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Standard Table of Commercial Moisture Regains for Textile Fibers[1]

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[1] This table is under the jurisdiction of ASTM Committee D13 on Textiles and is the direct responsibility of Subcommittee D13.51 on Chemical Conditioning and Performance Test Methods.

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1. Scope

1.1 This table lists the commercial moisture regains commonly used for a number of textile fibers. Such moisture regain 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 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]

D 123 Terminology Relating to Textiles

D 2118 Practice for Assigning a Standard Commercial Moisture Content for Wool and Its Products

D 2720 Practice for Calculation of Commercial Weight and Yield of Scoured Wool, Top, and Noil for Various Commercial Compositions

3. Terminology

3.1 *Definitions:*

3.1.1 *commercial moisture regain (CMR), n—* a formally adopted, arbitrary value, to be used with the oven-dried mass of textile fibers, when calculating the commercial mass of a shipment or delivery.

3.1.2 For definitions of other textile terms used, refer to Terminology D 123.

4. Significance and Use

4.1 The value listed for the commercial moisture regain of a specific fiber type is not an experimentally determined quantity but a purely arbitrary 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, bear no consistent relation to the commercial moisture regain values listed herein. Equilibrium moisture regain values depend upon the previous history of the material.

5. Table of Commercial Moisture Regain Values

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

6. Keywords

6.1 moisture regain; textile fiber

[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*, ~~Vol 07.01.~~ volume information, refer tot he standard's Document summary page on the ASTM website.

TABLE 1 Commercial Moisture Regain Values

Fiber	Regain, %	Fiber	Regain, %
Acetate (secondary)	6.5	Modacrylic[G]	
Acrylic	1.5	Class I	0.4
Aramid, for	[A]	Class II	2.0
plastic reinforcement	3.5		
Standard Yarn	7.0		
		Class III	3.0
~~filtration fabrics and safety apparel~~	~~4.5~~	~~Nylon (polyamide)~~	~~4.5~~
		Nylon (polyamide)	4.5
~~reinforcement of rubber goods~~	~~7.0~~	~~Olefin~~	~~0.0~~
		Olefin	0.0
Azlon	10.0	Polyester	0.4
Cotton		Ramie	
Raw cotton	[B]	Raw	7.6
Natural cotton yarn	7.0[C]	Scoured	7.8
Dyed cotton yarn	8.0[C]	Rayon (regenerated cellulose)	11.0
Mercerized cotton yarn	8.5[C]	Rubber	0.0
Flax (raw)	12.0[D]	Saran	0.0
Flax (linen)	8.75	Silk	11.0
Fluorocarbon	0.0	Spandex	1.3
Glass	0.0	Triacetate (primary)	3.5
Hemp	12.0[D]	Vinal	4.5
Jute	13.75[D]	Vinyon	0.0
Metallic	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 D 2118. 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 D 2720.

[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.