

Measuring the vertical water permeability of geotextile filters

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The vertical water permeability of woven and nonwoven geosynthetic filters is often a source of confusion and questions. This is primarily because the vertical water permeability can be determined using different national standards. The difference between the standards is not even their respective measuring methods, but generally the units used to express vertical water permeability.

This makes it difficult to compare the results and specifications, leading to confusion in the marketplace. The European Standards (EN) are designed to remove this discrepancy between European countries so that measurements and reports are identical, and hence comparable. However, the new European Standard (EN 11058) will lead to even more confusion in the short term because vertical water permeability under this method is expressed using the yet to be developed Velocity Index. In principle, the measuring method in the EN differs little from the national standards already in place. How is the vertical water permeability of a filter measured?

A geotextile filter (F) is fitted within a transparent tube with a minimum diameter of 50 mm. Water is allowed to flow through the filter. Because the water flow experiences resistance in the filter, a difference in pressure (ΔH) is built up in the filter. The more water flows through the filter, the higher the velocity of the water that flows through the filter and the higher the difference in pressure across the filter. Conversely, the higher the difference in pressure (ΔH) across the filter, the higher the water velocity and the greater the quantity of water (Q) that will flow through the filter.

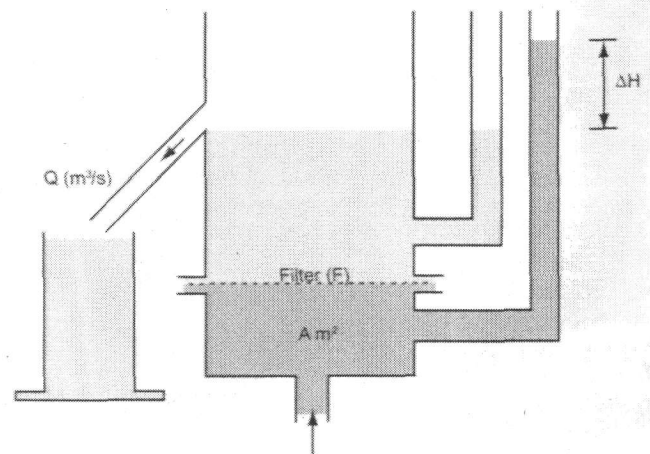


Figure 1: Measurement of water permeability normal to the plane