Designation: D3992 – 94 (Reapproved 2012)ε1

Standard Specifications for Fineness of Wool Top or Mohair Top and Assignment of Grade[1]

This standard is issued under the fixed designation D3992; 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.

ε[1] NOTE—The terminology section was updated in July 2012.

1. Scope

1.1 These specifications are applicable in the classification, by fineness grade, of the fiber in wool top, mohair top, wool yarns, mohair yarns, wool fabrics, and mohair fabrics of the worsted type.

NOTE 1—For fineness specifications for wool, mohair, and alpaca, refer to Specifications D3991 and D2252.

2. Referenced Documents

2.1 *ASTM Standards:*[2]

D123 Terminology Relating to Textiles

D2130 Test Method for Diameter of Wool and Other Animal Fibers by Microprojection

D2252 Specification for Fineness of Types of Alpaca

D3991 Specifications for Fineness of Wool or Mohair and Assignment of Grade

D4845 Terminology Relating to Wool

2.2 *Federal Standards:*

Official Standards of the United States for Grades of Wool Top, Section 31.100[3]

Measurement Method for Determining Grade of Wool Top, Section 31.301[3]

Official Standards of the United States for Grades of Mohair Top, Section 32.100[4]

Measurement Method for Determining Grade of Mohair Top, Section 32.302[4]

3. Terminology

3.1 For all terminology related to D13.13, refer to Terminology D3991.

3.1.1 The following terms are relevant to this standard: average fiber diameter, fineness, grade, mohair, top, wool.

3.2 For all other terminology related to textiles, refer to Terminology D123.

4. Requirements

4.1 The grade of wool top shall conform to Table 1.

4.2 The grade of mohair top shall conform to Table 2.

5. Significance and Use

5.1 These specifications are considered satisfactory for classifying wool top or mohair top by grade and provide a basis for acceptance of commercial shipments.

6. Test Method

6.1 Test the material as directed in Test Method D2130. Measure at least the minimum number of fibers needed to attain confidence limits of the mean within ±0.4 μm at a probability level of 95 % (see Annex A1 of Test Method D2130).

7. Assignment of Grade

7.1 Compare the observed average fiber diameter and fiber diameter distribution, determined as directed in Section 6, with the specifications for the various grades for the material being tested in Table 1 or Table 2. Assign the grade that corresponds to the average fiber diameter and fiber diameter distribution requirements specified in Table 1 for wool top or Table 2 for mohair top. If the observed average diameter and fiber diameter distribution correspond to a single grade, assign that grade. If the fiber diameter distribution does not meet the requirements for the grade to which the average fiber diameter corresponds, assign a dual grade designation, the second designation being one grade coarser than the grade to which the average fiber diameter corresponds. Assignment of grade is illustrated by the examples in 7.1.1 and 7.1.2.

7.1.1 *Wool Top:*

7.1.1.1 *Example 1*—Average fiber diameter, 28.10 μm; fiber diameter distribution; 30.0 μm and under, 64 %; 30.1 μm and over, 36 %; 50.1 μm and over, 1 %: grade designation, 56s.

[1] These specifications are under the jurisdiction of ASTM Committee D13 on Textiles and are the direct responsibility of Subcommittee D13.13 on Wool and Felt.

Current edition approved July 1, 2012. Published August 2012. Originally approved in 1981. Last previous edition approved in 2006 as D3992 – 94 (2006). Replaces D472 and D1381. DOI: 10.1520/D3992-94R12E01.

[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 to the standard's Document Summary page on the ASTM website.

[3] *Federal Register*, Vol 33, No. 248, Dec. 21, 1968, pp. 19073–19076.

[4] *Federal Register*, Vol 38, No. 4, Jan. 8, 1976, pp. 964–967.

TABLE 1 Specifications for Grades of Wool Top[A,B]

Grade	Average Fiber Diameter Range, μm	Fiber Diameter Distribution, %							
		25 μm and Under, min	30 μm and Under, min	40 μm and Under, min	25.1 μm and Over, max	30.1 μm and Over, max	40.1 μm and Over, max	50.1 μm and Over, max	60.1 μm and Over, max
Finer than 80s	under 18.10	95	...	...	5	1	...	...	...
80s	18.10–19.59	91	...	...	9	1	...	...	...
70s	19.60–21.09	83	...	...	17	3	...	...	...
64s	21.10–22.59	...	92	...	...	8	1	...	...
62s	22.60–24.09	...	86	...	...	14	1.5	...	...
60s	24.10–25.59	...	80	...	...	20	2	...	...
58s	25.60–27.09	...	72	...	...	28	...	1	...
56s	27.10–28.59	...	62	...	...	38	...	1	...
54s	28.60–30.09	...	54	...	...	46	...	2	...
50s	30.10–31.79	...	44	...	...	56	...	2	...
48s	31.80–33.49	...	...	75	...	...	25	...	1
46s	33.50–35.19	...	...	68	...	...	32	...	1
44s	35.20–37.09	...	...	62	...	...	38	...	2
40s	37.10–38.99	...	...	54	...	...	46	...	3
36s	39.00–41.29	...	...	44	...	...	56	...	4
Coarser than 36s	over 41.29	...	...	...	...	...	...	...	...

[A] In each grade, the minimum percent and the first maximum percent total 100 %. The second maximum percent distribution permitted for any grade is part of, and not in addition to, the first maximum percent.
[B] The requirements in Table 1 are the same as the Official Standards of the United States for Grades of Wool Top as promulgated by the U.S. Department of Agriculture, effective Jan. 20, 1969.

TABLE 2 Specifications for Grades of Mohair Top[A,B]

Grade	Fineness Range, μm	Fiber Diameter Distribution, %						
		30 μm and Under, min	40 μm and Under, min	50 μm and Under, min	30.1 μm and Over, max	40.1 μm and Over, max	50.1 μm and Over, max	60.1 μm and Over, max
Finer than 40s	under 23.55	80	...	...	20	1	...	...
40s	23.55–25.54	74	...	...	26	4	...	...
36s	25.55–27.54	67	...	...	33	6	...	...
32s	27.55–29.54	57	...	...	43	8	...	...
30s	29.55–31.54	47	...	...	53	13	...	...
28s	31.55–33.54	...	80	...	...	20	3	...
26s	33.55–35.54	...	73	...	...	27	5	...
24s	35.55–37.54	...	64	...	...	36	8	...
22s	37.55–39.54	...	56	...	...	44	13	...
20s	39.55–41.54	...	...	82	...	...	18	6
18s	41.55–43.54	...	...	77	...	...	23	8
Coarser than 18s	over 43.54	...	...	...	...	...	...	...

[A] In each grade, the minimum percent and the first maximum percent total 100 %. The second maximum percent distribution permitted for any grade is part of, and not in addition to, the first maximum percent.
[B] The requirements in Table 2 are the same as the Official Standards of the United States for Grades of Mohair Top as promulgated by the U.S. Department of Agriculture, effective Jan. 1, 1973.

7.1.1.2 *Example 2*—Average fiber diameter, 28.10 μm; fiber diameter distribution; 30.0 μm and under, 61 %; 30.1 μm and over, 39 %; 50.1 μm and over, 2 %: grade designation, 56/54s.

7.1.2 *Mohair Top:*

7.1.2.1 *Example 1*—Average fiber diameter, 32.60 μm; fiber diameter distribution; 40 μm and under, 83 %; 40.1 μm and over, 17 %; 50.1 μm and over, 3 %: grade designation, 28s.

7.1.2.2 *Example 2*—Average fiber diameter, 32.60 μm; fiber diameter distribution; 40 μm and under, 79 %; 40.1 μm and over, 21 %; 50.1 μm and over, 4 %: grade designation, 28/26s.

7.2 *Interpretation of Results*—The true average fiber diameter of a lot of wool top or mohair top can be determined only by measurement of every fiber in the lot. Since this is not practicable, reliance is placed on the result obtained through the measurement of a sample. The likelihood that the observed average fiber diameter correctly identifies the grade increases as the average approaches the midpoint of the fineness range of the grade concerned, and decreases as the average approaches either limit of such range. The probability of the correctness of the grade designation of a lot may be increased by increasing the number of fibers measured.

8. Conformance

8.1 When the purchaser and the supplier have agreed upon specific requirements for fineness, wool or mohair top that fails to meet those requirements may be rejected. Rejection should be reported to the supplier in writing. In case of disagreement with the results of the tests, the supplier may make claim for a retest.

9. Keywords

9.1 animal fibers (except wool); number grade; wool; yarn