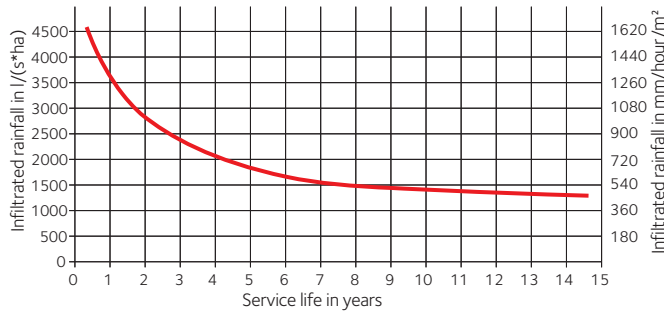


Surface infiltration rates and clogging

Research has demonstrated the build-up of detritus in the jointing aggregate will reduce the infiltration, but rate of reduction will decrease and stabilise over time. This effect is summarised in below.



The inclusion of the upper geotextile between the laying course and sub base may also reduce the infiltration rate through the pavement.

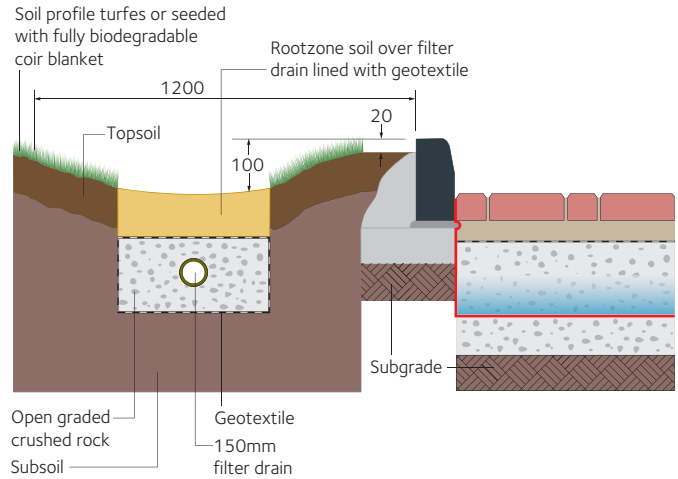
Typical rainfall in the UK is about 20mm/hour and an extreme event being 75mm/hour. Experiments have demonstrated that the infiltration rate for a newly laid Omega Flow block surface is over 4,000mm/hour. The permeable sub-base will have an infiltration rate many times this, at least 40,000 mm/hour.

The design procedure in the British Standard, Interpave guidance and PermCalc assumes the infiltration rate is approximately 400mm/hr, just 10% of the initial infiltration rate through the pavement surface, to allow for long term clogging, therefore providing a significant safety margin.

However, to ensure a long service life, it is recommended that care is taken to protect the pavement during and after construction to minimise clogging of the joints.

Landscaping adjacent areas

Landscaping and adjacent areas should be designed such that it does not cause soil, mulch and other materials to be washed onto the permeable surface causing clogging of the joints. A typical detail is shown in the diagram below.



Landscaping should also be designed so that surface of the pavement is not continuously in the shade, which promotes the growth of moss in the joints.

Construction site precautions

Preventing and diverting impermeable contaminants such as soil and mud from entering the permeable sub base and permeable surface both during and after construction is imperative to ensure that the pavement remains permeable. Simple practices such as not allowing the storage of materials that could clog the pavement, such as top soil or mulch on the paved areas, and not allowing muddy construction equipment on the pavement are recommended. Additional measures such as installing silt fences and temporary drainage swales which divert runoff away from the area should be considered.



Do not store materials on the pavement that may lead to clogging.



Protect the newly laid paving from contaminated run off

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Brett Landscaping operate to the highest levels of independent certification:

- BS EN ISO 9001 Quality Management System
- BS EN ISO 14001 Environmental Management System
- OHSAS 18001 Health and Safety Management System

In addition, when designing projects under BREEAM we are also holders of BES 6001 Responsible Sourcing of Construction Products (Very Good)

All of these can help significantly when designing for sustainability.

Health & safety and accessibility

There is a perception that standing water in a permeable pavement can cause a potential health and safety issue, either due to stagnation of the water or freezing. This is not the case, as the pavement, if designed correctly, will drain after a rainfall event and thus there should not be water standing for any significant period of time.

Maintenance

As discussed (above), the infiltration rate of a permeable pavement will decrease due to the build-up of detritus in the jointing aggregate but stabilise with age. However, evidence suggests that infiltration rates always remain significantly higher than rainfall intensity, so, even without maintenance, there should be sufficient infiltration to accommodate rainfall events. It may be advisable to sweep occasionally but this should not be any greater than is normally undertaken on traditional pavements. However in reality, experience suggests that this is rarely carried out.

Unlike a conventional drainage system, a permeable pavement can be quickly visually assessed, particularly after a rain event as water ponding on the surface will indicate localized clogged joints may require remedial maintenance to restore the permeability. If the joints do clog completely it will be possible to rehabilitate by removing the clogged jointing aggregate, hand brooms, water blasting or a road sweeper, however care must be taken to ensure that only the detritus is removed. It may be necessary to top up the joints with new jointing aggregate.

To maintain structural integrity it is important to ensure that all the joints are full with the correct permeable aggregate. It may be necessary, particularly in the early life of the pavement, to top up the joints with permeable jointing aggregate.



The joints on the right are full, whereas the joints on the left require topping up with new joint aggregate.

Depressions, rutting and cracked or broken blocks, considered to be detrimental to the structural performance of the pavement or a hazard to users, will require appropriate corrective action.

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