



Standard Test Method for Moisture Content of Asbestos Fiber¹

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^{ε1} NOTE—Units information was editorially corrected in February 2012.

1. Scope

1.1 This test method covers the determination of the moisture content of asbestos fiber.

1.2 **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: A Manual on Preventive and Control Measures.”²

1.3 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.

1.4 *This standard does not purport to address all of the safety concerns, if any, associated with its use. It is the responsibility of whoever uses this standard to consult and establish appropriate safety and health practices and determine the applicability of regulatory limitations prior to use.*

2. Referenced Documents

2.1 *ASTM Standards*:³

D2590 Test Method for Sampling Chrysotile Asbestos

D2946 Terminology for Asbestos and Asbestos-Cement Products

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.

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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.

D3879 Test Method for Sampling Amphibole Asbestos
(Withdrawn 2009)⁴

3. Summary of Test Method

3.1 A weighed specimen of fiber is dried in an oven, cooled in a desiccator, and reweighed. The weight loss is used to determine the percent moisture content of the fiber.

4. Significance and Use

4.1 This test method will give a value of moisture content obtained under specified conditions. This value should not be considered as an absolute moisture content. Results may not compare with those obtained by the same method under different conditions, or by different methods.

5. Apparatus

5.1 *Drying Oven*, capable of maintaining 105 to 110°C [220 to 230°F].

5.2 *Balance*, with sensitivity of 0.01 g and capacity of at least 400 g.

5.3 *Weighing Containers*—Shallow borosilicate glass dishes or corrosion-resistant metal pans approximately 200 mm [8 in.] in diameter. Examples of suitable containers are glass culture dishes or sifting sieve pans.

5.4 *Desiccator*.

5.5 *Timer*; 1 h.

6. Sampling and Preparation

6.1 Sampling and preparation shall be in accordance with Test Method D2590, omitting Section 6 of that test method, for chrysotile asbestos, and with Test Method D3879 omitting drying step described in the first sentence of Section 6.3 of the latter test method, for amphibole asbestos. When unsure of the type of asbestos to be tested, refer to Terminology D2946 for detailed descriptions of chrysotile and of the more common types of amphibole asbestos fibers. Samples must be contained in moistureproof containers from time of selection to time of

⁴ The last approved version of this historical standard is referenced on www.astm.org.

testing. During specimen preparation the sample should be coned and quartered without delay to avoid changing the representative moisture of the sample at the sampling location. (**Warning**—See 1.2.)

7. Procedure

7.1 Weigh out three 50-g test specimens to the nearest 0.01 g simultaneously and spread them evenly into previously tared weighing containers. Record the weight of the containers plus weight of fiber as W_1 .

7.2 Dry the specimens in an oven at 105 to 110°C [220 to 230°F] for 1 h.

7.3 Remove the dried specimen from the oven and cool to room temperature in a desiccator. Weigh the container and dried fiber to the nearest 0.01 g and record as W_2 .

NOTE 1—Weigh the dried specimens without delay to minimize the gain in weight caused by the rapid absorption of atmospheric moisture due to the hygroscopic nature of dried asbestos. Alternatively, weighing may be carried out in an airtight weighing container.

8. Calculation

8.1 Calculate the percentage moisture as follows:

$$\text{Moisture, percent} = [(W_1 - W_2)/50.00] \times 100$$

where:

W_1 = weight of tared container plus 50.00 g of fiber specimen, and

W_2 = weight of tared container plus dried fiber.

9. Report

9.1 Report the average of three determinations as the percent moisture content of the fiber sample tested.

NOTE 2—The atmospheric humidity and temperature at the sampling location may be reported to define the conditions for the test result more clearly.

10. Precision and Bias

10.1 *Precision*—The single-sample, multiple operator intralaboratory precision is within 1 % of the average in 95 % of cases.

10.2 *Bias*—The moisture content of asbestos fiber at equilibrium with the surrounding atmosphere is a function of atmospheric temperature, barometric pressure and relative humidity⁵. Thus, different values will be obtained with different conditions. Generally, this variation will not be significant for normal atmospheric changes.

11. Keywords

11.1 asbestos; fiber; moisture; moisture content

⁵ International Critical Tables, Vol 2, p. 323.

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