
**Wool — Determination of
mean diameter of fibres — Air
permeability method**

*Laine — Détermination du diamètre moyen des fibres — Méthode
perméamétrique*

Sample Document

get full document from standards.iteh.ai



Reference number
ISO 1136:2015(E)

© ISO 2015

Sample Document

get full document from standards.iteh.ai



COPYRIGHT PROTECTED DOCUMENT

© ISO 2015

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
Case postale 56 • CH-1211 Geneva 20
Tel. + 41 22 749 01 11
Fax + 41 22 749 09 47
E-mail copyright@iso.org
Web www.iso.org

Published in Switzerland

Contents

	Page
Foreword	iv
Introduction	v
1 Scope	1
2 Normative references	1
3 Terms and definitions	1
4 Principle	1
5 Apparatus	2
5.1 Forms of apparatus.....	2
5.2 Detailed parts.....	2
6 Conditioning and testing atmosphere	4
7 Preparation of test specimens	4
7.1 Unopened sliver.....	4
7.1.1 Cleaning.....	4
7.1.2 Number of specimens.....	4
7.1.3 Selection of specimens.....	5
7.1.4 Specimen mass.....	5
7.1.5 Preparation.....	5
7.2 Opened sliver.....	5
7.2.1 Cleaning.....	5
7.2.2 Preparation.....	5
7.2.3 Number of specimens.....	5
7.2.4 Selection of specimens.....	5
7.2.5 Specimen mass.....	5
8 Procedure	6
8.1 Unopened sliver.....	6
8.2 Opened sliver.....	6
9 Expression of results	7
10 Test report	7
Annex A (informative) Calibration of apparatus	8
Annex B (informative) Reproducibility of results	11
Annex C (normative) Correction for relative humidity	12
Annex D (informative) Special types of wool	13
Annex E (informative) Reference slivers for calibration	14
Bibliography	15

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).

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).

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*, Subcommittee SC 23, *Fibres and yarns*.

This second edition cancels and replaces the first edition (ISO 1136:1976), which has been technically revised.

Introduction

When a current of air is passed through a uniformly-arranged mass of fibres packed in a chamber with perforated ends, the ratio of air flow to differential pressure is uniquely determined by the total surface area of the fibres, and by various constants. This was predicted from the hydrodynamic equations of Kozeny and others.

For fibres of circular or near-circular cross-section and constant density, such as non-medullated wool, the surface area of a given mass of fibres is proportional to the average fibre diameter. This principle can be utilized to construct apparatus giving an estimate of fibre diameter. Because of its speed and simplicity, the method is particularly suitable for quality control in mill testing laboratories.

Since the method is indirect, the apparatus is first calibrated from wools of known fibre diameter. For this purpose, eight reference slivers have been provided (see [Annex E](#)).

It has been shown that the estimate of fibre diameter actually given by the permeability method is $d(1+c^2)$, where d is the average fibre diameter (length biased) measured by the projection microscope, and c is the fractional coefficient of variation. Since c normally lies within comparatively small limits for unblended slivers, it is usual, however, to calibrate the apparatus directly in terms of d .

The method requires that the fibres be reasonably clean and dispersed in a uniform open state, such as card slivers or combed slivers. It is thus unsuitable for raw wool unless first scoured and carded. Some types of wool need special calibrations as described in [Annex D](#).

The preparation of test specimens for measurement is identical with that used for calibration specimens.

This second edition to ISO 1136 is based on the test method IWTO-6-98, drawn up by the International Wool Textile Organization (IWTO).

Sample Document

get full document from standards.iteh.ai

Wool — Determination of mean diameter of fibres — Air permeability method

1 Scope

This International Standard specifies a method for the determination of the mean diameter of wool fibres, using an apparatus which passes a current of air through a bundle of fibres.

This International Standard is applicable to clean, unmedullated wool fibres dispersed in a uniform, open state. It provides a method particularly suitable for combed slivers. The dichloromethane extractable matter content of the specimen must not exceed 1,0 %. It is applicable to oil-combed slivers after cleaning with an organic solvent.

The method described in this International Standard is less accurate for lambswool and for wool which is appreciably medullated (see [Annex D](#)) and heavily dyed wool.

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*

3 Terms and definitions

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

3.1

laboratory sample

conditioned sample of fibres, representative of the bulk, from which the test specimens are weighed out

Note 1 to entry: In many cases, the laboratory sample will consist of one or more short lengths of sliver.

3.2

test specimen

weighed amount of fibre which is packed into the constant volume chamber

4 Principle

A specified mass of fibres to be tested is compressed to a constant volume in a cylindrical chamber with perforated ends to which a flowmeter and a manometer are connected.

The fibres are packed in such a way that they lie predominantly at right angles to the long axis of the chamber. A regulated current of air is then passed through the compressed fibres and the average fibre diameter read off from a scale on the manometer or the flowmeter.