

# INTERNATIONAL STANDARD

**ISO**  
**8067**

First edition  
1989-10-15

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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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Reference number  
ISO 8067 : 1989 (E)

## 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.

Draft International Standards adopted by the technical committees are circulated to the member bodies for approval before their acceptance as International Standards by the ISO Council. They are approved in accordance with ISO procedures requiring at least 75 % approval by the member bodies voting.

International Standard ISO 8067 was prepared by Technical Committee ISO/TC 45, *Rubber and rubber products*.

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International Organization for Standardization

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# Flexible cellular polymeric materials — Determination of tear strength

## 1 Scope

This International Standard specifies a method for the determination of the tear strength of flexible cellular polymeric materials having a thickness of more than 24,0 mm. The procedure described produces a value which may be regarded as a measure of the tear resistance of foam under the conditions of this particular test.

## 2 Normative references

The following standards contain provisions which, through reference in this text, constitute provisions of this International Standard. At the time of publication, the editions indicated were valid. All standards are subject to revision, and parties to agreements based on this International Standard are encouraged to investigate the possibility of applying the most recent editions of the standards indicated below. Members of IEC and ISO maintain registers of currently valid International Standards.

ISO 1923 : 1981, *Cellular plastics and rubbers — Determination of linear dimensions.*

ISO 5893 : 1985, *Rubber and plastics test equipment — Tensile, flexural and compression types (constant rate of traverse) — Description.*

## 3 Apparatus

Tear strength shall be measured on a power-driven apparatus 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 shall be used having an indicator that remains at the point of maximum force after rupture.

The machine shall be of low inertia conforming to Grade B of ISO 5893.

## 4 Test pieces

The test pieces shall be of rectangular parallelepiped shape and shall be free of skin, voids and flow lines. They may be cut on a bandknife or die-cut from sheet material. Each test piece shall have the dimensions given in figure 1 and a 45 mm to 55 mm cut shall be placed in one side. If the material reveals a predominant direction of cellular structure (orientation of the cells),

the test pieces for tear strength shall be taken in such a way that the plane of the cut is parallel to, and the long dimension of the cut is perpendicular to, the predominant rise direction. If this is not possible, the location of the long dimension of the cut, with respect to the predominant rise direction, shall be stated in the test report. The thickness shall be determined in accordance with ISO 1923.

## 5 Number of test pieces

Three test pieces shall be tested.

Additional test pieces may be required if the spread of results is too great (see 8.2) or to compensate for deviation in the progress of the tear (see 7.5).

## 6 Conditioning

Test pieces shall not be tested for at least 72 h after manufacture, though this period may be varied by the specification for particular materials.

Prior to the test, the test pieces shall be stored for at least 16 h at either

23 °C ± 2 °C, 50 % ± 5 % relative humidity, or

27 °C ± 2 °C, 65 % ± 5 % relative humidity.

This period may form the latter part of the time following manufacture.

NOTE — It is recommended that for referee purposes the test is performed 7 days or more after the cellular material has been manufactured.

## 7 Procedure

**7.1** Measure the thickness of the test piece in the position and direction shown in figure 1.

**7.2** Clamp the test piece in the jaws of the testing machine, taking care that the jaws grip the test piece properly. Spread the block so that the force is applied in the direction shown in figure 2.

7.3 Apply the force with a jaw speed of 50 mm/min to 500 mm/min.

NOTE — For reference purposes, a jaw speed of 50 mm/min ± 5 mm/min should be used.

7.4 Where necessary to keep the cut in the centre of the block while tearing, aid it with light applications of a freshly sharpened blade, for example a single-edged razor blade.

Care should be taken when using blades.

7.5 When the tear has travelled 25 mm ± 5 mm along the test piece, record the maximum force on the dial or scale. If rupture occurs before a 30 mm length is torn, a fresh test piece shall be taken.

## 8 Expression of results

8.1 Calculate the tear strength  $R$ , expressed in newtons per metre, using the equation

$$R = \frac{F}{d}$$

where

$F$  is the maximum force, in newtons, registered on the testing machine;

$d$  is the original thickness, in metres, of the test piece.

8.2 Report the result as the median of the values for tear strength calculated for each test piece.

If one or more values deviate more than 20 % from the median, two additional test pieces shall be tested and the median for all five values shall be reported.

## 9 Test report

The test report shall include the following particulars:

- a reference to this International Standard;
- a description of the material and cutting method used;
- the conditioning used;
- the jaw speed used;
- the location of the plane of the cut with respect to the predominant rise direction of the cellular structure;
- any deviation of the progress of the tear (causing extra test pieces to be tested);
- the median tear strength.

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Dimensions in millimetres

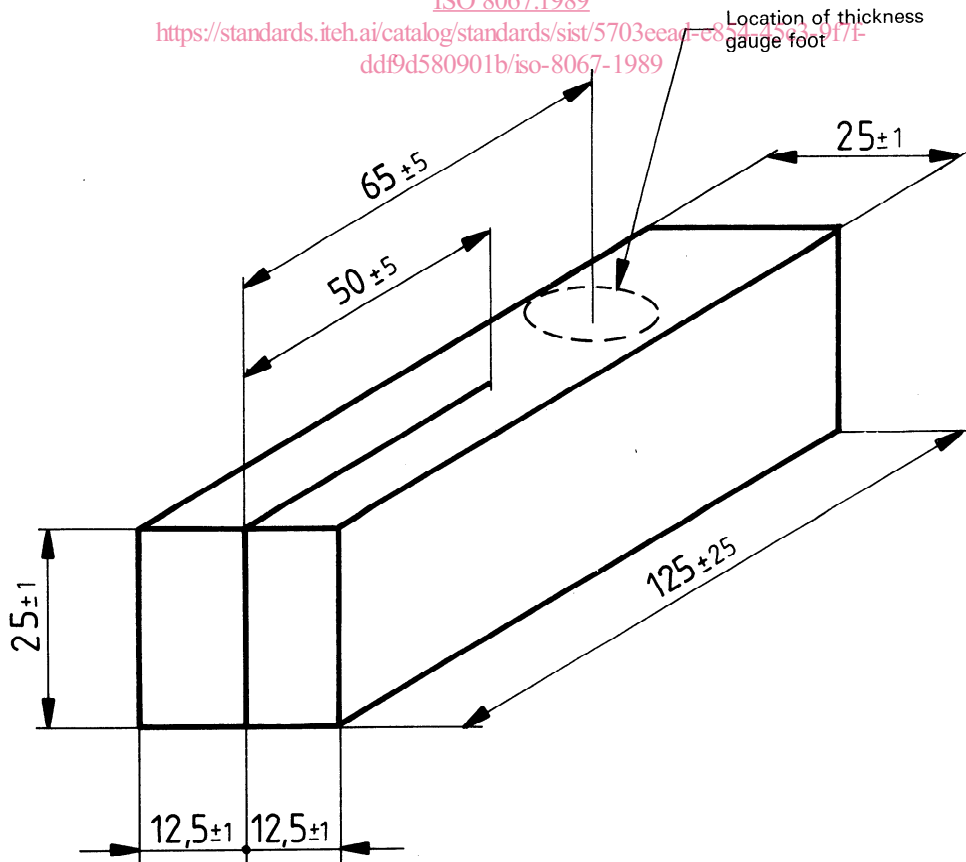


Figure 1 — Tear strength test specimen



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Figure 2 – Schematic test arrangement  
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