



Standard Test Method for Kerosene Retention of Asbestos¹

This standard is issued under the fixed designation C 1124; 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.

^{ε1} NOTE—Asbestos warning was moved from 8.1 to 1.3 in September 2004.

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 inch-pound units are to be regarded as the standard. The values given in parentheses are for information only.

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.”*²

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:³

- D 1655 Specification for Aviation Turbine Fuels
- D 2590 Test Method for Sampling Chrysotile Asbestos
- D 2946 Terminology Relating to Asbestos
- D 3879 Test Method for Sampling Amphibole Asbestos
- E 11 Specification for Wire-Cloth Sieves for Testing Purposes

¹ 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.

Current edition approved June 1, 2004. Published July 2004. Originally approved in 1989. Last previous edition approved in 1999 as C 1124 – 90 (1999).

² Available from The Asbestos Institute, http://www.chrysotile.com/en/sr_use/manual.htm.

³ For referenced ASTM standards, visit the ASTM website, www.astm.org, or contact ASTM Customer Service at service@astm.org. For *Annual Book of ASTM Standards* volume information, refer to the standard's Document Summary page on the ASTM website.

E 177 Practice for Use of the Terms Precision and Bias in ASTM Test Methods

2.2 Other Standards:

- US Federal Specifications, VV-K-211 d, Kerosene⁴
- Canadian Government Specifications Board CAN 2-3.3-M85 Kerosene⁵
- United Kingdom, Ministry of Defense Specification DEF-2403-A⁶

3. Terminology

3.1 *Definitions*—Refer to Terminology D 2946.

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 E 11, 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.

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.

⁴ Available from the Superintendent of Documents, U.S. Government Printing Office, Washington, DC 20402.

⁵ Available from The Secretary, Canadian General Standard Board, Ottawa, ONT, Canada K1A 1G6.

⁶ Available from Her Majesty's Stationery Office, London, England.

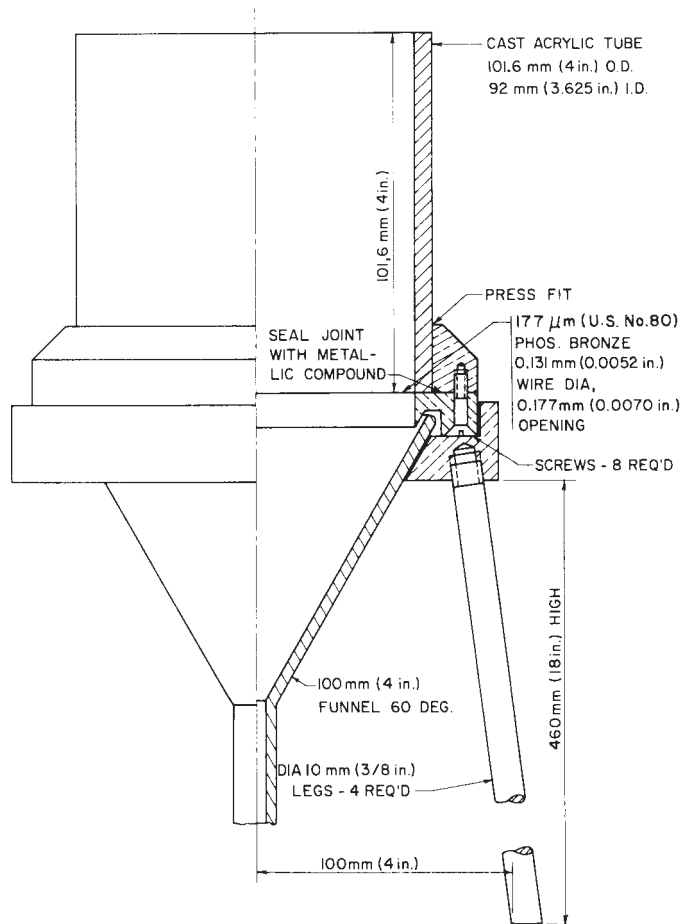


FIG. 1 Kerosene Retention Apparatus Assembly

7.1.2 Jet A Kerosine specified in Specification D 1655.

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 D 2590 in the case of chrysotile asbestos or Test Method D 3879 in the case of amphibole asbestos.

9.2 *Test Specimens:*

9.2.1 Two specimens each of 50 ± 0.05 g are required.

10. Procedure

10.1 Put a 50 g specimen into a 400 cm³ beaker and add 325 ± 1 cm³ of kerosene.

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-cm³ graduated cylinder beneath the drainage cylinder outlet.

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

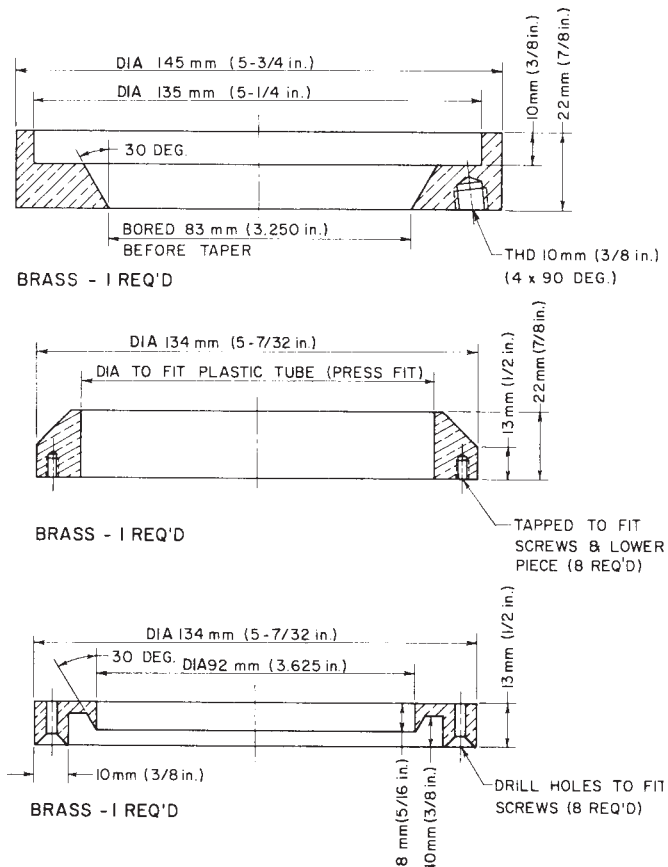


FIG. 2 Retention Apparatus Detail

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 cm³.

10.8 Discard the asbestos retained on the screen, rinse clean with running hot water, and dry the apparatus.⁷ 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 cm³, from the initial quantity of kerosene (325 cm³). Multiply these differences by two to obtain the kerosene retention values per 100 g of asbestos fiber.

11.2 *Example*—If the reading on the graduated cylinder was 215 cm³, then the kerosene retention value = $(325 - 215) \times 2 = 220$ cm³/100 g.

12. Report

12.1 Report the average of two kerosene retention values in cm³/100 g.

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

⁷ A jet of clean dry compressed air may be used to accelerate the drying.

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 ± 2 % (two sigma limits expressed in units of percentage) as defined in Practice E 177 over the range of 200 to 400 cm³/100 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.⁸

14. Keywords

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

⁸ Supporting data is available from ASTM International Headquarters. Request RR: C17-1002.

ASTM International takes no position respecting the validity of any patent rights asserted in connection with any item mentioned in this standard. Users of this standard are expressly advised that determination of the validity of any such patent rights, and the risk of infringement of such rights, are entirely their own responsibility.

This standard is subject to revision at any time by the responsible technical committee and must be reviewed every five years and if not revised, either reapproved or withdrawn. Your comments are invited either for revision of this standard or for additional standards and should be addressed to ASTM International Headquarters. Your comments will receive careful consideration at a meeting of the responsible technical committee, which you may attend. If you feel that your comments have not received a fair hearing you should make your views known to the ASTM Committee on Standards, at the address shown below.

This standard is copyrighted by ASTM International, 100 Barr Harbor Drive, PO Box C700, West Conshohocken, PA 19428-2959, United States. Individual reprints (single or multiple copies) of this standard may be obtained by contacting ASTM at the above address or at 610-832-9585 (phone), 610-832-9555 (fax), or service@astm.org (e-mail); or through the ASTM website (www.astm.org).