BS EN ISO 4590:2016

BSI Standards Publication

Rigid cellular plastics — Determination of the volume percentage of open cells and of closed cells (ISO 4590:2016)

bsi.

National foreword

This British Standard is the UK implementation of EN ISO 4590:2016. It supersedes BS EN ISO 4590:2003 which is withdrawn.

The UK participation in its preparation was entrusted to Technical Committee PRI/72, Rigid cellular materials.

A list of organizations represented on this committee can be obtained on request to its secretary.

This publication does not purport to include all the necessary provisions of a contract. Users are responsible for its correct application.

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Rigid cellular plastics - Determination of the volume percentage of open cells and of closed cells (ISO 4590:2016)

Plastiques alvéolaires rigides - Détermination du pourcentage volumique de cellules ouvertes et de cellules fermées (ISO 4590:2016)

Harte Schaumstoffe - Bestimmung des Volumenanteils offener und geschlossener Zellen (ISO 4590:2016)

This European Standard was approved by CEN on 1 July 2016.

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

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European foreword

This document (EN ISO 4590:2016) has been prepared by Technical Committee ISO/TC 61 “Plastics” in collaboration with Technical Committee CEN/TC 249 “Plastics” the secretariat of which is held by NBN.

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of an identical text or by endorsement, at the latest by February 2017, and conflicting national standards shall be withdrawn at the latest by February 2017.

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

This document supersedes EN ISO 4590:2003.

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Endorsement notice

The text of ISO 4590:2016 has been approved by CEN as EN ISO 4590:2016 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 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).

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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 61, *Plastics*, Subcommittee SC 10, *Cellular plastics.*

This third edition cancels and replaces the second edition (ISO 4590:2002), which has been technically revised with the following changes:

— changes on Clause 2;

— introduction of a new test method based on the variation of the volume which is named 2b and is explained under 9.5 to 9.7;

— references to the test methods have been revised consequently and the cross references;

— some editorial updates have been introduced.

Introduction

The method 2b is included in order to update the basics of the method with the modern apparatus. This International Standard kept the same measurement equipment since the first version of 1981 and new test equipment has been included in accordance with the technical advances. The equipment, its performance and calibration, and the calculation of the new method are described in 9.5 to 9.9.

INTERNATIONAL STANDARD ISO 4590:2016(E)

Rigid cellular plastics — Determination of the volume percentage of open cells and of closed cells

1 Scope

This International Standard specifies a general procedure for the determination of the volume percentage of open and of closed cells of rigid cellular plastics, by measurement first of the geometrical volume and then of the air-impenetrable volume of test specimens.

The procedure includes the correction of the apparent open-cell volume by taking into account the surface cells opened by cutting during specimen preparation. Three alternative methods (method 1, method 2a and method 2b), and corresponding apparatus, are specified for the measurement of the impenetrable volume.

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 1923, *Cellular plastics and rubbers — Determination of linear dimensions*

3 Terms and definitions

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

3.1
surface area
S
total surface area of the test specimen determined by measuring its geometrical dimensions

3.2
geometrical volume
V_g
volume of the test specimen determined by measuring its geometrical dimensions

3.3
surface/volume ratio
r
ratio $\frac{S}{V_g}$ for the test specimen

3.4
impenetrable volume
V_i
volume of the test specimen into which air cannot penetrate and from which gas cannot escape, under the test conditions