

INTERNATIONAL
STANDARD

ISO
4589-4

First edition
2021-04

**Plastics — Determination of burning
behaviour by oxygen index —**

**Part 4:
High gas velocity test**

*Plastiques — Détermination du comportement au feu au moyen de
l'indice d'oxygène —*

Partie 4: Essai à vitesse élevée de gaz

Reference number
ISO 4589-4:2021(E)



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Published in Switzerland

Contents

	Page
Foreword	iv
Introduction	v
1 Scope	1
2 Normative references	1
3 Terms and definitions	1
4 Principles for determination of HOI	2
5 Apparatus	2
6 Calibration of equipment	7
7 Preparation of test specimens	7
7.1 Test specimen form	7
7.2 Sampling	8
7.3 Test specimen dimensions and preparation	8
7.4 Marking of test specimen	8
7.5 Conditioning	8
8 Procedure for determination of HOI	8
8.1 Setting up the apparatus	8
8.2 Setting volume fraction of oxygen and gas flow velocity	9
8.3 Procedure for ignition of the test specimen	9
8.4 Assessing the burning behaviour of test specimen	10
8.5 Selecting successive volume fraction of oxygen	10
8.6 Determining the preliminary volume fraction of oxygen	10
8.7 Volume fraction of oxygen changes	10
9 Calculation and expression of results	11
9.1 Calculation of the HOI	11
9.2 Determination of k	12
9.3 Standard deviation of oxygen volume fraction measurements	13
10 Precision of test results	13
11 Test report	13
Annex A (normative) Calibration of equipment	14
Annex B (informative) Example of test results sheet for HOI	15
Annex C (informative) Interlaboratory test data on HOI measurement	18
Annex D (informative) Blow-off behaviour at high gas velocity — How to predict the flammability of materials	20
Bibliography	29

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).

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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.

This document was prepared by Technical Committee ISO/TC 61, *Plastics*, Subcommittee SC 4, *Burning behaviour*.

A list of all parts in the ISO 4589 series can be found on the ISO website.

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.

Introduction

This document has been prepared to extend the test methods available for the determination of flammability by oxygen index to higher gas velocity of oxygen/nitrogen mixture to which plastic materials can be exposed in a service situation where the gas velocity is higher than that specified in ISO 4589-2. The gas velocity at the position of the test specimen is measured prior to the test.

The output of the test described in this document can be used, for example, in the evaluation of the burning behaviour of plastics materials used in circumstances where forced ventilation air flow governs the supply of oxygen to the fire. See References [10] to [16].

Plastics — Determination of burning behaviour by oxygen index —

Part 4: High gas velocity test

1 Scope

This document specifies a test method for determining the minimum volume fraction of oxygen, in admixture with nitrogen, at ambient temperature, that supports combustion of small vertical sheet test specimen under a specified gas velocity that is higher than that specified in ISO 4589-2.

NOTE The result is expressed as a high gas velocity oxygen index (HOI).

In addition, this document specifies the testing apparatus for determining the HOI.

The test method is applicable to materials in the form of sheets up to 2 mm thick. It is also applicable to flexible sheet materials that are supported vertically by a specified specimen holder.

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 291:2008, *Plastics — Standard atmospheres for conditioning and testing*

ISO 2859-1, *Sampling procedures for inspection by attributes — Part 1: Sampling schemes indexed by acceptance quality limit (AQL) for lot-by-lot inspection*

ISO 2859-2, *Sampling procedures for inspection by attributes — Part 2: Sampling plans indexed by limiting quality (LQ) for isolated lot inspection*

ISO 13943, *Fire safety — Vocabulary*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 13943, and the following apply.

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

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

3.1

high gas velocity oxygen index

HOI

minimum volume fraction of oxygen, in a mixture of oxygen and nitrogen, at a specified gas velocity that supports flaming combustion of a material under specified test conditions

Note 1 to entry: The specified gas velocity is greater than 40 mm/s and is typically between 600 mm/s and 1 000 mm/s.