

Australian/New Zealand Standard™

Methods of test for pulp and paper

**Method 437s: Tensile strength of wetted
paper and paperboard**



AS/NZS 1301.437s:2007

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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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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 1301.437s—1989.

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 conforms to the procedure defined in ISO 3781 but the ISO standard provides for a soaking time, not necessarily sufficient for saturation, to be agreed between the interested parties.

Similar standards

TAPPI T456om-87

SCAN P20:67

CPPA D.10 (1977)

For the purpose of this standard, 'tensile strength of wetted paper and paperboard' is defined as the tensile strength after saturation with distilled water to the extent that further soaking will not significantly reduce the tensile strength.

Wet strength resins used in the paper industry take several weeks to develop full wet strength in the product. Tests done on paper immediately after manufacture cannot be regarded as a measure of the eventual performance of the paper in wet conditions. The strength of the resins may be developed quickly by heating the paper at a temperature depending on the nature of the resin. The heating period also depends on the product and type of resin. The specific heating conditions can be established only by experiment.

This standard is divided into two sections. One of these is designed for testing hard-sized or water resistant paper and paperboard. The other is for testing relatively absorbent products where saturation is complete within 30 s of immersion. The results may be used to predict the performance of paper and paperboard products when subjected to stress after being moistened.

Tensile strength of wetted paper and paperboard

1 Scope

This standard specifies methods for the determination of the wet strength of paper and paperboard by measuring its tensile strength after it has been immersed in water for a specified period.

2 Normative references

The following documents are referred to in this standard.

AS/NZS

1301.404s Tensile strength of paper and board (constant rate of loading method)

1301.414s Conditioning of paper for testing

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

1301.448s Tensile strength of paper and paperboard (constant rate of elongation method)

3 Apparatus

3.1 Tensile tester

Tensile tester as prescribed in AS/NZS 1301.404s or AS/NZS 1301.448s.

3.2 Metal roller

Metal roller weighing 10.0 ± 0.5 kg with a smooth face 200 ± 10 mm wide and a diameter of 90 ± 10 mm. Stainless steel, brass and chrome-plated brass rollers have been found to be satisfactory. For safety reasons a suitable cradle should be provided to hold the roller when it is not in use.

3.3 Blotters

Blotters made of fully bleached chemical pulp, neutral, free from sizing agents, chemical additives, visible contraries and fluorescent materials. The blotters shall have one dimension at least 250 mm, a grammage of 250 ± 25 g/m², a Klemm absorbency of 70 ± 20 mm (Annex B1) and a water uptake of 450 ± 50 g/m² (Annex B2). Advice on the source of suitable blotters may be obtained from Appita.

4 Preparation of test pieces

Condition the sample in accordance with AS/NZS 1301.415s. Conditioning is necessary to enable the desired reproducibility to be achieved in cutting test pieces.

4.1 Water resistant paper and paperboard

Prepare at least 10 test pieces in each principal direction of the paper, in accordance with AS/NZS 1301.404s or AS/NZS 1301.448s. For the preliminary testing to establish the soaking time, prepare an additional 40 test pieces cut with the longer edge in the machine direction.

4.2 Absorbent paper

Prepare at least 10 test pieces in each principal direction of the paper, in accordance with AS/NZS 1301.404s or AS/NZS 1301.448s except that the test pieces shall be 25.0 ± 0.2 mm wide.