

<b>STN</b>	<b>Textílie. Stanovenie sklonu textílie k rozvlákneniu (splsteniu) povrchu a ku žmolkovaniu. Časť 3: Stanovenie s použitím bubnovej metódy (ISO 12945-3: 2014).</b>	<b>STN EN ISO 12945-3</b>  80 0837
------------	---	--

Textiles - Determination of the fabric propensity to surface pilling, fuzzing or matting - Part 3: Random tumble pilling method (ISO 12945-3:2014)

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. 11/14

Obsahuje: EN ISO 12945-3:2014, ISO 12945-3:2014

**119786**

---

Úrad pre normalizáciu, metrológiu a skúšobníctvo SR, odbor SÚTN, 2014  
Podľa zákona č. 264/1999 Z. z. v znení neskorších predpisov sa môžu slovenské technické normy rozmnožovať a rozširovať iba so súhlasom Úradu pre normalizáciu, metrológiu a skúšobníctvo SR.

EUROPEAN STANDARD  
NORME EUROPÉENNE  
EUROPÄISCHE NORM

**EN ISO 12945-3**

July 2014

ICS 59.080.01

English Version

**Textiles - Determination of the fabric propensity to surface pilling, fuzzing or matting - Part 3: Random tumble pilling method (ISO 12945-3:2014)**

Textiles - Détermination de la propension des étoffes à l'ébouriffage en surface et au boulochage - Partie 3: Méthode de boulochage par projections aléatoires dans une chambre cylindriques (ISO 12945-3:2014)

Textilien - Bestimmung der Neigung von textilen Flächengebilden zur Pill-, Flusen- oder Filzbildung auf der Oberfläche - Teil 3: Random-Tumble-Pilling-Verfahren (ISO 12945-3:2014)

This European Standard was approved by CEN on 21 June 2014.

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**

Contents	Page
Foreword.....	3

## **Foreword**

This document (EN ISO 12945-3:2014) 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 January 2015, and conflicting national standards shall be withdrawn at the latest by January 2015.

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 12945-3:2014 has been approved by CEN as EN ISO 12945-3:2014 without any modification.

---

---

# **Textiles- Determination of the fabric propensity to surface pilling, fuzzing or matting —**

## **Part 3: Random tumble pilling method**

*Textiles - Détermination de la propension des étoffes à l'ébouriffage en  
surface et au boulochage —*

*Partie 3: Méthode de boulochage par projections aléatoires dans une  
chambre cylindrique*





**COPYRIGHT PROTECTED DOCUMENT**

© ISO 2014

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](mailto:copyright@iso.org)  
Web [www.iso.org](http://www.iso.org)

Published in Switzerland

# 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 and auxiliary materials</b>	<b>2</b>
5.1 Apparatus	2
5.2 Auxiliary materials	3
<b>6 Conditioning and testing atmosphere</b>	<b>4</b>
<b>7 Preparation of test specimens</b>	<b>4</b>
7.1 Pretreatment	4
7.2 Sampling	5
7.3 Fixation of specimen edges	5
7.4 Number of specimens and marking	5
<b>8 Preparation of apparatus</b>	<b>5</b>
8.1 Polychloroprene liners	5
<b>9 Procedure</b>	<b>5</b>
<b>10 Assessment of pilling and/or fuzzing and/or matting</b>	<b>6</b>
<b>11 Results</b>	<b>7</b>
<b>12 Test report</b>	<b>7</b>
<b>Annex A (normative) Checking of apparatus and preparation of liners</b>	<b>9</b>
<b>Annex B (informative) Alternative procedure</b>	<b>10</b>
<b>Annex C (informative) Rationale</b>	<b>11</b>
<b>Bibliography</b>	<b>13</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*, Subcommittee SC 24, *Conditioning atmospheres and physical tests for textile fabrics*.

ISO 12945 consists of the following parts, under the general title *Textiles — Determination of fabric propensity to surface pilling, fuzzing or matting*:

- *Part 1: Pilling box method*
- *Part 2: Modified Martindale method*
- *Part 3: Random tumble pilling method*



## Introduction

Pills are formed when fibres on a fabric surface “tease out” and become entangled during wear. Such surface deterioration is generally undesirable, but the degree of consumer tolerance for a given level of pilling will depend on the garment type and fabric end use.

Generally, the level of pilling which develops is determined by the rates of the following parallel processes:

- a) fibre entanglement leading to pill formation;
- b) development of more surface fibre;
- c) fibre and pill wear-off.

The rates of these processes depend on the fibre, yarn, and fabric properties. Examples of extreme situations are found in fabrics containing strong fibres versus fabric containing weak fibres. A consequence of the strong fibre is a rate of pill formation that exceeds the rate of wear-off. This results in an increase of pilling with an increase of wear. With a weak fibre, the rate of pill formation competes with the rate of wear-off. This would result in a fluctuation of pilling with an increase of wear. There are other constructions where surface fibre wear-off occurs before pill formation. Each of these examples demonstrates the complexity of evaluating the surface change on different types of fabric.

The ideal laboratory test would accelerate the wear processes a), b), and c) by exactly the same factor and would be universally applicable to all fibre, yarn, and fabric types. No such test has been developed. However, a test procedure has been established in which fabrics can be ranked in the same order of fuzzing and pilling propensity as is likely to occur in end use wear.

Particular attention is drawn to [Annex A](#) which gives advice on the maintenance and checking of the apparatus and liners. It is recommended that [Annex A](#) be studied prior to carrying out the procedure.

In Bibliography, some listed national standards have been taken into consideration as they refer to the use of the equipment, on which this part of ISO 12945 is based.



# Textiles- Determination of the fabric propensity to surface pilling, fuzzing or matting —

## Part 3: Random tumble pilling method

### 1 Scope

This part of ISO 12945 describes a method for the determination of the resistance to pilling, fuzzing, and matting of textile fabrics using the random tumble pilling tester. This method is applicable to most of woven and knitted fabrics, including napped fabrics (fleeces, inlay fabrics).

This method is not applicable to fabrics which cannot tumble freely.

### 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 48, *Rubber, vulcanized or thermoplastic — Determination of hardness (hardness between 10 IRHD and 100 IRHD)*

ISO 139, *Textiles — Standard atmospheres for conditioning and testing*

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