

Australian/New Zealand Standard™

Methods of test for pulp and paper

**Method 439s: Bendtsen roughness of
paper and paperboard**



AS/NZS 1301.439s:2007

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 19 February 2007 and on behalf of the Council of Standards New Zealand on 16 March 2007.
This Standard was published on 27 March 2007.

The following are represented on Committee PK-019:

Australian Plantation Products and Paper Industry Council (A3P)
Appita
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National Association of Forest Industries

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This Standard was issued in draft form for comment as DR 06731.

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Originated in Australia as AS 1301.439s—1991.
Jointly revised and designated AS/NZS 1301.439s:2007.

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Jointly published by Standards Australia, GPO Box 476, Sydney, NSW 2001 and Standards New Zealand, Private Bag 2439, Wellington 6020

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 1301.439s—1991, *Methods of test for pulp and paper*, Method 439s: *Bendtsen roughness of paper and paperboard*.

The objective of this Standard is to specify a method for the determination of the roughness of paper and board using the Bendtsen apparatus.

This Standard is identical with and has been reproduced from ISO 8791-2:1990, *Paper and board—Determination of roughness/smoothness (air leak methods)—Part 2: Bendtsen method*.

The term ‘normative’ has been used in this Standard to define the application of the annex to which it applies. A ‘normative’ annex is an integral part of a Standard.

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 part of ISO 8791’ 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.

<i>Reference to International Standard</i>		<i>Australian/New Zealand Standard</i>	
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	1301.414s 1301.415s	Method 414s: Conditioning of paper for testing Method 415s: Standard atmosphere for testing paper and board and procedure for monitoring the atmosphere
8791	Paper and board—Determination of roughness/smoothness (air leak methods)	—	
8791-1	Part 1: General method		

AUSTRALIAN/NEW ZEALAND STANDARD

Methods of test for pulp and paper

Method 439s:

Bendtsen roughness of paper and paperboard

1 Scope

This part of ISO 8791 specifies a method for the determination of the roughness of paper and board using the Bendtsen apparatus. It should be read in conjunction with ISO 8791-1.

The method is applicable to paper and board which have Bendtsen roughness values between about 50 ml/min and 1 200 ml/min. It is not suitable for soft papers which allow the land to make a significant impression on the surface or for high air permeance papers which allow a significant flow of air to pass through the sheet, or for papers which will not lie flat under the heavy metal annulus.

2 Normative references

The following standards contain provisions which, through reference in this text, constitute provisions of this part of ISO 8791. At the time of publication, the editions indicated were valid. All standards are subject to revision, and parties to agreements based on this part of ISO 8791 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 186:1985, *Paper and board — Sampling to determine average quality*.

ISO 187:1977, *Paper and board — Conditioning of samples*.

ISO 8791-1:1986, *Paper and board — Determination of roughness/smoothness (air leak methods) — Part 1: General method*.

3 Definition

For the purposes of this part of ISO 8791, the following definition applies.

Bendtsen roughness: A measure of the rate at which air will pass between a flat circular land and a sheet of paper or board when tested under specified conditions and at operating pressure.

It is expressed in millilitres per minute.

4 Principle

Clamping a test piece between a flat plate and a circular metal land. Supplying air at a nominal pressure of 1,47 kPa to the space enclosed inside the land and measuring the rate of air flow between the land and the test piece.

5 Apparatus

The apparatus consists of a compressor (A) and pressure stabilizing reservoir (B) to supply air, a flowmeter (D) with a pressure controlling device (C), and a measuring head (E) (see figure 1).

Annex A gives details of care and maintenance of Bendtsen testers.

5.1 Compressor

The compressor shall generate air at a pressure of about 127 kPa. If necessary, filters shall be provided to ensure that the air is clean and free from oil.