
**Cigarettes — Determination
of benzo[a]pyrene in cigarette
mainstream smoke with an intense
smoking regime using GC/MS —**

**Part 1:
Method using methanol as extraction
solvent**

*Cigarettes — Dosage par CG/SM du benzo[a]pyrène dans le courant
principal de la fumée de cigarette avec un régime de fumage
intense —*

Partie 1: Méthode utilisant du méthanol comme solvant d'extraction

ISO 23906-1:2020

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Foreword

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

A list of all parts in the ISO 23906 series can be found on the ISO website.

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

Between 1999 and 2003, a task force composed of Cooperation Centre for Scientific Research Relative to Tobacco (CORESTA) members studied the existing methodologies for the determination of benzo[a]pyrene (B[a]P) in the mainstream smoke of cigarettes. Several methods have been proposed for this determination, which are mainly based on two types of analytical methodology: high performance liquid chromatography (HPLC) with fluorescence detection and gas chromatography/mass spectrometry (GC-MS). In both cases, it is necessary to purify the total particulate matter (TPM) extract before performing the chromatography in order to obtain a correct separation of the B[a]P peak.

The task force decided in the first instance to develop a method using HPLC with fluorescence detection. However, after several collaborative experiments, it appeared that achieving a significant reduction of the initially observed variability would be technically very difficult. The task force then decided to investigate a GC-MS method as an alternative and was able to demonstrate, through collaborative experiments, that a lower variability can be obtained with this methodology.

This document, produced through collaborative experiments conducted in 2012 involving 12 laboratories in 11 countries, provides a procedure for the determination of B[a]P in cigarette mainstream smoke.^[4] The repeatability and reproducibility of this method have been assessed according to ISO recommendations and are included.

No machine smoking regime can represent all human smoking behaviours.

- 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 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 International Standards.

