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# Flexible cellular polymeric materials — Determination of tear strength

*Matériaux polymères alvéolaires souples — Détermination de la résistance au déchirement*



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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).

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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 *45*, *Rubber and rubber products*, Subcommittee SC 4, *Products (other than hoses)*.

This third edition cancels and replaces the second edition (ISO 8067:2008), which has been technically revised.



The main changes compared to the previous edition are as follows:

— test pieces with skin has been added in 5.1

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.

# Flexible cellular polymeric materials — Determination of tear strength

## 1 Scope

This document specifies two methods for the determination of the tear strength of flexible cellular polymeric materials:

— method A, using a trouser test piece;

— method B, using an angle test piece without a nick.

## 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 1923, *Cellular plastics and rubbers — Determination of linear dimensions*

ISO 7500-1, *Metallic materials — Calibration and verification of static uniaxial testing machines — Part 1: Tension/compression testing machines — Calibration and verification of the force-measuring system*



## 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**
**tear strength**
*R*
maximum force per unit thickness observed when stretching a test piece to rupture

## 4 Apparatus

The tear strength shall be measured on a tensile-testing machine which will indicate the force at which rupture of the test piece takes place. An automatic machine should preferably be used which draws the actual curve, or a stylus or scale should be used having an indicator that remains at the point of maximum force after rupture of the test piece.

The accuracy of the test machine shall be class 2 or better as defined in ISO 7500-1.

## 5 Test pieces

### 5.1 General

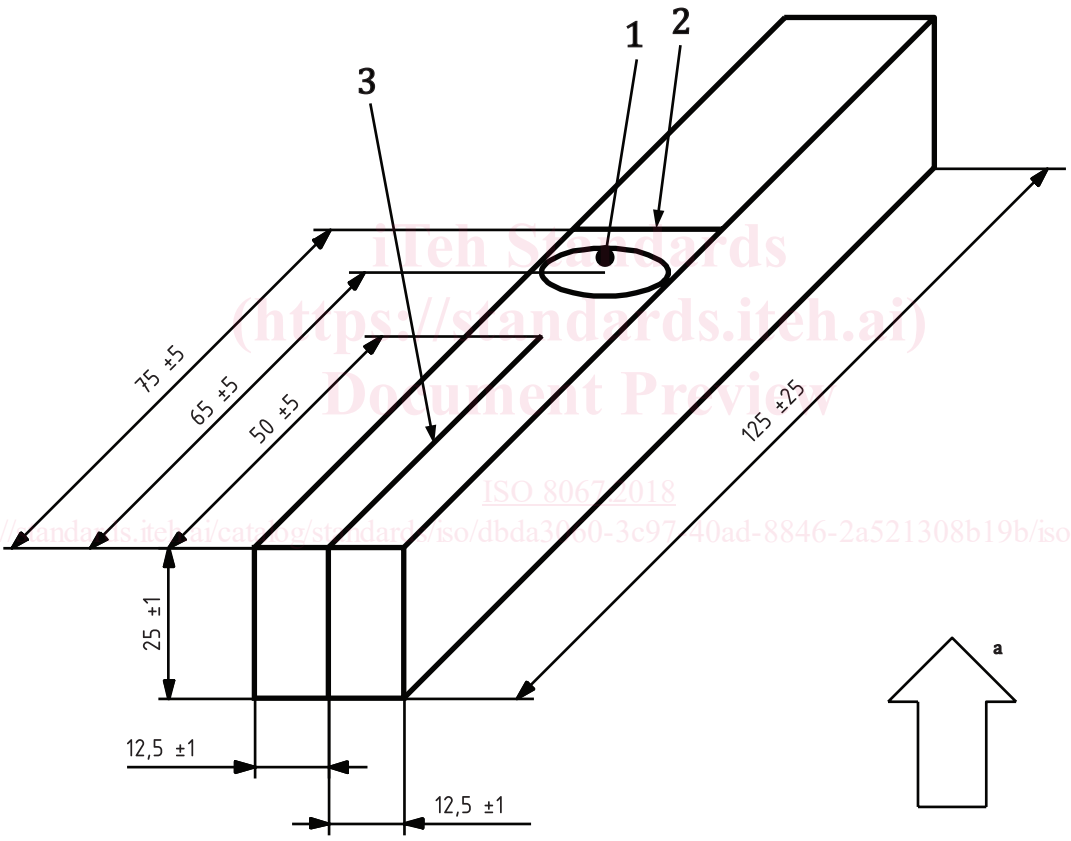
The test pieces shall be free of voids and flow lines. Test pieces can be selected either with or without skin. If the material exhibits a predominant direction of cellular structure (orientation of the cells), the

trouser test piece shall be taken in such a way that the plane of the cut subsequently made in the test piece (see Figure 1) is parallel to, and the long dimension of the cut perpendicular to, the predominant foam-rise direction and the angle test piece shall be taken in such a way that the plane of the V-shaped side of the test piece (see Figure 3) is parallel to, and the long dimension of the test piece perpendicular to, the predominant foam-rise direction. If this is not possible, the orientation of the long dimension of the cut or the V-shaped side of the test piece with respect to the predominant foam-rise direction shall be stated in the test report. See Annex A for the difference of test results and the precision for each type of test pieces.

## 5.2 Trouser test piece for method A

The trouser test piece shall be a rectangular parallelepiped cut from a sheet of material with a band knife or a cutting die. Each test piece shall have the dimensions given in Figure 1 and a 45 mm to 55 mm cut shall be made at one end. The required tear length (25 mm) shall be marked on the test piece. The predominant foam-rise direction for the trouser test piece is indicated by an arrow in Figure 1.

Dimensions in millimetres






**Key**

1 location of thickness measurement
2 mark indicating required tear length
3 cut made in test piece
a Predominant foam-rise direction.

**Figure 1 — Trouser test piece**

## 5.3 Angle test piece for method B

The test piece shall be cut from a sheet of material of thickness 10 mm to 15 mm with a die having the dimensions and shape shown in Figure 2. The predominant foam-rise direction for the angle test piece is indicated in Figure 3.