



HUMBOLDT

H-4115 Vibration Compaction Hammer

Vibration compaction set used to compact soil samples for use in tests referencing ASTM D 7382-08 methods. This method refers to the determination of the maximum dry unit weight and water content range for the effective compaction of granular soils using a vibrating hammer.

The test set includes a heavy-duty frame designed specifically for easily mounting a vibration hammer. A vibration hammer, which includes a 5.75" tamper and a 12" long mounting shank. The set also includes an 11" split, compaction mold.

The vibrating hammer test method may be performed in the field or in the laboratory.

Test Scope

1. These test methods cover the determination of the maximum dry unit weight and water content range for effective compaction of granular soils. A vibrating hammer is used to impart a surcharge and compactive effort to the soil specimen.
2. These test methods apply to soils with up to 35 %, by dry mass, passing a No. 200 (75- μ m) sieve if the portion passing the No. 40 (425- μ m) sieve is nonplastic.
3. These test methods apply to soils with up to 15 %, by dry mass, passing a No. 200 (75- μ m) sieve if the portion passing the No. 40 (425- μ m) sieve exhibits plastic behavior.
4. These test methods apply to soils in which 100 %, by dry mass, passes the 2-in. (50-mm) sieve.
5. These test methods apply only to soils (materials) that have 30 % or less, by dry mass of their particles retained on the $\frac{3}{4}$ -in. (19.0-mm) sieve.
6. These test methods will typically produce a higher maximum dry density/unit weight for the soils specified in 1.2 and 1.3 than that obtained by impact compaction in which a welldefined moisture-density relationship is not apparent. However, for some soils containing more than 15 % fines, the use of impact compaction (Test Methods D 698 or D 1557) may be useful in evaluating what is an appropriate maximum index density/unit weight.
7. Two alternative test methods are provided, with the variation being in mold size. The method used shall be as indicated in the specification for the material being tested. If no method is specified, the choice should be based on the maximum particle size of the material.



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H-4115

Vibration Compaction Hammer Set

Test Method A:

Mold: 6-in. (152.4-mm) diameter.

Material: Passing $\frac{3}{4}$ -in. (19.0-mm) sieve and consistent with the requirements of 2 and 3.

Layers: Three.

Time of Compaction per layer— 60 ± 5 s.

Test Method B:

Mold: 11-in. (279.4-mm) diameter.

Material: Passing 2-in. (50-mm) sieve and consistent with the requirements of 1.2 and 1.3.

Layers: Three.

Time of Compaction per layer— 52 ± 5 s at each of 8 locations.

Either method, A or B, can be performed with the material in an oven-dried or wet/saturated state, whichever provides the maximum dry unit weight.

8. If the test specimen contains more than 5 % by mass of oversize fraction (coarse fraction) and the material will not be included in the test, corrections must be made to the unit weight and water content of the test specimen or to the appropriate field in-place density test specimen using Practice D 4718.

9. This test method causes a minimal amount of degradation (particle breakdown) of the soil. When degradation occurs, typically there is an increase in the maximum unit weight obtained, and comparable test results may not be obtained when different size molds are used to test a given soil. For soils where degradation is suspected, a sieve analysis of the specimen should be performed before and after the compaction test to determine the amount of degradation.

10. Units—The values stated in either SI units or inch-pound units are to be regarded separately as standard. The values stated in each system may not be exact equivalents; therefore, each system shall be used independently of the other. Combining values from the two systems may result in non-conformance with the standard.

Vibration Compaction Hammer Set— H-4115

Frame for Vibration Compaction Hammer— H-4115.2

Frame Only (does not include hammer or mold)

Vibration Compaction Hammer with Tamper— H-4115.3

Includes Hammer, 5.75" Tamper and 12" long mounting Shank

11-Inch, Split Compaction Mold— H-4115.4

For use with Vibration Compaction Mold Set



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