



Designation: C 1245 – 93

Standard Test Method for Determining Bond Strength Between Hardened Roller Compacted Concrete and Other Hardened Cementitious Mixtures (Point Load Test)¹

This standard is issued under the fixed designation C 1245; 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 reappraisal. A superscript epsilon (ϵ) indicates an editorial change since the last revision or reappraisal.

1. Scope

1.1 This test method is intended for testing roller-compacted concrete specimens and covers determination of the relative bond between layers of hardened concrete in multiple-lift forms of construction. It is applicable to all types of layered concrete construction involving an upper layer of concrete or mortar bonded to an underlying layer of concrete or mortar where the total depth is sufficient to meet the minimum specimen length and diameter requirements of this test method.

NOTE 1—This test method does not provide tensile strength results of the material tested.

1.2 The values stated in inch-pound units are to be regarded as the standard. The values given in parentheses are for information only.

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 39 Test Method for Compressive Strength of Cylindrical Concrete Specimens²
- C 42 Test Method for Obtaining and Testing Drilled Cores and Sawed Beams of Concrete²
- C 192 Practice for Making and Curing Concrete Test Specimens in the Laboratory²
- C 670 Practice for Preparing Precision and Bias Statements for Test Methods for Construction Materials²
- C 1042 Test Method for Comparing Concrete on the Basis of the Bond Developed with Reinforcing Steel²
- E 18 Test Methods for Rockwell Hardness and Rockwell

Superficial Hardness of Metallic Materials³

3. Significance and Use

3.1 Bond strength is determined using drilled cores or cast cylindrical specimens in which the bond surface is essentially normal to the longitudinal axis at approximately the mid-length of the specimen. A splitting tensile stress normal to the bond surface is produced by point-loading the specimen across a diameter at that surface.

NOTE 2—Test results are not affected significantly by specimen surfaces obtained with normal coring operations. The ends of cores need not be trimmed.

3.2 This test method may be used either for laboratory investigation by casting individual composite cylinders or by coring prototype structures or assemblies (Test Method C 42).

4. Apparatus

4.1 *Testing Machine*—The testing machine shall conform to the requirements of Test Method C 39 and may be of any type of sufficient capacity to provide the rate of loading prescribed in 6.3.

4.2 *Testing Apparatus*—The testing apparatus shall be constructed of steel and allow the testing of both 4 and 6-in. (101 and 152-mm) diameter specimens. The test schematic is given in Fig. 1. The testing apparatus shall permit the positioning of a specimen such that the joint of the bonded surfaces is oriented as closely as possible parallel to the direction of loading. A photograph of the test configuration is given in Fig. 2. Figures 3 through 10 Figs. 3-10 provide the information necessary to construct alignment devices for 4 and 6-in. (101 and 152-mm) diameter specimens. Anvil rods (Fig. 4 and Fig. 6) shall have a hardness of not less than 55 HRC (Rockwell hardness number of 64 on the C scale) and shall be plane on the bearing surfaces to within ± 0.001 in. (0.025 mm). The alignment post shall ensure that the anvil rods are kept parallel to each other in the vertical plane. The system is easily adaptable to most testing machines.

¹ This test method is under the jurisdiction of ASTM Committee C-9 on Concrete and Concrete Aggregates and is the direct responsibility of Subcommittee C09.45 on Roller Compacted Concrete.

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² *Annual Book of ASTM Standards*, Vol 04.02.

³ *Annual Book of ASTM Standards*, Vol 03.01.