BS ISO 3308:2012

BSI Standards Publication

Routine analytical cigarette-smoking machine — Definitions and standard conditions

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National foreword

This British Standard is the UK implementation of ISO 3308:2012. It supersedes BS ISO 3308:2000+A1:2009 which is withdrawn.

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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INTERNATIONAL STANDARD

ISO 3308

Fifth edition
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Routine analytical cigarette-smoking machine — Definitions and standard conditions

Machine à fumer analytique de routine pour cigarettes — Définitions et conditions normalisées

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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 3308 was prepared by Technical Committee ISO/TC 126, *Tobacco and tobacco products*.

This fifth edition cancels and replaces the fourth edition (ISO 3308:2000), which has been technically revised. Subclause 5.8, the last formula in Annex C and the figures have been editorially revised. It also incorporates the amendment ISO 3308:2000/Amd.1 2009.

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Introduction

Experience and knowledge gained from the use of analytical cigarette-smoking machines has highlighted a need to specify certain requirements, which are addressed in this International Standard.

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.

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INTERNATIONAL STANDARD ISO 3308:2012(E)

Routine analytical cigarette-smoking machine — Definitions and standard conditions

1 Scope

This International Standard:

— defines smoking parameters and specifies the standard conditions to be provided for the routine analytical machine smoking of cigarettes;

— specifies the requirements for a routine analytical smoking machine complying with the standard conditions.

Annex A specifies the ambient air velocities surrounding cigarettes in a routine analytical smoking machine, the mechanical design of the enclosures immediately surrounding them, and the methods of air velocity measurement including the location where air velocity is measured.

Annex B describes, as an example, the special characteristics of a typical smoking machine incorporating a piston type of puffing mechanism.

Annex C includes a diagram of a puff profile and illustrates definitions and standard conditions.

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

3 Terms and definitions

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

3.1
test atmosphere
atmosphere to which a sample or test piece is exposed throughout the test

NOTE 1 It is characterized by specified values for one or more of the following parameters: temperature, relative humidity and pressure, which are kept within the specified tolerances.

NOTE 2 The test may be carried out either in the laboratory or in a special chamber termed the "test chamber", or in the conditioning chamber, the choice depending on the nature of the test piece and on the test itself. For example, close control of the test atmosphere may not be necessary if the change in properties of the test piece is insignificant over the test period.

NOTE 3 Adapted from ISO 558:1980, definition 2.3.

3.2
butt length
length of unburnt cigarette remaining at the moment when the smoking is stopped

3.3
restricted smoking
condition that exists when the butt end of a cigarette is closed to the atmosphere between successive puffs

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3.4
free smoking
condition that exists when the butt end of a cigarette is completely exposed to the atmosphere between successive puffs

3.5
pressure drop
static pressure difference between the two ends of

— the test piece completely encapsulated in a measuring device such that no air can pass through the outer membrane (or wrapping); or

— a pneumatic circuit when it is traversed by an air flow under steady conditions in which the measured volumetric flow, under standard conditions, at the output end is 17,5 ml/s

3.6
draw resistance
negative pressure which has to be applied to the butt end, under test conditions (see ISO 3402) in order to sustain a volumetric flow of 17,5 ml/s, exiting at the butt end, when the cigarette is encapsulated in a measurement device to a depth of 9 mm

NOTE 1 Any ventilation zones and the tobacco rod are exposed to the atmosphere.

NOTE 2 Measurement values are expressed in pascals (Pa). They used to be expressed in millimetres water gauge (mm WG). The values given previously in mm WG are converted into pascals using the following conversion factor: 1 mm WG = 9,8067 Pa.

NOTE 3 The concept of draw resistance may also be subjectively judged when a cigarette is smoked by a consumer/taste panel. Under such circumstances, draw resistance is not measured objectively because the conditions of the formal definition are not met.

3.7
puff duration
interval of time during which the port is connected to the suction mechanism

3.8
puff volume
volume leaving the butt end of a cigarette and passing through the smoke trap

3.9
puff number
number of puffs necessary to smoke a cigarette to a specified butt length

3.10
puff frequency
number of puffs in a given time

3.11
puff termination
termination of the connection of the port to the suction mechanism

3.12
puff profile
flow rate measured directly behind the butt end of a cigarette and depicted graphically as a function of time

3.13
dead volume
volume which exists between the butt end of a cigarette and the suction mechanism

3.14
cigarette holder
device for holding the mouth end of a cigarette during smoking

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3.15
smoke trap
device for collecting such part of the smoke from a sample of cigarettes as is necessary for the determination of specified smoke components

3.16
port
aperture of the suction mechanism through which a puff is drawn and to which is attached a smoke trap

3.17
channel
element of a smoking machine consisting of one or more cigarette holders, one trap and a means of drawing a puff through the trap

3.18
compensation
ability to maintain constant puff volumes and puff profiles when the pressure drop at the port changes

3.19
cigarette position
position of a cigarette on the smoking machine

NOTE In particular, it is determined by the angle made by the longitudinal axis of the cigarette and the horizontal plane when a cigarette is inserted into a cigarette holder in an analytical smoking machine.

3.20
mainstream smoke
all smoke which leaves the butt end of a cigarette during the smoking process

3.21
sidestream smoke
all smoke which leaves a cigarette during the smoking process other than from the butt end

3.22
ashtray
device positioned under the cigarettes in their holders to collect ash falling from the cigarettes during smoking

3.23
clearing puff
any puff taken after the cigarette has been extinguished or removed from the cigarette holder

3.24
ambient air flow
air flow around the cigarettes during the smoking process

NOTE See Annex A.

4 Standard conditions

4.1 Machine pressure drop

The whole of the flow path between the butt end of the cigarette and the suction mechanism shall offer the least possible resistance, and its pressure drop (see 3.5) shall not exceed 300 Pa.

4.2 Puff duration

The standard puff duration (see 3.7) shall be (2,00 ± 0,02) s.

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