AS/NZS 1301.403s:2006

Australian/New Zealand Standard™

Methods of test for pulp and paper

Method 403s: Bursting strength of paper

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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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Australian/New Zealand Standard™

Methods of test for pulp and paper

Method 403s: Bursting strength of paper

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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/NZS 1301.403s:1997.

This revision is necessary to remove the accuracy requirements on dead weight testers used for calibration (this matter is covered by the rules of laboratory accrediting agencies) and to clarify the verification of maximum reading ‘peak sample and hold’ devices operating under dynamic conditions. This revision also prohibits the use of Bourdon tube gauges for measuring the bursting strength.

Annexes A, B, C, D form integral parts of this Standard. Annex E is for information only.

Introduction

This standard prescribes the procedure to be used for the determination of bursting strength of paper by means of a burst tester. [1, 2, 3, 4] It is applicable to paper sheet materials which have a mean bursting strength less than 1100 kPa. Materials with a mean bursting strength between 350 and 1100 kPa may be tested either by this standard or as prescribed in AS/NZS 1301.438s. However, all components of solid or corrugated fibreboard whose mean bursting strength is greater than 250 kPa and all combined boards with mean bursting strengths greater than 350 kPa shall be tested by AS/NZS 1301.438s.

If there is uncertainty as to the classification of the material to be tested and in the absence of any instruction as to which of the two standards shall be used, all materials with mean bursting strengths below 600 kPa shall be tested by this standard and those whose bursting strength is above 600 kPa shall be tested by AS/NZS l301.438s.

This revision of the AS/NZS standard conforms to the corresponding ISO standard (ISO 2758:2001 *Paper—Determination of bursting strength*) but is more restrictive than the ISO standard. For example, the ISO standard does not prohibit the use of Bourdon tube gauges for pressure measurement and the calibration requirements in ISO 2758 are both less detailed and less demanding than are those in this standard.

Other similar standards are TAPPI T403om-02, SCAN-P 24:99 and CPPA D.8-93.

Contents

Bursting strength of paper

1 Scope

This Standard prescribes the procedure to be used for the determination of bursting strength of paper by means of a burst tester.

2 Normative references

The following documents are referred to in this Standard.

AS
1301.414m Conditioning of paper for testing

AS/NZS
1301.405s Grammage of non-creped paper and board
1301.415s Standard atmosphere for testing paper and board and procedure for monitoring the atmosphere
1301.438s Bursting strength of board

3 Definitions

For the purpose of this Standard the following definition applies.

3.1 Bursting strength

The true peak pressure developed by the hydraulic fluid in forcing a rubber diaphragm through a circular area of paper when the pressure is applied in the manner prescribed in this standard. The pressure applied to extend the rubber diaphragm during the test is included in the indicated bursting pressure.

4 Principle

A test piece, placed over a circular elastic diaphragm, is rigidly clamped at the periphery but free to bulge with the diaphragm. Hydraulic fluid is pumped at a constant rate, bulging the diaphragm until the test piece ruptures. The bursting strength of the test piece is the maximum value of the applied hydraulic pressure.

5 Apparatus

5.1 Burst tester

The test instrument used for measuring bursting strength is known as a burst tester, but the design specified for testing paper is different from that specified in AS/NZS 1301.438s for testing board, including corrugated fibreboard. If any material is tested contrary to the provisions of the introduction, the type of instrument used shall be stated in the report.

The paper tester shall have the features described in Clauses 5.2 to 5.6.

5.2 Clamping

A means of clamping the test piece firmly, uniformly and without slippage between two parallel, annular, plane, unpolished (matt) clamping plates. One design which achieves this has on its clamping surfaces concentric or spiral V-grooves not less than 0.25 mm deep and 0.9 mm apart, the innermost groove being not more than 3.3 mm from the edge of the circular opening of the plate. For the purpose of calculating the clamping area, ignore any such grooves.

The upper clamping plate shall be made of steel plate, preferably stainless steel, at least 6 mm thick, and shall have a circular opening 30.50 ±0.10 mm in diameter (see Figure 1).