Designation: D8030/D8030M – 23

Standard Practice for Sample Preparation for GCCM[1]

This standard is issued under the fixed designation D8030/D8030M; 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 standard practice specifies a set of instructions for preparing samples of geosynthetic cementitious composite mat (GCCM) for index property testing.

1.2 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 nonconformance with the standard.

1.3 All observed and calculated values shall conform to the guidelines for significant digits and rounding established in Practice D6026.

1.3.1 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.

1.3.2 The procedures used to specify how data are collected/recorded or calculated in this practice are regarded as the industry standard. In addition, they are representative of the significant digits that generally should be measured. 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 the significant digits of reported data to be commensurate with these considerations. It is beyond the scope of this practice to consider significant digits used in the analytical methods for engineering design.

1.4 *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.* Some specific hazards statements are given in Section 7 on Hazards.

1.5 *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]

C191 Test Methods for Time of Setting of Hydraulic Cement by Vicat Needle

D4354 Practice for Sampling of Geosynthetics and Rolled Erosion Control Products (RECPs) for Testing

D4439 Terminology for Geosynthetics

D6026 Practice for Using Significant Digits and Data Records in Geotechnical Data

3. Terminology

3.1 *Definitions*—For definitions of common technical terms used in this standard, refer to Terminology D4439.

3.2 *Definitions of Terms Specific to This Standard:*

3.2.1 *cured, adj*—a description of the state of a GCCM after hydration for a specified period of time under specified conditions, followed by a period of time where the GCCM is kept under a specified environmental condition during which the cementitious material continues to cure and develop compressive strength.

3.2.2 *curing time, n*—the time subsequent to initial hydration of the GCCM and immediately prior to the testing of the material during which the cementitious material is allowed to harden and form its final structure. The specific process for curing is specified in 10.3.

3.2.3 *hydration, n*—exposure of the GCCM, in this case, to water in prescribed conditions for a prescribed time.

3.2.4 *index property test, n*—in geosynthetics, a standard test that may be used to compare the relative material properties of erosion control products.

3.2.5 *initial setting time, n*—the time subsequent to initial hydration of the GCCM at which the cementitious material

[1] This practice is under the jurisdiction of ASTM Committee D35 on Geosynthetics and is the direct responsibility of Subcommittee D35.05 on Geosynthetic 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.

begins to cure and form an extended structure. The measurement of initial setting time is prescribed, for instance, in Test Methods C191.

3.2.6 *uncured, adj*—a description of the state of a GCCM before it has been exposed to a hydration source. Typically describes the "as-received" dry product after conditioning in prescribed manner.

3.2.7 *wet, adj*—a description of the state of a GCCM after it has been exposed to a hydration source for a period of time less than the initial setting time of the cementitious material.

4. Summary of Practice

4.1 A representative sample of uncured (dry) GCCM is either (*1*) cut into uncured specimens, or (*2*) exposed to water under controlled conditions and for a prescribed time, allowed to cure (harden), and then cut into specimens for index testing.

5. Significance and Use

5.1 This practice is intended to create specimens of GCCM products appropriate for testing for the determination of index properties. Cured (hardened) samples are not necessarily intended to represent a field application of GCCM products, but would be representative of the correct amount of water applied to a known style of product and provide a basis for consistent and repeatable index property testing.

6. Apparatus

6.1 *Balances*—A balance with 0.01 lb readability is required (excluding the mass of the sample container).

6.2 *Sample Containers*—Suitable containers which are resistant to corrosion and change in mass upon repeated exposure to moisture, materials of varying pH, and cleaning.

6.3 *Die,* of known dimensions.

6.4 *Saw,* such as a tile saw or wall chaser cutter with diamond-tipped blades, used for cutting cured test specimens to predetermined dimensions.

6.5 *Hydration Tank*—A watertight container with dimensions sufficient to fit the forms, square support bars, and GCCM coupons.

6.6 *Forms,* typically 300 mm [12 in.] square, positioned either side of the GCCM coupons in the hydration tank. Forms must be aluminum or stainless steel, at least 0.2 in. [5 mm] thick, and flat.

6.7 *Square Support Bars,* with a square cross section of 12 mm [½ in.]. Four bars are required per coupon (see Appendix X1) and are typically 250 mm [10 in.] long for a 300 mm [12 in.] coupon.

6.8 *Miscellaneous Knives, Templates, Markers,* as required for marking and cutting samples, coupons, and specimens to fixed dimensions. A knife with a "snap off" type blade is recommended for cutting uncured GCCMs, which can dull blade tips rapidly.

7. Hazards

7.1 *Safety Hazards*—GCCM products can be dusty. Eye protection and a dust mask are recommended to be worn during the procedure.

8. Sampling, Test Specimens, and Test Units

8.1 *Lot Sample*—For the lot sample, refer to Practice D4354 for discussion of recommended practice for breaking up shipments of GCCM into lots for testing.

8.2 *Laboratory Samples*—Cut a full-width sample from the lot sample that must be large enough to enable the required number of coupons and test specimens to be cut from it. The laboratory sample must be cut at least 300 mm [1 ft] from the ends of the lot sample. It is essential that the cementitious material is not damaged and has not fallen out of the GCCM. In cases of dispute, take a laboratory sample that will exclude material from the outer wrap of the roll or the inner wrap around the core, of at least 900 mm [3 ft] from the interior end of the roll (wrapped around the core) or exterior end of the material roll, measured from the edge of the cementitious portion of the material.

8.3 *Test Specimens*—Take specimens at random but equally spaced from the laboratory sample. The number of test specimens shall be specified in each test method. Uncured test specimens must be taken a minimum of 100 mm [4 in.] from the edge of the laboratory sample, measured from the edge of the cementitious portion of the material.

8.4 *Coupons*—For preparation of wetted or cured GCCM test specimen(s). The coupon is cut from the uncured laboratory sample and is oversized compared to the test specimen(s) by at least 25 mm [1 in.] along the perimeter of the test specimen(s). A coupon may include one or more specimens and is often 300 mm [12 in.] square; see Fig. 1.

9. Procedure A – Uncured (Dry) Specimens

9.1 Obtain a sufficient amount of representative laboratory sample of the GCCM to satisfy 9.2.

9.1.1 All sample and specimen cutting should be carried out in a clean area free of debris and preferentially with a surface covering to collect any loose powder which may come from material during cutting.

9.2 *Preparation of Uncured Specimens:*

9.2.1 Using a die, or template and knife, carefully cut the required number of test specimens.

9.2.2 All samples and specimens shall be cut, whether using a die, saw, or knives, to the specific dimensions required for the test being performed.

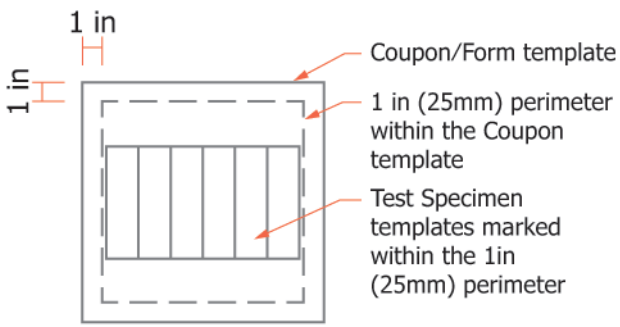

FIG. 1 Test Specimen Templates Marked Within the 1 in. Perimeter of the Coupon Template