Australian/New Zealand Standard™

Methods of test for pulp and paper

Method 461rp: Scuffing resistance of linerboard

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The following are represented on Committee PK-019:

Appita Inc.
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Forest Research (New Zealand)
National Association of Forest Industries
New Zealand Pulp and Paper Industry Association
Printing Industries Association of Australia
Pulp and Paper Manufacturers Federation of Australia

Additional interests participating in the preparation of this Standard:

Paper manufacturers
Pulp manufacturers
Research interests
Manufacturers of paper testing instruments
Suppliers of paper testing instruments

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Contents

Page

Foreword

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

This is a new standard, and its introduction is intended to provide the pulp and paper industry with a standardized method for determining scuff resistance of linerboard.

Introduction

This standard is intended to be used in the testing of linerboard to be converted into corrugated or solid fibre containers. These containers may exhibit surface damage when rubbed against another container. The surface damage has been described as scuffing, peeling or cigarring. The outer layer of the linerboard lifts from the surface, and the rubbing motion results in the lifted layer rolling into a cigar or quill.

In this standard a method is described in which test pieces of linerboard are rubbed against each other until scuffing occurs. The number of double strokes of the linerboard test pieces against each other prior to the appearance of scuffing failure is recorded as the scuffing resistance.

The repeated rubbing motion used in this standard does not duplicate the conditions encountered in some commercial situations where a single abrasive motion may cause scuffing damage. However, the correlation between this method and commercial practice is fair, and this test is accepted as a means of measuring this property in linerboard and determining the suitability of the linerboard for fabrication into containers.

Other similar standards are ASTM D 1029 and TAPPI UM 580.

Scuffing resistance of linerboard

1 Scope

This standard sets out a method to determine the scuffing resistance of linerboard.

2 Normative references

The following standards contain provisions which, through reference in this test, constitute provisions of AS/NZS 1301.461rp. At the time of publication, the editions indicated were valid. All standards are subject to revisions, and parties to agreements based on AS/NZS 1301.461rp are encouraged to investigate the possibility of applying the most recent editions of the standards indicated below.
AS 1301.P414m—1986, *Conditioning of paper for testing*
AS/NZS 1301.415s:1998, *Standard atmosphere for testing paper and board and procedure for monitoring the atmosphere*
AS 1301.417s—1992 (NZS 1301.417s:1992), *Sampling paper, board and pulp for testing*

3 Principle

Two linerboard test pieces are rubbed together under specified conditions and the number of double strokes required to cause scuffing damage is recorded.

4 Apparatus

The apparatus is a power-driven testing machine consisting of the following elements.

4.1 Test piece holders, the apparatus has two test piece holders, one is fixed and the other is free to slide over it. Both test piece holders shall be equipped with clamps or bars which hold the linerboard test pieces flat and taut. The leading edges of the smaller test piece holder shall be bevelled or rounded to avoid a square edge of one test piece moving across the surface of the other. The dimensions of the smaller test piece holder shall be about 25 mm by 28 mm. It is recommended that both holders be covered with a layer of rubber to ensure a uniform contact area. The thickness of the layer of rubber on the larger test piece holder shall be some 3 mm, and on the smaller test piece holder it shall be about 9 mm.

4.2 Auxiliary weight, an auxiliary weight shall be attached to the smaller test piece holder or the reciprocating arm such that the pressure exerted on the fixed test piece is 70 kPa.

NOTE 1 — The weight exerts a constant pressure on the contact area between the test pieces. The contact area is constant and equal to the area of contact between the two test pieces at any moment. A pressure of 3.4 kPa is specified in ASTM D 1029, *Test Method for Peeling Resistance of Paper and Paperboard* where the weight is 5.4 kg and the contact area is 15500 mm^2. Tappi 580UM, Scuffing Resistance of Linerboard specifies a weight of 11.35 g and a contact area of 5645 m^2 to give a pressure of 19.7 kPa. In this case the weight is 5.0 g and the contact area is 700 mm^2.

4.3 Motor and reciprocating arm assembly, the drive mechanism of the reciprocating arm assembly shall move the arm and the smaller test piece holder at a constant number of strokes per minute. A reciprocating speed of 145 ±5 double strokes per minute has been found to be suitable; a double stroke being the forward plus the backward movement of the smaller specimen holder. The length of stroke shall be constant during the test and equal to 85 ±1 mm, or 170 mm for the double stroke. The means of fastening the arm to the smaller test piece holder shall be such as to prevent rocking of the holder during the test.

4.4 Guiding mechanism, to minimize rotation and lateral motion of the smaller test piece holder. The guiding mechanism shall be constructed in such a way as to minimize friction.