

STANDARD

3401

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**Cigarettes — Determination of alkaloid retention
by the filters — Spectrometric method**

*Cigarettes — Détermination de la rétention des alcaloïdes par les
filtres — Méthode spectrométrique*



Reference number
ISO 3401:1991(E)

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 3401 was prepared by Technical Committee ISO/TC 126, *Tobacco and tobacco products*.

This second edition cancels and replaces the first edition (ISO 3401:1977), which has been technically revised.

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Cigarettes — Determination of alkaloid retention by the filters — Spectrometric method

1 Scope

This International Standard specifies two methods for the spectrometric determination of alkaloid retention by filters of cigarettes:

- the direct method;
- the indirect method.

The methods are applicable to filter cigarettes. The direct method shall be used unless it is not applicable owing to incomplete recovery of the retained alkaloids from the filter material (for example, with some types of charcoal filters). The indirect method is not applicable to cigarettes with perforated or porous filter tipping wraps. This International Standard is not applicable in the case of filters having an irreversible nicotine retention and equipped with perforated or porous wrapping.

NOTE 1 These methods determine the retention only of alkaloids of tobacco smoke, expressed as nicotine. The retention of other substances present in the mainstream smoke is not necessarily related to the alkaloid retention.

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 editions indicated were 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 editions of the standards indicated below. Members of IEC and ISO maintain registers of currently valid International Standards.

ISO 3308:1991, *Routine analytical cigarette-smoking machine — Definitions and standard conditions.*

ISO 3400:1989, *Cigarettes — Determination of alkaloids in smoke condensates — Spectrometric method.*

ISO 3402:1991, *Tobacco and tobacco products — Atmosphere for conditioning and testing.*

ISO 4387:1991, *Cigarettes — Determination of total and nicotine-free dry particulate matter using a routine analytical smoking machine.*

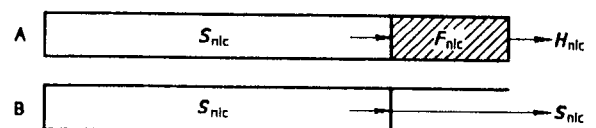
ISO 8243:1991, *Cigarettes — Sampling.*

3 Definition

For the purposes of this International Standard, the following definition applies.

3.1 alkaloid retention index R_{nic} of a cigarette filter: The ratio, expressed as a percentage by mass, of the alkaloids retained by the filter to those entering the filter:

$$R_{\text{nic}} = \frac{F_{\text{nic}}}{S_{\text{nic}}} \times 100$$



The alkaloid retention index may be determined as follows:

- a) *Directly*, by measurement of the mass of alkaloids retained by the filter and of the mass of alkaloids in the mainstream smoke leaving the filter: