

GDT 36

A. Scope

For a complete list of GDTs, please see the Table of Contents.

Use this test method to determine the bulking of sand.

B. Apparatus

The apparatus consists of the following:

1. Measure: Use a 1/2 ft³ (0.0142 m³) bucket (WM-02).
2. Straightedge: Use one at least 12 in (305 mm) long (WS-13-1).
3. Ruler: (SRO285)

C. Sample Size and Preparation

Take a representative sample from the material to be tested by quartering or with a sampler.

D. Procedures

1. Fill the measure with the sand. Drop the sand into the measure with about the same force that it flows into the measuring hopper of the mixer.
2. Strike off the sand level with the top of the measure.
3. Carefully pour the measured sand into another container. Do not lose any sand.

NOTE: If you spill measured sand, start over at [Procedures, step 1](#).

4. Fill the measure with water.
5. Pour the measured sand slowly into the water. The inundated sand should occupy less volume than the dry sand.
6. Measure the volume of the inundated sand.
 - a. Extend a straightedge across the top of the measuring bucket.
 - b. Measure with a rule the distance to the top of the inundated sand.
7. Calculate the volume of the inundated sand:

$$V = 0.454 \times (11.0 - d)$$

where:

V = Volume in cubic feet (Note: multiply volume in cubic feet by 0.02832 to get volume in cubic meters)

d = Distance, in inches

E. Calculations

1. Calculate the bulking factor as follows:

where: $B = V1 \div V2$

B = Bulking factor

V1 = Volume of damp, loose sand (0.5 ft³ [0.0142 m³])

V2 = Volume of the inundated sand, cubic feet (meters)

NOTE: To obtain the equivalent volume of loose, damp sand to compacted volume, multiply the bulking factor by the volume of compacted sand to be measured.

F. Report

Report the bulking factor.