



Designation: ~~D4792 – 00 (Reapproved 2006)~~ D4792/D4792M – 13

Standard Test Method for Potential Expansion of Aggregates from Hydration Reactions¹

This standard is issued under the fixed designation ~~D4792;D4792/D4792M~~; 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 determination of potential volume expansion of dense graded compacted aggregates that contain components susceptible to hydration and consequent volume increase, such as the free calcium and magnesium oxides that occur in some industrial by-products.

1.2 The values stated in either SI units or inch-pound units are to be regarded separately as the standard. The inch-pound units in parentheses are for information purposes only; 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.

NOTE 1—Sieve size is identified by its standard designation in Specification E11. The alternative designation given in parentheses is for information only and does not represent a different standard sieve size.

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:²

[C702 Practice for Reducing Samples of Aggregate to Testing Size](#)

[D75 Practice for Sampling Aggregates](#)

[D698 Test Methods for Laboratory Compaction Characteristics of Soil Using Standard Effort \(12 400 ft-lbf/ft³ \(600 kN-m/m³\)\)](#)

[D1883 Test Method for CBR \(California Bearing Ratio\) of Laboratory-Compacted Soils](#)

[D2940 Specification for Graded Aggregate Material For Bases or Subbases for Highways or Airports](#)

[E11 Specification for Woven Wire Test Sieve Cloth and Test Sieves](#)

3. Summary of Test Method

3.1 This test method consists of measuring the volume expansion of compacted specimens following the general procedures of Test Method [D1883](#). Compaction is based on maximum density determination using Test Methods [D698](#). To accelerate the hydration reaction, specimens are stored in water at $70 \pm 3^\circ\text{C}$ (~~158~~158 \pm ~~5~~5 $^\circ\text{F}$) for a minimum of 7 days.

4. Significance and Use

4.1 This test method provides a procedure for determining the compliance of steel slags and other materials with specifications, such as Specification [D2940](#), that limit permissible expansion of base and subbase aggregates containing components subject to hydration.

4.2 This test method can also be used to evaluate the effectiveness of aging or other treatments for reducing the expansive potential of such materials.

4.3 Test results have not been correlated with field performance, and values obtained do not necessarily indicate expansion that may occur in service conditions.

¹ This test method is under the jurisdiction of ASTM Committee [D04](#) on Road and Paving Materials and is the direct responsibility of Subcommittee [D04.51](#) on Aggregate Tests.

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² For referenced ASTM standards, visit the ASTM website, www.astm.org, or contact ASTM Customer Service at service@astm.org. For *Annual Book of ASTM Standards* volume information, refer to the standard's Document Summary page on the ASTM website.