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Fine-cut tobacco and smoking articles made from it — Methods of sampling, conditioning and analysis —

Part 3: Determination of total particulate matter of smoking articles using a routine analytical smoking machine, preparation for the determination of water and nicotine, and calculation of nicotine-free dry particulate matter

Tabac à rouler et objets confectionnés à partir de ce type de tabac — Méthodes d'échantillonnage, de conditionnement et d'analyse —

Partie 3: Dosage de la matière particulaire totale des objets à fumer au moyen d'une machine à fumer analytique de routine, préparation pour le dosage de l'eau et de la nicotine, et calcul de la matière particulaire anhydre et exempte de nicotine

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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 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 126, *Tobacco and tobacco products*.

This fourth edition cancels and replaces the third edition (ISO 15592-3:2022), which has been technically revised.

The main changes are as follows:

— the Scope has been revised editorially;

— the Normative references have been updated;

— Figure 1 has been moved to 5.2;

— subclause 8.1 has been updated by referring to ISO 4906 regarding filling power;

— the requirement for the indicator graduated at 35 ml have been added in 9.5.3.4;

— the consideration of linear smoking machine has been added in 9.5.3.4;

— in 11.1 the information on the wrapper study has been updated;

— in Annex B, the approach 1 based on the tobacco filing power has been updated by referring to ISO 4906 regarding filling power;

— the Bibliography has been updated.

A list of all parts in the ISO 15592 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.

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Introduction

Smokers make smoking articles by enclosing fine-cut tobacco in a suitable wrapper (sometimes incorporating a filter) either by hand or by using a rolling/tubing machine. The scientific literature has shown that the quantity of fine-cut tobacco, the type of wrapper chosen and the size of the articles made vary widely between consumers and between countries.[1]

When the article is smoked, the yield of nicotine free dry particulate matter [NFDPM (sometimes referred to as “tar”)] and nicotine is determined by the construction of the article. This document has been developed to specify how articles are made in the laboratory and how they are tested. Fine-cut smoking articles made by consumers can therefore differ from the fine-cut smoking articles made for the purpose of testing described in this document.

One smoking article is made using one mass of fine-cut tobacco and one tube made from a specified wrapper (see Annex A).

It should be noted that because the use of fine-cut tobacco is so dependent on the way in which an individual makes a smoking article, a comparison of the smoke yield with the single result from factory-manufactured cigarettes according to ISO 4387 is of limited value.

This document also gives further necessary procedures as follows in Annex B.

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Fine-cut tobacco and smoking articles made from it — Methods of sampling, conditioning and analysis —

Part 3: Determination of total particulate matter of smoking articles using a routine analytical smoking machine, preparation for the determination of water and nicotine, and calculation of nicotine-free dry particulate matter

1 Scope

This document specifies methods for the determination of total particulate matter in the mainstream smoke of fine-cut smoking articles (FCSAs) using a routine analytical smoking machine. It also specifies the preparation for the determination of water and nicotine, and calculation of nicotine-free dry particulate matter in the collected total particulate matter.

This document specifies the method of making of fine-cut tobacco smoking articles using a tube made from a specified wrapper.

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 3308:2012, *Routine analytical cigarette-smoking machine — Definitions and standard conditions*

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

ISO 4906, *Tobacco and tobacco products — Determination of filling power for preparation of fine-cut smoking articles — Constant-weight pressurization*

ISO 6488, *Tobacco and tobacco products — Determination of water content — Karl Fischer method*

ISO 6565, *Tobacco and tobacco products — Draw resistance of cigarettes and pressure drop of filter rods — Standard conditions and measurement*

ISO 10315, *Cigarettes — Determination of nicotine in total particulate matter from the mainstream smoke — Gas-chromatographic method*

ISO 10362-1, *Cigarettes — Determination of water in total particulate matter from the mainstream smoke — Part 1: Gas-chromatographic method*

ISO 15592-1, *Fine-cut tobacco and smoking articles made from it — Methods of sampling, conditioning and analysis — Part 1: Sampling*

ISO 15592-2, *Fine-cut tobacco and smoking articles made from it — Methods of sampling, conditioning and analysis — Part 2: Atmosphere for conditioning and testing*

ISO 16055, *Tobacco and tobacco products — Monitor test piece for smoking machine — Requirements and use*

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3 Terms, definitions and symbols

3.1 Terms and definitions

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

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

— ISO Online browsing platform: available at https://www.iso.org/obp

— IEC Electropedia: available at https://www.electropedia.org/

3.1.1
fine-cut tobacco
tobacco produced to be used by consumers for making their own smoking articles

3.1.2
fine-cut smoking article
FCSA
article, suitable for smoking, produced by combining *fine-cut tobacco* (3.1.1) with a *wrapper* (3.1.4)

3.1.3
expanded tobacco
fine-cut tobacco, which has increased in volume by a process of cellular expansion

3.1.4
wrapper
paper specially prepared and supplied in a form suitable for enclosing *fine-cut tobacco* (3.1.1) so as to produce a smoking article

3.1.5
total particulate matter
TPM
portion of the mainstream smoke which is retained in the smoke trap

3.1.6
dry particulate matter
DPM
total particulate matter (3.1.5) after deduction of its water content

3.1.7
nicotine-free dry particulate matter
NFDPM
dry particulate matter (3.1.6) after deduction of its nicotine content

3.1.8
smoking process
use of a smoking machine to smoke *fine-cut smoking articles* (3.1.2) from lighting to final puff

3.1.9
smoking run
specific *smoking process* (3.1.8) to produce such smoke from a sample of *fine-cut smoking articles* (3.1.2) as is necessary for the determination of the smoke components

3.1.10
laboratory fine-cut tobacco sample
sample of *fine-cut tobacco* (3.1.1) intended for laboratory inspection or testing and which is representative of the gross sample or the sub-period sample

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