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Paper, board and pulps — Standard atmosphere for conditioning and testing and procedure for monitoring the atmosphere and conditioning of samples

Papier, carton et pâtes — Atmosphère normale de conditionnement et d'essai et méthode de surveillance de l'atmosphère et de conditionnement des échantillons

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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.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular, the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives).

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For an explanation of the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT), see www.iso.org/iso/foreword.html.

This document was prepared by Technical Committee ISO/TC 6, *Paper, board and pulps*, Subcommittee SC 2, *Test methods and quality specifications for paper and board,* in collaboration with the European Committee for Standardization (CEN) Technical Committee CEN/TC 172, *Pulp, paper and board,* in accordance with the Agreement on technical cooperation between ISO and CEN (Vienna Agreement).

This third edition cancels and replaces the second edition (ISO 187:1990), which has been technically revised.

The main changes are as follows:

— introduction has been revised;

— normative references have been removed;

— definition of conditioning has been revised;

— content has been added to Clause 5 and Clause 6;

— Annex A has been simplified.

Any feedback or questions on this document should be directed to the user’s national standards body. A complete listing of these bodies can be found at www.iso.org/members.html.

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Introduction

The physical properties of paper are affected by its moisture content which, in turn, is dependent on the relative humidity (RH) of the surrounding atmosphere and its history. In order that tests can be made on paper in a defined physical state, it is brought into equilibrium in an atmosphere of standardized temperature and relative humidity.

The moisture content of a given paper in equilibrium with a given atmosphere varies according to whether the equilibrium is reached by sorption or by desorption of moisture and how far the moisture content is from its equilibrium value. This hysteresis influences those physical properties that change with moisture content. Preconditioning paper from low relative humidity and then bringing it into the standard atmosphere will avoid most of the hysteresis effect. Typically, the variation in the moisture content of a given sample is less than 0,15 % when the sample is later conditioned to 50 % RH and 23 °C. Unless otherwise specified, the equilibrium condition should be attained from a low relative humidity.

For a number of years, three standard test atmospheres have been in common use:

20 °C/65 % RH;

23 °C/50 % RH;

27 °C/65 % RH.

Since 1993, the atmosphere of 23 °C /50 % RH has been considered the ISO standard test atmosphere for testing of pulp, paper, and board. However, this atmosphere can be difficult to attain in some countries located in tropical zones, and in such countries the 27 °C /65 % RH atmosphere is permitted.

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Paper, board and pulps — Standard atmosphere for conditioning and testing and procedure for monitoring the atmosphere and conditioning of samples

1 Scope

This document specifies the standard atmospheres for conditioning and testing pulp, paper and board, the conditioning procedure and the procedures for measuring the temperature and relative humidity.

2 Normative references

There are no normative references in this document.

3 Terms and definitions

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

ISO and IEC maintain terminology databases for use in standardization at the following addresses:

— ISO Online browsing platform: available at https://www.iso.org/obp

— IEC Electropedia: available at https://www.electropedia.org/

3.1
relative humidity
RH
ratio, expressed as a percentage, of the actual water vapour content of the air to the water vapour content of air saturated with water vapour at the same temperature and pressure

3.2
conditioning
process of establishing a reproducible moisture content equilibrium of a sample in an atmosphere of specified temperature and relative humidity

Note 1 to entry: This equilibrium is considered to be attained when the results of two consecutive weighings of the sample, carried out at an interval of time of not less than 1 h, do not differ by more than 0,25 %.

4 Principle

Exposure of a sample to a specific conditioning atmosphere in such a manner that a reproducible state of moisture content equilibrium is reached.

5 Standard atmosphere

The standard atmosphere for testing pulp, paper and board shall be (23 ± 1) °C and (50 ± 2) % RH. In tropical countries, an atmosphere of (27 ± 1) °C and (65 ± 2) % RH can be used.

A test atmosphere shall be deemed to be within the requirements of this document if all the test results determined as described in Annex A are within the prescribed limits.

Even short-term excursions of temperature or humidity beyond these limits, to the extent that the equilibrium moisture content of the sample will be affected, are not permitted. Whenever the test

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