

**Standard Test Method for Laboratory Compaction Characteristics of Soil Using Modified Effort
ASTM D1557 – 12e1**

APPARATUS / SECTION 6

1. Mold Assembly: As per clause 6.1? _____
 - a. 4 in. Mold:
 - Inside diameter / average 101.6 ± 0.4 mm (4.000 ± 0.016 -in.)? _____
 - Height / 116.4 ± 0.5 mm (4.584 ± 0.18 in.)? _____
 - Volume / 943 ± 14 cm³ (0.0333 ± 0.0005 ft³)? _____
 - b. 6 in. Mold:
 - Inside diameter / average 152.4 ± 0.7 mm (6.000 ± 0.026 -in.)? _____
 - Height / 116.4 ± 0.5 mm (4.584 ± 0.18 in.)? _____
 - Volume / 2124 ± 25 cm³ (0.075 ± 0.0009 ft³)? _____
2. Rammer: As per clause 6.2
 - Shall free fall 457.2 ± 1.3 mm (18 ± 0.05 in.)? _____
 - Mass 4.5364 ± 0.009 kg (10.0 ± 0.2 lbf)? _____
 - Strike face of hammer shall be planar and circular? _____

Note: Please note exceptions in clause 6.2 and Note 7

IN ADDITION:

- a. Manual Rammer:
 - Guide sleeve with at least 4 vent holes in accordance with clause 6.2.1? _____
- b. Mechanical Rammer-Circular Face:
 - Provides complete and uniform coverage of specimen surface? _____
 - Shall meet the calibration requirements of ASTM D2168? _____
 - Clearance between rammer and inside surface of mold at its smallest dia. shall be 2.5 ± 0.8 mm (0.10 ± 0.03 in.)? _____

or

Mechanical Rammer-Sector Face (for 152.4 mm (6.0 in.) mold):

 - Refer to clause 6.2.2.1 for details? _____
3. Sample Extruder: A device capable of extruding compacted specimens from the mold? _____
4. Balance: Class GP5 as specified in D4753 for 1-g readability? _____
5. Sieves: 19.0 mm, 9.5 mm and 4.75 mm / as per ASTM E11? _____

**Standard Test Method for Laboratory Compaction Characteristics of Soil Using Modified Effort
ASTM D1557 – 12e1**

APPARATUS / SECTION 6 (CONTINUED)

6. Oven:

- Capable of maintaining a uniform temperature of $110 \pm 5.0^{\circ}\text{C}$ ($230 \pm 9^{\circ}\text{F}$)?
- Thermostatically controlled?

7. Straight Edge:

- Made of metal not less than 254 mm (10 in.) in length?
- Length machined straight to a tolerance of ± 0.1 mm (0.005 in.)?
- Scraping Edge **beveled** if thickness greater than 3 mm (1/8 in.)?.....

STANDARDIZATION/CALIBRATION / SECTION 7

- 1. Balance, molds, manual / mechanical hammers calibrated in accordance with Section 7?

PREPARATION OF APPARATUS / SECTIONS 1 & 9 (In accordance with Test Method A, B or C)

Method A?

- Material - P/4.75 mm sieve
- Mold - 101.6 mm
- Number of layers to be compacted - 5
- Blows per layer - 25
- Use and other Uses - Refer to clause 1.3.1.5 and 1.3.1.6

Method B?

- Material - P/9.5 mm sieve
- Mold - 101.6 mm
- Number of layers to be compacted - 5
- Blows per layer - 25
- Use and other Uses - Refer to clause 1.3.2.5 and 1.3.2.6

Method C?

- Material - P/19.0 mm sieve
- Mold - 152.4 mm
- Number of layers to be compacted - 5
- Blows per layer - 56
- Use - Refer to clause 1.3.3.5
- 1.3.4 The 152.4 mm mold is not to be used for Methods A or B

**Standard Test Method for Laboratory Compaction Characteristics of Soil Using Modified Effort
ASTM D1557 – 12e1**

PROCEDURE / SECTION 10

- a. Compaction mold selected in accordance with Method A, B, or C?
- b. Soil specimen prepared in accordance with:
 - Moist Preparation Method?
 - Dry Preparation Method?

Moist Preparation Method (without previously drying the sample)

- Moist material passed through the 19.0 mm, 9.5 mm or 4.75 mm depending on Method used (Method A, B or C)?
- Determined moisture content of processed material?
- Prepared 5 test samples possessing water contents that bracket the estimated optimum water content?

Approximately 2.3 kg (5-lb) each using Method A or B
Approximately 5.9 kg (13-lb) each using Method C

- 1st trial sample prepared as close as possible to the optimum moisture content?
- Two samples prepared on drier side of optimum and 2 on wetter side?
- Moisture content of each specimen to indicate increments of approximately 2%
- Specimens that require drying to meet the incremental criteria can be by air drying at ambient temperatures or using an oven set at a temperature that does not exceed 60° C (140° F)?
- Each specimen thoroughly mixed and allowed to cure (If required) in a separate container in accordance with ASTM D 1557 Table 2?

Dry Preparation Method

- Reduce moisture content by air drying at ambient temperatures or using an oven set at a temperature that does not exceed 60° C (140° F)?
- Dried until sample becomes friable?
- Pass material through the 19.0 mm, 9.5 mm or 4.75 mm depending on Method used (Method A, B or C)?
- Prepared 5 test samples possessing water contents that bracket the estimated optimum water content?
- 1st trial sample prepared as close as possible to the optimum moisture content?
- Two samples prepared on drier side of optimum and 2 on wetter side?
- Moisture content of each specimen to indicate increments of approximately 2%
- Each specimen thoroughly mixed and allowed to cure (If required) in a separate container in accordance with ASTM D 1557 Table 2?

**Standard Test Method for Laboratory Compaction Characteristics of Soil Using Modified Effort
ASTM D1557 – 12e1**

PROCEDURE / SECTION 10 (CONTINUED)

3. Compaction (Same for Moist and Dry Preparation Methods)

- Mold assembly resting on rigid foundation? _____
- Compacted specimen in approximately 5 equal layers? _____
- Each layer compacted with the specified number of blows? _____
- Compacted material in 5th layer does not exceed 6 mm (¼ in.) above the top of the mold? _____

Note: specimen shall be discarded if compacted third layer extends below the top of the compaction mold.

- After compaction, carefully removed collar and base plate from mold? _____

Note: Base plate may have to remain if soil is too wet or dry to be removed. Volume of mold must be recalibrated if base plate is to remain attached.

- Carefully trimmed the excess material above the mold with the straight edge to form a plane surface? _____
- Fill any voids on the surface, by pressing in any excess materials with the fingers and then repeat the trimming process? _____
- Determined mass of specimen, mold and base plate if necessary and record to the nearest g? _____
- Obtained a moisture sample from compacted specimen? _____
 - 1. Used entire sample? _____
 - 2. Representative portion – slicing axially through centre to obtain an approximately 500 g of material? _____

CALCULATIONS / SECTION 11

COMMENTS
