INTERNATIONAL STANDARD

ISO 12945-2

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Textiles — Determination of fabric propensity to surface fuzzing and to pilling —

Part 2: Modified Martindale method

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

Partie 2: Méthode Martindale modifié

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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.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 3.

Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

Attention is drawn to the possibility that some of the elements of this part of ISO 12945 may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights.

International Standard ISO 12945-2 was prepared by Technical Committee ISO/TC 38, *Textiles*.

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

— *Part 1: Pilling box method*

— *Part 2: Modified Martindale method*

— *Part 3: Determination using a random tumble method*

Annex A forms a normative part of this part of ISO 12945.

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 that the 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.

The modification to the very widely adopted Martindale abrasion testing machine on which this part of ISO 12945 is based is described in a publication by H. Knecht: *Neue Methode zur Prüfung der Pillingneigung* in Wirkerei und Strickerei Technik, **38** (1988), 12, p. 1309.

Textiles — Determination of fabric propensity to surface fuzzing and to pilling —

Part 2:
Modified Martindale method

1 Scope

This part of ISO 12945 specifies a method for determination of the resistance to pilling and surface change of textile fabrics using a modified Martindale method.

2 Normative references

The following normative documents contain provisions which, through reference in this text, constitute provisions of this part of ISO 12945. For dated references, subsequent amendments to, or revisions of, any of these publications do not apply. However, parties to agreements based on this part of ISO 12945 are encouraged to investigate the possibility of applying the most recent editions of the normative documents indicated below. For undated references, the latest edition of the normative document referred to applies. Members of ISO and IEC maintain registers of currently valid International Standards.

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

ISO 12947-1, *Textiles — Determination of the abrasion resistance of fabrics by the Martindale method — Part 1: Martindale abrasion testing apparatus.*

3 Terms and definitions

For the purposes of this part of ISO 12945 the following terms and definitions apply.

3.1
fuzzing
roughing up of the surface fibres and/or teasing out of the fibres from the fabric, producing a visible surface change

NOTE This change can occur during washing, dry cleaning and/or wearing.

3.2
pills
entangling of fibres into balls (pills) which stand proud of the fabric and are of such density that light will not penetrate and will cast a shadow

NOTE This change can occur during washing, dry cleaning and/or wearing.

3.3
pilling
generation of pills over the surface of the fabric