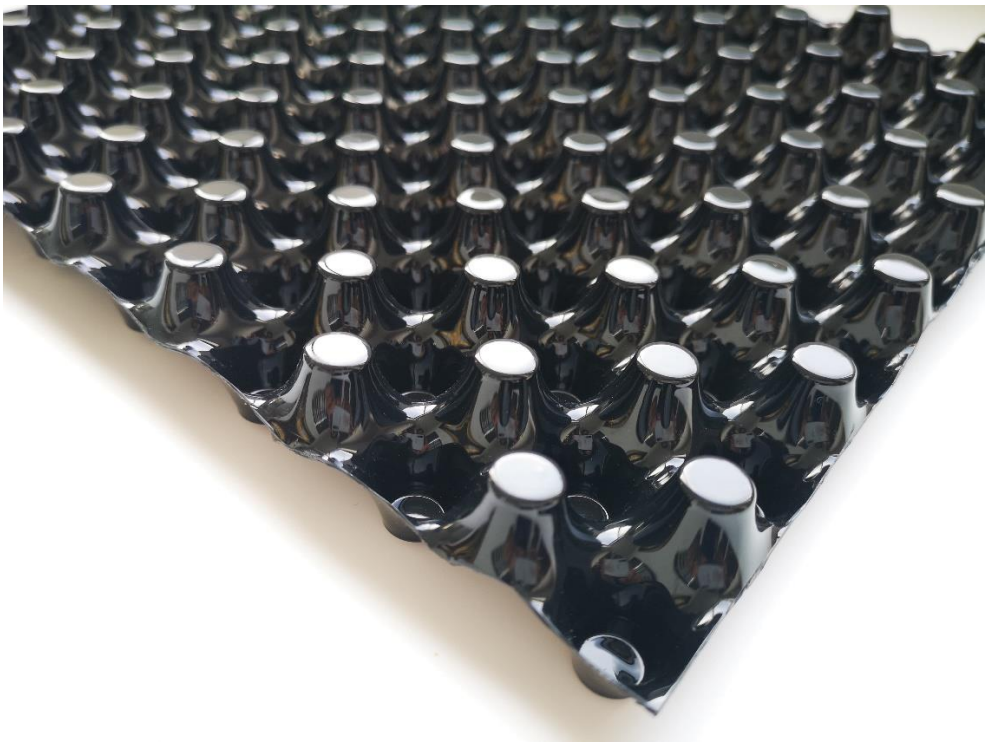
| **Property** | | | | |
|---|---|---|---|---|
| **Core** | | | **GeoDrainSP** | **Megaflo** |
| Thickness | ASTM D1777 | mm | 25 | 40 |
| Core type | | | Cuspated | Corrugated |
| Material | | | PVC | HDPE** |
| Horizontal Compressive Strength | ASTM D2412@10% deflection | kPa | >350 | >200 |
| Core Flow Rate | ASTM D4716 (@200Kpa; 0.5HG) | L/min/m | 640 | 370 |
| Open Pore Space | | $cm^2/l.m$ | 390 | 39 |
| Weight/roll | | kg | 29.5 | 49 |
| Volume/roll | | $m^3$ | 0.46 | 0.64 |
| **Chemical Resistance** | Both core and fabric are resistant to all naturally-occurring soil materials. | | | |

**Independent NATA Accredited test data (GeoDrainSP) and published literature values for Megaflo 300.*
**HDPE exhibits higher susceptibility to compressive creep and thermal ratcheting than PVC. (*HDPE and PVC Creep and Thermal Ratcheting Behavior under Compression - Jeya, Zhao, Bouzid, 2017*)

**Shotcrete Applications**

**GeoDrainSP's** cuspated core provides an excellent surface for the adhesion of shotcrete and other construction materials. The geotextile coated dimples reduce shotcrete rebound by 10-20% giving additional cost savings because less shotcrete is lost during spraying. The corrugated surface of Megaflo is not as effective at reducing shotcrete rebound.

**GeoDrainSP** is more flexible and conforms more closely to the contours of an embankment or rock face than a rigid Megaflo drain. This ensures more water enters the core and hydrostatic pressure is reduced.



**GeoDrainSP** offers better performance as a subsurface drain than Megaflo in several key areas:

GeoDrainSP is made from **creep resistant PVC** and its core's horizontal compressive strength is 75% greater than Megaflo 300. GeoDrainSP's high compressive strength withstands both installation stress and long-term performance stress.

- GeoDrainSP is **designed to collect 10x more water** at a lower hydraulic gradient from the surrounding soil than Megaflo 300. Its total open area is >65% or 390cm2 per linear metre for a 300mm wide GeoDrainSP drain compared to <4% or 39cm2 per linear metre for Megaflo 300. This allows GeoDrainSP to collect the same amount of water 10 times faster than Megaflo 300.

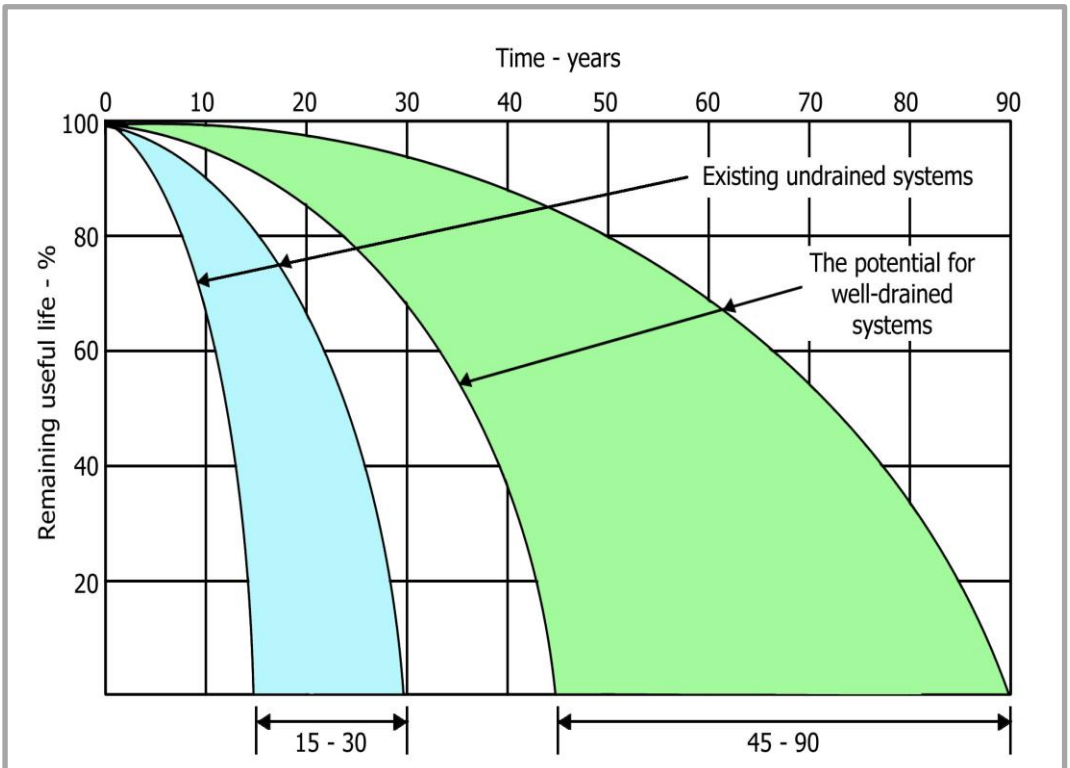
- The core of GeoDrainSP provides multiple channels for vertical and horizontal water flow and **delivers 170% of the in-plane flow rate of Megaflo**. Megaflo's published in-plane flow rate is 370 litres/minute at an hydraulic gradient of 0.5% compared to 640 litres/minute for GeoDrainSP.

- GeoDrainSP saves money on storage and transport. It takes up 28% less volume and is 40% lighter than Megaflo 300.

Specifying geocomposite strip drains helps to conserve the limited supply of high quality aggregates needed for infrastructure projects and reduces carbon emissions by 4 tonnes of $CO_2$ per kilometre of installed drain.

**Road Edge Drainage**

Geocomposite strip drains provide a cost effective, efficient method of moisture reduction of the subgrade adjacent to and beneath highways and roads by intercepting seepage and transmitting water into the core. Subsurface moisture weakens pavement layers and degrades pavement material reducing the service life of roads and increasing the frequency of repairs and maintenance.




**Potential life expectancies of well-drained pavements with conventional "undrained" pavements. H. Cedergren (1989)**

**GeoDrainSP** exceeds the requirements of State Road Authorities (RMS3556, MRT38) and its uniform properties and quality manufacturing processes assure predictable drain performance.

**Sport and Recreation drainage**

While GeoDrainSP and Megaflo flat panel drains provide drainage, filtration and stabilisation for natural and synthetic turf, the significantly larger open pore area of GeoDrainSP collects water **10 times faster than Megaflo** and means that sports field surfaces can drain more quickly.

GeoDrainSP is also available in sheets up to 1100mm wide for drainage underneath synthetic sports fields.

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