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

**Part 4:
Assessment of pilling, fuzzing and
matting by visual analysis**

*Textiles — Détermination de la propension au boulochage, à
l'ébouriffage ou au moutonnement des étoffes en surface —*

*Partie 4: Évaluation du boulochage, de l'ébouriffage et du
moutonnement par analyse visuelle*

ISO 12945-4:2020

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ISO copyright office
CP 401 • Ch. de Blandonnet 8
CH-1214 Vernier, Geneva
Phone: +41 22 749 01 11
Email: copyright@iso.org
Website: www.iso.org

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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.

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 of the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT), see www.iso.org/iso/foreword.html.

This document was prepared by Technical Committee ISO/TC 38, *Textiles*, Subcommittee SC 24, *Conditioning atmospheres and physical tests for textile fabrics*, in collaboration with the European Committee for Standardization (CEN) Technical Committee CEN/TC 248, *Textiles and textile products*, in accordance with the Agreement on technical cooperation between ISO and CEN (Vienna Agreement).

A list of all parts in the ISO 12945 series can be found on the ISO website.

Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at www.iso.org/members.html.

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

Part 4: Assessment of pilling, fuzzing and matting by visual analysis

1 Scope

This document specifies a method for the visual assessment of pilling, fuzzing, and matting respectively of textile fabrics. This method is applicable to most of woven and knitted fabrics, including napped fabrics (fleeces, inlay fabrics).

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO 3668, *Paints and varnishes — Visual comparison of colour of paints*

ISO 12945-1, *Textiles — Determination of fabric propensity to surface pilling, fuzzing or matting — Part 1: Pilling box method*

ISO 12945-2, *Textiles — Determination of fabric propensity to surface pilling, fuzzing or matting — Part 2: Modified Martindale method*

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

3 Terms and definitions

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

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

- ISO Online browsing platform: available at <https://www.iso.org/obp>
- IEC Electropedia: available at <http://www.electropedia.org/>

3.1

pill

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 1 to entry: This change can occur during washing, dry cleaning, and/or wearing.

3.2

pilling

generation of *pills* (3.1) over the surface of the fabric

3.3

fuzzing

roughing up of the surface fibres and/or teasing out of the fibres from the fabric, which produces a visible surface change

Note 1 to entry: This change can occur during washing, dry cleaning, and/or wearing.

3.4

matting

disorientation of the raised fibres of a napped fabric, which produces a visible surface change

Note 1 to entry: This change can occur during washing, dry cleaning, and/or wearing.

[SOURCE: ISO 16847:2016, 3.1, modified — Note 1 to entry has been removed.]

4 Principle

After the specimens have been prepared, under the defined conditions in of ISO 12945-1, ISO 12945-2 and ISO 12945-3 pilling, fuzzing, and matting are assessed visually.

5 Apparatus

5.1 Assessment unit, illuminated with a light source with artificial daylight D65 (in accordance with ISO 3668) with a brightness of at least 600 lx to give uniform illumination over the surface of the specimen(s) and masked in such a way that the observer does not look directly into the light. It should be used after a warm up period of at least 10 min. The illuminant should be positioned at an angle between 5° and 15° to the plane of the specimen (see [Figure 1](#)). The distance between the eye and the specimen should be between 30 cm to 50 cm for normal corrected vision.

Alternative assessment units may be used as agreed between interested parties and shall be reported.

NOTE The use of different assessment units can lead to different test results.

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