
**Paper and board — Determination of air
permeance and air resistance (medium
range) —**

**Part 5:
Gurley method**

*Papier et carton — Détermination de la perméabilité à l'air et de la
résistance à l'air (valeur moyenne) —*

Partie 5: Méthode Gurley



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ISO copyright office
Case postale 56 • CH-1211 Geneva 20
Tel. + 41 22 749 01 11
Fax + 41 22 749 09 47
E-mail copyright@iso.org
Web www.iso.org

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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 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 5636-5 was prepared by Technical Committee ISO/TC 6, *Paper, board and pulps*, Subcommittee SC 2, *Test methods and quality specifications for paper and board*.

This second edition cancels and replaces the first edition (ISO 5636-5:1986), which has been technically revised.

In this edition, the factor to be used for the calculation of air permeance (10.1) has been changed to 135,3 (from calculation factor 127 in the first edition). The new factor for calculation of air permeance will cause an increase in the level of the result of approximately 7 %. To avoid confusion in trade due to the fact that some laboratories are not aware of this new edition and thus will still use the factor 127, it is important to report the calculation factor used.

ISO 5636 consists of the following parts, under the general title *Paper and board — Determination of air permeance and air resistance (medium range)*:

- *Part 1: General method*
- *Part 2: Schopper method*
- *Part 3: Bendtsen method*
- *Part 4: Sheffield method*
- *Part 5: Gurley method*

Introduction

This part of ISO 5636 describes a method for measuring the air permeance or, if required, the air resistance of paper and board using the measurement principle known as “Gurley”. The air pressure within the cylinder varies slightly according to the displacement of the cylinder, but it has been shown that the variation is about 1,2 % of the mean pressure for 100 ml of displacement and about 4 % for a cylinder with a displacement of 400 ml. Because these variations are within the 5 % limit specified in ISO 5636-1, the apparatus complies with the general requirements detailed in ISO 5636-1 and the air-permeance results may be expressed in micrometres per pascal second [$\mu\text{m}/(\text{Pa} \cdot \text{s})$].

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Paper and board — Determination of air permeance and air resistance (medium range) —

Part 5: Gurley method

1 Scope

This part of ISO 5636 specifies the Gurley method of determining the air permeance of paper and board. It is applicable to papers and boards which have air permeances between $0,1 \mu\text{m}/(\text{Pa}\cdot\text{s})$ and $100 \mu\text{m}/(\text{Pa}\cdot\text{s})$. It is unsuitable for rough-surfaced materials, which cannot be securely clamped to avoid leakage.

This method may also be used to determine the air resistance of paper and board.

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 48, *Rubber, vulcanized or thermoplastic — Determination of hardness (hardness between 10 IRHD and 100 IRHD)*

ISO 186, *Paper and board — Sampling to determine average quality*

ISO 187, *Paper, board and pulps — Standard atmosphere for conditioning and testing and procedure for monitoring the atmosphere and conditioning of samples*

ISO 385-1, *Laboratory glassware — Burettes — Part 1: General requirements*

ISO 3104, *Petroleum products — Transparent and opaque liquids — Determination of kinematic viscosity and calculation of dynamic viscosity*

ISO 5636-1, *Paper and board — Determination of air permeance (medium range) — Part 1: General method*

3 Terms and definitions

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

3.1

air permeance

mean flow of air through unit area under unit pressure difference in unit time, under specified conditions

NOTE Air permeance is expressed in micrometres per pascal second [$1 \text{ ml}/(\text{m}^2\cdot\text{Pa}\cdot\text{s}) = 1 \mu\text{m}/(\text{Pa}\cdot\text{s})$].