ICS 59.080.01
CCS W 04

NATIONAL STANDARD OF THE PEOPLE'S REPUBLIC OF CHINA

GB/T 40905.2-2022

Textiles - Quantitative analysis of cashmere, wool, other specialty animal fibres and their blends - Part 2: Scanning electron microscopy method

Issued on: October 14, 2022 **Implemented on: May 1, 2023**

Issued by: State Administration for Market Regulation, China National Standardization Administration

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foreword

This document is in accordance with the provisions of GB/T 1.1-2020 "Guidelines for Standardization Work Part 1.Structure and Drafting Rules of Standardization Documents"

drafted.

This document is the second part of GB/T 40905 "Quantitative Analysis of Textile Cashmere, Sheep Wool, Other Special Animal Fibers and Their Mixtures"

part. GB/T 40905 has released the following parts.

--- Part 1.Optical microscopy;

--- Part 2.Scanning electron microscopy.

This document is modified using ISO 17751-2.2016 "Textile cashmere, sheep wool, other special animal fibers and their mixtures quantitative

Analysis Part 2.Scanning Electron Microscopy.

This document has the following structural adjustments compared to ISO 17751-2.2016.

--- Added Chapter 2;

---Chapter 3~Chapter 8 correspond to Chapter 2~Chapter 7 of ISO 17751-2.2016;

---9.1 corresponds to Chapter 8 of ISO 17751-2.2016, and 9.2 is added;

--- Added Chapter 10.

The technical differences between this document and ISO 17751-2.2016 and their reasons are as follows.

--- Added the content that woven fabric samples with different warp and weft yarns should be taken apart, weighed and recorded separately (see 7.2.4.1, ISO 17751-2.

6.2.4.1 of.2016) to meet the actual testing and calculation requirements;

--- Modified the description of the third situation after the first sample holder detection (see 8.2.1, 7.2.1 of ISO 17751-2.2016), so that the actual

More comprehensive coverage of the detection situation;

--- Increased the representation of test results (see 9.2) to make the standard content more comprehensive;

--- Added a chapter of test report (see Chapter 10) to make the standard content more comprehensive;

--- Change the nature of Appendix A from "informative" to "normative" (see Appendix A, Appendix A of ISO 17751-2.2016) to make it

It is used in conjunction with the actual test;

--- Changed and increased the density values of some fibers in Appendix C (see Appendix C, Appendix C of ISO 17751-2.2016) to meet the

Daily testing is required.

The following editorial changes have been made to this document.

--- Added note in 3.1;

--- Adjust the note in 8.1 of ISO 17751-2.2016 to the content of the text to amend the expression of the normative appendix in the text;

--- Removed references to ISO 17751-2.2016.

Please note that some content of this document may be patented. The issuing agency of this document assumes no responsibility for identifying patents.

Introduction

Cashmere fiber is of good quality and expensive, but cashmere and other animal hair fibers such as sheep wool, yak wool, camel hair, etc. have similar properties.

physical and chemical properties, therefore, their mixtures could not be accurately quantified by mechanical or chemical methods in the early days. Moreover, these fibers have the appearance of

The state is also relatively close, and the current detection methods are not easy to accurately quantify.

Research work on the accurate identification of cashmere fibers is ongoing. At present, the widely used and mature technology is the microscope identification

methods, including light microscopy (LM) and scanning electron microscopy (SEM).

--- The advantage of the LM method is that the medulla layer and pigment distribution of the fibers can be observed. The disadvantage of the LM method is that it cannot clearly present a

Some fine surface structures; black samples need to be decolorized; improper decolorization will affect the identification of fibers.

---SEM method and LM method have complementary advantages, so some types of fibers need to be identified by SEM method.

For some difficult-to-determine samples, it is necessary to combine optical microscopy and scanning electron microscopy to take advantage of their respective advantages.

identify.

Practice has proved that the accuracy of quantitative analysis using this method is combined with the rich testing experience of the inspectors (that is, the appearance of various animal fibers).

morphological understanding and familiarity) have a great relationship. Therefore, in addition to the text description, this document also gives a detailed description of the different categories in Appendix B.

The appearance and surface morphology pictures and characteristic descriptions of type animal fibers are provided for the reference of inspectors.

GB/T 40905 is a standard for quantitative analysis of cashmere, sheep wool, other special animal fibers and their mixtures. It consists of two parts.

--- Part 1.Optical microscopy;

--- Part 2.Scanning electron microscopy.

Textile Cashmere, sheep wool, other special animals

Quantitative analysis of fibers and their mixtures

Part 2.Scanning Electron Microscopy

1 Scope

This document specifies the qualitative and quantitative analysis of cashmere, sheep wool, other special animal fibers and their mixtures by scanning electron microscopy

Methods.

This document applies to cashmere, sheep wool, other special animal fibers and their blends, including loose fibers, semi-finished products and finished products.

2 Normative references

There are no normative references in this document.

3 Terms and Definitions

The following terms and definitions apply to this document.

3.1

special animal fiber specialtyanimalfibre

A general term for hair keratin fibers obtained from other animals other than sheep wool fibers obtained from sheep.

Note. Special animal fibers include cashmere, camel hair, yak hair, mohair, angora rabbit hair, alpaca hair, etc.

3.2

Scanning Electron Microscope

An intermediate microscopic morphological observation instrument between transmission electron microscopes and optical microscopes, using a focused high-energy electron beam

A variety of physical information signals are generated.

Note 1.The principle is to scan the primary focused electron beam over the whole area involved in the solid sample surface, and then receive, amplify and display the signal from this area to

Complete observation of the surface morphological characteristics of the sample.

Note 2.The signals obtained by scanning electron microscopy are secondary electrons (3.3), Auger electrons, characteristic X-rays, etc.

3.3

secondary electron

The low-energy extra-nuclear electrons are released from the metal atoms in the 5nm~10nm scanning region, and the thickness of this region is less than

10nm, the outermost metal coating surface closest to the sample, is an electron beam with an energy of tens of keV under the impact of the initial focusing.

NOTE. Since the mean free path of electrons escaping deep from the sample is small and the surface is sensitive, it is possible to generate clear coated surface fibers with the highest image resolution.

dimensional appearance morphological image.