INTERNATIONAL STANDARD

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Tobacco and tobacco products — Atmosphere for conditioning and testing

Tabac et produits du tabac — Atmosphère de conditionnement et d'essai

Reference number
ISO 3402:1991(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 3402 was prepared by Technical Committee ISO/TC 126, *Tobacco and tobacco products*.

This third edition cancels and replaces the second edition (ISO 3402:1978), which has been technically revised.

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Introduction

During 1988 and 1989, collaborative studies by task forces composed of members of the Cooperation Centre for Scientific Research Relative to Tobacco (CORESTA), "Smoke" and "Technology" groups, have been made on the repeatability and reproducibility of tests on tobacco and tobacco products.

In order to ensure comparability between test results from different laboratories it has been proved necessary to specify a single atmosphere for conditioning and testing rather than allowing the use of one of the three possibilities provided for in the two previous editions of this International Standard.

It has also been found that, in practice, the previous tolerances on relative humidity for the test atmosphere were difficult to achieve.

These studies have resulted in the publication of CORESTA recommended method No. 21.

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Tobacco and tobacco products — Atmosphere for conditioning and testing

1 Scope

This International Standard specifies the atmosphere for conditioning and testing samples and test pieces of tobacco and tobacco products.

It is applicable to tests on tobacco, tobacco products and materials used in the manufacture of tobacco products for which 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.

2 Normative reference

The following standard contains provisions which, through reference in this text, constitute provisions of this International Standard. At the time of publication, the edition indicated was 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 edition of the standard indicated below. Members of IEC and ISO maintain registers of currently valid International Standards.

ISO 558:1980, *Conditioning and testing — Standard atmospheres — Definitions.*

3 Definitions

For the purposes of this International Standard, the following definitions given in ISO 558 apply.

3.1 atmosphere: Ambient conditions defined by one or more of the following parameters:

— Temperature

— Relative humidity

— Pressure

3.2 conditioning atmosphere: The atmosphere in which a sample or test piece is kept before being subjected to test. 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.

NOTES

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

2 The conditioning can be done either in the laboratory or in a special enclosure termed "the conditioning chamber", or in the test chamber.

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

3.3 test atmosphere: The atmosphere to which a sample or test piece is exposed throughout the test. 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 4 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.

4 Atmosphere

4.1 Conditioning atmosphere

— Temperature 22 °C ± 1 °C

— Relative humidity (60 ± 2) %

NOTE 5 The atmospheric pressure should be within the range 96 kPa ± 10 kPa.

The pressure shall be measured and included in any test report.

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 60 %.

4.2 Test atmosphere

The test atmosphere shall be the same as the conditioning atmosphere but wider tolerances are permissible as follows:

— Temperature 22 °C ± 2 °C

— Relative humidity (60 ± 5) %

5 Conditioning

5.1 Duration of conditioning

In current practice, conditioning for 48 h using a forced air flow is generally found to be sufficient for loose cigarettes. This conditioning time can be insufficient for certain samples or test pieces, for example, for packeted cigarettes or cigarettes in bulk and when loose cigarettes are conditioned without forced air flow; therefore, in all cases, it should be verified that equilibrium has been properly attained (5.2). It is also recommended that the atmospheric relative humidity near the samples or test pieces be verified by the use of a reference hygrometer.

NOTE 6 If, for any reason, test samples are to be kept for longer than 10 d, store them in the original packaging or in airtight containers just large enough to contain the sample. It is recommended that tobacco and tobacco products be frozen after three months and stored at −16 °C ± 2 °C until needed.

5.2 Checking of equilibrium

Equilibrium shall be considered to be 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.