

# INTERNATIONAL STANDARD

**ISO**  
**3550-1**

First edition  
1997-09-01

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## **Cigarettes — Determination of loss of tobacco from the ends —**

### **Part 1: Method using a rotating cylindrical cage**

*Cigarettes — Détermination de la perte de tabac par les extrémités —  
Partie 1: Méthode utilisant une cage rotative cylindrique à barreaux*



Reference number

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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.

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 3550-1 was prepared by Technical Committee ISO/TC 126, *Tobacco and tobacco products*, Subcommittee SC 1, *Physical and dimensional tests*.

ISO 3550 consists of the following parts, under the general title *Cigarettes — Determination of loss of tobacco from the ends*:

- *Part 1: Method using a rotating cylindrical cage*
- *Part 2: Method using a rotating cubic box (sismelatophore)*

Annex A forms an integral part of this part of ISO 3550. Annexes B and C are for information only.

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Printed in Switzerland

## Introduction

The loss of tobacco from cigarette ends, which particularly affects short strands, is a nuisance for the industry as well as for the consumer.

From this standpoint, the greater a cigarette's resistance to loss from its ends, the higher its quality.

The measuring devices available are based on the rotation of a cigarette-containing device. This International Standard describes two particular types of device. The first, described in this part of ISO 3550, comprises a rotating cylindrical cage through which tobacco is allowed to fall into a weighing vessel; the second, described in ISO 3550-2, uses a cubic box rotating about its main diagonal axis.

The first system principally permits determination of losses undergone by the cigarette during the manufacturing and packaging processes, and the second one losses undergone throughout the distribution network and in the smoker's pocket.

The two methods are not mutually exclusive and other acceptable methods exist which are based upon slightly different types of device.

# Cigarettes — Determination of loss of tobacco from the ends —

## Part 1: Method using a rotating cylindrical cage

### 1 Scope

This part of ISO 3550 specifies a method for the determination of loss of tobacco from cigarette ends using a rotating cylindrical cage.

It applies mainly to cigarettes sampled on the manufacturing site, before or after packaging.

NOTE — A method for the determination of loss of tobacco from the ends, using a cubic rotating box (sismelatophore), is described in ISO 3550-2.

### 2 Normative references

The following standards contain provisions which, through reference in this text, constitute provisions of this part of ISO 3550. At the time of publication, the editions indicated were valid. All standards are subject to revision, and parties to agreements based on this part of ISO 3550 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 2971:—<sup>1</sup>, *Cigarettes and filters rods — Determination of nominal diameter — Method using the laser beam measuring device.*

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

ISO 6488:—<sup>2</sup>, *Tobacco — Determination of water content — Karl Fischer method.*

ISO 8243:1991, *Cigarettes — Sampling.*

### 3 Principle

A test portion of a given number of cigarettes is placed in a cylinder (cage) of elliptical cross section, which is formed of closely spaced parallel rods. During the test the cage rotates around its horizontally positioned longitudinal axis and the cigarettes tumble in the cage.

The amount of tobacco fallout from the open ends of the cigarettes is determined.

<sup>1</sup> To be published. (Revision of ISO 2971:1987)

<sup>2</sup> To be published. (Revision of ISO 6488:1981)

The test conditions depend on the size and shape of the cage, the diameter and the spacing of the rods, the rotational speed of the cage, the number of revolutions per test, and the number of cigarettes per test portion which in turn depends on the diameter of the cigarettes.

As a first result of the test, the mass  $m_L$  of tobacco falling from the test portion is determined. From this mass and the physical dimensions of the test cigarette, the loss of tobacco per open end and per unit cross-section of open end is determined.

## 4 Apparatus

**4.1 Conditioning chamber**, capable of controlling the enclosed atmosphere in accordance with the requirements of ISO 3402.

**4.2 Cigarette ends loss tester**, complying with the following requirements.

- a) The main part of the tester shall consist of a cage having an elliptical cross section formed from a number of round stainless-steel rods. The spacing between adjacent rods shall be smaller than the diameter of the cigarettes to be tested but wide enough for any strands of tobacco lost from the test portion during a test to fall through. The positioning of the rods and their spacing shall be as detailed in annex A.
- b) Bearings shall be provided at the centre point of each elliptical end face to enable the cage to be held horizontally and allowing it be rotated about its longitudinal axis.
- c) To permit tests to be carried out simultaneously on more than one test portion or on test portions from different samples, the cage may be equipped with one or more dividers along its length so as to create several test compartments.
- d) Each test compartment shall be equipped with one movable end plate in addition to its fixed end face, so that the effective length of the compartment can be adjusted to match the length of the cigarettes under test.
- e) Each test compartment shall be provided with means of opening to allow for loading and unloading of its test portion and with a removable pan arranged beneath it to collect all of the tobacco which falls out from the ends of the cigarettes during the test.
- f) The tester shall be equipped with a drive system capable of rotating the cage and its contents at a rotational speed of  $90 \text{ r/min} \pm 1 \text{ r/min}$ . The drive system shall be controlled by a preset counter that stops the rotation of the cage automatically when the specified number of revolutions is reached. For normal testing, 270 revolutions is specified.

See figure 1 for a schematic diagram of a tester.