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Third edition
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Plastics — Smoke generation —

Part 2: Determination of optical density by a single-chamber test

Plastiques — Production de fumée —

*Partie 2: Détermination de la densité optique par un essai en
enceinte unique*



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Contents

	Page
Foreword	v
Introduction	vi
1 Scope	1
2 Normative references	1
3 Terms and definitions	1
4 Principles of the test	3
5 Suitability of a material for testing	3
5.1 Material geometry.....	3
5.2 Physical characteristics.....	3
6 Specimen construction and preparation	3
6.1 Number of specimens.....	3
6.2 Size of specimens.....	3
6.3 Specimen preparation.....	4
6.4 Wrapping of specimens.....	4
6.5 Conditioning.....	4
7 Apparatus and ancillary equipment	5
7.1 General.....	5
7.2 Test chamber.....	5
7.3 Specimen support and heating arrangements.....	9
7.4 Gas supply.....	14
7.5 Photometric system.....	15
7.6 Chamber leakage.....	17
7.7 Cleaning materials.....	17
7.8 Ancillary equipment.....	17
8 Test environment	18
9 Setting-up and calibration procedures	18
9.1 General.....	18
9.2 Alignment of photometric system.....	19
9.3 Selection of compensating filter(s).....	19
9.4 Linearity check.....	20
9.5 Calibration of range-extension filter.....	20
9.6 Chamber leakage rate test.....	20
9.7 Burner calibration.....	20
9.8 Radiator cone calibration.....	21
9.9 Cleaning.....	21
9.10 Frequency of checking and calibrating procedure.....	21
10 Test procedure	22
10.1 General.....	22
10.2 Preparation of test chamber.....	22
10.3 Tests with pilot flame.....	22
10.4 Preparation of the photometric system.....	22
10.5 Loading the specimen.....	22
10.6 Recording of light transmission.....	23
10.7 Observations.....	23
10.8 Termination of test.....	24
10.9 Testing in different modes.....	24
11 Expression of results	25
11.1 Specific optical density D_s	25
11.2 Clear-beam correction factor D_c	25

This is a preview of "ISO 5659-2:2012". [Click here to purchase the full version from the ANSI store.](#)

12	Precision	25
13	Test report	26
Annex A (normative)	Calibration of heat flux meter	27
Annex B (informative)	Variability in the specific optical density of smoke measured in the single-chamber test	28
Annex C (informative)	Determination of mass optical density	30
Annex D (informative)	Precision data from tests on intumescent materials	35
Annex E (informative)	Guidance on optical density testing	37
	Bibliography	45

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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.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 2.

The main task of technical committees is to prepare International Standards. Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

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.

ISO 5659-2 was prepared by Technical Committee ISO/TC 61, *Plastics*, Subcommittee SC 4, *Burning behaviour*.

This third edition cancels and replaces the second edition (ISO 5659-2:2006), which has been technically revised. It also replaces ISO 5659-1:1996 (*Plastics — Smoke generation — Part 1: Guidance on optical-density testing*), which will be withdrawn upon publication of this edition.

ISO 5659 consists of the following parts, under the general title *Plastics — Smoke generation*:

- *Part 2: Determination of optical density by a single-chamber test*
- *Part 3: Determination of optical density by a dynamic-flow method* (Technical Report)

Introduction

Fire is a complex phenomenon: its development and effects depend upon a number of interrelated factors. The behaviour of materials and products depends upon the characteristics of the fire, the method of use of the materials and the environment in which they are exposed (see also ISO/TR 3814^[1] and ISO 13943).

A test such as is specified in this part of ISO 5659 deals only with a simple representation of a particular aspect of the potential fire situation, typified by a radiant heat source, and it cannot alone provide any direct guidance on behaviour or safety in fire. A test of this type may, however, be used for comparative purposes or to ensure the existence of a certain quality of performance (in this case, smoke production) considered to have a bearing on fire behaviour generally. It would be wrong to attach any other meaning to results from this test.

The term "smoke" is defined in ISO 13943 as a visible suspension of solid and/or liquid particles in gases resulting from incomplete combustion. It is one of the first response characteristics to be manifested and should almost always be taken into account in any assessment of fire hazard as it represents one of the greatest threats to occupants of a building or other enclosure, such as a ship or train, on fire.

The responsibility for the preparation of ISO 5659 was transferred during 1987 from ISO/TC 92 to ISO/TC 61 on the understanding that the scope and applicability of the standard for the testing of materials should not be restricted to plastics but should also be relevant to other materials where possible, including building materials.