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Textiles — Bursting properties of fabrics —

Part 2: Pneumatic method for determination of bursting strength and bursting distension

Textiles — Propriétés de résistance à l'éclatement des étoffes —

Partie 2: Méthode pneumatique pour la détermination de la résistance et de la déformation à l'éclatement

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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).

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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*.

This second edition cancels and replaces the first edition (ISO 13938-2:1999), of which it constitutes a minor revision.

The changes compared to the previous edition are as follows:

— the normative references have been updated.

A list of all parts in the ISO 13938 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.

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Textiles — Bursting properties of fabrics —

Part 2: Pneumatic method for determination of bursting strength and bursting distension

1 Scope

This document describes a pneumatic pressure method for the determination of bursting strength and bursting distension of textile fabrics.

NOTE ISO 13938-1 describes a method using hydraulic pressure.

The method is applicable to knitted, woven, nonwoven and laminated fabrics. It can be suitable for fabrics produced by other techniques. The test is suitable for test specimens in the conditioned or wet state.

From the available data there appears to be no significant difference in the bursting strength results achieved using hydraulic or pneumatic burst testers, for pressures up to 800 kPa. This pressure range covers the majority of performance levels expected of general apparel. For speciality textiles requiring high bursting pressures, the hydraulic apparatus is more suitable.

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

ISO 3696, *Water for analytical laboratory use — Specification and test methods*

ISO 10012, *Measurement management systems — Requirements for measurement processes and measuring equipment*

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
test area
area of the test specimen within the circular clamping device

3.2
bursting pressure
pressure at burst
maximum pressure applied to a test specimen clamped over an underlying diaphragm until the test specimen ruptures

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3.3
bursting strength
strength at burst
pressure obtained by subtracting the *diaphragm pressure* (3.4) from the mean *bursting pressure* (3.2)

3.4
diaphragm pressure
pressure applied to the diaphragm, with no test specimen present, to distend it to the mean *bursting distension* (3.5) of the test specimen

3.5
bursting distension
distension at burst
expansion of a test specimen at the *bursting pressure* (3.2)

Note 1 to entry: It is expressed either as *height at burst* (3.6).

3.6
height at burst
distance between the upper surface of the test specimen before distension and the top of the test specimen at the *bursting pressure* (3.2)

3.7
time to burst
time taken to distend a test specimen to burst

4 Principle

A test specimen is clamped over an expansive diaphragm by means of a circular clamping ring. Increasing air pressure is applied to the underside of the diaphragm, causing distension of the diaphragm and the fabric. The pressure is increased smoothly until the test specimen bursts. The bursting strength and bursting distension are determined.

5 Sampling

Either select samples in accordance with the procedure laid down in the material specification for the fabric, or as agreed between the interested parties. In the absence of an appropriate material specification, an example of a suitable sampling procedure is given in Annex A. Avoid areas that are folded or creased, selvedges and areas not representative of the fabric. The system of clamping used generally permits tests to be applied without cutting out test specimens.

6 Apparatus

6.1 Bursting tester. Metrological confirmation of the bursting tester shall be carried out in accordance with ISO 10012.

The bursting tester shall comply with the following requirements.

6.1.1 The apparatus shall be capable of producing an increase in air pressure to achieve a testing time to burst of (20 ± 5) s. To achieve responsive adjustment of the air velocity, an indicating control valve is needed in addition to the main air valve of the apparatus.

6.1.2 Bursting pressure shall be indicated with an accuracy of ±2 % of full-scale range above the first 20 % of range.

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