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Tobacco — Determination of the content of total alkaloids as nicotine — Continuous-flow analysis method using KSCN/DCIC

Tabac — Détermination de la teneur en alcaloïdes totaux exprimés en nicotine — Méthode par analyse en flux continu à l'aide de KSCN/DCIC

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Foreword

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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.

This document was prepared by Technical Committee ISO/TC 126, *Tobacco and tobacco products*, Subcommittee SC 2, *Leaf tobacco*.

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

In 2014, the CORESTA Routine Analytical Chemistry Sub-Group (RAC) undertook a collaborative study of two methods for the determination of total alkaloids in tobacco (as nicotine) by segmented continuous-flow analysis. The two methods are ISO 15152 and a new method proposed by the China National Tobacco Quality Supervision and Test Center. In ISO 15152, cyanogen chloride is generated in situ by the reaction of potassium cyanide and chloramine T. The proposed method eliminates the use of the potassium cyanide (KCN) by employing potassium thiocyanate (KSCN) with sodium dichloroisocyanurate dihydrate (DCIC) for colour development. Each method was tested using water extracted tobacco and 5 % acetic acid extracted tobacco. Calibration standards were prepared with the same extraction solutions.

Tobacco — Determination of the content of total alkaloids as nicotine — Continuous-flow analysis method using KSCN/DCIC

1 Scope

This document specifies a method for the determination of the content of total alkaloids as nicotine in tobacco by continuous-flow analysis. This method is applicable to leaf samples, stems, reconstituted tobacco sheet materials and tobacco blends.

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

ISO 13276, *Tobacco and tobacco products — Determination of nicotine purity — Gravimetric method using tungstosilicic acid*

3 Terms and definitions

No terms or definitions are listed in this document.

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

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

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

4 Principle

An aqueous extract (see the next paragraph) of the tobacco is prepared and the total alkaloids content (as nicotine) of the extract is measured by reaction of sulfanilic acid and cyanogen chloride. Cyanogen chloride is produced in situ by reaction of potassium thiocyanate (KSCN) and sodium dichloroisocyanurate (DCIC). The developed brown colour is measured at 460 nm.

A collaborative study has shown that the method gives equivalent results for water and 5 % acetic acid extracts. 5 % acetic acid extracts shall be used if total alkaloids (as nicotine) and reducing substances (see ISO 15153) or reducing carbohydrates (see ISO 15154) are to be carried out simultaneously.

5 Reagents

Use only reagents of recognized analytical grade. All reagents shall be used according to good laboratory practice.

5.1 Polyoxyethylene lauryl ether (Brij-35™[1]), a mass fraction of 30 % solution), $(C_2H_4O)_nC_{12}H_{26}O$, CAS # 9002-92-0.

1) Birj-35™ is an example of a suitable product available commercially. This information is given for the convenience of users of this document and does not constitute an endorsement by ISO of this product.