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**Quantitative determination for mixtures of special
animal fiber and wool**

特种动物纤维与绵羊毛混合物含量的测定

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Quantitative determination for mixtures of special animal fiber and wool

1 Scope

This standard specifies the determination method, of using a projection microscope, to determine the content of each component fiber, in special fluffy animal fibers, wool, and their mixtures, such as cashmere, rabbit hair, mohair, camel wool (hair), yak wool (hair), alpaca hair.

This standard applies to special animal fibers, wool and their mixtures.

2 Normative references

The following documents are essential to the application of this document. For the dated documents, only the versions with the dates indicated are applicable to this document; for the undated documents, only the latest version (including all the amendments) is applicable to this standard.

GB/T 6529 Textiles - Standard atmospheres for conditioning and testing

GB/T 8170 Rules of rounding off for numerical values & expression and judgement of limiting values

GB 9994 Conventional moisture regains of textiles

GB/T 10685 Wool - Determination of fiber diameter - Projection microscope method

3 Principle

The determination of the content of special animal fiber and wool mixture is, based on the scale structure characteristics of special animal fiber and wool, to distinguish various types of fibers, on a projection microscope or a microscope imaging analyzer; respectively record the number; measure their diameters; use formula to calculate the mass percentage of special animal fiber, wool and their mixture.

multiple of a complete pattern, from each piece). Cut it, from the middle along the warp direction, into two parts; one is the representative sample of the test, whilst the other is the standby sample.

7.2.5 Knitted fabric specimen: Disassemble the knitted fabric into yarns. Cut at least 150 pieces of 20 cm long yarn. Then cut the yarn, from the middle, into two parts; one is the representative sample of the test, whilst the other is the standby sample.

8 Pre-conditioning and humidity conditioning

Carry out pre-conditioning and humidity conditioning of specimen, under the conditions specified in Chapter 6. When the moisture regain of the specimen is lower than the public moisture regain, pre-conditioning may be exempted. Refer to GB 9994 for the public moisture regain of various types of fibers.

9 Preparation of specimen

A total of three test specimens are prepared in this test. The specimens prepared shall ensure that the number of measured fibers is not less than 1500. Two of them are independently tested by two operators. If there is a difference between the two results, it shall test a third test specimen.

9.1 Loose fiber

9.1.1 Spread the test representative sample flat on the test bench. Use tweezers to take at least about 500 mg of fiber (not less than 20 points in total), equally from different parts. Mix and divide as evenly as possible into three parts. Sort it slightly, to make the fibers basically parallel.

9.1.2 Use a Hastelloy slicer or double blades, to cut fiber fragments of about 0.4 mm ~ 0.6 mm long, from the middle of the fiber. Each fiber can only be cut once; it must not be cut repeatedly or lost.

9.1.3 Put all the fiber fragments on the watch glass. Add dropwise an appropriate amount of liquid paraffin. Use tweezers to stir it, to make it evenly distributed in the medium. Then take an appropriate amount of specimen. Place it on the glass slide. Cover a cover glass. When covering, remove the excess viscous medium mixture first, to ensure that no medium is squeezed out from under the cover glass, after the cover glass is covered, so as to avoid fiber loss.

9.2 Pile

9.2.1 Cut out about 1/3 of each pile, in the longitudinal direction.

9.2.2 Use a Hastelloy slicer or a double blade, to cut the fiber fragments about 0.4 mm ~ 0.6 mm long, from the middle of the pile. Do not cut repeatedly or lose.

9.2.3 The remaining operations are the same as 9.1.3.

9.3 Yarn

9.3.1 Divide the test representative sample into three parts, as evenly as possible.

9.3.2 Use a Hastelloy slicer or double blades, to cut fiber fragments of about 0.4 mm ~ 0.6 mm long. Each yarn can only be cut once; it must not be cut repeatedly or lost.

9.3.3 The remaining operations are the same as 9.1.3.

9.4 Woven fabrics

9.4.1 For the representative samples with significant differences in warp and weft yarns, it shall disassemble the warp and weft yarns first. Then weigh them respectively (if the fabric is circulated in a pattern, it shall disassemble at least an integer multiple of the complete pattern). Take at least 150 yarn segments in each direction. Divide them into three parts as evenly as possible. If there is no significant difference in the warp and weft yarns of the fabric, all the yarns in a complete square can be cut, as a test specimen.

9.4.2 The rest of the operations are the same as 9.3.2 and 9.3.3.

9.5 Knitted fabric

After taking out the yarn, operate according to 9.3.

10 Measurement

10.1 Observe the various fibers, which enter the field of view, according to the method specified in the test procedure of GB/T 10685. Measure the diameter of each type of fiber as required. The number of each fiber, whose diameter is measured, shall not be less than 300. At the same time, according to the fiber morphology and structure characteristics, identify its type, as shown in Appendix A. Respectively record the number of various types of fibers. For each test specimen, test a total of more than 1500 fibers.

Note: If the number of fibers has reached 1500, whilst the glass slide only moves to the middle, it must continue to count to the side before stopping. If the proportion of the above-mentioned certain types of fibers, in the mixture, is low, AND the specimen

Appendix A

(Normative)

Surface morphological characteristics of commonly used animal fibers

A.1 Cashmere

Cashmere is composed of scales and cortex, without a medulla layer. The edges of the scales are smooth, similar to a ring-like covering on the hair shaft; the covering spacing is larger than that of wool; the scale density is 60 pieces/mm ~ 80 pieces/mm; the scale is relatively thin, which closely wrap around the hair shaft, with a small opening angle; the cross-section is often a regular circle. The coarse hair fiber is composed of three parts: scale layer, cortex layer, medulla layer. The edges of the scales, at the lower part of the coarse hair shaft, are smooth or slightly wavy. The edge of the scales near the hair tip is zigzag. The cross-section of the coarse hair is approximately round, some are elliptical.

A.2 Rabbit hair

Rabbit hair basically has a medulla layer; only a very small part of the fine hair is free from medulla. The medulla of the villi is in intermittent and single-row ladder. Its cross-section is irregular quadrilateral, which has a cavity in the middle. The medulla of the coarse hair is ladder-shaped, in double, three, four rows; a very small number can reach more than ten rows; the cross-section is in ovaloid or oval shape, with one to more cavities in the middle. The scales of rabbit hair are mostly oblique wood grain.

A.3 Mohair

Mohair is heterogeneous hair, which is mixed with a certain amount of medullated hair and dead hair. The scales are flat and close to the hair shaft, rarely overlapping, with a smooth surface and strong luster. The cross-sectional shape of the fiber is oval or approximately circular.

A.4 Camel fluff (hair)

The color of camel hair fiber is milky white, light yellow, yellowish brown, tan, etc. It is mainly composed of scale layer and cortex layer; some even has medulla layer. It has relatively small amount of surface scales, which are in incomplete covering; the edge is smooth AND the scale density is 40 pcs/mm ~ 90 pcs/mm; the cross-sectional shape is almost circular. The medulla layer of camel hair is thin and discontinuous. The medulla layer of thick hair is continuously distributed in thin and narrow strips.

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