SalierGeotechnical Limited

Fresh Concrete - Slump Test

Lab Test Reference	:	300
British Standard Reference	:	BS 1881 : Part 102
Principal Apparatus	:	Slump Cone -
	:	Tamping Rod -
	:	Measuring Tape - (BS 4372/4484)

1. Preliminaries

1.1 This test is performed on site an the equipment needs to be checked as follows:-

1.2 Check that the slump cone is clean on the inside and free from hardened concrete, and that it is not deformed.

1.3 Check that the tamping rod is clean and in good order and that the measuring rule is serviceable.

2. Sampling

2.1 The test involves the measurement of concrete workability by taking a representative sample of wet concrete and measuring its slump after removal of a metal mould which has been used to form a cone of wet compacted concrete. This is usually done at concrete plants during trial mixes, on site at the time of discharge from a truck mixer or at site erected batching plants.

2.2 Sampling of the wet concrete is done by using a large scoop capable of holding about 7kg. This is passed through the falling stream of concrete on the chute of the truck mixer until filled and then emptied into a clean bucket. This should be repeated at least four times until sufficient concrete has been collected for the test. The first and last parts of the batch should be disregarded for sampling purposes.

2.3 If the concrete has been deposited in a heap, the scoop can be taken from this by sampling from within the mass.

2.4 At all stages of sampling transport and handling, the fresh concrete samples shall be protected against gaining or losing water and against excessive temperatures.

2.5 There is an alternative method of taking a sample which is used when the slump value is required on the first part of the batch before complete discharge from the truck mixer. Allow a discharge of about $0.3m^3$ and then collect six scoopfuls of concrete from the moving stream of wet concrete and place in a clean bucket. This is then remixed on a non-absorbent surface and sub-divided into two parts. Each part is tested for slump value.

2.6 The above section describes the method of sampling, the actual test method now follows:-

3. Standard Test Method

3.1 The whole sample is tipped out on to a sampling tray or similar flat non-absorbent surface, thoroughly mixed and turned over three times, following a cone of concrete each time and flattening with the blade of a shovel. Making sure the slump cone is clean and damp, this is placed on a horizontal non-absorbent surface, and by standing astride the cone and using the foot pieces it can be kept steady. The cone is filled in three layers, each about a third of the height of the cone, then tamped with the 600mm long steel tamping rod. Tamp each layer with 25 strokes of the tamping rod, the strokes being uniformly distributed over the cross-section of the layer. Tamp each layer to its full depth, ensuring that the tamping rod does not forcible strike the surface below, when tamping the first layer, and just passes through the second and top layers into the layers immediately below. Heap the concrete above the mould before the top layer is tamped. If necessary add further concrete to maintain in an excess above the top of the mould throughout the tamping operation. After the top layer has been tamped strike off the concrete level with the cone with a sawing and rolling motion of the tamping rod. With the cone still held down, clean from the surface below any concrete which may have fallen on to it or leaked from the level edge of the cone.

3.2 Remove the cone from the concrete by raising it vertically, slowly and carefully in 5 to 10 seconds. Immediately after the mould is removed, measure the slump to the nearest 5mm by using a rule to determine the difference between the height of the mould and the highest point of the specimen being tested.

3.3 The test is only valid if it yields a slump which remains substantially intact and symmetrical. If the specimen shears or collapses, take another sample and repeat the procedure.

3.4 Record the true slump to the nearest 5mm.

4. Test Report Information

4.1 (i) Date, time of completion, and location.

(ii) Method of sampling ie. standard or alternative.

(iii) Time lapse from sampling to commencement of test.

(iv) Form of slump, whether true, shear or collapse.

(v) Measured true slump.

(vi) Test operator.

(vii) Supplier of concrete.

(viii) Mix details.

(ix) Time of arrival and placement.