

ICS 83.100

CCS G 44



**NATIONAL STANDARD OF THE
PEOPLE'S REPUBLIC OF CHINA**

GB/T 10654-2001

Replacing GB/T 10654-1989

**Flexible cellular polymeric materials - Determination of tensile
strength and elongation at break**

高聚物多孔弹性材料 拉伸强度和拉断伸长率的测定

(English Translation)

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Foreword

This standard is identical to International Standard ISO 1798:1997 and replaces GB/T 10654-1989.

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Warning: users of this standard should be familiar with standard laboratory practice. This standard does not purport to address all of the safety concerns associated with its use; it is the responsibility of the user to establish appropriate safety and health practices and to ensure compliance with the relevant national regulations.

1 Scope

This standard specifies methods for determining the strength and deformation properties of flexible cellular materials by stretching a specimen at a constant rate until rupture.

This standard applies to flexible cellular polymeric materials.

2 Normative references

HG/T 3054-1988 (1997), Latex foam - Determination of linear dimensions (eqv ISO 1923:1981).

3 Definitions

3.1

Tensile strength

The maximum tensile stress applied to a tensile specimen until fracture.

3.2

Elongation at break

The percentage elongation of the fractured specimen.

4 Instruments

The tensile testing machine shall move the power-driven grips at (500 ± 50) mm/min, and the speed shall remain constant throughout the test. The accuracy of the machine is five thousandths.

5 Specimens

5.1

Sampling direction

Where the product has a principal direction of the cellular structure, the specimens shall be cut with their longitudinal axes perpendicular to that orientation; where this is not possible, the orientation of the longitudinal axis relative to the cell orientation shall be stated in the test report.

5.2

Shape and dimensions

The specimen shall have a rectangular cross-section, be free from visible defects and may or may not carry a surface skin. Specimens are cut with a die as shown in Figure 1, with a thickness between 10 mm and 15 mm.

5.3

Quantity

Unless otherwise specified, five specimens shall be tested.

5.4

Conditioning

The material shall not be tested within 72 h of manufacture, and before cutting shall be conditioned for at least 16 h at (23 ± 2) °C and (50 ± 5) % relative humidity, or (27 ± 2) °C and (65 ± 5) %.

6 Procedures

After conditioning, the thickness is measured at five evenly distributed points in the area from which the specimens are to be cut, or at two points on each cut specimen, in accordance with HG/T 3054; the variation between measurements shall not exceed $\pm 2\%$. The specimen is cut, the gauge length is marked with two reference lines, and the specimen is pulled at the stated rate until it breaks.

7 Expression of results

7.1

The tensile strength is the maximum breaking force F , in N, divided by the average initial cross-sectional area A , in mm^2 .

7.2

The elongation at break is calculated from the gauge length at break L and the initial gauge length L_0 and expressed as a percentage of the initial gauge length.

8 Test report

The report shall give: a) the reference to this standard; b) the properties of the cellular material; c) the conditioning conditions used; d) the location of the test piece within the product and, where necessary, the principal direction of the cellular structure; e) where the test piece has a skin, its location and number; f) the thickness of the test piece; g) the median tensile strength in MPa; h) the median elongation at break as a percentage; i) any deviation from this standard.