
Standard Method of Test for

**Resistance R-Value and Expansion
Pressure of Compacted Soils**

AASHTO Designation: T 190-14 (2018)

**Technical Subcommittee: 1a, Soil and Unbound Recycled
Materials**

Release: Group 3 (July)

ASTM Designation: D2844-07



**American Association of State Highway and Transportation Officials
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1. SCOPE

- 1.1. This method covers the procedure for testing both treated and untreated laboratory compacted soils or aggregates with the stabilometer and expansion pressure devices to obtain results indicative of performance when placed in the base, subbase, or subgrade of a road subjected to traffic.
- 1.2. The values stated in SI units are to be regarded as the standard.

2. REFERENCED DOCUMENTS

- 2.1. *AASHTO Standard:*
- M 231, Weighing Devices Used in the Testing of Materials
- 2.2. *ASTM Standards:*
- E4, Standard Practices for Force Verification of Testing Machines
 - E11, Standard Specification for Woven Wire Test Sieve Cloth and Test Sieves

3. APPARATUS

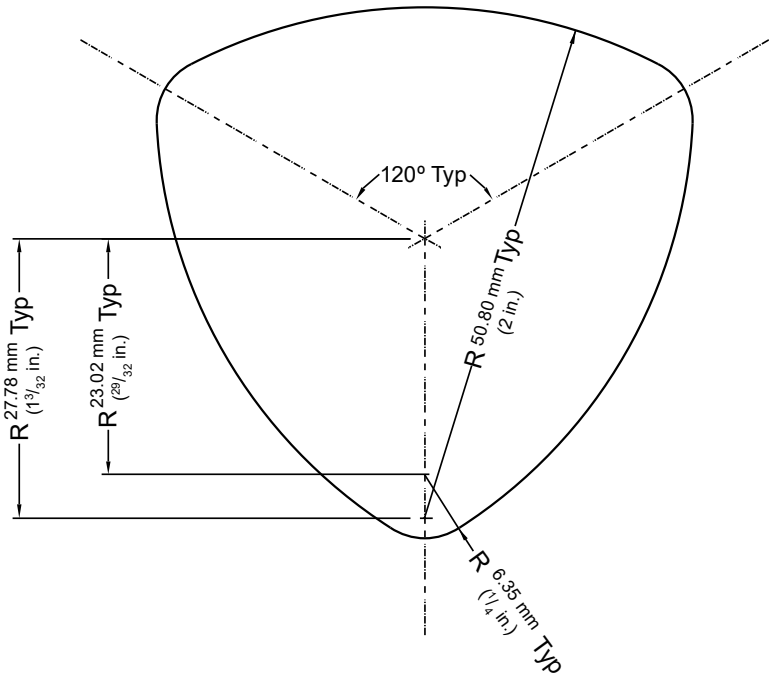
- 3.1. *Kneading Compactor* capable of applying an average contact pressure of 2413 ± 110 kPa (350 ± 16 psi) to the tamper foot shown in Figure 1 and with provisions for maintaining this pressure during changes in sample height. The load-time trace shall be free of “chatter” or evidence of impact-associated changes in slope. The rise time for application of foot pressure, in the range from 241 to 2068 kPa (35 to 300 psi), shall not be less than 0.07 nor more than 0.20 s. The dwell time, measured at 2068 kPa (300 psi) foot pressure, shall not be less than 0.15 nor more than 0.45 s. The pressure-release or removal time shall not be greater than 0.60 s.
- 3.1.1. The compactor shall include a counter or timer for measuring the number of tamps applied to a specimen and a mold holder, for use in compacting specimens, that rotates equally between tamps to give five to seven tamps per revolution of the mold. The holder shall firmly restrain the mold during compaction. The base of the mold holder shall have a metal plate 100.8 mm ($3^{31/32}$ in.) in diameter and 12.7 mm ($1/2$ in.) high to which is cemented a rubber disk having a diameter of

100.0 mm ($3^{15}/_{16}$ in.) and a height of 3.2 mm ($1/8$ in.). The plate shall be an integral part of the base of the mold holder. The compactor shall also include a trough for feeding the sample into the mold in 20 increments (Figure 2). Troughs with a semicircular cross section of 3871 mm² (6 in.²) in area and 508 mm (20 in.) long have proven satisfactory.

- 3.2.
- Compression Testing Machine

with a minimum capacity of 45 kN (10,000 lbf) and satisfying the requirements of ASTM E4.
- 3.3.
- Mold

101.6 ± 0.05 mm (4 ± 0.002 in.) inside diameter by 127.00 ± 0.20 mm (5 ± 0.008 in.) high.
(See Figure 3 for surface roughness.)



Dimensional Limits, mm (in.)

	Min	Max
Distance across Foot		
3 Measurements	51.89	52.89
120° Apart	(2.042)	(2.082)

mm	in.
50.80 ± 0.05	2.00 ± 0.002
6.35 ± 0.51	1/4 ± 0.020
6.35	1/4
50.80	2
22.22	7/8

Figure 1—Tamper Foot for Kneading Compactor