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Standard Test Method for FINISH CONTENT OF WOVEN GLASS FABRIC, CLEANED AND AFTER FINISHED WITH EPOXY—FUNCTIONAL SILANE- TYPE FINISHES FOR PLASTIC LAMINATES¹

This standard is issued under the fixed designation D 3098; 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 reappraisal. A superscript epsilon (ε) indicates an editorial change since the last revision or reappraisal.

1. Scope

1.1 This test method covers the measurement of the amount of epoxy-functional silane finish applied to various styles of woven glass fabric that have been suitably cleaned to remove the oils and binders present on the yarn to make them suitable for use in plastic laminates.

1.2 Glass fabrics with these finishes can be used with epoxy resin systems to produce laminates having properties suitable for use as single- and multi-layer circuit boards.

NOTE 1—Typical epoxy-functional silane finishes are known as A-186-Beta(3,4-Epoxy-cyclohexyl) ethyl-trimethoxysilane; A-187-Gamma-Glycidoxypropyl-trimethoxysilane; Z-6040-Gamma-Glycidoxypropyl-trimethoxysilane.

NOTE 2—This test method is based on the use of a Leco No. 589-600 Conductometric Carbon Determinator and Leco Induction Furnace, Laboratory Equipment Co., St. Joseph, Mich., but any test method giving comparable results may be used.

NOTE 3—The finish content may also be determined using automatic instruments not on the market when this test method was originally written. The results obtained by these instruments comply with the requirements of this test method although the procedure may differ.

1.3 *This standard may involve hazardous materials, operations, and equipment. This standard does not purport to address all of the safety problems associated with its use. It is the responsibility of whoever uses this standard to consult and establish appropriate safety and health practices and determine the applicability of regulatory limitations prior to use.*

2. Applicable Document

2.1 *ASTM Standard:*

D4029 Specification for Finished Woven Glass Fabrics²

3. Summary of Method

3.1 Specimens are burned with iron and tin accelerators in the presence of oxygen. The carbon content is measured, which is a reliable indication of the amount of epoxy-functional silane finish on the glass fabric.

4. Significance and Use

4.1 The purpose of this test method is to provide a means for determining the amount of epoxy-functional silane finish on glass fabrics that have met the requirements of Specification D 4029 and whether it has been correctly applied. It is intended for use in specifications, product evaluation, and quality control.

4.2 The epoxy-functional silane finish enhances the handleability of the fabric and improves the mechanical properties of the glass fabric when used as a reinforcement in polyester laminates.

5. Apparatus

5.1 *Induction Furnace, Leco Model 521, 522, or 523.*

5.2 *Conductometric Carbon Determinator, Leco No. 515.*

¹ This test method is under the jurisdiction of ASTM Committee D-20 on Plastics and is the direct responsibility of Subcommittee D20.18 on Reinforced Thermosetting Plastics.

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² *Annual Book of ASTM Standards*, Vol 07.02.