



Designation: D 5095 – 91 (Reapproved 2002)

Standard Test Method for Determination of the Nonvolatile Content in Silanes, Siloxanes and Silane-Siloxane Blends Used in Masonry Water Repellent Treatments¹

This standard is issued under the fixed designation D 5095; 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 approval. A superscript epsilon (ϵ) indicates an editorial change since the last revision or reapproval.

1. Scope

1.1 This test method describes a procedure for the determination of the nonvolatile content (N_v) of silanes, siloxanes, and blended silane-siloxane materials used in masonry water repellent treatments and is applicable to both solvent- and waterborne materials.

1.2 *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 health and safety practices and determine the applicability of regulatory limitations prior to use.* For a specific hazard statement, see Section 7.

2. Referenced Documents

2.1 ASTM Standards:

D 1193 Specification for Reagent Water²

D 3980 Practice for Interlaboratory Testing of Paint and Related Materials³

E 145 Specification for Gravity-Convection and Forced-Ventilation Ovens⁴

3. Summary of Test Method

3.1 A designated quantity of test material is weighed into a preweighed aluminum dish containing the catalyst solution, mixed, allowed to stand for 60 min at room temperature, and then heated in an oven at $110 \pm 5^\circ\text{C}$ for 60 min. The nonvolatile content of the test material is calculated by subtracting the solids of the catalyst solution from the total solids by weight of the test solution.

4. Significance and Use

4.1 This test method is used to determine the nonvolatile content of silanes, siloxanes, and silane-siloxane blended materials used in masonry water-repellent treatments. It can be

used for the purpose of calculating the volatile organic compound (VOC) content of these materials under specified test conditions.

5. Apparatus

5.1 *Aluminum Dishes*, 58-mm diameter by 18-mm high with a smooth (planar) bottom surface. Precondition the dishes for 30 min in an oven at $110 \pm 5^\circ\text{C}$ and store in a desiccator prior to use.

5.2 *Forced Draft Oven*, Type IIA or Type IIB as specified by Specification E 145.

5.3 *Syringes*, 1-mL and 5-mL.

5.4 *Analytical Balance*, capable of weighing to 0.1 mg.

6. Reagents

6.1 *Purity of Water*—Unless otherwise indicated, references to water shall be understood to mean reagent water as defined by Type IV of Specification D 1193.

6.2 *p-Toluenesulfonic Acid*, monohydrate.⁵

6.3 *Alcohol*, technical grade ethanol or isopropanol.

7. Hazards

7.1 In addition to other precautions, provide adequate ventilation, consistent with accepted laboratory practice, to limit the accumulation of solvent vapors.

8. Procedure

8.1 *Catalyst Solution*—Prepare a catalyst solution containing a mixture of 0.5 % *p*-Toluenesulfonic acid in either ethanol or isopropanol. Thoroughly mix the solution. Prepare sufficient catalyst solution to perform all tests.

8.1.1 The nonvolatile content of the test material can be calculated only if the same catalyst solution is used throughout the test. Each time a new batch of catalyst solution is used, its nonvolatile content must be determined.

8.2 Determine the nonvolatile matter, in triplicate, of the catalyst solution as follows:

¹ This test method is under the jurisdiction of ASTM Committee D01 on Paint and Related Coatings, Materials, and Applications and is the direct responsibility of Subcommittee D01.47 on Masonry Treatments.

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² *Annual Book of ASTM Standards*, Vol 11.01.

³ Discontinued; see 1998 *Annual Book of ASTM Standards*, Vol 06.01.

⁴ *Annual Book of ASTM Standards*, Vol 14.04.

⁵ The sole source of supply of the solution of *p*-Toluenesulfonic acid known to the committee at this time is King Industries, Science Road, Norwalk, CT 06852. If you are aware of alternative suppliers, please provide this information to ASTM International Headquarters. Your comments will receive careful consideration at a meeting of the responsible technical committee,¹ which you may attend.