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Paper and board — Determination of internal bond strength

Papier et carton — Détermination de la force de cohésion interne





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Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives).

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For an explanation on the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the WTO principles in the Technical Barriers to Trade (TBT) see the following URL: [Foreword - Supplementary information](#)

The committee responsible for this document is ISO/TC 6, *Paper, board and pulps*, Subcommittee SC 2, *Test methods and quality specifications for paper and board*.

This corrected version of ISO 16260:2016 replaces the entire text of the erroneously published version dated 2015-06-01.

Introduction

Paper and board sheets may, during printing, conversion or specific product applications, be subjected to impulses, impacts or shock loads of sufficient magnitude to cause structural failure. Commonly observed in-plane structural failures include surface picking, blistering and interior delimitation.

This International Standard describes one method for determining the internal bond strength of a product of pulp, paper or board. There are other published methods^{[4][8]} for determining “Z” or thickness direction tensile strength, but in this method, the delaminating force is applied at a rate very much higher than in other methods. This method may, therefore, be preferred for predicting sheet performance under printing or converting conditions.

Paper and board — Determination of internal bond strength

1 Scope

This International Standard describes a method to measure the energy required to rapidly delaminate a test piece of paper or board. Rupture of the test piece in the “Z” or thickness direction is initiated by a pendulum having a defined mass, moving at a defined velocity.

The procedure is suitable for both single- and multi-ply papers and boards, including coated sheets and those that are laminated with synthetic polymer films. It is particularly suitable for papers and boards that may be subjected to z-direction^{[4][8]} rapid impacts, impulses or shock loads during printing or conversion.

The test procedure entails the adherence of double-sided adhesive tape to both sides of the test piece under pressure. For this reason, the method may be unsuitable for materials that might be structurally damaged by compression or are porous enough to permit migration of the tape adhesive into or through the test piece.

2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO 186, *Paper and board — Sampling to determine average quality*

ISO 187, *Paper, board and pulps — Standard atmosphere for conditioning and testing and procedure for monitoring the atmosphere and conditioning of samples*

EN 755-2:2013, *Aluminium and aluminium alloys — Extruded rod/bar, tube and profiles — Part 2: Mechanical properties*

3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

3.1

internal bond strength

average potential energy, expressed as J/m² of surface, required to delaminate a test piece under the conditions of the test

Note 1 to entry: The result is the difference of the potential energy before and the remaining energy after delaminating the test piece.

3.2

test assembly

test piece, laminated between two pieces of double-sided adhesive tape, with the bottom side of the lower tape adhered to a rigid metal anvil and the upper side of the upper tape adhered to an “L”-shaped aluminium platen