AS/NZS 1301.420s:2006

Australian/New Zealand Standard™

Methods of test for pulp and paper

Method 420s: Gurley air permeance of paper (ISO 5636-5:2003 MOD)

This Joint Australian/New Zealand Standard was prepared by Joint Technical Committee PK-019, Methods of Test for Pulp and Paper. It was approved on behalf of the Council of Standards Australia on 16 June 2006 and on behalf of the Council of Standards New Zealand on 30 June 2006.
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The following are represented on Committee PK-019:

Australian Plantation Products and Paper Industry Council (A3P)
Appita
CSIRO Forestry and Forest Products
Ensis Papro, SCION
National Association of Forest Industries

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We also welcome suggestions for improvement in our Standards, and especially encourage readers to notify us immediately of any apparent inaccuracies or ambiguities. Please address your comments to the Chief Executive of either Standards Australia or Standards New Zealand at the address shown on the back cover.

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PREFACE

This Standard was prepared by the Joint Standards Australia/Standards New Zealand Committee PK-019, Methods of Test for Pulp and Paper to supersede AS 1301.420s—1989.

The objective of this Standard is to specify 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 μm/(Pa.s) and 100 μm/(Pa.s). It is unsuitable for rough-surfaced materials, which cannot be securely clamped to avoid leakage.

This Standard is an adoption with national modifications and has been reproduced from ISO 5636-5:2003, *Paper and board—Determination of air permeance and air resistance (medium range)—Part 5: Gurley method*. The modification as set out in Item (d) below, was necessary because when ISO 5636-5 was revised in 2003, it was decided to change the factor in the formula in Clause 10.1 to 135.1 (it had been 127). Clause 12 of the revised ISO 5636-5 was not varied to require that the value of this factor be included in the test report, thus exposing readers of the test report to potential confusion if the results are compared to air permeance results calculated using the previous factor. The modification as set out in Item (e) below, was necessary as in the AS/NZS 1301 series of Standards only one test atmosphere is permitted.

As this Standard is reproduced from an international standard, the following applies:

(a) Its number appears on the cover and title page while the international standard number appears only on the cover

(b) In the source text ‘this part of ISO 5636’ should read ‘this Australian/New Zealand Standard.’

(c) A full point substitutes for a comma when referring to a decimal marker.

(d) Clause 12 is to be read as having an Item (j) that states:

   (j) the magnitude of the factor used to convert time units to air permeance units in the formula of Clause 10.1.

(e) Item (e) in Clause 12 is to be deleted.

The terms ‘normative’ and ‘informative’ are used to define the application of the annex to which they apply. A normative annex is an integral part of a standard, whereas an informative annex is only for information and guidance.

References to International Standards should be replaced by references to Australian or Australian/New Zealand Standards, as follows:

Reference to International Standard		*Australian/New Zealand Standard*
ISO		AS
48	Rubber, vulcanized or thermoplastic—Determination of hardness (hardness between 10 IRHD and 100 IRHD)	—
186	Paper and board—Sampling to determine average quality	—

ISO		AS/NZS	
187	Paper, board and pulps—Standard atmosphere for conditioning and testing and procedure for monitoring the atmosphere and conditioning of samples	1301	Methods of test for pulp and paper
		1301.414s	Method 414s: Conditioning of paper for testing
		1301.415s	Method 415s: Standard atmosphere for testing paper and board and procedure for monitoring the atmosphere
385	Laboratory glassware—Burettes	—	
385-1	Part 1: General requirements		
3104	Petroleum products—Transparent and opaque liquids—Determination of kinematic viscosity and calculation of dynamic viscosity	—	
5636	Paper and board—Determination of air permeance (medium range)	—	
5636-1	Part 1: General method	—	

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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 [µm/(Pa·s)].

NOTES

AUSTRALIAN/NEW ZEALAND STANDARD

Methods of test for pulp and paper

Method 420s:
Gurley air permeance of paper
(ISO 5636-5:2003, MOD)

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 µm/(Pa·s) and 100 µm/(Pa·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 ml/(m^2·Pa·s) = 1 µm/(Pa·s)].