



Designation: D 4522 – 86 (Reapproved 1993)^{ε1}

Standard Performance Specification for Feather-Filled and Down-Filled Products¹

This standard is issued under the fixed designation D 4522; 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—Editorial changes were made throughout in February 1993.

1. Scope

1.1 This performance specification covers requirements for industry products such as wearing apparel, sleeping bags, and comforters containing down, feathers, down and feather blends, or combinations of the above with other natural or synthetic materials.

1.2 These requirements apply both to the filling material and the finished product.

2. Referenced Documents

2.1 ASTM Standards:

D 123 Terminology Relating to Textiles²

D 1518 Test Method for Thermal Transmittance of Textile Materials²

D 2905 Practice for Statements on Number of Specimens for Textiles²

D 4523 Terminology Relating to Feather-Filled and Down-Filled Products³

D 4524 Test Method for Composition of Plumage³

2.2 Other Standards:

Fed. Std. No. 148a-1964 Method 4: Determination of Oxygen Number (Titration Method)⁴

TC Guides for the Feather and Down Products Industry—1971⁵

3. Terminology

3.1 Definitions:

3.1.1 *down, n*—the fine, soft plumage of waterfowl, consisting of light, fluffy filaments having at least two barbs attached; that is, barbs growing from the quill point but without a quill shaft.

3.1.2 *feathers, n*—the outgrowth forming the contour and external covering of fowl.

3.1.2.1 *Discussion*—Feathers consist of a central shaft or

quill composed of a hollow part near the body and a distal solid part, the rachis, along each side of which is a series of processes, the barbules, which in turn may be equipped with barbicels, or hooklets, the whole composing the vane of the feather. In this standard, the unqualified term “feathers” refers to material that has not been processed in any manner except by washing, dusting, chemical treatment, and sanitizing.

3.2 For the definitions of textile terms used in this standard, refer to Terminology D 123 and Terminology D 4523.

4. Specification Requirements

4.1 The properties of filled fabrics and feather and down filling materials of down products shall conform to the specification requirements as set forth in the Federal Trade Commission Guidelines. See Table 1.

4.2 The minimum thermal resistance and location of the area tested of filled fabrics shall be agreed upon by the purchaser and the supplier.

4.3 The wording of claims on the percentage of down present shall not misrepresent the facts directly or indirectly. For example:

4.3.1 A product should not be designated at “100 % Down,” “All Down,” “Pure Down,” or by other terms of similar import unless it in fact contains only down, without regard to the tolerance set forth in this standard.

4.3.2 A product should not be represented to contain a certain percentage of feathers or down unless it in fact contains the stated percentage with due regard to the tolerances set forth in this standard.

4.4 A product shall not be designated by the name of a waterfowl species unless a minimum of 90 % of that waterfowl plumage contained therein is of that species.

5. Significance and Use

5.1 Upon mutual agreement between the purchaser and the seller, feather and down filling material and fabrics intended for this end use should meet all requirements listed in Table 1 of this specification.

5.2 It is recognized that, for purposes of fashion or aesthetics, the ultimate consumer of articles made from these fabrics may find acceptable fabrics and feather and down filling materials that do not conform to all of the requirements in Table 1. Therefore, one or more of the requirements listed in

¹ This performance specification is under the jurisdiction of ASTM Committee D-13 on Textiles and is the direct responsibility of Subcommittee D13.61 on Apparel.

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² Annual Book of ASTM Standards, Vol 07.01.

³ Annual Book of ASTM Standards, Vol 07.02.

⁴ Available from the General Services Administration Business Service Center, Washington, DC 20407.

⁵ Available from the Federal Trade Commission, 6th St. and Pennsylvania Ave. N.W., Washington, DC 20580.



TABLE 1 Down-Filled and Feather Filled Products Requirements

Characteristic	Requirements	Breakdown of Requirements	Section
Filled Fabrics			
Plumage Cleanliness	Oxygen # of 20 max		7.1
Thermal Resistance	See 4.2		7.2
Filling Materials			
Plumage Cleanliness	Oxygen # of 20 max		7.1
Composition of Plumage			7.3
Down Products:			
Down, Plumules, and Down Fiber	80 % min		7.3
Consisting of:			
Down and Plumules		70 % min	7.3
Down Fiber		10 % max	7.3
Remainder:	20 % max		
Consisting of:			
Down Fiber			
Waterfowl Feather			
Waterfowl Feather Fiber			
Nonwaterfowl Feather		2 % max	7.3
Damaged Feathers		2 % max	7.3
Residue		2 % max	7.3
TOTAL:	100 %		
Waterfowl Feather Products			
Waterfowl Feathers	80 % min		7.3
Remainder:	20 % max		
Consisting of:			
Down, Down Fiber, Waterfowl Feather Fiber,			
Nonwaterfowl Feathers		8 % max	7.3
Damaged Feathers		2 % max	7.3
Residue		2 % max	7.3
TOTAL:	100 %		
Down Blends:			4.3
Species Designation:			4.4

Table 1 may be modified by mutual agreement between the purchaser and the seller, except as specified in the filling material tolerances in Table 1.

5.2.1 In such cases, any references to the specification shall specify that: “This Fabric and Feather and Down Filling Material meets ASTM Specification D 4522 except for the following characteristic(s).”

5.3 Where no prepurchase agreement has been reached between the purchaser and the seller, and in case of controversy, the requirements listed in Table 1 are intended to be used as a guide only. As noted in 5.2, ultimate consumer demands dictate varying performance parameters for any particular style of fabric or filling material.

5.4 The uses and significance of particular properties and test methods are discussed in the appropriate sections of the specified test methods.

6. Sampling

6.1 Tests shall be performed on the fabrics and feather and down filling materials as they will reach the consumer.

6.2 Unless otherwise agreed upon, as when specified in an applicable material specification, take the number of specimens

directed in each of the applicable test methods.

6.2.1 If there has been no prior agreement and the test method does not specify the number of specimens per unit in the laboratory sample, take a number of specimens per unit in the laboratory sample, such that the user may expect at the 95 % probability level that the test result is not more than 5 % of the average above or below the true value for the unit in the laboratory sample. Use a reliable estimate of the variability of individual observations in the user’s laboratory and the procedures in Practice D 2905 to determine the number of specimens per unit in the laboratory sample.

7. Test Methods

7.1 *Plumage Cleanliness*—Determine the oxygen number of the filling material as directed in Federal Standard 148a – 64, Method 4.

7.2 *Thermal Resistance*—Determine the thermal transmittance of layered fabric assemblages and filling materials as directed in Test Method D 1518 – 77.

7.3 *Composition of Plumage*—Determine the composition of the filling material as directed in Test Method D 4524.

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