
**Flexible cellular polymeric
materials — Determination of fatigue
by constant-load pounding**

*Matériaux polymères alvéolaires souples — Détermination de la
fatigue par indentation à charge constante*

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Published in Switzerland

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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).

Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

For an explanation on the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the WTO principles in the Technical Barriers to Trade (TBT) see the following URL: Foreword - Supplementary information.

The committee responsible for this document is ISO/TC 45, *Rubber and rubber products*, Subcommittee SC 4, *Products other than hoses*.

This fourth edition cancels and replaces the third edition (ISO 3385:1989), which has been technically revised.

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Flexible cellular polymeric materials — Determination of fatigue by constant-load pounding

1 Scope

This International Standard specifies a method for the determination of loss in thickness and loss in hardness of flexible cellular materials intended for use in load-bearing applications such as upholstery.

It provides a means of assessing the service performance of flexible cellular materials based on rubber latex or polyurethane used in load-bearing upholstery.

The method is applicable both to standard size test pieces cut from slabstock material and to shaped components. The measured loss in thickness and loss in hardness are related to, but are not necessarily the same as, the losses likely to occur in service.

This international Standard is not intended to function as a detailed engineering design specification for fatigue apparatus.

2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO 2439:2008, *Flexible cellular polymeric materials — Determination of hardness (indentation technique)*

3 Principle

Repeated indentation of a test piece by an indenter smaller in area than the test piece, the maximum load reached during each cycle being kept within specified limits. The typical loading cycle is shown in [Figure A.1](#).

4 Apparatus

4.1 Pounding test machine of either Type A (see [4.2](#)) or Type B (see [4.3](#)), having the following parts.

4.1.1 Plane platen, capable of fully supporting the test piece, and suitably vented with holes approximately 6 mm in diameter at approximately 20 mm pitch in order to allow air to escape from the test piece.

4.1.2 Indentor, having an overall diameter of $250 \text{ mm} \pm 1 \text{ mm}$ with a $25 \text{ mm} \pm 1 \text{ mm}$ radius at its lower edge, provided with a device for applying a maximum force of $750 \text{ N} \pm 20 \text{ N}$ during the loading cycle. The indentor shall be rigidly fixed to its guide and its surface shall be smooth but not polished.

The machine shall be capable of oscillating either the platen ([4.1.1](#)) carrying the test piece, or the indentor towards the other in a vertical direction at a rate of (70 ± 5) strokes per minute. The amplitude of the stroke shall be adjustable.

The indentor shall be linked to a re-settable counting device which displays the number of compression cycles performed during the test.

