



Designation: D 1576 – 90 (Reapproved 1995)

Standard Test Method for Moisture in Wool by Oven-Drying¹

This standard is issued under the fixed designation D 1576; 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 amount of moisture present in ordinary commercial and industrial samples of wool in all forms except grease wool, using the oven-drying technique.

1.2 Formulas for calculating the moisture content (as-received basis) and moisture regain (oven-dried basis) are given. It is always important to use the correct term which corresponds to the basis used in the calculation (see 12.2.1).

NOTE 1—The determination of moisture content for textile materials in general is covered in Test Methods D 2654, and an optimal method for determining the moisture in wool by distillation with toluene is covered in Test Method D 2462. A method for sampling wool for the determination of moisture in wool is covered in Practice D 2525. The oven-drying method has been adapted for cotton in Test Method D 2495.

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 123 Terminology Relating to Textiles²
- D 1060 Practice for Core Sampling of Raw Wool in Packages for Determination of Percentage of Clean Wool Fiber Present²
- D 1776 Practice for Conditioning Textiles for Testing²
- D 2258 Practice for Sampling Yarn for Testing²
- D 2462 Test Method for Moisture in Wool by Distillation with Toluene²
- D 2495 Test Method for Moisture in Cotton by Oven-Drying²
- D 2525 Practice for Sampling Wool for Moisture²
- D 2654 Test Methods for Moisture Content and Moisture Regain of Textiles²
- D 3333 Practice for Sampling Man-Made Staple Fibers, Sliver, or Tow for Testing³

3. Terminology

3.1 Definitions:

3.1.1 *grease wool, n*—wool taken from the living sheep and which has not been commercially scoured.

3.1.2 *moisture content, n*—the amount of moisture in a material determined under prescribed conditions and expressed as a percentage of the mass of the moist material, that is, the original mass comprising the oven-dried substance plus any moisture present.

3.1.2.1 *Discussion*—The term “mass” is the correct designation for the property commonly designated as “weight.”

A slight amount of residual moisture may not be removed from a specimen subjected to oven drying because of the relative humidity of the ambient air. The amount of moisture retained by a specimen may be estimated from published data.⁴

There may also be a slight additional loss in mass caused by the evaporation of volatile material other than water, the amount depending on the characteristics of any added oils or emulsions.

3.1.3 *moisture-free, adj*—the condition of a material that has been exposed in an atmosphere of desiccated air until there is no further significant change in its mass (see 3.1.2).

3.1.3.1 *Discussion*—Heating the material and the desiccated air to temperatures as high as 110°C increases the rate of moisture loss but does not change the final equilibrium mass of the moisture-free material.

3.1.4 *moisture regain, n*—the amount of moisture in a material determined under prescribed conditions and expressed as a percentage of the mass of the moisture-free material (see moisture content).

3.1.4.1 *Discussion*—In this test method, the material is considered to be oven-dried after drying as described in Section 10.

3.1.5 *oven-dried, adj*—the condition of a material that has been heated under prescribed conditions of temperature and humidity until there is no further significant change in its mass (see 3.1.2).

3.1.5.1 *Discussion*—An oven-dried material will retain a small amount of moisture which is dependent on the temperature and relative humidity of the atmosphere in contact with the material during the drying process. An oven-dried material will

¹ This test method is under the jurisdiction of ASTM Committee D-13 on Textiles, and is the direct responsibility of Subcommittee D13.13 on Wool and Wool Felt.

Current edition approved Aug. 31, 1990. Published October 1990. Originally published as D 1576 – 58. Last previous edition D 1576 – 84.

² Annual Book of ASTM Standards, Vol 07.01.

³ Annual Book of ASTM Standards, Vol 07.02.

⁴ Toner, R. K., Bowen, C. F., and Whitwell, J. C., “Equilibrium Moisture Relations for Textile Fibers,” *Textile Research Journal*, Vol 17, January 1947, pp. 7 to 18.