AS/NZS 1301.419s:2004
ISO 2528:1995
Reconfirmed 2017

Australian/New Zealand Standard™

Methods of test for pulp and paper

Part 419s: Water vapour transmission rate of paper

Appita

STANDARDS AUSTRALIA

STANDARDS NEW ZEALAND
Paerewa Aotearoa

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 22 January 2004 and on behalf of the Council of Standards New Zealand on 23 February 2004. It was published on 12 March 2004.

The following are represented on Committee PK-019:

Appita Inc.
AusInfo
Australian Paper Industry Council
CSIRO Forestry and Forest Products
Forest Research (New Zealand)
National Association of Forest Industries
New Zealand Pulp and Paper Industry Association
Printing Industries Association of Australia

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This Standard was issued in draft form for comment as DR 03491.

STANDARDS AUSTRALIA/STANDARDS NEW ZEALAND

RECONFIRMATION

OF
AS/NZS 1301.419s:2004
Methods of test for pulp and paper
Part 419s: Water vapour transmission rate of paper

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Technical Committee PK-019 has reviewed the content of this publication and in accordance with Standards Australia procedures for reconfirmation, it has been determined that the publication is still valid and does not require change.

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Appita
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NOTES

Australian/New Zealand Standard™

Methods of test for pulp and paper

Part 419s: Water vapour transmission rate of paper

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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 1301.419s—1991, *Methods of test for pulp and paper*, Method 419s: *Water vapour transmission rate of paper.*

The objective of this Standard is to specify a method for those concerned with determining the water vapour transmission rate (often erroneously called 'permeability') of sheet materials.

This Standard is identical with and has been reproduced from ISO 2528:1995, *Sheet materials—Determination of water vapour transmission rate—Gravimetric (dish) method.*

The terms 'normative' and 'informative' have been used in this Standard 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.

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

(a) Its number does not appear on each page of text and its identity is shown only on the cover and title page.

(b) In the source text, 'this International Standard' should read 'this Australian/New Zealand Standard'.

(c) A full point should be substituted for a comma when referring to a decimal marker.

The references to International Standards should be replaced by references to the following Australian/New Zealand Standards.

Reference to International Standard		*Australian/New Zealand Standard*	
ISO		AS/NZS	
186	Paper and board—Sampling to determine average quality	1301 1301.417s	Methods of test for pulp and paper, Method 417s: Sampling paper, board and pulp for testing
187	Paper, board and pulps—Standard atmosphere for conditioning and testing and procedure for monitoring the atmosphere and conditioning of samples	1301.P414m 1301.415s	Method P414m: Conditioning of paper for testing Method 415s: Standard atmosphere for testing paper and board and procedure for monitoring the atmosphere
209	Wrought aluminium and aluminium alloys—Chemical composition and forms of products	—	
209-1	Part 1: Chemical composition		
		AS	
291	Plastics—Standard atmospheres for conditioning and testing	1327	Plastics—Standard atmospheres for conditioning and testing
471	Rubber—Temperatures, humidities and times for conditioning and testing	1683 1683.20	Methods of test for rubber Method 20: Standard temperatures, humidities and times for conditioning and testing
2231	Rubber- or plastics-coated fabrics—Standard atmospheres for conditioning and testing	—	

ISO		AS	
2233	Packaging—Complete, filled transport packages—Conditioning for testing	2582 2582.2	Complete, filled transport packages—Methods of test Part 2: Conditioning for test
9932	Paper and board—Determination of water vapour transmission rate of sheet materials—Dynamic sweep and static gas methods	—	

INTRODUCTION

This International Standard describes a method which can in theory be applied to any sheet material. In practice its main use is for flat, usually thin, materials that can be processed to form a vapour-resistant barrier, as used in packaging, such as paper, board, plastics films or laminates of paper with films or metal foils, and for fabrics coated with rubber or plastics.

The water vapour pressure differential is the essential part of this test and in this instance it has not been possible to adopt the conditions recommended in ISO 554. In addition, the limits of temperature and humidity control are more exacting than those required for normal testing.

This test is intended to give reliable values of WVTR by means of simple apparatus. The use of the results of any particular application must, however, be based upon experience.

Transmission rate is not a linear function of temperature nor, generally, of relative humidity difference. A determination carried out under certain conditions is not, therefore, necessarily comparable with one carried out under other conditions. The conditions of test should, therefore, be chosen to be as close as possible to the conditions of use.

AUSTRALIAN/NEW ZEALAND STANDARD

Methods of test for pulp and paper

Method 419s:
Water vapour transmission rate of paper

1 Scope

This International Standard specifies a method for the determination of the water vapour transmission rate (often erroneously called "permeability") of sheet materials.

This method is not generally recommended for use if the transmission rate is expected to be less than 1 g/(m^2·d) or for materials thicker than 3 mm. In such cases the method specified in ISO 9932 is preferred.

The method cannot be applied to film materials that are damaged by hot wax or that shrink to an appreciable extent under the test conditions used.

For some purposes it may be necessary to determine the transmission rate of creased material; a procedure for this is given in annex A.

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 186:1994, *Paper and board — Sampling to determine average quality.*

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

ISO 209-1:1989, *Wrought aluminium and aluminium alloys — Chemical composition and forms of products — Part 1: Chemical composition.*

ISO 291:1977, *Plastics — Standard atmospheres for conditioning and testing.*

ISO 471:1995, *Rubber — Temperatures, humidities and times for conditioning and testing.*

ISO 2231:1989, *Rubber- or plastics-coated fabrics — Standard atmospheres for conditioning and testing.*

ISO 2233:1994, *Packaging — Complete, filled transport packages — Conditioning for testing.*

ISO 9932:1990, *Paper and board — Determination of water vapour transmission rate of sheet materials — Dynamic sweep and static gas methods.*

3 Definition

For the purposes of this International Standard, the following definition applies.

3.1 water vapour transmission rate (WVTR): Mass of water vapour transmitted through a unit area in a unit time under specified conditions of temperature and humidity.

It is expressed in grams per square metre per 24 h [g/(m^2·d)].

NOTE 1 The WVTR depends upon the thickness, composition and permeability of the constituent material or materials and upon the conditions of temperature and relative humidity under which the test is carried out (see annex B).

4 Principle

Dishes containing a desiccant and closed by the ma-