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Cigarettes — Sampling

Cigarettes — Échantillonnage

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Contents

Page

Foreword.....	iv
Introduction	v
1 Scope	1
2 Normative references	1
3 Terms and definitions.....	2
4 Sampling mode: at one time.....	3
4.1 Procedure for sampling at the point of sale	3
4.2 Procedure for sampling at the factory.....	5
5 Sampling mode: over a period of time	6
5.1 General.....	6
5.2 Procedure for sampling over a period of time at the factory	6
6 Statistical evaluation and reporting.....	7
6.1 Statistical evaluation	7
6.2 Outliers	7
6.3 Confidence interval.....	7
6.4 Applications to the verification of cigarettes yields	7
7 Sampling report	8
Annex A (informative) Flow chart illustration of the sampling in Clauses 4 and 5	9
Annex B (informative) Sources of variability concerning the choice of sampling procedures	10
Bibliography	11

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.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 2.

The main task of technical committees is to prepare International Standards. 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.

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.

ISO 8243 was prepared by Technical Committee ISO/TC 126, *Tobacco and tobacco products*.

This fourth edition cancels and replaces the third edition (ISO 8243:2003), which has been technically revised.

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Introduction

It is difficult to recommend a detailed method of sampling cigarettes, suitable for every purpose. The objective of sampling is clearly, to provide a representative sample, but the problem arises because the specific purpose for which tests are required affects the recommendation.

Existing national standards, rules, regulations and laws were taken into account when preparing this International Standard and two different procedures both of which are simple and reliable are described:

- sampling at the point of sale;
- sampling at the producer's premises or importer's and distributor's warehouses.

Sampling is carried out "at one point in time" (e.g. cigarettes available for distribution from a factory/warehouse or available at a retail outlet on the market on a scheduled day). When a sample is required which represents cigarettes available over an appreciable period of time (e.g. cigarettes representing several months' production) a number of sub-period samples will be taken in a series of samplings, and the results combined.

Since this International Standard was originally written in 1981, its role in providing a basis of sampling cigarettes for the verification of on-pack declarations of smoke constituent yields has become increasingly important. For this reason a guide to the statistical evaluation and reporting of results is included to clarify the statistical basis of the confidence intervals for nicotine-free dry particulate matter (NFDPM), nicotine and carbon monoxide (CO) that are listed in Table 3.

The sources of variability arising in cigarette manufacture and in the determination of smoke constituent components are described in Annex B and in Technical Report ISO/TR 22305. It is recommended that determinations of smoke constituent yields should be made on the population manufactured for sale, sampled at manufacturers' factories or importers' warehouses and that because of variations in cigarette manufacture the "sampling over a period of time" mode should be used wherever possible.

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Cigarettes — Sampling

1 Scope

This International Standard specifies two methods of providing representative samples of a population of cigarettes manufactured for sale. Different procedures are specified (see Table 1) according to whether sampling is undertaken at the point of sale or at a factory.

- a) Sampling “at one point in time” provides for appraisal of the chosen properties of the cigarettes on that occasion. Sampling is carried out within as short a period as possible.
- b) Sampling “over a period of time” provides for on-going appraisals. It can be considered for practical purposes as a series of samples each taken “at one point in time”.

Table 1 — Sampling possibilities

Sampling procedures	Sampling mode	
	At one time (instantaneous)	Over a period (continuous)
A At point of sale	Subclause 4.1	a
B At a factory	Subclause 4.2	Clause 5
^a Procedure A over a period of time is possible but is not specified in this International Standard.		

This International Standard provides information on the statistical basis for the treatment of data and gives estimates, based on practical experience, of the typical confidence intervals for NFDPM, nicotine and CO yields which may be found when a product is sampled in accordance with this International Standard and smoked in accordance with the procedures specified in ISO 3308, ISO 3402, ISO 4387, ISO 8454, ISO 10315, ISO 10362-1 and ISO 10362-2.

2 Normative references

The following referenced documents are indispensable for the application 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 2602:1980, *Statistical interpretation of test results — Estimation of the mean — Confidence interval*

ISO 4387:2000, *Cigarettes — Determination of total and nicotine-free dry particulate matter using a routine analytical smoking machine*

ISO 5725-2:1994, *Accuracy (trueness and precision) of measurement methods and results — Part 2: Basic method for the determination of repeatability and reproducibility of a standard measurement method*

ISO 8454:1995, *Cigarettes — Determination of carbon monoxide in the vapour phase of cigarette smoke — NDIR method*

ISO 10315:2000, *Cigarettes — Determination of nicotine in smoke condensates — Gas-chromatographic method*

ISO 10362-1:1999, *Cigarettes — Determination of water in smoke condensates — Part 1: Gas-chromatographic method*

3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

3.1

factory

place of manufacture or its associated distribution depots or the warehouse of an importer

3.2

sale unit

quantity of cigarettes ready to be offered for sale to the public

NOTE The commonly sold packet of 20 cigarettes is used as the basis of this International Standard, but cigarettes are also sold loose and in other size packets.

3.3

carton

commercial package available within a factory

EXAMPLE Packets of 20 cigarettes are usually put into cartons of 200 cigarettes.

3.4

place of purchase

town, village or district within the area to be sampled, or that part of the area where the cigarettes are available

NOTE Examples of boundaries are those of cantons, local government districts, electoral areas, postal code areas or any boundaries in accordance with the geographical context, or others.

3.5

sampling point

specific location representing different kinds of sampling points (e.g. shop, specialist tobacco shop, auto-vending machine, supermarket, place in warehouse, place in factory) from which an increment is to be taken

3.6

population

aggregate of sale units to be sampled

NOTE The definition includes different sub-populations, three of which are given in 3.6.1 to 3.6.4.

3.6.1

population available to consumers

aggregate of sale units in retail outlets in a given area, at any time in a given time period

3.6.2

population manufactured for sale

aggregate of sale units at a factory

3.6.3

stratification

the division of a population into mutually exclusive and exhaustive sub-populations (called strata), which are thought to be more homogeneous, with respect to the characteristics investigated, than the total population

3.6.4**stratified sampling**

in a population that can be divided into different mutually exclusive and exhaustive sub-populations (called strata), sampling carried out in such a way that specified proportions of the sample are drawn from the different strata and each stratum is sampled with at least one sampling unit

3.7**increment**

sample of cigarettes taken at one time, at one sampling point

3.8**sub-increment**

individual groups of cigarettes making up an increment

3.9**sub-period sample**

increment taken when sampling over a period of time

3.10**laboratory sample**

sample intended for laboratory inspection or testing

3.11**test sample**

cigarettes for test taken at random from the laboratory sample and which are representative of each of the increments making up the laboratory sample

3.12**test portion**

group of cigarettes randomly selected from the test sample for a determination

3.13**lot**

definite quantity of some product, material or service, collected together and submitted for examination

NOTE An inspection lot may consist of several batches or parts of batches.

[ISO 3534-2:1993, definition 1.3.5]

4 Sampling mode: at one time**4.1 Procedure for sampling at the point of sale****4.1.1 Selection of the number and choice of sampling points**

The number of sales units to be taken and the number of places of purchase to be randomly sampled is determined by the size of the area in which the cigarettes are sold. Select the appropriate numbers according to Table 2.