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AMERICAN SOCIETY FOR TESTING AND MATERIALS
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Standard Test Method for Liquid Holding Capacity (LHC) of Clay Granular Carriers[1]

This standard is issued under the fixed designation E 1521; 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 is used to determine the liquid holding capacity (LHC) of clay granular carriers.

1.2 The values stated in either SI or inch-pound units are to be regarded as 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.* For specific precautionary statements, see Section 5.

2. Summary of Test Method

2.1 Incremental amounts of kerosene are added to a known weight of granular carrier. The point at which the granules stick to the sides of the container allows calculation of the LHC.

3. Significance and Use

3.1 This test method has been designed principally for clay granular carriers. Its accuracy with other materials has not been determined.

3.2 This test method is applicable to granules in the range from 4 to 100 mesh (4.75 to 0.150 mm).

4. Apparatus and Reagents

4.1 *Buret Stand.*

4.2 *Buret*, 10 to 25 mL, accurate to 0.2 mL.

4.3 *Glass Bottle*, 1 oz (29.6 mL), with poly seal cap (7 by 3.5-cm outside diameter).

4.4 *Glass Bottle*, 8 oz (236.8 mL), wide mouth with poly seal cap.

4.5 *Deodorized Kerosene* (CAS No. 8008-20-6).

4.6 *Balance*, accurate to ±0.1 g.

5. Safety Precautions

5.1 Before testing, read the precautionary statements on the product label and material safety data sheet. Take proper precautions to prevent skin contact and inhalation of the fines and vapors. Take care to prevent contamination of the surrounding area. Always wear the appropriate safety equipment and, where indicated, wear respiratory devices approved by NIOSH for the product being tested.

6. Procedure

6.1 Weigh 7.0 ± 0.1 g of granular carrier for LHC determination into a 29.6-mL glass bottle.

6.2 From a buret, add kerosene as follows: 0.5-mL increments until 2.0 mL is reached, shaking between increments by hand or mechanical shaker until completely absorbed. (A few sharp taps with the heel of the hand may be necessary to break up a saturated portion.) Shaking should not exceed 2 min.

6.3 After the first 2.0 mL is added, decrease the increments to 0.2 mL and proceed as described in 6.2 until the end point is reached. The end point is indicated by two or more of the following:

6.3.1 Clay darkens or appears wet.

6.3.2 Granules cease to be free flowing.

6.3.3 Granules stick to sides of bottle.

6.3.4 Granules stick to bottom of bottle when inverted slowly.

6.4 An alternate procedure is to use 50 g of clay. Follow the instructions given in 6.1-6.3, but use the 236.8-mL jar. Add an initial 15 mL of kerosene in 5-mL increments, as described in 6.2. Thereafter, follow the steps outlined in 6.3.

7. Calculation

7.1 Calculate % LHC as follows:

$$\% \text{ LHC} = \frac{(\text{g kerosene} \times 100)}{(\text{g granules}) + (\text{g kerosene})} \quad (1)$$

7.2 Round the % LHC to the nearest whole number.

7.3 Use Eq 2 as the alternate calculation to provide an LHC value as if the liquid (kerosene) density were 1.0:

$$\frac{(\text{g kerosene}) \times 1.25 \times 100}{(\text{g granules}) + [(\text{g kerosene}) \times 1.25]} = \% \text{ LHC (density 1.0)} \quad (2)$$

7.4 The value reported should note the formula used.

8. Disposal of Sample

8.1 Store all materials in a safe manner after testing, and dispose of used material in accordance with the product label directions and material safety data sheet.

[1] This test method is under the jurisdiction of ASTM Committee E-35 on Pesticides and is the direct responsibility of Subcommittee E35.22 on Pesticide Formulation and Application Systems.

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