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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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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.

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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.