

What is a slump test?

Slump test is the most common and simple test used to measure the workability of fresh concrete. This test is performed to check the workability or consistency of freshly mixed concrete in a specific batch.

Workability: Workability means how easily the concrete can be mixed, handled, transported, placed into position and compacted.

There are two other tests used to measure the workability of concrete; Compaction Factor Test and Vee-Bee Test. Slump test is also known as Slump Cone Test as a cone is used in the test.

The Slump Cone Test is done on a construction site before the concreting process. The Slump test gives satisfactory results for the concrete mix of medium to high workability, which may give zero slumps.



Apparatus for the Slump Cone Test

- Mould or Slump Cone with a height of 300mm, a base diameter of 200mm and a top diameter of 100mm
- Standard Tamping Rod
- Non-porous Base Plate
- Measuring Scale (tape measure)
- Scoop
- Funnel

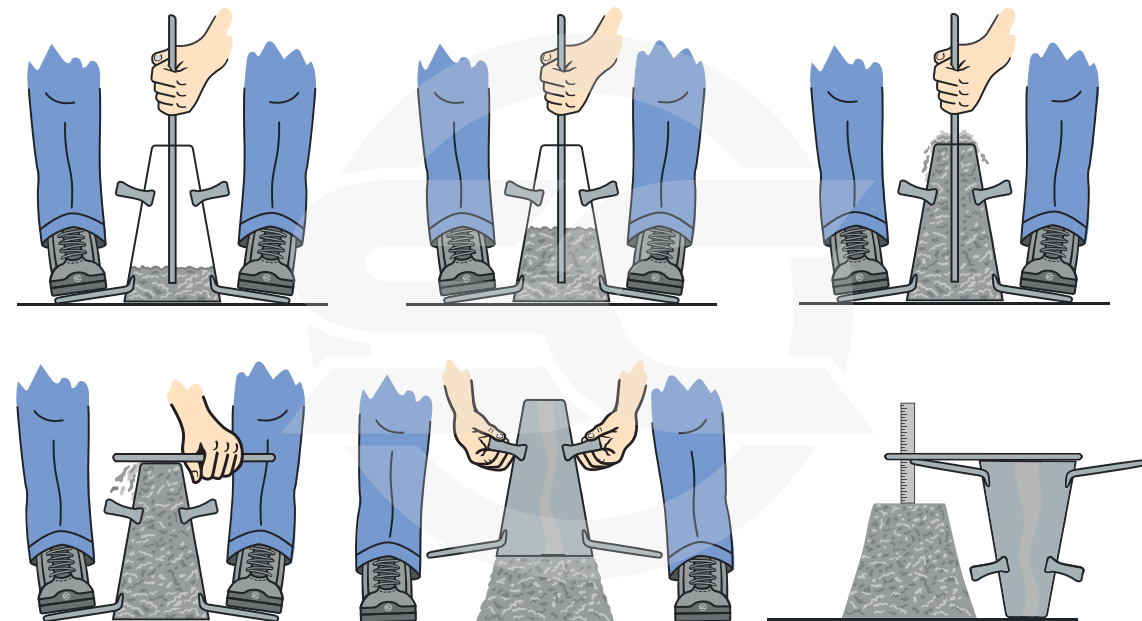


Mould oil is always handy and can be applied to the inside of the cone to ensure cleanliness.



Step by step Slump Test procedure

1. Ensure the inner surface is clean, apply mould oil via a brush or sprayer
2. Place the mould (cone) on a horizontal, non-porous base plate (stainless steel is ideal)
3. Use a funnel as wide as the cone top (optional) to pour freshly mixed concrete into three equal layers.
4. Stroke each layer 25 times with a standard tamping rod over the cross section.
5. After the process of stroking 25 times ensure the top layer is struck off level between the height of the cone and the concrete sample.
6. Remove the cone and place level next to the concrete which will have now slumped and place the tamping bar on top of the cone. Measure the distance from the top of the concrete to the underside of the bar. This will provide the degree of slump.
7. The subsidence of concrete is known as the slump and the value of slump is measured in both inches or millimetres.



Types of Slump

True Slump

The concrete mass after the test lies evenly spread without disintegration.

Zero Slump

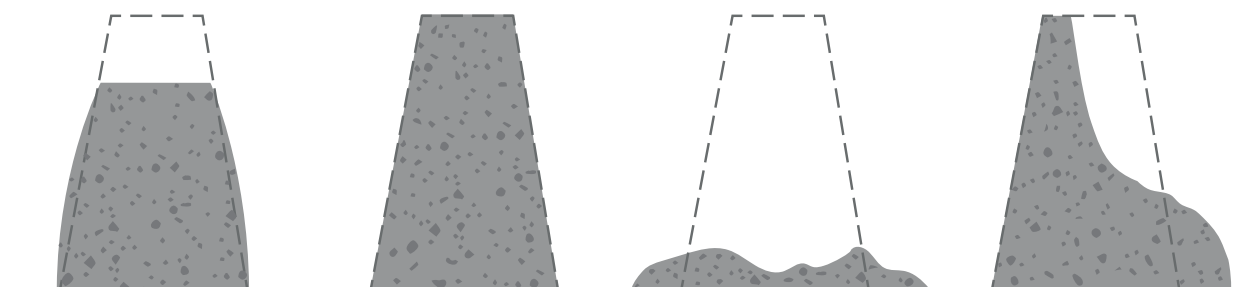
For very stiff or dry mixes that show little or no slump after removing the cone.

Collapse Slump

When the sample is collapsed due to adding excessive water.

Shear Slump

When one half of the concrete mass tends to slide away from the original mass. This can occur with lean concrete mixes.



Advantages of the Slump Test

The procedure of a Slump Test is simple to carry out on a construction site. The Slump Test can be carried out with inexpensive and portable apparatus.

Limitations of the Slump Test

The test is only suitable for concrete of medium or high workabilities, for example: having a value of between 25 and 125mm. For very stiff mixes having zero slumps, the slump test does not show any difference in concrete of different workabilities. The test is also limited to concretes with the maximum size of aggregates less than 38mm.



Consistency & Workability what does it mean?

Consistency and workability are often confused with one another. Workability means the ease with which concrete can be moved and placed in forms without segregation. Consistency, on the other hand, is the degree of wetness of concrete. Means how much wet the concrete is. Lets see the difference between consistency and workability in detail.

It is often stated that increasing water increases the workability of the concrete. However, this is not always true. Increasing water or degree of wetness doesn't always increase the workability. If water is increased then there are greater chances of segregation. If concrete is segregated then it means coarse aggregates are separated from fines. In this case as coarse aggregates settle down then it is difficult to move and place the concrete. In other words, workability of concrete decreases due to segregation. In addition to water, workability of fresh concrete also depends on size and amount of coarse and fine aggregates.

Consistency cannot measure workability but it can give indication of workability of concrete. Consistency of concrete is measured with the help of a slump test.

Feel free to contact us if you have any questions about projects you may have which concerns concrete. We can advise the best approaches for you.

