

<b>STN</b>	<b>Textílie. Kvantitatívna analýza kašmíru, vlny, iných špeciálnych živočíšnych vlákien a ich zmesí. Časť 1: Metóda svetelnej mikroskopie (ISO 17751-1: 2016).</b>	<b>STN EN ISO 17751-1</b>  80 0234
------------	--------------------------------------------------------------------------------------------------------------------------------------------------------------------	----------------------------------------------

Textiles - Quantitative analysis of cashmere, wool, other specialty animal fibers and their blends - Part 1: Light Microscopy method (ISO 17751-1:2016)

Táto norma obsahuje anglickú verziu európskej normy.  
This standard includes the English version of the European Standard.

Táto norma bola oznámená vo Vestníku ÚNMS SR č. 09/16

Obsahuje: EN ISO 17751-1:2016, ISO 17751-1:2016

**123130**

EUROPEAN STANDARD

**EN ISO 17751-1**

NORME EUROPÉENNE

EUROPÄISCHE NORM

April 2016

ICS 59.060.10

English Version

## Textiles - Quantitative analysis of cashmere, wool, other specialty animal fibers and their blends - Part 1: Light Microscopy method (ISO 17751-1:2016)

Textiles - Analyse quantitative du cachemire, de la laine, d'autres fibres animales spéciales et leurs mélanges - Partie 1: Méthode de microscopie optique (ISO 17751-1:2016)

Textilien - Quantitative Analyse von Kaschmir, Wolle, anderen speziellen tierischen Fasern und deren Mischungen - Teil 1: Lichtmikroskopie-Verfahren (ISO 17751-1:2016)

This European Standard was approved by CEN on 13 December 2015.

CEN members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration. Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the CEN-CENELEC Management Centre or to any CEN member.

This European Standard exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CEN member into its own language and notified to the CEN-CENELEC Management Centre has the same status as the official versions.

CEN members are the national standards bodies of Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, Former Yugoslav Republic of Macedonia, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and United Kingdom.



EUROPEAN COMMITTEE FOR STANDARDIZATION  
COMITÉ EUROPÉEN DE NORMALISATION  
EUROPÄISCHES KOMITEE FÜR NORMUNG

**CEN-CENELEC Management Centre: Avenue Marnix 17, B-1000 Brussels**

<b>Contents</b>	<b>Page</b>
<b>European foreword.....</b>	<b>3</b>

## European foreword

This document (EN ISO 17751-1:2016) has been prepared by Technical Committee ISO/TC 38 "Textiles" in collaboration with Technical Committee CEN/TC 248 "Textiles and textile products" the secretariat of which is held by BSI.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by October 2016, and conflicting national standards shall be withdrawn at the latest by October 2016.

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

According to the CEN-CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, Former Yugoslav Republic of Macedonia, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.

### Endorsement notice

The text of ISO 17751-1:2016 has been approved by CEN as EN ISO 17751-1:2016 without any modification.

---

---

**Textiles — Quantitative analysis  
of cashmere, wool, other specialty  
animal fibers and their blends —**

**Part 1:  
Light microscopy method**

*Textiles — Analyse quantitative du cachemire, de la laine, d'autres  
fibres animales spéciales et leurs mélanges —*

*Partie 1: Méthode de microscopie optique*



**COPYRIGHT PROTECTED DOCUMENT**

© ISO 2016, Published in Switzerland

All rights reserved. Unless otherwise specified, no part of this publication may be reproduced or utilized otherwise in any form or by any means, electronic or mechanical, including photocopying, or posting on the internet or an intranet, without prior written permission. Permission can be requested from either ISO at the address below or ISO's member body in the country of the requester.

ISO copyright office  
Ch. de Blandonnet 8 • CP 401  
CH-1214 Vernier, Geneva, Switzerland  
Tel. +41 22 749 01 11  
Fax +41 22 749 09 47  
copyright@iso.org  
www.iso.org

# Contents

Page

<b>Foreword</b> .....	<b>iv</b>
<b>Introduction</b> .....	<b>v</b>
<b>1 Scope</b> .....	<b>1</b>
<b>2 Normative references</b> .....	<b>1</b>
<b>3 Terms and definitions</b> .....	<b>1</b>
<b>4 Principle</b> .....	<b>2</b>
<b>5 Apparatus, materials, and reagents</b> .....	<b>2</b>
5.1 Apparatus.....	2
5.2 Materials.....	2
5.3 Reagents.....	3
<b>6 Drawing of laboratory sample and conditioning</b> .....	<b>3</b>
<b>7 Preparation of the test specimens</b> .....	<b>3</b>
7.1 Number of test specimens.....	3
7.2 Preparation of the test specimens.....	3
7.2.1 Loose fibre.....	3
7.2.2 Sliver.....	3
7.2.3 Yarn.....	3
7.2.4 Woven fabrics.....	4
7.2.5 Knitted fabrics.....	4
7.3 Decolouring of the laboratory sample.....	4
<b>8 Test procedure</b> .....	<b>4</b>
8.1 Settings of magnification with micrometer scale.....	4
8.2 Fibre identification and fibre diameter measurement.....	4
<b>9 Calculation of test result</b> .....	<b>6</b>
<b>Annex A (informative) Drawing of the lot sample and the laboratory sample</b> .....	<b>8</b>
<b>Annex B (informative) Decolouration</b> .....	<b>9</b>
<b>Annex C (informative) Surface morphology of common animal fibres</b> .....	<b>10</b>
<b>Annex D (normative) Density of common animal fibres</b> .....	<b>40</b>
<b>Bibliography</b> .....	<b>41</b>

## 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.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see [www.iso.org/directives](http://www.iso.org/directives)).

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. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received (see [www.iso.org/patents](http://www.iso.org/patents)).

Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

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*.

ISO 17751 consists of the following parts, under the general title *Textiles — Quantitative analysis of cashmere, wool, other speciality animal fibres and their blends*:

- *Part 1: Light microscopy method*
- *Part 2: Scanning electron microscopy method*

## Introduction

Cashmere is a high-value specialty animal fibre, but cashmere and other animal wool fibres such as sheep's wool, yak, camel, etc. exhibit great similarities in their physical and chemical properties, so that their blends are difficult to distinguish from each other by both mechanical and chemical methods. In addition, these fibres show similar scale structures. It is very difficult to accurately determine the fibre content of such fibre blends by current testing means.

Research on the accurate identification of cashmere fibres has been a long undertaking. At present, the most widely used and reliable identification techniques include the light microscopy (LM) method and the scanning electron microscopy (SEM). The SEM method shows complementary characteristics to those of LM method.

- The advantage of the LM method is that the internal medullation and pigmentation of fibres can be observed; the disadvantage is that some subtle surface structures cannot be clearly displayed. A decolouring process needs to be carried out on dark samples for testing. An improper decolouring process can affect the judgment of the fibre analyst.
- The SEM method shows opposite characteristics to those of LM method so some types of fibres need to be identified by scanning electron microscope.

The LM and SEM methods need be used together to identify some difficult-to-identify samples in order to utilize the advantages of both methods.

It has been proven in practice that the accuracy of a fibre analysis is highly related to the ample experience, full understanding, and extreme familiarity of the fibre analyst to the surface morphology of various types of animal fibres so besides the textual descriptions, several micrographs of different types of animal fibres are given in Annex C.

# Textiles — Quantitative analysis of cashmere, wool, other specialty animal fibers and their blends —

## Part 1: Light microscopy method

### 1 Scope

This part of ISO 17751 specifies a method for the identification, qualitative, and quantitative analysis of cashmere, wool, other speciality animal fibres, and their blends using light microscopy (LM).

This part of ISO 17751 is applicable to loose fibres, intermediate-products, and final products of cashmere, wool, other speciality animal fibres, and their blends.

### 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*

**koniec náhľadu – text ďalej pokračuje v platenej verzii STN**