

---

---

**Material used for producing  
wrappings for cigarette filters,  
cigarettes and other tobacco  
products — Determination of  
acetate and citrate content — Ion  
chromatographic method**

iTeh Standards

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

Document Preview

[ISO 9322:2023](https://standards.iteh.ai/catalog/standards/sist/6644fdb9-dac6-4ffc-b0d1-ac01220af0a8/iso-9322-2023)

<https://standards.iteh.ai/catalog/standards/sist/6644fdb9-dac6-4ffc-b0d1-ac01220af0a8/iso-9322-2023>



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

ISO 9322:2023

<https://standards.iteh.ai/catalog/standards/sist/6644fdb9-dac6-4ffc-b0d1-ac01220af0a8/iso-9322-2023>



**COPYRIGHT PROTECTED DOCUMENT**

© ISO 2023

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](mailto:copyright@iso.org)  
Website: [www.iso.org](http://www.iso.org)

Published in Switzerland

# Contents

Page

Foreword.....	iv
<b>1 Scope.....</b>	<b>1</b>
<b>2 Normative references.....</b>	<b>1</b>
<b>3 Terms and definitions.....</b>	<b>1</b>
<b>4 Principle.....</b>	<b>1</b>
<b>5 Reagents.....</b>	<b>2</b>
<b>6 Apparatus.....</b>	<b>2</b>
<b>7 Preparation.....</b>	<b>2</b>
7.1 Preparation of labware.....	2
7.2 Preparation of standards.....	3
<b>8 Procedure.....</b>	<b>3</b>
8.1 Sample preparation.....	3
8.2 Determination of acetate and citrate by ion chromatography.....	4
8.3 External standard calibration.....	4
8.4 Sample extraction.....	4
8.5 Analysis of samples.....	4
<b>9 Calculation.....</b>	<b>5</b>
<b>10 Repeatability and reproducibility.....</b>	<b>5</b>
<b>11 Test report.....</b>	<b>6</b>
<b>Annex A (informative) Example chromatogram of the wrapping material samples.....</b>	<b>7</b>
<b>Bibliography.....</b>	<b>8</b>

[ISO 9322:2023](https://standards.iteh.ai/standards/sist/6644fdb9-dac6-4ffc-b0d1-ac01220af0a8/iso-9322-2023)

<https://standards.iteh.ai/catalog/standards/sist/6644fdb9-dac6-4ffc-b0d1-ac01220af0a8/iso-9322-2023>

## 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 document 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](http://www.iso.org/directives)).

ISO draws attention to the possibility that the implementation of this document may involve the use of (a) patent(s). ISO takes no position concerning the evidence, validity or applicability of any claimed patent rights in respect thereof. As of the date of publication of this document, ISO had not received notice of (a) patent(s) which may be required to implement this document. However, implementers are cautioned that this may not represent the latest information, which may be obtained from the patent database available at [www.iso.org/patents](http://www.iso.org/patents). ISO shall not be held responsible for identifying any or all such patent rights.

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](http://www.iso.org/iso/foreword.html).

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

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](http://www.iso.org/members.html).

# Material used for producing wrappings for cigarette filters, cigarettes and other tobacco products — Determination of acetate and citrate content — Ion chromatographic method

## 1 Scope

This document specifies an ion chromatographic method for the determination of the acetate and citrate content of materials used to produce wrappings for cigarette filters, cigarettes, and other tobacco products.

## 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 187, *Paper, board and pulps — Standard atmosphere for conditioning and testing and procedure for monitoring the atmosphere and conditioning of samples*

ISO 287, *Paper and board — Determination of moisture content of a lot — Oven-drying method*

ISO 3696, *Water for analytical laboratory use — Specification and test methods*

## 3 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

#### acetate content

anhydrous acetic acid content determined by ion chromatographic method

Note 1 to entry: Acetate is generally added to wrapping materials, in particular cigarette paper, as sodium acetate and potassium acetate to influence the burning rate of the cigarette and, consequently, the puff number<sup>[1]</sup>.

### 3.2

#### citrate content

anhydrous citric acid content determined by ion chromatographic method

Note 1 to entry: Citrate is generally added to wrapping materials, in particular cigarette paper, as trisodium citrate and tripotassium citrate or mixtures thereof to influence the burning rate of the cigarette and, consequently, the puff number<sup>[2]</sup>.

## 4 Principle

A sample of the wrapping material is extracted using water of Grade 1 specified in ISO 3696, and the content of acetate and citrate in the extract is determined by ion chromatographic analysis. The response of acetate and citrate ions is measured using a conductivity detector and the corresponding content is quantified against an external standard calibration curve.

## 5 Reagents

### 5.1 General

All reagents used shall be of recognized analytical grade. Water of Grade 1 specified in ISO 3696 shall be used.

**5.2 Sodium acetate trihydrate, [CH<sub>3</sub>COONa·3H<sub>2</sub>O], CAS No<sup>1)</sup>:** 6131-90-4, > 99 % purity.

**5.3 Citric acid monohydrate, [C<sub>6</sub>H<sub>8</sub>O<sub>7</sub>·H<sub>2</sub>O], CAS No.:** 5949-29-1, > 99 % purity.

## 6 Apparatus

The usual laboratory apparatus for use in preparation of samples, solutions, standards and, in particular, the following items.

**6.1 Conical flasks,** of nominal capacity 250 ml.

**6.2 Syringe filter,** 0,45 µm nylon, or equivalent.

**6.3 Electronic or mechanical pipettes.**

**6.4 Ion chromatograph (IC),** consisting of a conductivity detector, conductivity suppressor (device that reduces the background conductance of the eluent), potassium hydroxide (KOH) Eluent Generator Cartridge and data collection system. An eluent degassing unit is recommended.

NOTE A gradient eluent can be achieved by potassium hydroxide (KOH) Eluent Generator Cartridge, or using a dosing-device for a Dose-in gradient.

**6.5 Anion exchange column (non-metallic) with matching guard column.**

EXAMPLE Thermo Scientific IonPac® AS15<sup>2)</sup>.

**6.6 Ultrasonic bath.**

**6.7 Analytical balance,** suitable for measuring to the nearest 0,000 1 g.

## 7 Preparation

### 7.1 Preparation of labware

Labware shall be cleaned and dried in a manner which ensures that contamination does not occur.

---

1) Chemical Abstracts Service (CAS) Registry Number® is a trademark of the American Chemical Society (ACS). This information is given for the convenience of users of this document and does not constitute an endorsement by ISO of the product named. Equivalent products may be used if they can be shown to lead to the same results.

2) Thermo Scientific IonPac® AS15 is an example of a suitable product available commercially. This information is provided for the convenience of users of this document and does not constitute an endorsement by ISO of the product name. Equivalent products (columns) may be used if they can be shown to lead to the same results.