

Australian/New Zealand Standard™

**Methods of test for pulp and paper**

**Method 423: Folding strength of  
paper—Kohler-Molin method**



## **AS/NZS 1301.423:2008**

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 7 October 2008 and on behalf of the Council of Standards New Zealand on 24 September 2008. This Standard was published on 4 December 2008.

---

The following are represented on Committee PK-019:

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

---

### **Keeping Standards up-to-date**

Standards are living documents which reflect progress in science, technology and systems. To maintain their currency, all Standards are periodically reviewed, and new editions are published. Between editions, amendments may be issued. Standards may also be withdrawn. It is important that readers assure themselves they are using a current Standard, which should include any amendments which may have been published since the Standard was purchased.

Detailed information about joint Australian/New Zealand Standards can be found by visiting the Standards Web Shop at [www.standards.com.au](http://www.standards.com.au) or Standards New Zealand web site at [www.standards.co.nz](http://www.standards.co.nz) and looking up the relevant Standard in the on-line catalogue.

Alternatively, both organizations publish an annual printed Catalogue with full details of all current Standards. For more frequent listings or notification of revisions, amendments and withdrawals, Standards Australia and Standards New Zealand offer a number of update options. For information about these services, users should contact their respective national Standards organization.

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.

---

# Australian/New Zealand Standard™

## Methods of test for pulp and paper

### Method 423: Folding strength of paper—Kohler-Molin method

Originated in Australia as AS P1.P423m—1962.  
Originated in New Zealand as Appita P423ts—1960.  
Previous edition AS/NZS 1301.423rp:1997.  
Second edition 2008.

#### **COPYRIGHT**

© Standards Australia/Standards New Zealand

All rights are reserved. No part of this work may be reproduced or copied in any form or by any means, electronic or mechanical, including photocopying, without the written permission of the publisher.

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

## Contents

	<i>Page</i>
1 Scope.....	1
2 Normative references.....	1
3 Definitions.....	1
4 Principle .....	1
5 Apparatus.....	1
6 Preparation of test pieces .....	2
7 Procedure.....	2
8 Calculation.....	3
9 Report.....	3
<b>Annex A</b> Care and maintenance of Kohler-Molin folding strength tester .....	4
<b>Annex B</b> Bibliography.....	5

## Foreword

This standard was prepared by Joint Technical Committee PK-019, Methods of Test for Pulp and Paper, as part of AS/NZS 1301, *Methods of test for pulp and paper*.

This edition cancels and replaces AS/NZS 1301.423rp:1997.

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.

## Introduction

This standard prescribes the procedure to be used to determine the folding strength of paper by means of a Kohler-Molin folding strength tester. Folding strength can be reported as folding endurance defined as the logarithm (to the base 10) of the number of double folds required to cause rupture in a strip of paper 15 mm wide tested under a defined tension. Alternatively, folding strength may be reported as the mean of the number of double folds.

This standard conforms to ISO 5626:1993, *Paper—Determination of folding endurance*, but the ISO standard also includes the use of Schopper and MIT instruments and allows a wider tolerance on tension. The ISO standard requires that fold test results be reported either as folding endurance or as fold number, which is defined as the antilogarithm of the folding endurance. The ISO fold number and the AS/NZS mean of the number of double folds generally do not have the same value.

A similar standard is SCAN P17:77.

# Folding strength of paper—Kohler-Molin method

## 1 Scope

The standard prescribes the procedure to be used to determine the folding strength of paper, measured as either folding endurance or the mean of the number of double folds, using a Kohler-Molin folding strength tester.

## 2 Normative references

The following documents are referred to in this standard.

AS/NZS

1301.414 Conditioning of paper for testing

1301.415 Standard atmosphere for testing paper and board and procedure for monitoring the atmosphere

## 3 Definitions

For the purpose of this standard the definitions below apply.

### 3.1 Double fold

One complete oscillation of the test piece, during which it is folded backwards and forwards once about the same line.

### 3.2 Folding endurance

The logarithm (to the base 10) of the number of double folds required to break a test piece when tested under a standard stress.

NOTE 1 — According to this standard the results of the folding strength test can be expressed either as folding endurance or as the mean of the number of double folds. In the ISO method results can be expressed either as folding endurance or fold number, which is the antilogarithm of the folding endurance. The mean of the number of double folds and the fold number generally will not have the same value.

### 3.3 Machine direction folding strength

The test result obtained using test pieces with their long dimension in the machine direction.

### 3.4 Cross-direction folding strength

The test result obtain using test pieces with their long dimension in the cross-direction.

## 4 Principle

A paper sample is folded backwards and forwards about the same line until it breaks, and the number of double folds completed is recorded.