

Standard Test Method for Resistance *R*-Value and Expansion Pressure of Compacted Soils¹

This standard is issued under the fixed designation D 2844; the number immediately following the designation indicates the year of original adoption or, in the case of revision, the year of last revision. A number in parentheses indicates the year of last reapproval. A superscript epsilon (ε) indicates an editorial change since the last revision or reapproval.

1. Scope *

1.1 This test 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 inch-pound units are to be regarded as the standard.

1.3 *This standard does not purport to address all of the safety concerns, if any, associated with its use. It is the responsibility of the user of this standard to establish appropriate safety and health practices and determine the applicability of regulatory limitations prior to use.*

2. Referenced Documents

2.1 ASTM Standards:

C 670 Practice for Preparing Precision and Bias Statements for Test Methods for Construction Materials²

E 4 Practices for Force Verification of Testing Machines³

E 11 Specification for Wire-Cloth Sieves for Testing Purposes⁴

2.2 AASHTO Documents:

T 190 Test Method for Resistance *R*-Value and Expansion Pressure of Compacted Soils⁵

3. Significance and Use

3.1 This test method is used to measure the potential strength of subgrade, subbase, and base course materials for use in road and airfield pavements. The *R*-value is used by some agencies as a criteria for acceptance of aggregates for base course and bituminous courses.

3.2 The expansion pressure testing has been used in conjunction with the *R*-value test to determine cover requirements (thickness) and construction controls to reduce pavement

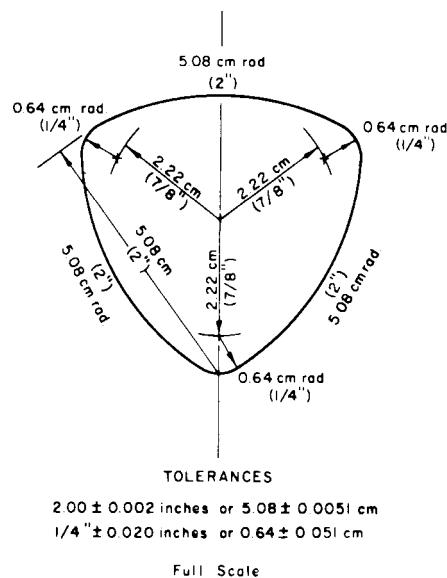


FIG. 1 Tamper Shoe for Kneading Compactor

distortion from expansive subgrade soils.

4. Apparatus

4.1 *Kneading Compactor*, capable of applying an average contact pressure of 350 ± 16 psi (2410 ± 110 kPa) to the tamper foot shown in Fig. 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 35 to 300 psi (240 to 2070 kPa), shall not be less than 0.07 nor more than 0.20; The dwell time, measured at 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.

4.1.1 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 5 to 7 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 $3 \frac{31}{32}$ in. (100.8 mm) in diameter and 0.5 in. (12.7 mm) high to which is cemented a rubber disk having a diameter of $3 \frac{15}{16}$ in. (100.0 mm) and a height of $\frac{1}{8}$ in. (3.2 mm). The plate

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² Annual Book of ASTM Standards, Vol 04.02.

³ Annual Book of ASTM Standards, Vol 03.01.

⁴ Annual Book of ASTM Standards, Vol 14.02.

⁵ Available from American Association of State Highway and Transportation Officials, 444 N. Capitol St., NW, Suite 225, Washington, DC 20001.