Flexible cellular polymeric materials

Determination of tear strength (ISO 8067:1989)
English version of DIN EN ISO 8067

DIN
EN ISO 8067

This standard incorporates the English version of ISO 8067.

ICS 83.100

Descriptors: Polymer, cellular materials, tear strength, testing.

Flexible Polymer-Schaumstoffe; Bestimmung des Weiterreißwiderstandes
(ISO 8067:1989)

European Standard EN ISO 8067:1995 has the status of a DIN Standard.

A comma is used as the decimal marker.

National foreword

This standard has been published in accordance with a decision taken by CEN/TC 249 to adopt, without alteration, International Standard ISO 8067 as a European Standard.

The responsible German body involved in its preparation was the *Normenausschuß Materialprüfung* (Materials Testing Standards Committee), Technical Committee *Prüfung von weich-elastischen Schaumstoffen*.

EN comprises 5 pages.

EUROPEAN STANDARD
NORME EUROPÉENNE
EUROPÄISCHE NORM

EN ISO 8067

May 1995

ICS 83.100

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English version

Flexible cellular polymeric materials

Determination of tear strength
(ISO 8067:1989)

Matériaux polymères alvéolaires souples; détermination de la résistance au déchirement (ISO 8067:1989)

Flexible Polymer-Schaumstoffe; Bestimmung des Weiterreißwiderstandes (ISO 8067:1989)

This European Standard was approved by CEN on 1995-05-11 and is identical to the ISO Standard as referred to.

CEN members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration.

Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the Central Secretariat or to any CEN member.

This European Standard exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CEN member into its own language and notified to the Central Secretariat has the same status as the official versions.

CEN members are the national standards bodies of Austria, Belgium, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and United Kingdom.

CEN

European Committee for Standardization
Comité Européen de Normalisation
Europäisches Komitee für Normung

Central Secretariat: rue de Stassart 36, B-1050 Brussels

Foreword

International Standard

ISO 8067:1989 Flexible cellular polymeric materials; determination of tear strength,

which was prepared by ISO/TC 45 'Rubber and rubber products' of the International Organization for Standardization, has been adopted by Technical Committee CEN/TC 249 'Plastics' as a European Standard.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, and conflicting national standards withdrawn, by November 1995 at the latest.

In accordance with the CEN/CENELEC Internal Regulations, the following countries are bound to implement this European Standard:

Austria, Belgium, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland, and United Kingdom.

Endorsement notice

The text of the International Standard ISO 8067:1989 was approved by CEN as a European Standard without any modification.

NOTE: Normative references to international publications are listed in Annex ZA (normative).

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) a reference to this International Standard;

b) a description of the material and cutting method used;

c) the conditioning used;

d) the jaw speed used;

e) the location of the plane of the cut with respect to the predominant rise direction of the cellular structure;

f) any deviation of the progress of the tear (causing extra test pieces to be tested);

g) the median tear strength.

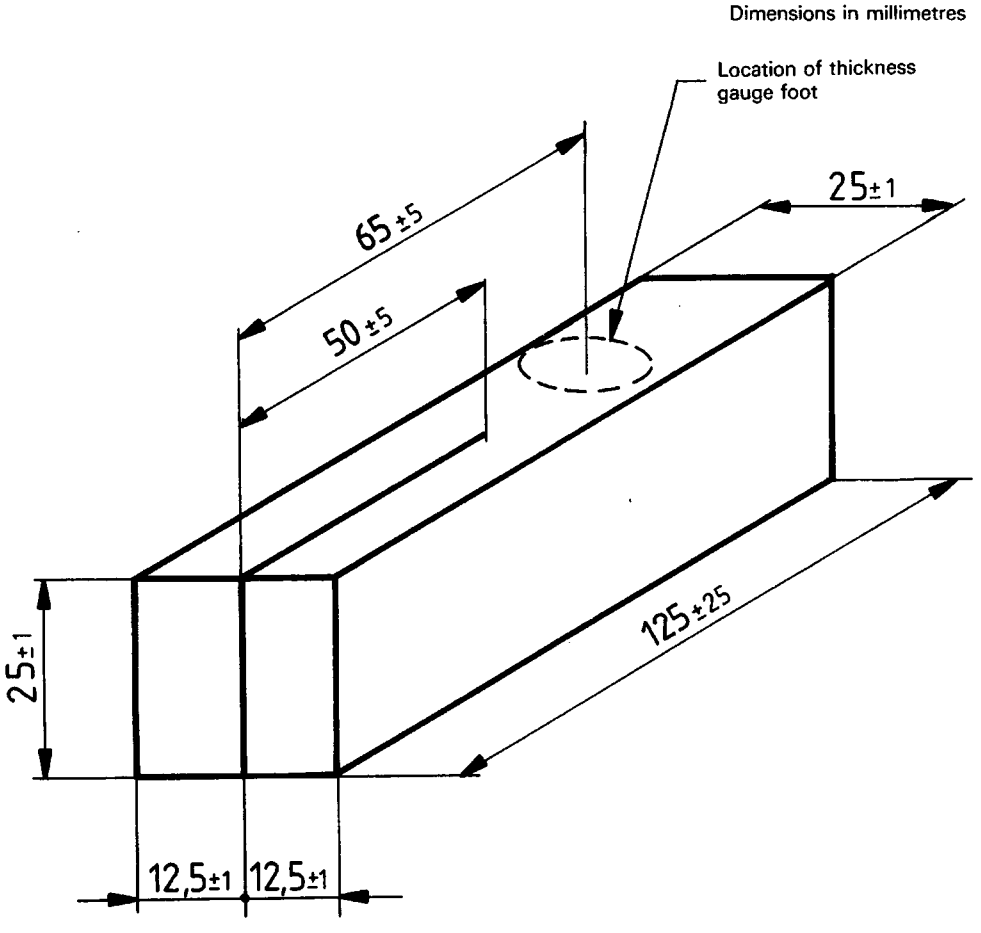

Figure 1 — Tear strength test specimen

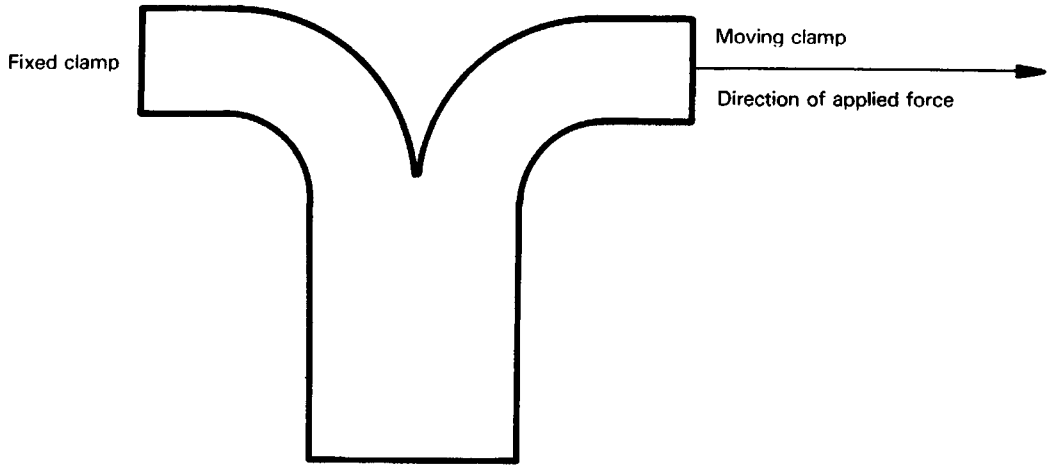

Figure 2 — Schematic test arrangement

Annex ZA (normative)
Normative references to international publications with their relevant European publications

This European Standard incorporates by dated or undated reference, provisions from other publications. These normative references are cited at the appropriate places in the text and the publications are listed hereafter. For dated references, subsequent amendments to or revisions of any of these publications apply to this European Standard only when incorporated in it by amendment or revision. For undated references the latest edition of the publication referred to applies.

Publication	Year	Title	EN	Year
ISO 1923	1981	Cellular plastics and rubbers - Determination of linear dimensions	EN ISO 1923	1995