



# Standard Test Method for Kerosene Retention of Asbestos<sup>1</sup>

This standard is issued under the fixed designation C1124/C1124M; 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 covers the determination of the kerosene retention capacity of asbestos fiber by filtering after mixing and measuring the volume of liquid retained by difference.

1.2 The values stated in either SI units or inch-pound units are to be regarded separately as standard. The values stated in each system may not be exact equivalents; therefore, each system shall be used independently of the other. Combining values from the two systems may result in non-conformance with the standard.

1.3 **Warning**—*Breathing of asbestos dust is hazardous. Asbestos and asbestos products present demonstrated health risks for users and for those with whom they come into contact. In addition to other precautions, when working with asbestos-cement products, minimize the dust that results. For information on the safe use of chrysotile asbestos, refer to “Safe Use of Chrysotile Asbestos: A Manual on Preventive and Control Measures.”*<sup>2</sup>

1.4 *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 a specific hazard warning, see 1.3.*

## 2. Referenced Documents

### 2.1 ASTM Standards:<sup>3</sup>

D1655 Specification for Aviation Turbine Fuels

D2590/D2590M Test Method for Sampling Chrysotile Asbestos

D2946 Terminology for Asbestos and Asbestos–Cement Products

D3879 Test Method for Sampling Amphibole Asbestos (Withdrawn 2009)<sup>4</sup>

E11 Specification for Woven Wire Test Sieve Cloth and Test Sieves

E177 Practice for Use of the Terms Precision and Bias in ASTM Test Methods

### 2.2 Other Standards:

US Federal Specifications, VV-K-211 d, Kerosene<sup>5</sup>

Canadian Government Specifications Board CAN 2-3.3-M85 Kerosene<sup>6</sup>

United Kingdom, Ministry of Defense Specification DEF-2403-A<sup>7</sup>

## 3. Terminology

3.1 *Definitions*—Refer to Terminology D2946.

## 4. Summary of Test Method

4.1 A slurry of asbestos fiber is formed by mixing in a known volume of kerosene. The slurry is then drained on a standard 177 μm [U.S. No. 80] screen as defined in Specification E11, and the kerosene that drains out in 15 min is measured. The quantity of kerosene retained is obtained by difference.

## 5. Significance and Use

5.1 The kerosene retention value is an indication of the degree of fiberization and of the absorptivity of a given grade of asbestos.

5.2 Since the retention of the fibrous fractions is much greater than that of the non-fibrous fractions, this test method may be used to compare the fibrous content of otherwise similar grades of asbestos.

<sup>1</sup> This test method is under the jurisdiction of ASTM Committee C17 on Fiber-Reinforced Cement Products and is the direct responsibility of Subcommittee C17.03 on Asbestos - Cement Sheet Products and Accessories.

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<sup>2</sup> Available from The Asbestos Institute, [http://www.chrysotile.com/en/sr\\_use/manual.htm](http://www.chrysotile.com/en/sr_use/manual.htm).

<sup>3</sup> For referenced ASTM standards, visit the ASTM website, [www.astm.org](http://www.astm.org), or contact ASTM Customer Service at [service@astm.org](mailto:service@astm.org). For *Annual Book of ASTM Standards* volume information, refer to the standard's Document Summary page on the ASTM website.

<sup>4</sup> The last approved version of this historical standard is referenced on [www.astm.org](http://www.astm.org).

<sup>5</sup> Available from the Superintendent of Documents, U.S. Government Printing Office, Washington, DC 20402.

<sup>6</sup> Available from The Secretary, Canadian General Standard Board, Ottawa, ONT, Canada K1A 1G6.

<sup>7</sup> Available from Her Majesty's Stationery Office, London, England.

## 6. Apparatus

6.1 *Kerosene Drainage Apparatus*—Described in Fig. 1 and Fig. 2.

## 7. Reagents and Materials

7.1 *Kerosene*, meeting one of the following specifications:

7.1.1 US Federal Specifications, VV-K-211 d, Kerosene.

7.1.2 Jet A Kerosine specified in Specification **D1655**.

7.1.3 United Kingdom, Ministry of Defense Specification DEF-2403-A.

7.1.4 Kerosine CGSB Spec CAN 2-3.3-M85.

## 8. Hazards

8.1 **Warning**—see 1.3.

## 9. Sampling, Test Specimens, and Test Units

9.1 *Sampling*:

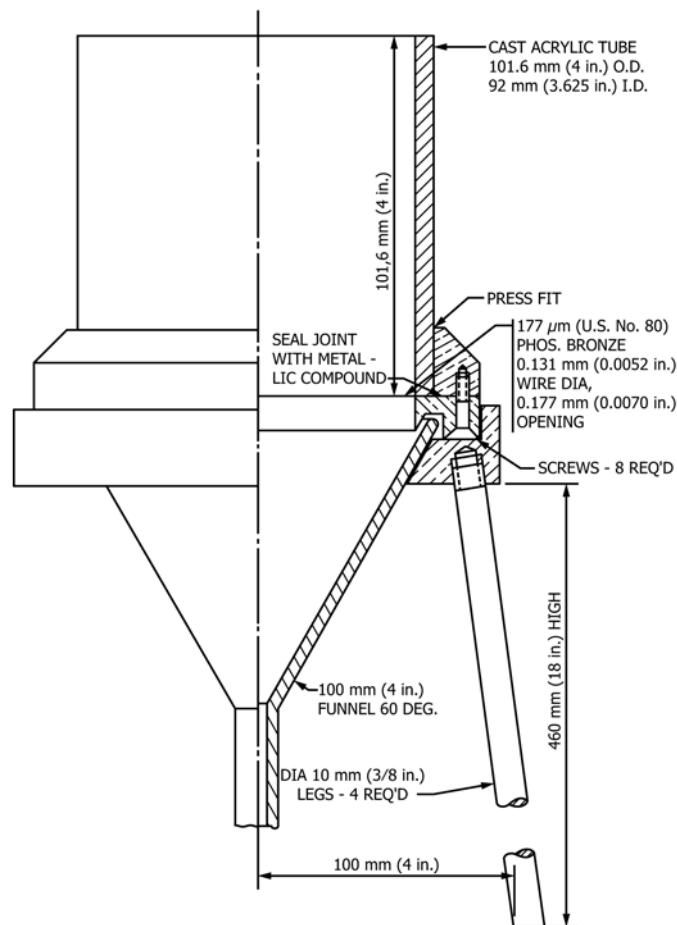
9.1.1 Take samples in accordance with Test Methods **D2590/D2590M** in the case of chrysotile asbestos or Test Method **D3879** in the case of amphibole asbestos.

9.2 *Test Specimens*:

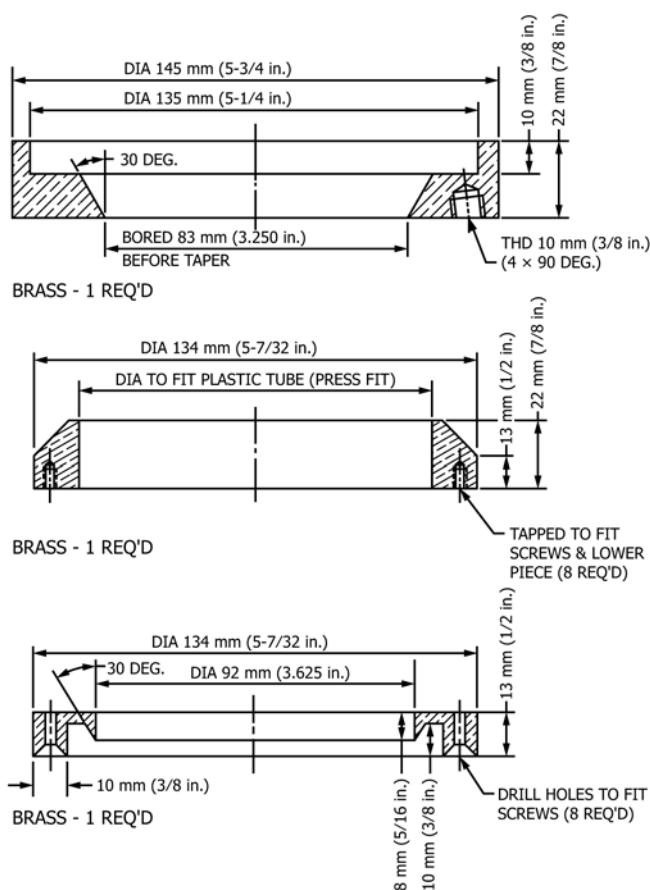
9.2.1 Two specimens each of  $50 \pm 0.05$  g are required.

## 10. Procedure

10.1 Put a 50 g specimen into a 400 cm<sup>3</sup> beaker and add  $325 \pm 1$  cm<sup>3</sup> of kerosene.



**FIG. 1 Kerosene Retention Apparatus Assembly**



**FIG. 2 Retention Apparatus Detail**

10.2 Mix with a spatula for 120 s (2 min).

10.3 Wet the drainage cylinder and screen with kerosene and drain 1 min.

10.4 Place a 250-cm<sup>3</sup> graduated cylinder beneath the drainage cylinder outlet.

10.5 Immediately transfer the slurry in one continuous motion to the drainage cylinder.

10.6 Start a stopwatch simultaneously.

10.7 After draining for 900 s (15 min), read the volume of kerosene drained into the graduate, and record this value to the nearest cm<sup>3</sup>.

10.8 Discard the asbestos retained on the screen, rinse clean with running hot water, and dry the apparatus.<sup>8</sup> Thus it will be ready for the next test.

10.9 Repeat this procedure with the second specimen.

## 11. Calculation

11.1 For each of the two readings, subtract the value obtained, in cm<sup>3</sup>, from the initial quantity of kerosene (325 cm<sup>3</sup>). Multiply these differences by two to obtain the kerosene retention values per 100 g of asbestos fiber.

<sup>8</sup> A jet of clean dry compressed air may be used to accelerate the drying.

11.2 *Example*—If the reading on the graduated cylinder was 215 cm<sup>3</sup>, then the kerosene retention value =  $(325 - 215) \times 2 = 220 \text{ cm}^3/100 \text{ g}$ .

## 12. Report

12.1 Report the average of two kerosene retention values in cm<sup>3</sup>/100 g.

12.2 Fully identify the sample tested as to designation and origin.

## 13. Precision and Bias

### 13.1 Acceptance of Results:

13.1.1 Results on two specimens must agree within 2 % of the average. If this is not attained, repeat the test until two results within 2 % from the average are obtained.

### 13.2 Precision:

13.2.1 The single-laboratory, multi-operator-apparatus day precision (repeatability) is  $\pm 2 \%$  (two sigma limits expressed in units of percentage) as defined in Practice E177 over the range of 200 to 400 cm<sup>3</sup>/100 g.

### 13.3 Bias:

13.3.1 No justifiable statement on the bias of this test method can be made since the true values cannot be established by an accepted referee method.

13.3.2 A partial verification of the repeatability that confirmed the above data is on file. A copy is available upon request.<sup>9</sup>

## 14. Keywords

14.1 absorption; asbestos; kerosene; kerosene retention; oil; oil absorption; retention capacity

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<sup>9</sup> Supporting data is available from ASTM International Headquarters. Request RR:C17-1002.

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