

# Filtration within the Landfill Cell

**Introduction**

The hydraulic conductivity of an aggregate drainage blanket is important in both the initial phase and the long term. Selection of an appropriate stone is important in the long term drainage performance of the system.

Environment agency R&D report P1-397 recommends the use of a coarse aggregate as a drainage medium in order to reduce the potential for biological clogging.

The recommended grading for aggregate in this application is BS 13242:2002 20/40, shown below.

British Standard Sieve Size (mm)	Percentage Passing (%)
63	98-100
40	80-99
31.5	20-70 (+/-15)
20	0-20
14	-
10	0-5
4	-

*Grading of drainage material 20-40mm*

It is recognised that this approach is not always a viable option, lack of available stone within close proximity lack of a suitable protection geotextile etc., and on this basis a finer graded 10/20 drainage aggregate is permitted for use.

British Standard Sieve Size (mm)	Percentage Passing (%)
63	-
40	100
31.5	98-100
20	80-99
14	20-70 (+/-15)
10	0-20
4	0-5

*Grading of drainage material 10-20mm*

When a 10/20mm aggregate is used, there is a requirement to use a geotextile filter to reduce the potential for biological clogging within the drainage system.

HPS 3.3 has been developed by GEOfabrics to meet the specific requirements of this application, and when used in conjunction with a 10/20mm stone it can provide a designer with additional confidence that the risk of clogging within the drainage system has been dramatically reduced.



### HPS 3.3/EA Requirement Comparison

Property	Test Method	EA Acceptance	HPS 3.3
<i>Polymer</i>	-	Polypropylene	Polypropylene
<i>Tensile Strength</i>	ISO 10319	-	22kN/m
<i>Tensile Elongation</i>	ISO 10319	-	80%
<i>Static Puncture (CBR)</i>	ISO 12236	3300N	3300N
<i>Cone Drop</i>	ISO 918	-	13mm
<i>Opening Size</i>	ISO 12956	50-120 $\mu\text{m}$	60 $\mu\text{m}$
<i>Water Permeability</i>	ISO 11058	>40 l/m <sup>2</sup> /s	70 l/m <sup>2</sup> /s
<i>Thickness</i>	EN 964-1	>1.5 mm	3.3 mm
<i>Durability</i>	Annex B of EN 13252	100 years	100 years
<i>Resistance to UV</i>	EN 12224	> 1 month	> 1 month