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**Tobacco and tobacco products —  
Determination of nicotine purity  
— Gravimetric method using  
tungstosilicic acid**

*Tabac et produits du tabac — Détermination de la pureté de la  
nicotine — Méthode gravimétrique à l'acide tungstosilicique*



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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](http://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](http://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 on 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 the following URL: [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*.

This second edition cancels and replaces the first edition (ISO 13276:1997), which has been technically revised with the following changes:

- [Clause 9](#) has been updated.

# Tobacco and tobacco products — Determination of nicotine purity — Gravimetric method using tungstosilicic acid

**WARNING** — The use of this document can involve hazardous materials, operations, and equipment. This document does not purport to address all the safety problems associated with its use. It is the responsibility of the user of this document to establish appropriate safety and health practices and determine the applicability of regulatory limitations prior to use.

## 1 Scope

This document specifies a method for the gravimetric determination of the purity of nicotine using tungstosilicic acid.

The method is applicable to pure nicotine or nicotine salts used to calibrate analytical methods for the determination of nicotine in the field of tobacco, tobacco products and smoke analysis.

## 2 Normative references

There are no normative references in this document.

## 3 Terms and definitions

No terms and definitions are listed in this document.

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

- IEC Electropedia: available at <http://www.electropedia.org/>
- ISO Online browsing platform: available at <http://www.iso.org/obp>

## 4 Principle

Complex formation of nicotine or its salts with tungstosilicic acid to form insoluble nicotine silicotungstate. Determination of the precipitate mass by filtration using either a sintered glass crucible in combination with oven-drying or an ashless filter paper in combination with incineration.

## 5 Reagents

Use only reagents of recognized analytical reagent grade and distilled water or water of at least equivalent purity.

### 5.1 Tungstosilicic acid solution (CAS of tungstosilicic acid: 12027-43-9).

Dissolve 12 g of dodeca-tungstosilicic acid ( $\text{H}_4[\text{Si}(\text{W}_3\text{O}_{10})_4] \cdot x\text{H}_2\text{O}$ ) in 100 ml of water.

**NOTE** Avoid the use of the other forms of tungstosilicic acid such as  $4\text{H}_2\text{O} \cdot \text{SiO}_2 \cdot 10\text{WO}_3 \cdot 3\text{H}_2\text{O}$  or  $4\text{H}_2\text{O} \cdot \text{SiO}_2 \cdot 12\text{WO}_3 \cdot 20\text{H}_2\text{O}$  as they do not yield crystalline precipitates with nicotine. Tungstosilicic acid of the CAS 11130-20-4 and 12027-38-2 might be used for this method provided sufficiently crystalline precipitation occurs.

### 5.2 Hydrochloric acid solution, HCl, a volume fraction of 20 %.

Dilute 20 ml of hydrochloric acid,  $\rho_{20}(\text{HCl}) = 1,18 \text{ g/ml}$ , to 100 ml with water.