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Standard Test Method for Odor of Volatile Solvents and Diluents¹

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This standard has been approved for use by agencies of the U.S. Department of Defense.

1. Scope

1.1 This test method covers a comparative procedure for observing the characteristic and residual odors of volatile organic solvents and diluents to determine their odor acceptability in a solvent system.

1.2 It is not intended that this test method be employed to determine subtle odor differences between materials or to determine odor intensity.

1.3 It is recommended that this test method not be employed to determine the residual odor of a liquid if its time for evaporation to dryness at room temperature exceeds 30 min or as agreed upon.

1.4 The values stated in SI units are to be regarded as standard. No other units of measurement are included in this standard.

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.*

For specific hazard statements, see Section 4.

1.6 For specific hazard information, see the supplier's Material Safety Data Sheet (MSDS).

1.7 *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. Reference Standards

2.1 Samples of the particular products being tested, having odor characteristics satisfactory to purchaser and manufacturer, are required.

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 D01.35 on Solvents, Plasticizers, and Chemical Intermediates.

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3. Significance and Use

3.1 The comparative odor characteristics can be used, combined with other tests, for product identification and assessing compliance with a specification.

3.2 The residual odor characteristics can be used to judge the presence of relatively nonvolatile materials that may be associated with manufacture or contamination during distribution. Since volatile solvents and diluents are used in a wide variety of chemical processes and residual materials may affect the efficiency of such processes, this test method provides a comparative test for manufacturing control and assessing compliance with a specification.

4. Hazards

4.1 Many solvents and diluents are hazardous or toxic. Take special precautions while determining the odor of all products. Make the tests only as frequently as is necessary for control and base the evaluations on short sniffs, inhaling as little vapor as possible.

4.2 Provide adequate ventilation to maintain solvent or diluent concentration below the personnel exposure limit value established for the general work area as given in the MSDS.

4.3 Other hazards may also be present. These may be, but are not limited to, flammable, combustible, corrosive, or explosive hazards.

5. Procedures

5.1 *Characteristic Odor*—Dip 25 mm by 75 mm strips of rapid qualitative paper, free of foreign odor, to a depth of 50 mm into the specimen and the reference standard, each contained in a beaker or other suitable container. Make an immediate comparison between the odor of the two materials on the filter papers.

5.2 *Residual Odor*—Dip 25 mm by 75 mm strips of a rapid qualitative paper, free of foreign odor, to a depth of 50 mm into the specimen under test and the reference sample, each contained in a beaker or other suitable container. Permit the papers to dry in air at room temperature and examine them at suitable intervals for differences in odor (see 1.3). The evaporation step may be omitted if only the “characteristic” odor of the material is to be determined.

6. Report

6.1 *Characteristic Odor*—Report the odor as “characteristic” if, upon immediate examination, the odor of the wet filter paper containing the specimen is similar to the odor of the filter paper containing the standard. However, report the odor as “noncharacteristic” if the odor of the specimen, compared with the standard, is unsuitable for its intended solvent use.

6.2 *Residual Odor*—Report the odor as “nonresidual” if no odor is detectable on the sample paper after both the standard and sample papers appear dry. It is assumed that the standard, which is acceptable to both consumer and producer, has no detectable residual odor. Report the odor as “residual” if an odor persists on the sample paper after none is detectable on the standard paper.

7. Precision and Bias

7.1 *Precision*—Since the result of the test is merely a subjective judgment of whether there is comparative similarity

with the reference standard specified in the procedure, no statement is made about the precision of assessing either characteristic or residual odor.

7.2 *Bias*—No statement is made about the bias of either the characteristic or residual odor. Some analysts have little olfactory sensitivity to some materials, while other analysts have extreme sensitivity to either the main or (if any) minor component. In either case, the accuracy of odor measurements should be considered suspect. In case of differing results between purchaser and supplier, it may be helpful to employ an odor panel consisting of no less than three persons. Consideration should be given to the qualifications of the panelists, such as the following: familiarity with odor determinations, length of time exposed to either the main or suspected minor component, and the environment in which the test is to be conducted.

8. Keywords

8.1 odor; solvent

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