

Textiles — Quantitative analysis of animal fibres by microscopy — Cashmere, wool, speciality fibres and their blends

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National foreword

This British Standard is the UK implementation of ISO 17751:2007.

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

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Textiles — Quantitative analysis of animal fibres by microscopy — Cashmere, wool, speciality fibres and their blends

*Textiles — Analyse quantitative des fibres animales par microscopie —
Cashemire, laine, fibres spéciales et leurs mélanges*



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Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

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Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights.

ISO 17751 was prepared by Technical Committee ISO/TC 38, *Textiles*, Subcommittee SC 23, *Fibres and yarns*.

This International Standard is based on IWTO-58-00, *Scanning Electron Microscopic Analysis of Speciality Fibres and Sheep's Wool and their Blends*, copyright the International Wool Textile Organisation (IWTO), used with permission of IWTO.

Introduction

Labelling textiles to indicate their composition is necessary according to relevant laws and regulations, not only for the final products but also for the raw materials at different stages of processing. Stringent labelling regulations for textile products at all stages of processing have compelled the manufacturers to state not only the types of fibre but also the mass percentages of the fibres contained in their goods.

Wool and speciality fibres (cashmere, mohair, llama/alpaca, camel hair, angora rabbit hair, etc.) exhibit great similarities in their physical and chemical properties, so that their blends cannot be separated mechanically or chemically. Light microscopy (LM) has traditionally been applied for fibre identification and blend analysis.

Wool has a long tradition as the main substitute in mislabelling when it is blended with animal fibres such as mohair and cashmere. A reliable method, complementing the current and widely used standards based on light microscopy, for distinguishing wool from all other speciality fibres is therefore of major technical and commercial importance.

A technique using scanning electron microscopy (SEM) for the discrimination of wool and speciality animal fibres, based on the assessment of cuticle scale edge heights, was introduced and developed during the 1980s and early 1990s. Although SEM illustrates topographical features extremely well, it is incapable of describing internal fibre structures. Fortunately, this deficiency can be complemented by LM which is capable of illustrating internal features. For all these reasons, it is insufficient to depend on only one form of microscopy and it is advantageous to utilize both LM and SEM techniques.

The identification of animal fibres is so complex that it is often necessary to consider subtle characteristics that require a multidisciplinary microscopic approach.

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1 Scope

This International Standard specifies a method for the identification and quantitative analysis of wool and speciality animal fibres using both light microscopy (LM) and scanning electron microscopy (SEM). This standard is also applicable to blends of animal fibres and products made from them.

NOTE 1 Difficulty may be encountered when attempting the analysis of deeply dyed or heavily pigmented fibres by LM. In such cases, mild dye-stripping or pigment-bleaching procedures may be applied prior to analysis.

NOTE 2 SEM is not an appropriate technique for the analysis of blends containing medullated fibres since the medullae will not be visible.

2 Caution

The microscopic analysis of blends of animal fibres requires a high degree of operator skill and experience. Only when authentic reference samples have been successfully identified by multiple replications over a prolonged period, and trial blends of known composition have been tested with acceptable results, should official analysis be performed by an operator.

3 Normative references

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

ISO 6938, *Textiles — Natural fibres — Generic names and definitions*

4 Terms and definitions

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

4.1

CRT

cathode ray tube or display screen

4.2

false scale edge shoulder

step-like structure on the surface of a cuticle cell, which may be mistaken for the scale edge

4.3

light microscope

optical instrument used to produce magnified images

NOTE Light microscopes may be of the reflected-light, transmitted-light or light-projection type. Either a transmitted-light type or a light-projection type is preferred for this type of analysis.