

Appendix 1 - Percolation Test Guidance

This guidance note serves to update Appendix A of Pollution Prevention Guidelines (PPG4) and bring it in line with the current British Standard Code of Practice for the design and installation of drainage fields for use in waste water treatment (BS 6297:2007).

Avoid carrying out this test in extreme weather conditions such as drought, frost and heavy rain.

Stage One – Preparing the test :

- a) Excavate at least two holes 300mm square to a depth 300mm below the proposed invert level (bottom of pipe) of the infiltration pipe and space them evenly along the proposed line of the subsurface irrigation system.
- b) Fill each hole with water to a depth of at least 300mm and allow to seep away completely.
- c) If the water drains away rapidly (within 10 minutes) the hole should be refilled up to a max. of 10 times. This ensures the ground is saturated for the test.
- d) If the water continues to drain away rapidly the ground may be unsuitable. In addition, if the water has not soaked away within 6 hrs the area may also be unsuitable.

Stage Two - Undertaking the test :

- a) Refill each hole to a depth of at least 300mm and observe the time in seconds for the water to seep away from 75% full (225mm depth) to 25% full (75mm depth). We want the time taken for the water to drop 150mm.
- b) Repeat this at least 3 times in each hole in the location of the proposed trench, recording all the times in seconds.

Stage Three – The Calculations :

- a) To calculate the Vp figure divide each time in seconds by 150(mm). This gives the average time in seconds required for the water to drop 1mm.
- b) Obtain the average figure for the overall percolation value (Vp) by summing all the values and dividing by the number of values used.
- c) To meet the British Standard the overall Vp result needs to be between 15 – 100. Figures outside of this would be deemed unsuitable.

i) Below the minimum value of 15 untreated effluent would percolate too rapidly into ground water.

ii) Where V_p is above the limit of 100 effective treatment is unlikely to take place in a drainage field as there will be inefficient soakage in this location which may lead to sewage ponding on the surface.

Agreement to Recommendation

BS 6297:2007 states that :

"a drainage field for disposal should only be used when percolation tests indicate average values of V_p between 15 and 100"

If the percolation test submitted with your application gave an average percolation value (V_p) of less than 15 which is outside the range, you will be required to put in place additional measures and we will seek your agreement to the following recommendation. In order to attenuate the flow of effluent into the ground it is recommended that the drainage field area is calculated using a V_p value of 15 and that a 700mm deep layer of medium or coarse, washed sand is laid on a permeable geotextile membrane, below the standard granular fill distribution layer.

If you obtain an average V_p value of below 15, in order to help us process your application swiftly, please state in a covering letter that you agree to design your drainage field on the basis of this recommendation.

Stage Four – Sizing the drainage field :

For domestic premises, the floor area of the drainage field (A in square metres) required may be calculated from:

$A = p \times V_p \times 0.25$ for septic tanks

$A = p \times V_p \times 0.20$ for package sewage treatment plants

The trench length can be calculated by dividing the trench area (A in square meters) by the trench width (metres). Drainage trench widths should be between 0.3m to 0.9m.

Where;

p is the number of people served by the tank (this should be the maximum number of people that could live in the house).

V_p is the percolation value described above.

If in doubt, consult your professional advisor or local authority building control officer for advice.