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Standard Test Method for Determination of the Upper Layer Separated from a Viscous Liquid[1]

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ε[1] NOTE—Keywords and the unit of measurement statement were added editorially in June 2000.

1. Scope

1.1 This test method covers the determination of the amount of liquid separated as an upper layer in a 24-h period from viscous solutions or dispersions that contain dispersed solids such as paints, enamels, pigmented lacquers, adhesives, polishes, and other similar materials.

NOTE 1—The amount of clear liquid that separates during this test is one of the criteria in the United Nations Recommendations on the Transportation of Dangerous Goods[2] for the placement of flammable viscous liquids into packing groups related to flash points (See 4.1).

1.2 The values stated in SI units are to be regarded as the standard. The values given in parentheses are 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 3925 Practice for Sampling Liquid Paints and Related Pigmented Coatings[3]

3. Summary of Test Method

3.1 A measured amount of the material to be tested is placed in a graduated cylinder and allowed to stand undisturbed for 24 h. The volume percent of the separated top layer is then determined.

4. Significance and Use

4.1 The United Nations Committee of Experts on the Transport of Dangerous Goods in their recommended regulations place materials having a flash point below 23°C (73.5°F) in Packing Group II. However, if viscous substances such as paint and related coatings, adhesives, polishes, etc., meet certain requirements, they can be placed in Group III along with materials having a flash point between 23 and 60.5°C (73.5 and 140°F). One of the requirements is that less than 3 % of clear liquid separates from the bulk of the material when subjected to this test method.

4.2 At the present time most international regulatory bodies such as the International Civil Aviation Organization (ICAO) and the International Maritime Organization (IMO) use the U.N. Recommendations. It is anticipated that most national transportation regulatory bodies will adopt the U.N. Recommendations as their regulations for control of transportation of hazardous materials. At present the United States permits the transshipment of hazardous materials through the United States to other countries under regulations of the IMO and ICAO.

5. Apparatus

5.1 *Graduated Cylinder,* 100-mL, TC, glass-stoppered, 295-mm total height and 29-mm inside diameter.

5.2 *Constant Temperature Cabinet or Room*, at 23 ± 2°C (73.5 ± 3.5°F).

6. Sampling

6.1 Obtain a uniform quart sample of the material using standard methods for sampling in accordance with Practice D 3925.

7. Conditioning

7.1 Store the sample or a representative portion at a constant temperature of 23 ± 2°C (73.5 ± 3.5°F) until the sample reaches a uniform temperature of 23°C (73.5°F).

8. Procedure

8.1 Thoroughly stir the sample to obtain uniform consistency and, in the case of materials containing particles, uniform dispersion of these particles.

8.2 Immediately pour 100 mL of the sample into the graduated cylinder. Insert a stopper, then leave the cylinder undisturbed at 23°C (73.5 ± 3.5°F) for 24 h.

8.3 After 24 h, measure the volume of any upper separated

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[2] *Transport of Dangerous Goods: Recommendations of the Committee of Experts on the Transport of Dangerous Goods*, United Nations; 3rd ed., New York, 1984.

[3] *Annual Book of ASTM Standards*, Vol 06.01.

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layer and determine the percent of the separated layer compared to the total volume of the specimen.

9. Calculation

9.1 Calculate the volume percent of the clear upper liquid layer P_c as follows:

$$P_c = (V_c/V_m) \times 100 \quad (1)$$

where:
V_c = volume of the clear upper liquid layer, mL, and
V_m = total volume of the 100-mL specimen, mL.

10. Report

10.1 Report the volume percent of the separated clear liquid to within 0.5 %.

11. Precision and Bias

11.1 The precision of this test method will be determined.

11.2 Bias cannot be determined since no standards are available.

12. Keywords

12.1 upper layer; viscous liquid

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