
ATTI - PERFORMANCE CHECKLIST

AASHTO T99-22 – Moisture-Density Relations of Soils Using a 5.5lb Rammer and a 12-in drop.

Sect. **Sample Method A Manual Rammer**

- 4.1 1. Obtain a representative sample. Sample must be large enough that when the oversized particles are removed 3 kg (7lb) or more remains.
- 4.2 2. Dry the sample until it becomes friable under a trowel. Drying by air or a drying apparatus not exceeding 60°C (140°F).
- 4.3 3. Sieve the soil over the #4 sieve. When the sample has oversized particles retained on the #4 sieve, refer to the Annex A1.
- 4.4 4. Reduce the sample to a mass of 3 kg (7lb) or more according to R76.
- 5.1 5. **Procedure:** Determine the mass of the mold and base plate to the nearest 1 g (0.005lb).
- 5.2 6. Thoroughly mix the representative sample with sufficient water to dampen it to approximately four to eight percentage points below optimum moisture.
- 5.3 7. Form a specimen by compacting the soil in the 4 inch mold in three approximately equal layers to give a compacted depth of about 125 mm (5 in). Prior to compaction, place the loose soils into the mold assembly and spread into a layer of uniform thickness. Lightly tamp the soil prior to compaction until it is not in a loose or fluffy state, using the manual compaction rammer or other device with a 50mm (2") diameter face. Following compaction of each of the first two layers, any soil adjacent to the mold wall that has not been compacted or extends above the compacted surface shall be trimmed, and evenly distributed on the top layer. Compact each layer by 25 uniformly distributed blows from the rammer dropping free from a height of 305mm (12in) above the elevation of the soil. During compaction the mold assembly shall rest firmly on a dense, uniform, rigid and stable foundation or base.
- 5.3.1 8. Following compaction, remove the collar; carefully trim the compacted soil even with the top of the mold by means of the straightedge, and determine the mass of the mold, baseplate and moist soil to the nearest 1 gram (0.005 lb.).

- 5.4 9. Detach the base plate and remove the material from the mold. Obtain a representative sample of the material by slicing vertically through the center of material and removing one of the cut faces or from the center of the pile if the material falls apart. Weigh the sample immediately. Determine the moisture content according to T265.
- 5.5 10. Thoroughly break up the remaining portion of the molded specimen until it will pass through a #4 sieve as judged by eye, and add to the remaining portion of the sample being tested. Add water in sufficient amount to increase the moisture content of the soil 1 to 2 percentage points (water content increments should not exceed 2.5 % except when heavy clay soils or organic soils exhibiting flat curves are encountered; the water content increment may be increased to a maximum of 4%) and repeat the procedure for each increment of water added. When the series of determinations indicate a decrease or no change in the wet unit mass per cubic meter (cubic foot), perform one more determination such that there is a minimum of two determinations over optimum moisture.
- 5.5.1 11. One additional determination over optimum is sufficient for non-cohesive, drainable soils.
- 5.5.2 12. In instances where the soil material is fragile in character and will be reduced significantly in grain size by repeated compaction, a separate and new sample shall be used in each compaction test.

Sect. **Method D**

- 8.1 - 13. Obtain a representative sample. The sample must be large enough that when oversized (retained on the 19.0 mm (3/4 in) sieve) particles are removed 11 kg (25lb.) or more of the sample remain.
- 11.1 14. Form a specimen by compacting the prepared soil in the 152.4mm (6 in.) mold in three layers to give a total depth of about 125mm (5 in.), each layer being compacted by 56 uniformly distributed blows.