



Designation: D5240 – 04

Standard Test Method for Testing Rock Slabs to Evaluate Soundness of Riprap by Use of Sodium Sulfate or Magnesium Sulfate¹

This standard is issued under the fixed designation D5240; 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 test procedures for evaluating the soundness of riprap by the effects of a sodium or magnesium sulfate solution on slabs of rock.

1.2 The values stated in either SI or 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:*²

[C88 Test Method for Soundness of Aggregates by Use of Sodium Sulfate or Magnesium Sulfate](#)

[C295 Guide for Petrographic Examination of Aggregates for Concrete](#)

[D653 Terminology Relating to Soil, Rock, and Contained Fluids](#)

[D3740 Practice for Minimum Requirements for Agencies Engaged in Testing and/or Inspection of Soil and Rock as Used in Engineering Design and Construction](#)

[D4753 Guide for Evaluating, Selecting, and Specifying Balances and Standard Masses for Use in Soil, Rock, and Construction Materials Testing](#)

[D4992 Practice for Evaluation of Rock to be Used for Erosion Control](#)

[D5121 Practice for Preparation of Rock Slabs for Durability Testing](#)

[D6026 Practice for Using Significant Digits in Geotechnical Data](#)

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.

3. Terminology

3.1 Definitions of words are in accordance with Terminology [D653](#).

4. Significance and Use

4.1 Rock riprap is composed of pieces of natural rock that are placed on construction projects to minimize the effects of erosion. The ability of riprap to withstand deterioration from weathering affects both the effectiveness of the project and its cost. The sodium sulfate or magnesium sulfate soundness test is one method by which to estimate qualitatively the durability of rock under weathering conditions.

NOTE 1—The quality of results produced by this standard is dependent on the competence of the personnel performing it and suitability of the equipment and facilities used. Agencies that meet the criteria of Practice [D3740](#) are generally considered capable of competent and objective testing. Reliable results depend on many factors and Practice [D3740](#) provides a means of evaluating some of them.

4.2 The results of this test method are not to be used as the sole basis for determination of rock durability, but rather should always be used in conjunction with the results of other tests.

4.3 This test method has been used to evaluate many different types of rocks. There have been occasions when test results have provided data that have not agreed with the durability of rock under actual field conditions; samples yielding a low soundness loss have disintegrated in actual usage, and the reverse has been true.

5. Apparatus

5.1 *Circular Diamond Saw*, 14-in. (360-mm) diameter, capable of sawing rock, of the type required for Practices [D5121](#).

5.2 *Apparatus*, as required by Test Method [C88](#), with the following exception: sieves are not required, and the balance shall meet the requirements of Class GP 10 in Specification [D4753](#) and be accurate within 5 g.

6. Special Solutions Required

6.1 The solutions required in this test method shall be the sodium or magnesium sulfate solutions required by Test Method [C88](#), and they shall be prepared and used in the same manner.

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