Designation: D1909 – 13

Standard
Tables of Commercial Moisture Regains and Commercial Allowances for Textile Fibers[1]

This standard is issued under the fixed designation D1909; 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 These tables list the commercial moisture regains and commercial allowances commonly used for a number of textile fibers. Such moisture regain and allowance values are intended primarily for determining the commercial weight of a specific fiber when the fiber is bought or sold on this basis. These regain and allowance values also are used in calculating the linear density of yarn in procedures employing such factors and in the quantitative analysis of fiber blends.

2. Referenced Documents

2.1 *ASTM Standards:*[2]

D123 Terminology Relating to Textiles

D2118 Practice for Assigning a Standard Commercial Moisture Content for Wool and its' Products

D2494 Test Method for Commercial Mass of a Shipment of Yarn or Manufactured Staple Fiber or Tow

D2720 Practice for Calculation of Commercial Weight and Yield of Scoured Wool, Top, and Noil for Various Commercial Compositions

D4920 Terminology Relating to Conditioning, Chemical, and Thermal Properties

2.2 *BISFA Standard:*[3]

BISFA Terminology of Man-made Fibers

3. Terminology

3.1 *Definitions:*

3.1.1 For all terminology related to Conditioning and, Chemical and Thermal Properties, see Terminology D4920.

3.1.1.1 The following terms are relevant to this standard: commercial moisture regain (CMR), commercial allowance (CA).

3.1.2 For definitions of all other textile terms, refer to Terminology D123.

4. Significance and Use

4.1 The value listed for the commercial moisture regain and commercial allowance of a specific fiber type is not an experimentally determined quantity but a purely defined value arrived at for commercial purposes by interested parties. The actual moisture regain values of textile materials, when in moisture equilibrium with the standard atmosphere for testing, can deviate from the listed values. Equilibrium moisture regain values depend upon the previous history of the material. The actual finish content of textile materials can deviate from the listed values (see Test Method D2494).

5. Table of Commercial Moisture Regain Values

5.1 Commercial moisture regain values for specified fibers are listed in Table 1.

5.2 Commercial allowance values for specified fibers are listed in Table 2.

6. Keywords

6.1 moisture regain; textile fiber

[1] These tables are under the jurisdiction of ASTM Committee D13 on Textiles and are the direct responsibility of Subcommittee D13.51 on Conditioning and, Chemical and Thermal Properties.

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[2] 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 tot he standard's Document summary page on the ASTM website.

[3] International Bureau for the Standardization of Man-Made Fibres, Avenue E. Van Nieuwenhuyse 6, 1160 Brussels, www.bisfa.org.

TABLE 1 Commercial Moisture Regain Values

Fiber	Commerical Moisture Regain, %	Fiber	Commerical Moisture Regain, %
Acetate (secondary)	6.5	Modacrylic[G]	
Acrylic	1.5	Class I	0.4
Aramid, for	[A]	Class II	2.0
High Modulus Yarn	3.5	Class III	3.0
Standard Yarn	7.0	Nylon (polyamide)	4.5
Azlon	10.0	Olefin	0.0
Cotton		Polyester	0.4
Raw cotton	[B]	Ramie	
Natural cotton yarn	7.0[C]	Raw	7.6
Dyed cotton yarn	8.0[C]	Scoured	7.8
Mercerized cotton yarn	8.5[C]	Rayon (regenerated cellulose)	11.0
Flax (raw)	12.0[D]	Rubber	0.0
Flax (linen)	8.75	Saran	0.0
Fluorocarbon	0.0	Silk	11.0
Glass	0.0	Spandex	1.3
Hemp	12.0[D]	Triacetate (primary)	3.5
Jute	13.75[D]	Vinal	4.5
Metallic	0.0	Vinyon	0.0
		Wool (all forms)	13.6[E,F]

[A] Aramid polymers are manufactured for specific but diverse end uses and have nominal regains that vary in the range 1.5 to 7.0 %. The values listed in the table are the commercial regains of fibers currently produced.

[B] There is no commercial regain value for raw cotton in U.S. trade. The value specified in Rule 15 of the Egyptian sales contracts and in Rule 105 of the Liverpool sales contract for Egyptian and Syrian cotton is 8.5. The value 8.5 is also used customarily for the cotton component of blends containing cotton in the process of performing quantitative analysis.

[C] Commercial Standard CS11-63, which is issued by the National Bureau of Standards, recommends these values to be used for cotton yarns by dyers and finishers.

[D] These values are the official commercial moisture regains listed in British Standards Handbook 11, Methods of Test for Textiles, Section 1, 1963.

[E] A moisture content of 12.0 %, which is equal to a moisture regain of 13.6 %, has been recommended for all wool yarns in Practice D2118. However, certain other regain values are commonly used. Other values, which should perhaps be classified as commercial allowance values, are listed below for information only.

Woolen yarn	13.0
Woolen hand knitting yarn	11.1
Worsted yarn (dry spun)	15.0
Worsted yarn (oil spun)	13.0

[F] For the commercial moisture contents of wools to which various specific commercial designations are applied, see Practice D2720.

[G] Class III modacrylic fibers include such fibers as Verel modacrylic fiber. Class II includes such fibers as SEF modacrylic fiber. Class I modacrylic fibers includes all other modacrylic fibers.

TABLE 2 Commercial Allowance Values[A]

Fiber	Commerical Allowance, %	Fiber	Commerical Allowance, %
Acetate	9.0	Lyocell	13.0
Acrylic	2.0	Melamine	
Alginate	20.0	Metal	2.0
Aramid, for		Modacryl	2.0
High Modulus Yarn	3.5	Modal	13.0
Standard Yarn	7.0	Polyamide	
Carbon		FY	5.75
Ceramic		SF	6.25
Chlorofiber	2.0	Polyester	1.5
Cupro	13.0	Polyethylene	1.5
Elastane	1.3	Polyimide	3.5
Elastodiene	1.0	Polylactide	1.5
Elastomultiester	1.5	Polypropylene	2.0
Elastolefin	1.5	Triacetate	7.0
Fluorofiber	0.0	Viscose	13.0
Glass	2/3.0	Vinylal	5.0

[A] BISFA, Terminology of man-made fibers, 2009 edition.