ADOPTION NOTICE

ASTM-C805, "CONCRETE, HARDENED, REBOUND NUMBER OF", was adopted on 23-MAY-94 for use by the Department of Defense (DoD). Proposed changes by DoD activities must be submitted to the DoD Adopting Activity: Commander, Defense Supply Center Philadelphia, ATTN: DSCP-ILEA, 700 Robbins Avenue, Philadelphia, PA 19111-5096. Copies of this document may be purchased from the American Society for Testing and Materials 100 Barr Harbor Drive West Conshohocken, Pennsylvania, United States, 19428-2959. http://www.astm.org/

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Standard Test Method for Rebound Number of Hardened Concrete[1]

This standard is issued under the fixed designation C 805; 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.

This specification has been approved for use by agencies of the Department of Defense.

1. Scope

1.1 This test method covers the determination of a rebound number of hardened concrete using a spring-driven steel hammer.

1.2 The values stated in SI 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:*

E 177 Practice for Use of the Terms Precision and Bias in ASTM Test Methods[2]

3. Summary of Test Method

3.1 A steel hammer impacts with a predetermined amount of energy, a steel plunger in contact with a surface of concrete, and the distance that the hammer rebounds is measured.

4. Significance and Use

4.1 This test method may be used to assess the in-place uniformity of concrete, to delineate regions in a structure of poor quality or deteriorated concrete, and to estimate in-place strength development.

4.2 To use this test method to estimate strength requires establishing a relationship between strength and rebound number. The relationship shall be established for a given concrete mixture and given apparatus. The relationship shall be established over the range of concrete strength that is of interest. To estimate strength during construction, establish the relationship by performing rebound number tests on molded specimens and measuring the strength of the same or companion molded specimens. To estimate strength in an existing structure, establish the relationship by correlating rebound numbers measured on the structure with the strengths of cores taken from corresponding locations. See ACI 228. 1R[3] for additional information on developing the relationship and on using the relationship to estimate in-place strength.

4.3 For a given concrete mixture, the rebound number is affected by factors such as moisture content of the test surface, the method used to obtain the test surface (type of form material or type of finishing), and the depth of carbonation. These factors need to be considered in preparing the strength relationship and interpreting test results.

4.4 Because of the inherent uncertainty in the estimated strength, this test method is not intended as the basis for acceptance or rejection of concrete.

5. Apparatus

5.1 *Rebound Hammer*, consisting of a spring-loaded steel hammer which when released strikes a steel plunger in contact with the concrete surface. The spring-loaded hammer must travel with a consistent and reproducible velocity. The rebound distance of the steel hammer from the steel plunger is measured on a linear scale attached to the frame of the instrument.

NOTE 1—Several types and sizes of rebound hammers are commercially available to accommodate testing of various sizes and types of concrete construction.

5.2 *Abrasive Stone*, consisting of medium-grain texture silicon carbide or equivalent material.

5.3 *Test Anvil*, Approximately 150-mm (6-in.) diameter by 150-mm (6-in.) high cylinder made of tool steel with an impact area hardened to Brinell 500 or Rockwell 52 C. An instrument guide is provided to center the rebound hammer over impact area and keep the instrument perpendicular to the surface.

6. Test Area

6.1 *Selection of Test Surface*—Concrete members to be tested shall be at least 100 mm (4 in.) thick and fixed within a structure. Smaller specimens must be rigidly supported. Areas exhibiting honeycombing, scaling, or high porosity should be avoided. The form material against which the concrete was placed should be similar (Note 2). Troweled surfaces generally

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[1] This test method is under the jurisdiction of ASTM Committee C-9 on Concrete and Concrete Aggregatesand is the direct responsibility of Subcommittee C09.64on Nondestructive Testing of Concrete.

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[2] *Annual Book of ASTM Standards*, Vol 14.02.

[3] ACI 228. 1R-89, "In-Place Methods for Determination of Strength of Concrete," *ACI Manual of Concrete Practice-Part 2, 1994*, American Concrete Institute, 38800 Country Club Drive, Farmington Hills, MI 48331.