



Designation: D5240/D5240M – 12 (Reapproved 2013)^{ε1}

Standard Test Method for Evaluation of Durability of Rock for Erosion Control Using Sodium Sulfate or Magnesium Sulfate¹

This standard is issued under the fixed designation D5240/D5240M; 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.

^{ε1} NOTE—Editorially updated units of measurement statement in April 2018.

1. Scope*

1.1 This test method covers test procedures for evaluating the soundness of rock for erosion control by the effects of a sodium or magnesium sulfate solution on slabs of rock. The test is an accelerated weathering test that simulates the freezing and thawing of cold weather exposure. The rock slabs, prepared in accordance with procedures in Practice D5121, are intended to be representative of erosion control sized materials and their inherent weaknesses. The test is appropriate for breakwater stone, armor stone, riprap and gabion sized rock materials.

The limitations of this test are twofold. First the test is a simulation of freezing and thawing conditions. The internal expansive force, derived from the rehydration of the salt upon re-immersion, simulates the expansion of water on freezing relying on chemical crystal formation to simulate freezing rather than the actual freezing of water. Secondly the size of the cut rock slab specimens may eliminate some of the internal defects present in the rock structure. The test specimens may not be representative of the quality of the larger rock samples used in construction. Careful examination of the rock source and proper sampling are essential in minimizing this limitation.

1.2 The use of reclaimed concrete and other materials is beyond the scope of this test method.

1.3 The values stated in either SI units or inch-pound units are to be regarded separately as standard. The 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.

1.4 All observed and calculated values shall conform to the guidelines for significant digits and rounding established in Practice D6026, unless superseded by this standard.

1.4.1 For purposes of comparing measured or calculated value(s) with specified limits, the measured or calculated value(s) shall be rounded to the nearest decimal or significant digits in the specified limits.

1.4.2 The procedures used to specify how data are collected/recorded or calculated, in this standard are regarded as the industry standard. In addition, they are representative of the significant digits that generally should be retained. The procedures used do not consider material variation, purpose for obtaining the data, special purpose studies, or any considerations for the user's objectives; and it is common practice to increase or reduce significant digits of reported data to be commensurate with these considerations. It is beyond the scope of this standard to consider significant digits used in analytical methods for engineering design.

1.5 *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, health, and environmental practices and determine the applicability of regulatory limitations prior to use.*

1.6 *This international standard was developed in accordance with internationally recognized principles on standardization established in the Decision on Principles for the Development of International Standards, Guides and Recommendations issued by the World Trade Organization Technical Barriers to Trade (TBT) Committee.*

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

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.

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