INTERNATIONAL STANDARD

ISO 11454

First edition
1997-02-01

Tobacco and tobacco products — Determination of vapour-phase nicotine in air — Gas-chromatographic method

Tabac et produits du tabac — Dosage de la nicotine en phase gazeuse dans l'air — Méthode par chromatographie en phase gazeuse

This material is reproduced from ISO documents under International Organization for Standardization (ISO) Copyright License number IHS/ICC/1996. Not for resale. No part of these ISO documents may be reproduced in any form, electronic retrieval system or otherwise, except as allowed in the copyright law of the country of use, or with the prior written consent of ISO (Case postale 56, 1211 Geneva 20, Switzerland, Fax +41 22 734 10 79), IHS or the ISO Licensor's members.

Reference number
ISO 11454:1997(E)

AVA Documents
Document Sharing Hub

Full document details: ISO 11454-1997

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.

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.

International Standard ISO 11454 was prepared by Technical Committee ISO/TC 126, *Tobacco and tobacco products.*

Annex A of this International Standard is for information only.

© ISO 1997

All rights reserved. Unless otherwise specified, no part of this publication may be reproduced or utilized in any form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from the publisher.

International Organization for Standardization
Case postale 56 • CH-1211 Genève 20 • Switzerland
Internet central@iso.ch
X.400 c=ch; a=400net; p=iso; o=isocs; s=central

Printed in Switzerland

AVA Documents
Document Sharing Hub

Full document details: ISO 11454-1997

INTRODUCTION

The method described in this International Standard has been recommended after studies by members of CORESTA (Co-operation Centre for Scientific Research Relative to Tobacco) as being suitable for the quantitative determination of vapour-phase nicotine in ambient air.

AVA Documents Document Sharing Hub

Full document details: ISO 11454-1997

Tobacco and tobacco products — Determination of vapour-phase nicotine in air — Gas-chromatographic method

1 SCOPE

This International Standard specifies a method for the determination of vapour-phase nicotine in ambient air. If the method is used to determine nicotine derived from tobacco smoke, it has to be accepted that whilst airborne nicotine is a qualitative marker to confirm that smoking has taken place, on the basis of research, its amount cannot be quantitatively extrapolated to other smoke components.

NOTE 1 For comments concerning limitations of use and field of application, see annex A, reference [1].

2 NORMATIVE REFERENCES

The following standards contain provisions which, through reference in this text, constitute provisions of this International Standard. At the time of publication, the edition indicated was valid. All standards are subject to revision, and parties to agreements based on this International Standard are encouraged to investigate the possibility of applying the most recent edition of the standards indicated below. Members of IEC and ISO maintain registers of currently valid International Standards.

ISO 648:1977, Laboratory glassware - One-mark pipettes.

ISO 1042:1983, Laboratory glassware - One-mark volumetric flasks.

ISO 13276:1997, Tobacco and tobacco products – Determination of nicotine purity – Gravimetric method using tungstosilicic acid.

3 DEFINITIONS

For the purposes of this International Standard, the following definitions apply.

AVA Documents Document Sharing Hub

Full document details: ISO 11454-1997

3.1 vapour-phase nicotine: That nicotine which is not bound to aerosol particulate matter.

3.2 ambient air: The air contained in specified indoor or outdoor environments.

4 PRINCIPLE

Drawing a known volume of air at approximately 1 l/min through an adsorbent sampling tube containing the specified resin. Transfer of the resin to a glass vial and addition of an internal standard. Desorption of nicotine and internal standard into a solvent. Determination by gas chromatography using a thermionic detector.

5 REAGENTS

All reagents shall be of recognized analytical reagent grade.

All volumetric flasks and pipettes shall comply with class A of ISO 1042 and class A of ISO 648 respectively.

5.1 Ethyl acetate, chromatographic grade.

5.2 Triethylamine, minimum purity 99 %, for modifying ethyl acetate solvent.

5.3 Nicotine, minimum purity 99 %.

Until use, store at 0 °C to 4 °C in the dark.

The content should be determined in accordance with ISO 13276.

5.4 Quinoline, mimimum purity 99 % for use as internal standard.

5.5 Adsorbent resin, comprising an agglomerated resin [1]) consisting of styrene crosslinked to divinyl benzene and having the form of microspheroids with a surface area of approximately 725 m^2/g.

5.6 Extraction solvent, for dissolving nicotine adsorbed on adsorbent resin (5.5).

Prepare a solution of 0,01 % (V/V) of triethylamine (5.2) in ethyl acetate (5.1).

5.7 Nicotine standard solutions

5.7.1 Primary standard solution

Weigh accurately about 100 mg of nicotine (5.3). Transfer to a 100 ml standard volumetric flask and dilute to the mark with extraction solvent (5.6).

---

[1]) XAD-4 is an example of a suitable product available commercially. This information is given for the convenience of the users of this International Standard and does not constitute an endorsement by ISO of this product.

AVA Documents Document Sharing Hub

Full document details: ISO 11454-1997