BS ISO 18596:2015

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Test method for staple length of dehaired cashmere — Hand-arranging method

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National foreword

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The UK participation in its preparation was entrusted to Technical Committee TCI/24, Physical testing of textiles.

A list of organizations represented on this committee can be obtained on request to its secretary.

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INTERNATIONAL STANDARD

ISO 18596

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Test method for staple length of dehaired cashmere — Hand-arranging method

Méthode d'essai de la longueur de fibre du cachemire épilé — Méthode d'organisation à la main

Reference number
ISO 18596:2015(E)

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Foreword

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For an explanation on the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the WTO principles in the Technical Barriers to Trade (TBT) see the following URL: Foreword - Supplementary information

The committee responsible for this document is ISO/TC 38, *Textiles*, Subcommittee SC 23, *Fibres and yarns*.

INTERNATIONAL STANDARD ISO 18596:2015(E)

Test method for staple length of dehaired cashmere — Hand-arranging method

1 Scope

This International Standard specifies a test method for a staple length of dehaired cashmere by a hand-arranging method.

This International Standard is also applicable to dehaired camel, dehaired yak, etc.

2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO 139, *Textiles — Standard atmospheres for conditioning and testing*

3 Terms and definitions

For the purpose of this document, the following terms and definitions apply.

3.1
dehaired cashmere
cashmere which has been scoured and dehaired

3.2
hand-arranging staple length
average fibre length measured on the length distribution graph which is arranged uniformly with fibres

3.3
short fibre content
number of fibres equal to or less than 15 mm in length as a percentage of the total number of fibres

4 Principle

Fibres are uniformly arranged onto a length distribution graph on a flannelette board. The length values are measured at 10 mm intervals. The weighted mean of these length values is called the hand-arranging staple length.

5 Apparatus

5.1 Flannelette board, covered with black knit flannelette (polyester fibres, 150 g/m^2 to 250 g/m^2 fabric weight).

5.2 Tweezers.

5.3 Steel plate rulers, with the minimum scale of 0,5 mm.

5.4 Coordinate papers, with the minimum scale of 1 mm.

6 Sample preparation

6.1 Lot sample

6.1.1 Proportion and amount

Randomly draw samples from each bale if the total number of bales in the lot is five or fewer.

If the number of bales in the lot exceeds five bales, draw samples from 20 % of the additional number of bales. Quantities less than one bale are counted as one bale. The total mass of the lot sample shall not be less than 300 g.

6.1.2 Sampling

Randomly select and draw samples from the top, middle and bottom positions, deeper than 15 cm from the outermost bale surface.

6.2 Laboratory sample

Spread out the lot sample on the test table and blend it by hand into a homogeneous state. Then divide it into two equal parts. One is the laboratory sample, and the other is retained as a spare.

6.3 Test specimen

Randomly draw 0,09 g to 0,15 g of fibres from each side of the laboratory sample at different positions (from no fewer than 40 positions). Mix these fibres well, then divide them into three equal parts. Two parts are used in parallel tests, the third is retained as a spare test specimen.

6.4 Atmospheres for conditioning and testing

Atmospheres used for conditioning and testing shall be in accordance with ISO 139. All the samples shall be conditioned for a minimum of 24 h immediately before testing and remain conditioned during testing.

7 Test procedure

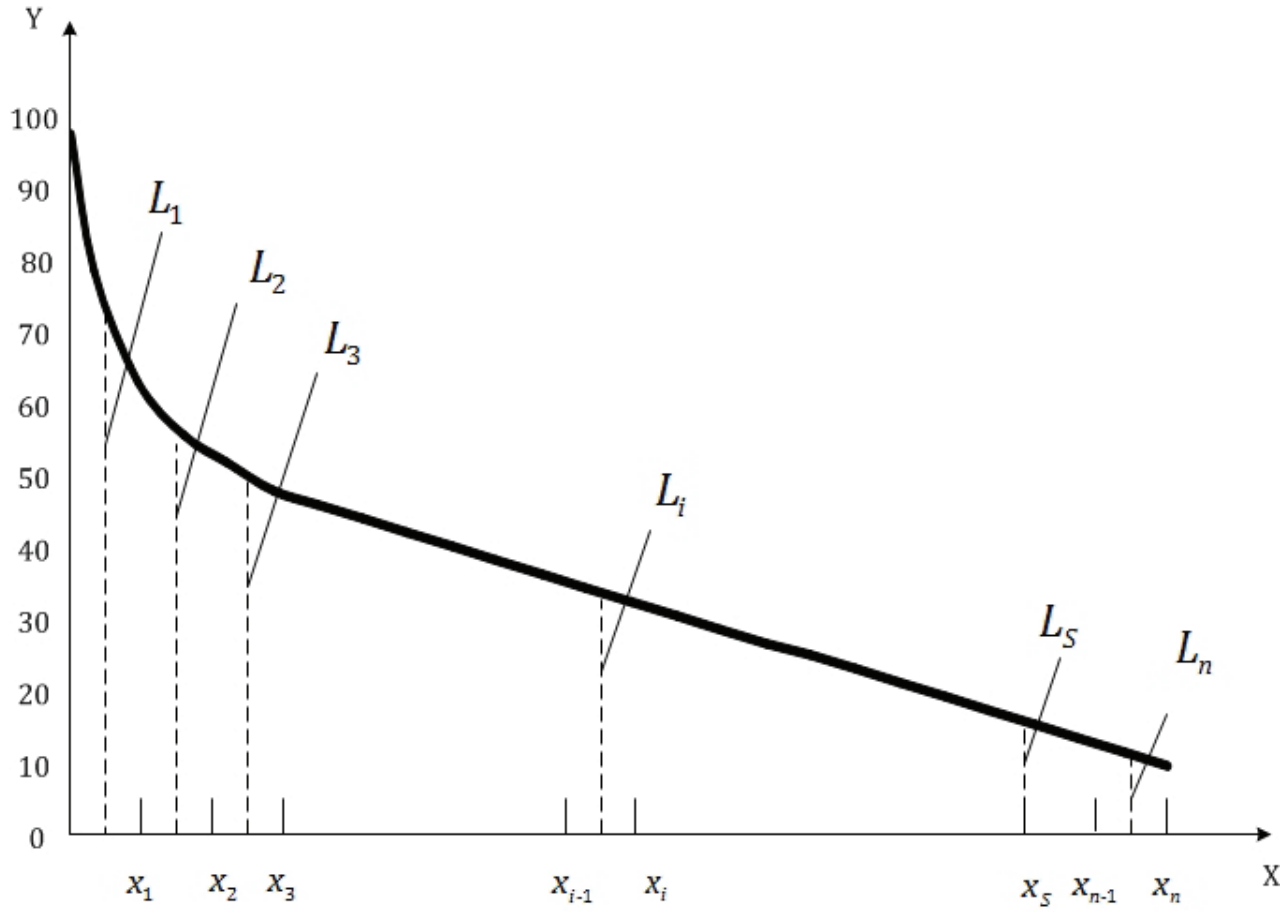
7.1 Layout of the fibre

7.1.1 Repeatedly sort the test specimen by hand into a natural neat bundle aligned at one end.

7.1.2 While holding the aligned end of the specimen with one hand, place the other end on the flannelette board and press by thumb. Slowly draw an equivalent amount of fibres out of the fibre bundle, then successively arrange the fibres from long to short on the flannelette board keeping one end aligned.

7.1.3 After all the fibres have been pulled out completely, take all the fibres with tweezers and re-sort the sample into a fibre bundle again. Repeat the preceding operations (not more than five times) until all the fibres are uniformly arranged into a length distribution graph whose bottom margin is 250 mm ± 10 mm, the fibres are naturally parallel to each other and the distribution's thickness is uniform as shown in Figure 1.

Dimensions in millimetres



Key

X abscissa

Y fibre length

Figure 1 — Length distribution graph

7.1 Plotting

Takethe bottom margin as the abscissa, and the fibre length as the ordinate as shown in Figure 1. Mark the abscissa x_1, x_2, …, x_i, …, x_{n-1} at 10 mm intervals from the origin. If the interval of the last group is not more than 10 mm, mark the terminal point's abscissa as x_n.

Measure the corresponding length L_1, L_2, …, L_i, …, L_n of each group's midpoint with steel plate rulers. Mark all the points on the coordinate papers. The base line of length distribution graph is x_n mm.

8 Calculations and expression of results

8.1 Hand-arranging staple length

Calculate the hand-arranging staple length from Formula (1), expressed in integer:

$$L = \frac{10 \times \sum_{i=1}^{n-1} L_i + \left(x_n - x_{n-1}\right) \times L_n}{x_n} \quad (1)$$

where

L is the hand-arranging staple length, expressed in millimetres (mm);

L_i is the staple length corresponding to different distances, expressed in millimetres (mm);

x_n is the terminal point 's abscissa value corresponding to the last length group, expressed in millimetres (mm);

$x_{n\text{-}1}$ is the starting point's abscissa value corresponding to the last length group, expressed in millimetres (mm);

L_n is the staple length corresponding to the last length group's midpoint, expressed in millimetres (mm).

8.2 Short fibre content

Calculate the short fibre content from Formula (2), rounded to one decimal place:

$$D = \frac{x_n - x_s}{x_n} \times 100\ \% \quad (2)$$

where

D is the short fibre content, expressed as a percentage (%);

x_n is the terminal point's abscissa value corresponding to the last length group, expressed in millimetres (mm);

x_s is the abscissa corresponding to the staple length of 15 mm, expressed in millimetres (mm).

8.3 Test result

Take the average of the two test specimens' value as the test result.

When the absolute value of the difference between the two specimens is more than 2 mm, the third specimen shall be tested. The final test result is the mean value of the three specimens.

9 Test report

The test report shall contain at least the following information:

a) a reference to this International Standard, i.e. ISO 18596;

b) the description of the samples;

c) the standard atmosphere for conditioning and testing;

d) testing results, including hand-arranging staple length, short fibre content;

e) deviation from this International Standard, if any;

f) anything unusual during the testing;

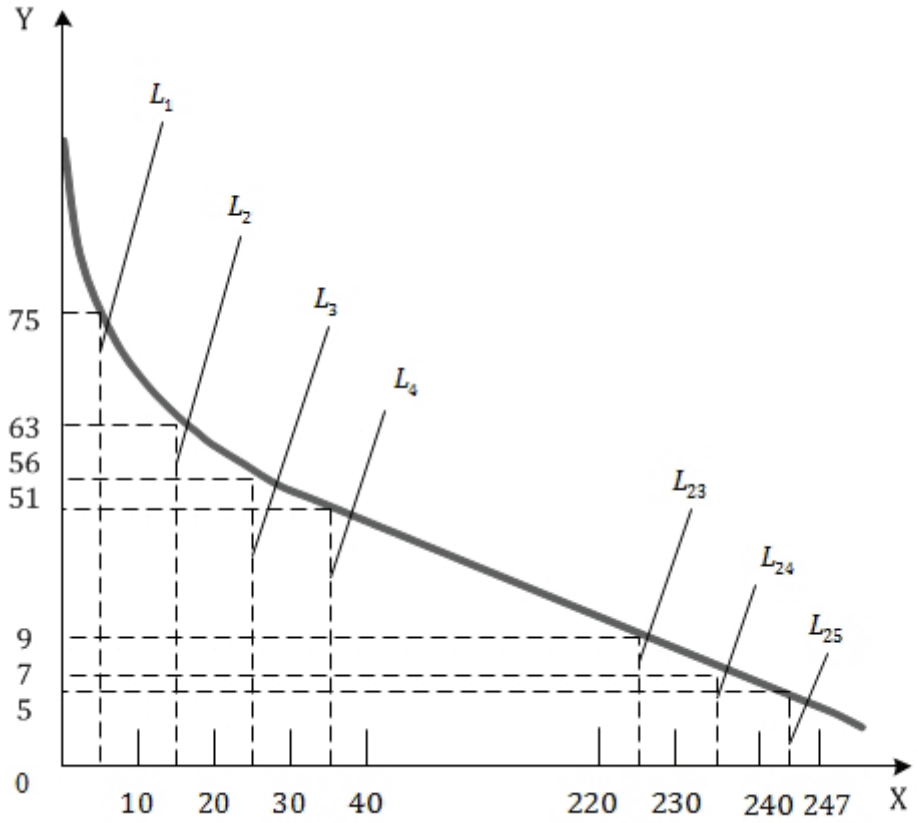
g) testing date.

Annex A
(informative)

Example of calculations made to obtain the hand-arranging staple length

A.1 Length distribution graph

Dimensions in millimetres



Key

X abscissa

Y fibre length

Figure A.1 — Example of a length distribution graph

As shown in Figure A.1, mark the abscissa (x_1 = 10, x_2 = 20, x_3 = 30, x_4 = 40, …, x_{22} = 220, x_{23} = 230, x_{24} = 240) at 10 mm intervals from the origin. Mark the terminal point's abscissa (x_{25} = 247).

Measure the corresponding length (L_1 = 74, L_2 = 63, L_3 = 56, L_4 = 51, …, L_{23} = 9, L_{24} = 7, L_{25} = 5) of each group's midpoint (5, 15, 25, 35, …, 225, 235, 243,5) with steel plate rulers. The base line of the length distribution graph is 247 mm.

A.2 Calculations of the hand-arranging staple length

$$
\begin{aligned}
L &= \frac{10 \times \sum_{i=1}^{n-1} L_i + \left(x_n - x_{n-1}\right) \times L_n}{x_n} \\
&= \frac{10 \times (75 + 63 + 56 + 51 + \cdots + 9 + 7) + (247 - 240) \times 5}{247} \\
&= 32 \text{ mm}
\end{aligned}
\tag{A.1}
$$

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