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

*Cigarettes — Dosage de la nicotine dans la matière particulaire totale
du courant principal de fumée — Méthode par chromatographie en
phase gazeuse*

iteh standards
(<https://standards.iteh.ai>)
Document Preview

ISO 10315:2021

<https://standards.iteh.ai/catalog/standards/iso/bdae8d10-d2be-4381-8b25-01608a096e37/iso-10315-2021>



iTeh Standards
(<https://standards.iteh.ai>)
Document Preview

ISO 10315:2021

<https://standards.iteh.ai/catalog/standards/iso/bdae8d10-d2be-4381-8b25-01608a096e37/iso-10315-2021>



COPYRIGHT PROTECTED DOCUMENT

© ISO 2021

All rights reserved. Unless otherwise specified, or required in the context of its implementation, no part of this publication may be reproduced or utilized otherwise in any form or by any means, electronic or mechanical, including photocopying, or posting on the internet or an intranet, without prior written permission. Permission can be requested from either ISO at the address below or ISO's member body in the country of the requester.

ISO copyright office
CP 401 • Ch. de Blandonnet 8
CH-1214 Vernier, Geneva
Phone: +41 22 749 01 11
Email: copyright@iso.org
Website: www.iso.org

Published in Switzerland

Contents

Page

Foreword	iv
Introduction	v
1 Scope	1
2 Normative references	1
3 Terms and definitions	1
4 Principle	1
5 Reagents	1
6 Apparatus	2
7 Procedure	3
7.1 Test portion.....	3
7.2 Setting up the apparatus.....	3
7.3 Calibration of the gas chromatograph.....	3
7.4 Determination.....	3
8 Expression of results	4
9 Repeatability and reproducibility	4
10 Alternative gas-chromatographic procedures and analysis precautions	5
10.1 General.....	5
10.2 Alternative columns.....	5
10.2.1 Packed columns.....	5
10.2.2 Capillary columns.....	5
10.3 Injection systems.....	5
10.4 Alternative internal standards.....	6
11 Test report	6
Annex A (informative) Use of this method with the gas-chromatographic determination of water ..	7
Annex B (informative) Example of chromatogram	8
Bibliography	9

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).

Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

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 10315:2013), which has been technically revised.

The main changes compared to the previous edition are as follows.

- The term "smoke condensate(s)" has been replaced with either "total particulate matter" or "total particulate matter from the mainstream smoke" throughout the document.
- Extraction solution and calibration solutions stored at low temperature, are equilibrated to ambient temperature before use ([5.7](#)).
- The linear regression equation for calibration is calculated by regression analysis with the area ratios in accordance with the nicotine concentrations ([7.3](#)).
- Data in [Clause 9](#) have been replaced with the results of ISO/TR 19478-1.

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 may be considered as part of a set produced by ISO/TC 126 which describes the determination of total and nicotine-free dry particulate matter (NFDPM) in total particulate matter from the mainstream smoke. The set comprises ISO 3308, ISO 3402, ISO 4387, ISO 8243, ISO 10315 (this document) and ISO 10362-1.

A related International Standard, ISO 3400, determines total alkaloids, whereas this document determines only nicotine by virtue of the gas-chromatographic separation. Occasionally, differences can occur because of minor amounts of alkaloids other than nicotine in some types of tobacco.

[Annex A](#) provides information about the use of this method in conjunction with or simultaneously with the gas-chromatographic method of water determination specified in ISO 10362-1.

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 document.
- 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.

(<https://standards.iteh.ai>)
Document Preview

[ISO 10315:2021](#)

<https://standards.iteh.ai/catalog/standards/iso/bdae8d10-d2be-4381-8b25-01608a096e37/iso-10315-2021>

