INTERNATIONAL STANDARD

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Fine-cut tobacco and smoking articles made from it — Methods of sampling, conditioning and analysis —

Part 2: Atmosphere for conditioning and testing

Tabac de fine coupe et objets confectionnés à partir de ce type de tabac — Méthodes d'échantillonnage, de conditionnement et d'analyse —

Partie 2: Atmosphère de conditionnement et d'essai

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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.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 3.

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 part of ISO 15592 may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights.

International Standard ISO 15592-2 was prepared by Technical Committee ISO/TC 126, *Tobacco and tobacco products*.

ISO 15592 consists of the following parts, under the general title *Fine-cut tobacco and smoking articles made from it — Methods of sampling, conditioning and analysis*:

— *Part 1: Sampling*

— *Part 2: Atmosphere for conditioning and testing*

— *Part 3: Determination of total particulate matter of smoking articles using a routine analytical smoking machine, preparation for the determination of water and nicotine and calculation of nicotine-free dry particulate matter*

— *Part 4: Classification of wrappers*

— *Part 5: Fine-cut tobacco to be used with specified wrappers*

— *Part 6: Effect of incorporation of loose filters*

Annex A of this part of ISO 15592 is for information only.

Introduction

ISO 3402 was based on the 1991 revision of CORESTA Recommended Method No. 21 and was produced in order to specify a standard atmosphere for conditioning leaf tobacco, and cut tobacco destined for the manufacture of cigarettes and for the manufactured cigarettes themselves.

Fine-cut tobacco is produced and sold at much higher moisture levels than tobacco used for manufacturing cigarettes. Consequently ISO 3402 is not applicable to fine-cut tobacco or smoking articles made from it.

This part of ISO 15592 is based on a new CORESTA Recommended Method No. 42 and should be used for all products conforming to the definitions in clause 2.

Fine-cut tobacco and smoking articles made from it — Methods of sampling, conditioning and analysis —

Part 2:
Atmosphere for conditioning and testing

1 Scope

This part of ISO 15592 specifies an atmosphere for conditioning and testing samples of fine-cut tobacco and test pieces made from it.

It is applicable to tests on fine-cut tobacco and products and materials used in the manufacture of fine-cut smoking articles for which a prior conditioning is necessary. It is not applicable in the case of test methods for which particular test conditions are laid down elsewhere, for example cigarette papers and board, which are given in ISO 187 or other tobacco products which are given in ISO 3402.

2 Terms and definitions

For the purposes of this part of ISO 15592, the following terms and definitions apply.

2.1
atmosphere
ambient conditions defined by one or more of the following parameters:

— temperature

— relative humidity

— pressure

[ISO 558:1980, definition 2.1]

2.2
conditioning atmosphere
atmosphere in which a sample or test piece is kept before being subjected to test

NOTE 1 It is characterized by specified values for one or more of the following parameters: temperature, relative humidity and pressure, which are kept within the prescribed tolerances for a given period of time.

NOTE 2 The term "conditioning" refers to the operation as a whole designed to bring a sample or test piece, before testing, into a specified condition with relation to temperature and humidity, by keeping it for a given period of time in the conditioning atmosphere.

NOTE 3 The conditioning may be carried out either in the laboratory or in a special enclosure termed the "conditioning chamber" or in the test chamber.

NOTE 4 The chosen values and period of time depend on the nature of the sample or test piece to be tested.

NOTE 5 Adapted from ISO 558:1980, definition 2.2.

2.3
test atmosphere
atmosphere to which a sample or test piece is exposed throughout the test

NOTE 1 It is characterized by specified values for one or more of the following parameters: temperature, relative humidity and pressure, which are kept within the prescribed tolerances.

NOTE 2 The test may be carried out either in the laboratory or in a special chamber termed the "test chamber" or in the conditioning chamber, the choice depending on the nature of the test piece and on the test itself. For example, close control of the test atmosphere may not be necessary if the change of properties of the test piece is insignificant in the test period.

NOTE 3 Adapted from ISO 558:1980, definition 2.3.

2.4
fine-cut tobacco
FCT
tobacco produced to be used by consumers for making their own smoking articles

2.5
wrapper
material specially prepared and supplied in a form suitable for enclosing fine-cut tobacco so as to produce a fine-cut smoking article

2.6
fine-cut smoking article
FCSA
article, suitable for smoking, produced by combining fine-cut tobacco with a wrapper

3 Atmosphere

3.1 Conditioning atmosphere

This shall be as follows:

— temperature (22 ± 2) °C;

— relative humidity (75 ± 3) %.

The atmospheric pressure should be within the range 86 kPa to 106 kPa. The pressure shall be measured and included in any test report if it is outside these prescribed tolerances.

The specified ranges listed above define the atmosphere immediately surrounding the test piece. Therefore, the atmosphere surrounding the test piece shall be maintained at a mean temperature of 22 °C and a mean relative humidity of 75 %.

NOTE 1 The tolerance on relative humidity is given as ± 3 %. This differs from the tolerance given in ISO 3402 which is ± 2 %. This is due to the higher relative humidity which is more difficult to control.

NOTE 2 Whilst monitoring equipment might indicate the relative humidity is within the (75 ± 3) % specification, this tolerance can be comparable with the uncertainty in calibration of the equipment.

Care should be taken to check the electronic control of humidity and the conditions in the cabinet should be checked regularly (see A.3).

3.2 Test atmosphere

This shall be as follows:

— temperature (22 ± 2) °C;

— relative humidity (60 ± 5) %.

4 Conditioning

4.1 Duration of conditioning

A duration of 72 h is generally found to be sufficient for fine-cut tobacco and fine-cut smoking articles, using a forced air flow. Samples shall not be kept in the conditioning cabinet for longer than 10 days.

The duration of conditioning (conditioning of tobacco prior to making the FCSAs and the subsequent conditioning time of the FCSAs) shall be limited to a period of 3 to 10 days to ensure proper equilibrium, as well as avoiding loss of volatile compounds. If, for any reason, test samples are to be kept for longer than 10 days, they shall be stored in the original packaging or in airtight containers just large enough to contain the sample.

A conditioning time of 72 h can be insufficient for certain samples or test pieces, for example when smoking articles are conditioned without forced air flow. Therefore, in all cases, it should be verified that equilibrium has been properly attained (see 4.3).

If it is anticipated that the tobacco, or the fine-cut smoking articles, are to be kept for longer than 3 months, it is recommended that they be placed in sealed containers, frozen and stored at approximately – 16 °C until needed.

4.2 Method of storage in the conditioning cabinet

For fine-cut tobacco, the tobacco layer depth shall be restricted to 20 mm to ensure proper conditioning. This depth shall be achieved without external pressure being applied to the tobacco. In the case of tobacco removed from a sample pouch destined for the market, it is necessary to tease the sample apart in order to ensure adequate exposure for conditioning.

NOTE Fine-cut smoking tobacco is also sold in packaging forms other than pouches but throughout this part of ISO 15592 the unit of sale is referred to as a pouch. The same principles of handling and conditioning apply to tobacco from all forms of packaging.

Fine-cut smoking articles shall be conditioned by storing them in the cabinet on a tray in a single layer. If a device is constructed to hold more than one tray it shall be constructed such as to allow air to pass freely over all fine-cut smoking articles in the device and the distance above each layer of fine-cut smoking articles shall be at least 8 mm.

In both cases, the trays used shall be perforated to allow circulation of conditioned air.

4.3 Checking of equilibrium

It is recommended that the atmospheric relative humidity near the samples or test pieces be verified by the use of a hygrometer calibrated with traceable standards (see, for example, ISO 4677-1).

Equilibrium shall be considered to have been attained either

a) when the relative variation of the mass of the sample or test pieces is not greater than 0,2 % in 3 h, or

b) when the sample or the test pieces, placed in a closed container of a volume similar to that of the sample or the test pieces, give(s) rise to a relative humidity in the container equal to that of the conditioning atmosphere.

NOTE Suitable apparatus for the measurement of relative humidity in the container is available from Rotronic and Novasina.[1)]

1) This information is given for the convenience of users of this part of ISO 15592 and does not constitute an endorsement by ISO of this equipment. Equivalent equipment may be used if it can be shown to lead to the same results.

Annex A
(informative)

Method of conditioning when electronically controlled cabinets are not available

A.1 Introduction

In laboratories not equipped with any means of controlling the conditioning atmosphere electronically, it is possible to condition the samples in a sealed cabinet containing a saturated salt solution, preferably with a low flow, forced air circulation.

A.2 Method

A.2.1 Making the salt solution

The saturated salt solution should be made up into a slurry with sodium chloride (general-purpose reagent) in water, such that the amount of sodium chloride does not all dissolve and a significant excess of the sodium chloride exists in the slurry.

A.2.2 Use in the cabinet

The amount to be used will depend on the size of the cabinet. The salt solution should be kept in a tray having shallow sides and with an area large enough to cover most of the bottom of the cabinet. The tray should be placed in the cabinet in such a way that a low air flow is forced over the salt solution.

A dish should not be used as the sides may interfere with the natural air flow and prevent proper conditioning of the atmosphere.

A.3 Validation of conditioning atmosphere

In order to ensure proper conditioning, it is necessary to validate the conditioning atmosphere.

Validate the temperature by using a thermometer calibrated with a traceable standard.

Various means of testing relative humidity exist. In practice, in a small enclosure, their use can be inconvenient or their calibration can be difficult to demonstrate. The mass of tobacco is very sensitive to conditioning (especially humidity). If an atmosphere, validated against a traceable standard, is available, the mass of tobacco can be used as a secondary standard. This offers a very simple control procedure. In practice, this procedure involves placing small samples (approximately 10 g) of fine-cut tobacco in shallow trays just large enough to hold the sample. Several (at least four) trays should be distributed throughout the cabinet. The mass of tobacco, including the tray, should be checked at least daily. Control charts should be constructed to indicate the mean mass of each sample and tolerance boundaries of ± 0,2 %. In this way any systematic or random deviation from the mean for any one position in the cabinet will be detected. Tobacco samples used for this purpose should be replaced at least every 6 months.

The procedures given in 4.3 should be used to test conditioning. The use of a salt solution does not, of itself, guarantee correct conditions.