

INTERNATIONAL
STANDARD

ISO
11605

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**Paper and board — Calibration
of variable-area flowmeters**

Papier et carton — Étalonnage des débitmètres à section variable



Reference number
ISO 11605:1995(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 11605 was prepared by Technical Committee ISO/TC 6, *Paper, board and pulps*, Subcommittee SC 2, *Test methods and quality specifications for paper and board*.

Annexes A and B of this International Standard are for information only.

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Paper and board — Calibration of variable-area flowmeters

1 Scope

This International Standard specifies a method for the calibration of variable-area flowmeters as used in instruments for the determination of air permeance and the roughness/smoothness of paper and board. Other meters, such as an electronic mass flowmeter may be used, provided their accuracy is at least as good as that of the specified method.

NOTE 1 This procedure may also be used for calibrating the capillary tubes used to check the Bendtsen apparatus.

2 Normative references

The following standards contain provisions which, through reference in this text, constitute provisions of this International Standard. At the time of publication, the editions indicated were 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 editions of the standards indicated below. Members of IEC and ISO maintain registers of currently valid International Standards.

ISO 187:1990, *Paper, board and pulps — Standard atmosphere for conditioning and testing and procedure for monitoring the atmosphere and conditioning of samples.*

ISO 5636-3:1992, *Paper and board — Determination of air permeance (medium range) — Part 3: Bendtsen method.*

ISO 5636-4:1986, *Paper and board — Determination of air permeance (medium range) — Part 4: Sheffield method.*

ISO 8791-2:1990, *Paper and board — Determination of roughness/smoothness (air leak methods) — Part 2: Bendtsen method.*

ISO 8791-3:1990, *Paper and board — Determination of roughness/smoothness (air leak methods) — Part 3: Sheffield method.*

ISO 8791-4:1992, *Paper and board — Determination of roughness/smoothness (air leak methods) — Part 4: Print-surf method.*

ISO 11004:1992, *Paper and board — Determination of air permeance — Low range.*

3 Principle

A soap bubble, introduced into an air flow from the variable-area flowmeter under test, is timed between two marks in a volumeter representing an accurately known volume and the actual air flow is calculated. This is repeated at other air flows until the flowmeter range has been covered.

4 Apparatus

4.1 Soap bubble meter (see figure 1) consisting of:

- glass flask or bottle, of capacity 1 litre;
- volumeter, calibrated at graduation marks appropriate to the flowmeter to be calibrated, for example, marks approximating 100 ml, 250 ml, 500 ml, 1 000 ml, 1 500 ml and 2 000 ml. The different ranges may be achieved with replaceable volumeters (additional designs are discussed by Gooderham [1]);
- needle valve¹⁾;

1) The needle valve has to be removed for calibration of the Print-surf apparatus.