NOTICE: This standard has either been superseded and replaced by a new version or discontinued.
Contact ASTM International (www.astm.org) for the latest information.

Designation: D 4912 – 89 (Reapproved 1994)

Standard Test Method for Fabric Stability of Vinyl-Coated Glass Yarn Insect Screening and Louver Cloth[1]

This standard is issued under the fixed designation D 4912; 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 provides a procedure for evaluating fabric stability by measuring the resistance to yarn slippage of filling yarns over warp yarns, or warp yarns over filling yarns in vinyl-coated glass yarn insect screening and louver cloth.

1.2 This test method shows the values in both SI units and inch-pound units. "SI units" is the technically correct name for a system of metric units known as the International System of Units. "Inch-pound units" is the technically correct name for the customary units used in the United States. The values stated in inch-pound units are to be regarded as the standard. The values in SI units are provided for information only.

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:*

D 76 Specification for Tensile Testing Machines for Textiles[2]

D 123 Terminology Relating to Textiles[2]

D 4028 Specification for Solar Screening Woven from Vinyl-Coated Fiber Glass Yarn[3]

E 171 Specification for Standard Atmospheres for Conditioning and Testing Materials[4]

3. Terminology

3.1 *Definitions:*

3.1.1 *atmosphere for testing textiles, n—for glass,* air maintained at a relative humidity of at least 48 % and no greater than 67 %, and at a temperature of at least 20°C (68°F) and no greater than 25°C (77°F).

3.1.1.1 *Discussion*—Glass textiles are used in various products such as reinforced plastics, mat-like material, tire cords, electrical insulation, etc. Each of these materials requires different testing atmospheres. It is the intent of the wide spread in testing atmosphere to allow testing of glass textiles in respective laboratories where end-product test atmosphere requirements differ. The test atmospheres for respective products should be controlled as specified in Specification E 171. It is the opinion of ASTM Subcommittee D13.18 that fabric stability of insect screening and louver cloth would not be affected by the range selected. In any event, the test atmosphere should be stated in the report.

3.1.2 *fabric stability, n—in vinyl coated glass screening and louver cloth,* the property denoting the ability to resist slippage of yarn segments in one direction over yarn segments in the opposite direction.

3.1.3 For definitions of other textile terms used in this test method, refer to Terminology D 123.

4. Summary of Test Method

4.1 Samples of the vinyl-coated glass yarn insect screening or louver cloth are subjected to a breaking force test where yarns have been severed within the gage length area. The force required to break the fused bond between yarn components and slip yarn segments in one direction over yarn segments in the opposite direction is reported as the *fabric stability.*

5. Significance and Use

5.1 This test method is considered satisfactory for acceptance testing of commerical shipments since the method has been used extensively in the trade for acceptance testing.

5.1.1 In cases of a dispute arising from differences in reported test results when using this test method for acceptance testing of commercial shipments, the purchaser and the supplier should conduct comparative tests to determine if there is a statistical bias between their laboratories. Competent statistical assistance is recommended for the investigation of bias. As a minimum, the two parties should take a group of test specimens which are as homogeneous as possible and which are from a lot of material of the type in question. The test specimens should then be randomly assigned in equal numbers to each laboratory for testing. The average results from the two laboratories should be compared using Student's *t*-test for unpaired data and an acceptable probability level chosen by the two parties before the testing begins. If a bias is found, either its cause must be found and corrected or the purchaser and the supplier must agree to interpret future test results in the light of the known bias.

5.2 Vinyl-coated glass yarn insect screening and louver cloth are subjected to a heating process to fuse the warp yarns to the filling yarns of the woven structure. The force at which yarns in one direction move over yarns in the opposite direction is a measure of the bond of fusion. The degree of

[1] This test method is under the jurisdiction of ASTM Committee D-13 on Textiles and is the direct responsibility of Subcommittee D13.18 on Glass Fiber and Its Products.

Current edition approved Feb. 24, 1989. Published April 1989.

[2] *Annual Book of ASTM Standards,* Vol 07.01.

[3] *Annual Book of ASTM Standards,* Vol 07.02.

[4] *Annual Book of ASTM Standards,* Vol 08.03.

the bond of fusion on the vinyl-coated glass yarn insect screening and louver cloth is used for process control. Fabric stability was formerly called resistance to yarn slippage.

6. Apparatus

6.1 *Tensile Testing Machine*—In case of dispute a constant-rate-of-extension, CRE, tensile testing machine as described in Specification D 76 will be used. When agreed upon between the purchaser and the supplier, a constant-rate-of-traverse tensile, CRT, testing machine can be used.

6.1.1 The clamp faces shall be rubber or smooth metallic faced at least 10 mm (0.4 in.) wider than the specimen width and with a minimum of 25 mm (1 in.) in the direction of application of force.

NOTE 1—The covering of the metallic faces with approximately a 3-mm (0.11-in.) thick cardboard or other suitable material has been found useful for preventing crushing of the specimen.

7. Sampling and Number of Specimens

7.1 *Lot Size*—A lot is defined as a single shipment of a single type of glass textile. A lot may constitute all or part of a single customer order.

7.2 *Lot Sample*—As a lot sample for acceptance testing, take the number of rolls of insect screening or louver cloth directed in an applicable material specification or other agreement between the purchaser and the supplier. Consider rolls of insect screening or louver cloth to be the primary sampling unit. In the absence of such an agreement, take the number of rolls specified in Table 1.

NOTE 2—An adequate specification or other agreement between the purchaser and the supplier requires taking into account the variability between rolls of insect screening or louver cloth and between test specimens from a swatch or roll of insect screening or louver cloth to produce a sampling plan with meaningful producer's risk, consumer's risk, acceptable quality level, and limiting quality level.

7.3 *Laboratory Sample*—As a laboratory sample for acceptance testing, proceed as directed in an applicable material specification or other agreement between the purchaser and the supplier. In the absence of such an agreement, use the lot sampling units for the laboratory sampling units. Take a full width swatch, 2 m (2 yd) long, from each selected lot sampling unit of screening or louver cloth. Take swatches after first discarding a minimum of 1 m (1 yd) from the very outside of the roll.

7.4 *Test Specimens*—From each swatch in the laboratory sample, cut five specimens in each the warp and filling direction, 50 by 125 mm (2 by 5 in.) with the long dimension respectively parallel to the warp and filling yarns. Cut alternate lengthwise yarns as shown in Fig. 1. Cut yarns equidistant from the center of the specimen length having three widthwise yarns between the yarns cut above the center of the specimen length (Cut A) and the yarns cut below the center of the specimen length (cut B). Ensure each lengthwise yarn has only one cut. The short direction is the direction of test. Take test specimens from each swatch in the laboratory sample in such a way that no specimen is closer than one tenth the width of the swatch from the selvage with no two specimens cut parallel to the warp containing the same set of warp ends or if cut parallel to the filling, containing the same set of filling picks, and the specimens from different swatches are each taken from a different part of the width of the swatches.

TABLE 1 Number of Rolls of Fabric in the Lot Sample

Total Length of Fabric in Lot		Number of Lot Sampling Units
m	ft	
245 or less	800 or less	2
246 to 6700, inclusive	801 to 22 000, inclusive	3
6701 and over	22 001 and over	5

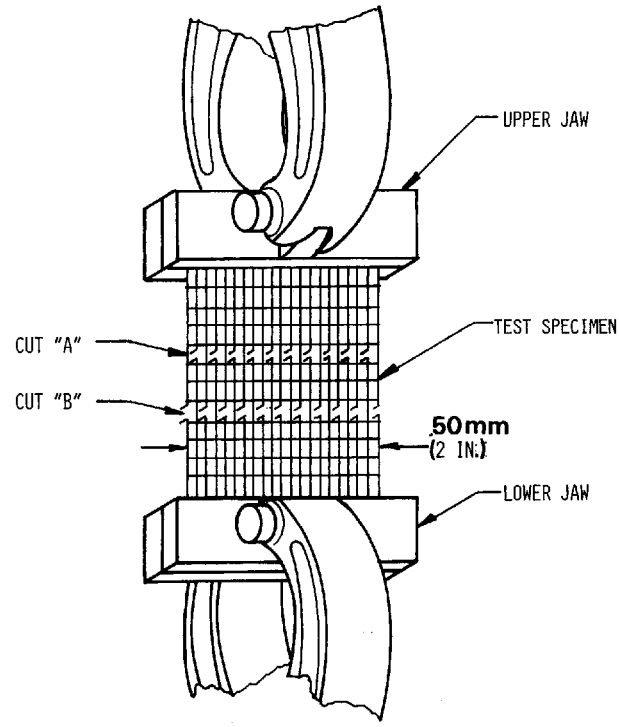

FIG. 1 Screening, Nonmetallic, Insert; Cut Pattern of Specimen

8. Procedure

8.1 Condition the laboratory samples without preconditioning for period of at least 5 h in the atmosphere for testing glass textiles, unless otherwise specified.

NOTE 3—In any event, 24 h is considered ample exposure to bring the samples to moisture equilibrium.

8.2 Select the force range of the tensile testing machine such that the maximum force required to separate the specimen occurs between 10 and 90 % of the full-scale force range. Secure the specimen centrally in the clamps of the tensile testing machine, taking care that the long dimension is as nearly as possible parallel to the direction of application of the force. Ensure that the tension in the specimen is uniform across the clamped width.

8.3 When using air-actuated clamps set the air pressure to 275 ± 15 kPa (40 ± 2 psi). When using manual clamps, ensure no slippage of the specimen occurs in the clamps.

8.4 Adjust the tensile testing machine in the starting position to a distance of 75 ± 1 mm (3 ± 0.05 in.) from nip to nip of the clamps along the specimen axis.

8.5 Operate the CRE tensile testing machine with a pulling speed of 125 ± 5 mm/min (5 ± 0.2 in./min), and when agreed upon between the purchaser and the supplier, a CRT tensile machine with a pulling speed of 300 ± 10 mm/min (12 ± 0.5 in./min).

iTeh Standards (https://standards.iteh.ai) Document Preview
ASTM D4912-89(1994)
https://standards.iteh.ai/catalog/standards/sist/...-d4912-891994