



Local Authority Building Control

Technical Information Note 8 Percolation Tests

These notes are offered to our customers for guidance and convenience only. They are intended to provide basic advice only and not a substitute for BS 6297 or other authoritative data. If you have any doubts or you are unsure about the information contained in these notes, please refer to the British Standard and/or seek professional advice.

Percolation Test to BS6297 - NOTE: The test must be carried out over 4 consecutive days.

- 1 Dig a hole in the area where any future land drains are likely to be. This hole should be large enough to work in – say 600mm square – and have a depth equal to the proposed depth of the land drains from the septic tank. If it is known that the winter water table rises to within 0.5m of the land drains, then the TEST HAS FAILED.
- 2 In the bottom of the first hole, form a second hole precisely 300mm square and 300mm deep measured below the bottom of the first hole.
- 3 If ground water seeps into the excavations before the test can be commenced then the TEST HAS FAILED.
- 4 If the excavation is dry, fill the small hole with water and allow to soak completely away overnight (see warning note).
- 5 If, on the second day, there is water in the hole, the TEST HAS FAILED.
- 6 If the excavation is dry, partly fill the small hole with water to a depth of 250mm and determine the time it takes to soak away completely. If any water remains by the third day, the TEST HAS FAILED.
- 7 Repeat the test with 250mm of water put in the hole on the third day and allow to soak away completely overnight, each time recording the time to soak away. If on any day there is water remaining from the previous day, then THE TEST HAS FAILED.

IT IS IMPERATIVE THAT THERE IS NO BREAK IN THE CONTINUITY OF TESTS EACH CONSECUTIVE DAY.

- 8 To make the determination of the soakage time easier, you can note the depth remaining at definite intervals of time and plot a graph as shown on the example. Sketch a smooth curve to meet the horizontal axis and thus give soakage time.
- 9 Average the soakage times as shown in the example and use this average time in the formula given, in order to arrive at the soakage area. Depending on the trench width selected, the length of land drain can be determined. A minimum length of 20m is recommended, even when a short soakage time is obtained.
- 10 If the average soakage time is more than 583 minutes, then the TEST HAS FAILED.
- 11 If the average soakage time is between 416 and 583 minutes, then underdrains leading to a water course will be required. There must be 0.5m clearance between land drains and underdrains. If it is not possible to provide underdrains, then the TEST HAS FAILED. If

underdrains are installed, permission to discharge to a watercourse will be required from the Internal Drainage Board and Environment Agency.

- 12 Before the test is finally completed, a second hole should be taken out a few metres away from the first test hole to a depth of 0.5m below the proposed level of the land drains. If ground water enters the second hole the TEST HAS FAILED.
- 13 If the test passes, the land drain layout is to be of the pattern recommended by the tank manufacturer, and should be installed in accordance with Fenland Building Control Technical Information Note 5 Guide to Non-Mains Foul and Surface Water Drainage.
- 14 If the test fails at any stage this shows the septic tank drainage will not function and a sealed cesspool or package treatment plant must be used.
- 15 If the test is satisfactory, a 2.7m³ septic tank (600 gallons/2700 litres) with associated land drains may be used for a single dwelling with a family of 4 persons. The size should be increased for each additional person.

WARNING

This test should be carried out carefully and every effort made to simulate the wet conditions found around every septic tank outlet. Septic tanks are relatively inexpensive compared to other forms of tank. However, you or your client should be aware that if a tank and its land drains do not function correctly in periods of wet weather it may be costly to rectify.

In periods of very dry weather you are advised to soak the small hole, at operation 4, a short while before letting the water soakaway overnight in order to simulate wetter conditions.

EXAMPLE

In the (see graph) example, the average soakage time is 263 minutes, therefore using the formula from the British Standard, the area of subsurface drainage trench is:-

$$A_t = P \times V_p \times 0.25$$

Where A_t = area of trench required
 P = number of persons served by the tank
 V_p = percolation value from soakage test

$$A_t = P \times \frac{\text{time in seconds}}{\text{depth in mm}} \times 0.25 = 4 \times \frac{263 \times 60}{250} \times 0.25 = 63.12\text{m}^2$$

Therefore, for a 600mm wide trench the total length of land drain required is 105m (63.12/0.6) which can be laid in a number of ways. The most common being a ducksfoot configuration or that detailed in the tank manufacturers literature.

The land drains should be bedded on at least 150mm of 20mm gravel which should be used to backfill well over the pipe. Polythene should then be laid over the gravel before the trench is backfilled with excavated material.

Example of Results for Soakage Test over 3 Days

