

How to carry out a percolation test.



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Introduction.

- ▶ A percolation test measures how quickly water drains away from the soil. The results from the test allow a drainage engineer to decide if a soakaway is suitable and if so, recommend the correct size.
- ▶ The testing process is simple- dig a pit to specific dimensions, fill the pit with water, and time how long the water takes to soak into the soil.
- ▶ To demonstrate to your local authority you have carried out the test correctly, we strongly advise you take time-stamped photos of each stage below.
- ▶ The following guide is broadly written to the standards of BRE365 (UK soakaway design digest.)
Rainwater Harvesting Ltd accept no liability for loss or damage whilst using this guidance. If unsure, seek specialist advice.

Make sure your site is suitable.

▶ A relatively large amount of space is required for a soakaway to be considered. The soakaway must be a minimum of;

5m away from your building

5m away from a road

2.5m away from any boundary.

▶ NB: Due to size constraints, developments in urban areas are sometimes not large enough to use a soakaway.

In many cases, sites with a **high water table** or a **heavy clay content** will also not be suitable.



If you can demonstrate your site is not suitable to accept a soakaway, contact one of our sales team who will be able to provide some alternative options.



Equipment required.

- ▶ A method of digging holes of considerable size.
- ▶ A source of water. Either a hosepipe or a water bowser. NB large volumes are required for percolation testing. Each test can use in excess of 200L.
- ▶ A tape measure.
- ▶ A stopwatch.
- ▶ (Attached) 'Percolation testing results sheet' and pen.



Percolation testing results sheet.

Site name: Example Home
 Location: Cambridgeshire
 Roof area and hard standing once completed: 130m²

Test Pit 1

Width/m	Length/m	Depth/m
0.3	1.0	1.0

Percolation Test (date/start time)		Time taken to drain from 75%-25%	
1	01/07/2018 10:30	38 mins	
2	02/07/2018 12:45	43 mins	

Test Pit 2

Width/m	Length/m	Depth/m
0.3	1.0	1.0

Percolation Test (date/start time)		Time taken to drain from 75%-25%	
1	01/07/2018 11:00	32 mins	
2	02/07/2018 13:30	34 mins	

Test Pit 3

Width	Length	Depth

Percolation Test (date/start time)		Time taken to drain from 75%-25%	
1			
2			

Excavation.

- ▶ The depth of the pit should be **30cm lower than the depth of the soakaway once installed**. If this is not known, a depth of around **1.5m** is typically sufficient.
- ▶ Dig the pit to full depth, squaring off all edges.
- ▶ **Make a note of the dimensions of your trial pits on the provided results sheet.**

NB: If the water table is hit during the excavation, a soakaway will not be suitable. Contact one of our sales team who will be able to provide some alternative options.



Prepare for testing.

- ▶ In preparation for timed testing, the test pits should be completely filled then left to drain for 24 hours.
- ▶ If the pit has not emptied completely after 24 hours, a soakaway is not suitable. Contact our team for advice on other options.



Mark a 75% and 25% line on the inside wall of the pit.

- ▶ Using the depth measurement, work out the height of 75% from base and 25% from base.
- ▶ Clearly mark the 75% and 25% by scoring the pit or using line paint.
- ▶ NB: Markings must be clear during the testing process.





Fill the pit entirely.

- ▶ Filling should be as fast as possible without causing damage to the walls.
- ▶ Have stopwatch ready for when the water level reaches the 75% mark.



Time drainage rate.

- ▶ Use a stopwatch to time how long it takes to drain from the 75% mark to the 25% mark.
- ▶ Make a note of the time taken on the sheet provided.

Percolation testing results sheet.

Site name: Example Home
Location: Cambridgeshire
Roof area and hard standing once completed: 130m²

Test Pit 1

Width/m	Length/m	Depth/m
0.3	1.0	1.85

Percolation Test (date/start time)		Time taken to drain from 75%-25%	
1	01/01/2018 10:30	38 mins	
2	02/01/2018 12:45	43 mins	

Test Pit 2

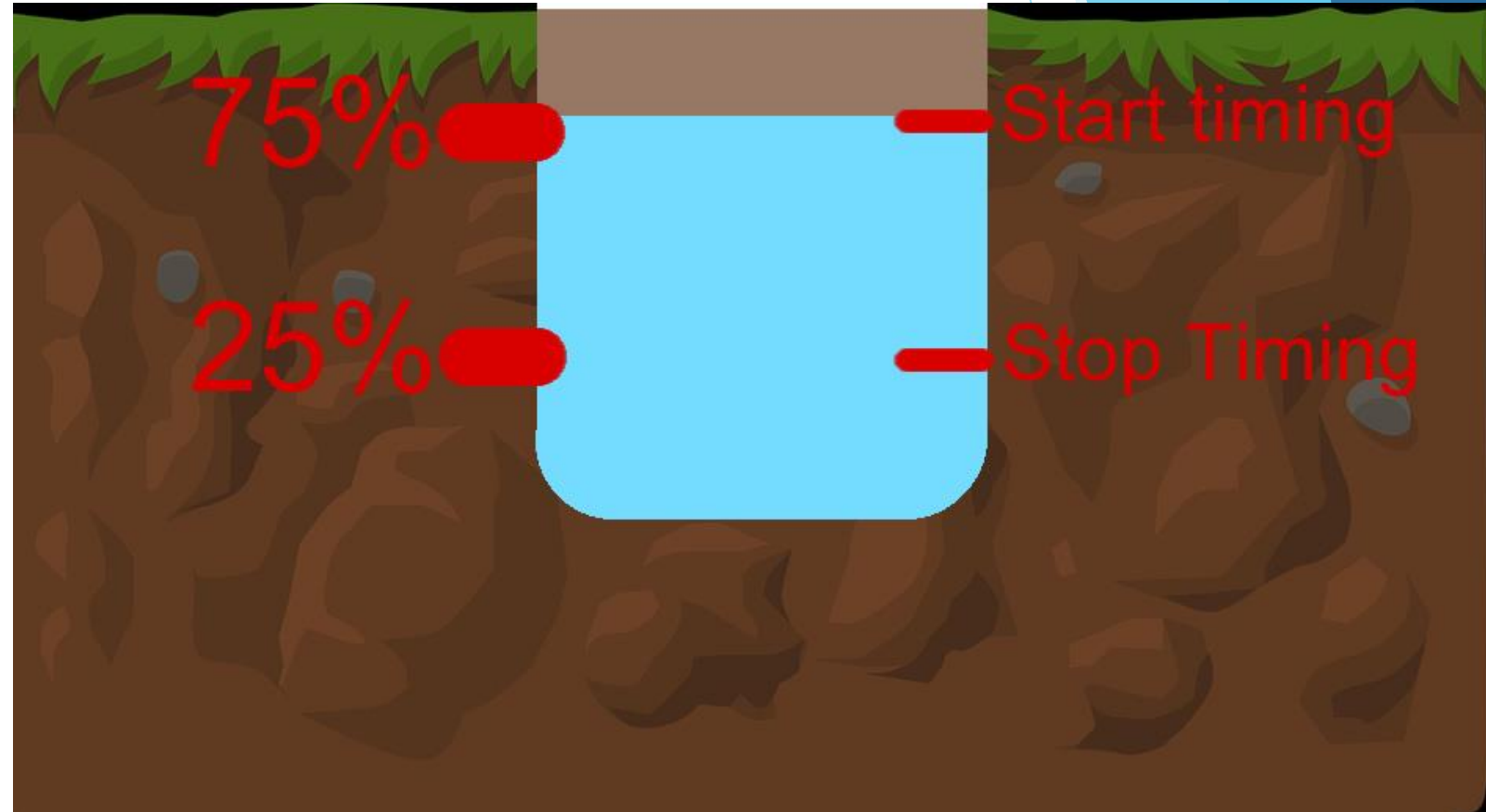
Width/m	Length/m	Depth/m
0.3	1.0	1.8

Percolation Test (date/start time)		Time taken to drain from 75%-25%	
1	01/01/2018 11:00	32 mins	
2	02/01/2018 13:30	34 mins	

Test Pit 3

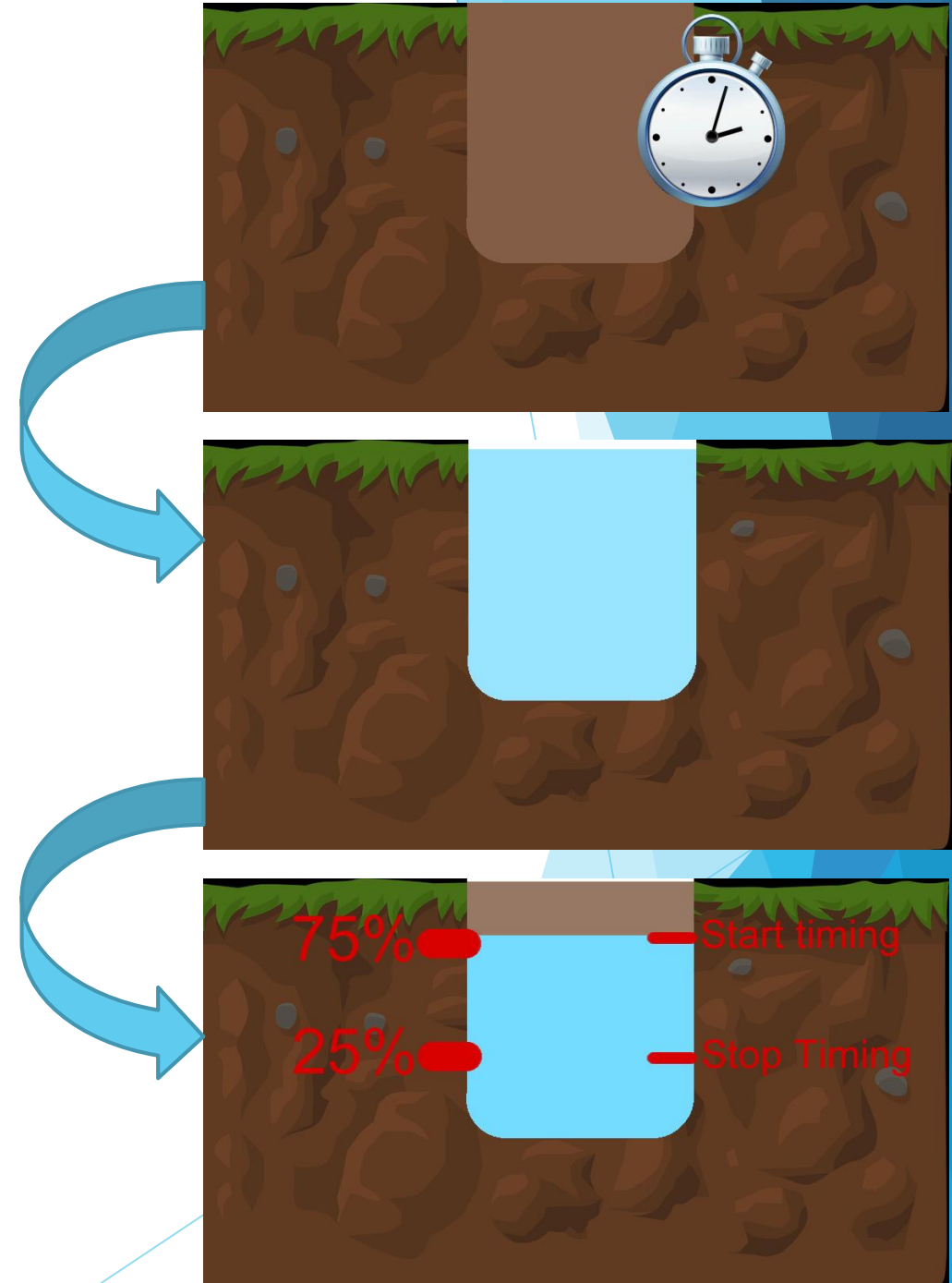
Width	Length	Depth

Percolation Test (date/start time)		Time taken to drain from 75%-25%	
1			
2			



Repeat tests.



- ▶ Before starting each test, ensure the pit is completely emptied.
- ▶ Ensure you make a note of the time taken on the sheet provided.
- ▶ A minimum of 3 tests are required over a minimum of 2 pits.
- ▶ Some authorities may request more tests or more pits. Check first with your local planning authority.



Send us the results for drainage calculations.

- ▶ Send the results sheet to info@suds-solutions.co.uk
- ▶ By providing the raw data, one of our team can convert the test pit size and drainage times into a percolation rate.
- ▶ By providing an approximate figure for the impermeable area of your development (roofs and driveways) and your geographical location, our team can provide a no obligation quotation for a soakaway.
- ▶ If you would prefer to run your own calculations, details are available in BRE365 Soakaway Design Digest.

Our company always advise the use of modular 'crate' soakaways. (See FAQ section.)



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1	
2	

FAQ-1

▶ **What is a soakaway?**

A Soakaway is an area underground where rainwater can infiltrate into the soil.

▶ **Why is proper percolation testing important?**

When building you must insist a percolation test is completed.

From our experience, it is also not uncommon for builders to build the soakaway too small in order to save some time.

This will cause it to fail. At best expect a boggy, flooded, garden. At worst you could have dirty surface water flooding your home and causing damage.

▶ **Why use 'crate' soakaways rather than a traditional rubble filled pit?**

Firstly the soakaway can be smaller in size (as there is lots of space in the crates to receive the water in comparison to broken rubble.)

Secondly, it forces your builders to build the soakaway to the correct size (see above.)

Crate soakaways are also less likely to silt up and fail, reducing costs down the line.

▶ **Who can't use a soakaway?**

Small sites that cannot meet the rules regarding the proximity of a soakaway to a development, road or boundary.

Plus areas that won't 'soak away' due to heavy clay, or high water table.

FAQ-2

- ▶ **What to do if your site cannot accept a soakaway.**
(If there is one) ask permission to connect your development to the sewer/drainage network. Due to instances of urban surface water flooding, the planning authority may stipulate the use of SuDS (Sustainable urban Drainage Systems.)
- ▶ **What are SuDS?**
SuDS systems (*sometimes referred to as 'storm attenuation'*) reduce the rate of water entering the drainage system. Thus preventing it backing up and causing flooding.
- ▶ **What systems are available?**
Controlled attenuation systems such as **Rain Activ™** are the most cost effective and simplest method to have passed by planning authorities.
Rainwater Harvesting and Rain Gardens, are considered good methods for domestic developments but can be difficult to supply the required calculations.
- ▶ **What is Rain Activ™?**
Rain Activ provides simple, cost effective, SuDS for smaller sites at a fraction of the cost of traditional systems. Stormwater is passed through a self cleaning filter and held within a tank. The water is then released slowly through a small calibrated orifice to control the flow. All planning authority calculations are provided.
Unlike any other SuDS systems, Rain Activ can be easily combined with rainwater harvesting and provide a payback.