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Flexible and rigid cellular polymeric materials -  
Accelerated ageing tests (ISO 2440:2025)

## EESTI STANDARDI EESSÕNA

## NATIONAL FOREWORD

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ICS 83.100

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EUROPEAN STANDARD

EN ISO 2440

NORME EUROPÉENNE

EUROPÄISCHE NORM

July 2025

ICS 83.100

Supersedes EN ISO 2440:2019

English Version

## Flexible and rigid cellular polymeric materials - Accelerated ageing tests (ISO 2440:2025)

Matériaux polymères alvéolaires souples et rigides -  
Essais de vieillissement accéléré (ISO 2440:2025)

Weich-elastische polymere Schaumstoffe und  
Hartschäume - Schnellalterungsprüfung (ISO  
2440:2025)

This European Standard was approved by CEN on 24 June 2025.

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EUROPEAN COMMITTEE FOR STANDARDIZATION  
COMITÉ EUROPÉEN DE NORMALISATION  
EUROPÄISCHES KOMITEE FÜR NORMUNG

CEN-CENELEC Management Centre: Rue de la Science 23, B-1040 Brussels

## European foreword

This document (EN ISO 2440:2025) has been prepared by Technical Committee ISO/TC 45 "Rubber and rubber products" in collaboration with Technical Committee CEN/TC 249 "Plastics" the secretariat of which is held by SIS.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by January 2026, and conflicting national standards shall be withdrawn at the latest by January 2026.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CEN shall not be held responsible for identifying any or all such patent rights.

This document supersedes EN ISO 2440:2019.

Any feedback and questions on this document should be directed to the users' national standards body/national committee. A complete listing of these bodies can be found on the CEN website.

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## Endorsement notice

The text of ISO 2440:2025 has been approved by CEN as EN ISO 2440:2025 without any modification.

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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 document 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](http://www.iso.org/directives)).

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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](http://www.iso.org/iso/foreword.html).

This document was prepared by Technical Committee ISO/TC 45, *Rubber and rubber products*, Subcommittee SC 4, *Products (others than hoses)*, in collaboration with the European Committee for Standardization (CEN) Technical Committee CEN/TC 249, *Plastics*, in accordance with the Agreement on technical cooperation between ISO and CEN (Vienna Agreement).

This fifth edition cancels and replaces the fourth edition (ISO 2440:2019) which has been technically revised.

The main changes are as follows:

- addition of [subclause 7.2](#);
- addition of [Clause 9](#);
- addition of a method for verification in [Annex A](#);
- addition of precision data in [Annex B](#).

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](http://www.iso.org/members.html).

## Introduction

The measurement of ageing effects, either by oxidation or hydrolysis by humidity, is used to assess the long-term behaviour of cellular polymeric materials under laboratory conditions. The physical properties of interest are measured before and after the application of the specified treatments.

Test conditions are given for open cellular latex, open- and closed-cell polyurethane foams, and closed-cell polyolefin foams.

The effect of the ageing procedures on any of the physical properties of the material can be examined, but those normally tested are either the elongation and tensile properties, or the compression or indentation hardness properties.

These tests do not necessarily correlate either with service behaviour or with ageing by exposure to light.

If desired, the ageing conditions contained in this document can be applied to composite structures containing any of the above types of cellular material. This can be helpful in the investigation of possible interactions between cellular materials and other substrates. Composite constructions can be in the form of complete finished products or representative small specimens cut there-from.

# Flexible and rigid cellular polymeric materials — Accelerated ageing tests

**WARNING** — Persons using this document should be familiar with normal laboratory practice. This document does not purport to address all of the safety problems, if any, associated with its use. It is the responsibility of the user to establish appropriate safety and health practices and to determine the applicability of any other restrictions.

## 1 Scope

This document specifies laboratory procedures which are intended to imitate the effects of naturally occurring reactions such as oxidation or hydrolysis by humidity for flexible and rigid cellular polymeric materials.

## 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 23529, *Rubber — General procedures for preparing and conditioning test pieces for physical test methods*

## 3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

ISO and IEC maintain terminology databases for use in standardization at the following addresses:

- ISO Online browsing platform: available at <https://www.iso.org/obp>
- IEC Electropedia: available at <https://www.electropedia.org/>

### 3.1

#### average value of the property after ageing

$\bar{X}_a$

average value from multiple determinations of the property to be investigated, measured after application of an ageing process

Note 1 to entry: The average value of the property after ageing is expressed in the unit foreseen for this property.

### 3.2

#### average value of the property before ageing

$\bar{X}_0$

average value from multiple determinations of the property to be investigated, measured before application of an ageing process

Note 1 to entry: The average value of the property before ageing is expressed in the unit foreseen for this property.

### 3.3

#### percentage change

relative difference of a property before and after an ageing process, measured under repeat conditions

Note 1 to entry: Percentage change is expressed in percent (%).