



Standard Test Method for Evaluation of Durability of Rock for Erosion Control Under Wetting and Drying Conditions¹

This standard is issued under the fixed designation D 5313; 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 procedures for evaluating the durability of rock for erosion control when exposed to wetting and drying conditions.

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:²

- D 653 Terminology Relating to Soil, Rock, and Contained Fluids
- D 2216 Test Method for Laboratory Determination of Water (Moisture) Content of Soil and Rock by Mass
- D 3740 Practice for Minimum Requirements for Agencies Engaged in the Testing and/or Inspection of Soil and Rock as Used in Engineering Design and Construction
- D 4753 Specification for Evaluating, Selecting, and Specifying Balances and Scales for Use in Soil, Rock, and Construction Materials Testing
- D 4992 Practice for Evaluation of Rock to be Used for Erosion Control
- D 5121 Practice for the Preparation of Rock Slabs for Durability Testing
- D 6026 Practice for Using Significant Digits in Calculating and Reporting Geotechnical Test Data

3. Terminology

3.1 For definitions of terms used in this guide, see Terminology D 653.

¹ This test method is under the jurisdiction of ASTM Committee D18 on Soil and Rock and is the direct responsibility of Subcommittee D18.17 on Rock for Erosion Control.

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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.

4. Significance and Use

4.1 Rock used for erosion control may consist of several types, depending on potential use. One type may be armor stone weighing from one to three tons or breakwater stone weighing three to twenty tons placed along shorelines or in jetties to protect the shoreline from erosion due to the action of large waves. Another type may be riprap usually weighing less than a ton and placed along river banks or on the slopes of dams to prevent erosion due to run-off, wave action or stream-flow. A third type may be gabion-fill weighing less than 22 kg (50 lb) and placed in baskets of wire or other suitable material. These baskets are then tied together to form an integral structure designed to resist erosion along stream banks and around bridge piers. No matter what form it takes, rock for erosion control consists of individual pieces of natural stone. The ability of these individual pieces of stone to resist deterioration due to weathering action affects the stability of the integral placement of rock for erosion control and hence, the stability of construction projects, shorelines, and stream-banks.

4.2 This test method is designed to determine the effects on the individual pieces of rock for erosion control of wetting and drying action and the resistance of the rock to deterioration. This test method was developed to be used in conjunction with additional test methods listed in Practice D 4992. This test method does not provide an absolute value but rather an indication of the resistance to wetting and drying; therefore, the results of this test method are not to be used as the sole basis for the determination of rock durability.

NOTE 1—The quality of the result produced by this standard is dependant upon the competence of the personnel performing it, and the suitability of the equipment and facilities used. Agencies that meet the criteria of Practice D 3740 are generally considered capable of competent and objective testing and sampling. Users of this standard are cautioned that compliance with Practice D 3740 does not in itself assure reliable results. Reliable results depend on many factors; Practice D 3740 provides a means of evaluation some of those factors.

5. Apparatus

5.1 *Diameter Circular Diamond Saw*, 350-mm (14-in.) capable of sawing rock, of the type required for Practice D 5121.

*A Summary of Changes section appears at the end of this standard.