



BSI Standards Publication

## **Cigarettes — Determination of carbon monoxide in the vapour phase of cigarette smoke — NDIR method**

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## National foreword

This British Standard is the UK implementation of ISO 8454:2007+A2:2019. It supersedes BS ISO 8454:2007+A1:2009, which is withdrawn.

The start and finish of text introduced or altered by amendment is indicated in the text by tags. Tags indicating changes to ISO text carry the number of the ISO amendment. For example, text altered by ISO amendment A1 is indicated by A1 A1.

The UK participation in its preparation was entrusted to Technical Committee AW/40, Tobacco and tobacco products.

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

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## **Cigarettes — Determination of carbon monoxide in the vapour phase of cigarette smoke — NDIR method**

*Cigarettes — Dosage du monoxyde de carbone dans la phase gazeuse de la fumée de cigarette — Méthode IRND*



Reference number  
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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 8454 was prepared by Technical Committee ISO/TC 126, *Tobacco and tobacco products*.

This third edition cancels and replaces the second edition (ISO 8454:1995), which has been technically revised.

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## **A1** Introduction

No machine smoking regime can represent all human smoking behaviour:

- it is recommended that cigarettes also be tested under conditions of a different intensity of machine smoking than those specified in this International Standard;
- machine smoking testing is useful to characterize cigarette emissions for design and regulatory purposes, but communication of machine measurements to smokers can result in misunderstandings about differences in exposure and risk across brands;
- smoke emission data from machine measurements may be used as inputs for product hazard assessment, but they are not intended to be nor are they valid as measures of human exposure or risks. Communicating differences between products in machine measurements as differences in exposure or risk is a misuse of testing using ISO standards. **A1**

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# Cigarettes — Determination of carbon monoxide in the vapour phase of cigarette smoke — NDIR method

## 1 Scope

This International Standard specifies a method for the determination of carbon monoxide (CO) in the vapour phase of cigarette smoke.

## 2 Normative references

The following referenced documents are indispensable for the application 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 3308, *Routine analytical cigarette-smoking machine — Definitions and standard conditions*

ISO 3402, *Tobacco and tobacco products — Atmosphere for conditioning and testing*

ISO 4387, *Cigarettes — Determination of total and nicotine-free dry particulate matter using a routine analytical smoking machine*

## 3 Terms and definitions

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

### 3.1

#### **vapour phase**

portion of smoke, which passes the particulate phase trap during smoking in accordance with ISO 4387 using a machine conforming to ISO 3308

### 3.2

#### **clearing puff**

any puff taken after a cigarette has been extinguished or removed from the cigarette holder

## 4 Principle

Smoking of cigarettes in accordance with the procedures given in ISO 4387. Collection of the vapour phase of the cigarette smoke and measurement of the carbon monoxide using a non-dispersive infrared (NDIR) analyser calibrated for carbon monoxide. Calculation of the amount of carbon monoxide per cigarette.

## 5 Apparatus

Usual laboratory apparatus and, in particular, the following items.

**5.1 Conditioning enclosure**, maintained accurately in accordance with the conditions specified in ISO 3402, for conditioning the cigarette sample prior to smoking (see also [7.1](#)).

**5.2 Routine analytical cigarette-smoking machine and accessories**, complying with the requirements of ISO 3308.