## INTERNATIONAL STANDARD



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# Paper and board — Compressive strength — Ring crush method

Papier et carton — Résistance à la compression — Méthode d'écrasement avec anneau



Reference number ISO 12192:2002(E)

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## Foreword

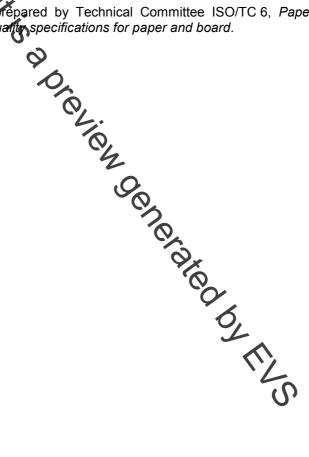
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International Standard ISO 12192 was prepared by Technical Committee ISO/TC 6, Paper, board and pulps, Subcommittee SC 2, Test methods and quarter specifications for paper and board.



## Introduction

Fibreboard shipping containers are frequently subjected to in-plane compressive forces during shipment or storage. Therefore, resistance to crushing is an important measure of the performance characteristics of the container.

Fibreboard shipping containers are trequently subjected to in-plane compressive torces during singmenn or storage. Therefore, resistance to crushing depends on the design of the containers and on the in-plane crush resistance of the container. The resistance to crushing the depends on the design of the containers and on the in-plane crush resistance of the components of the body from which it is made. The in-plane crush resistance of these components can be measured by the ring crushing the dependence of the containers and on the in-plane crush resistance of these components can be measured by the ring crushing the dependence of the design of the container. The resistance is the body from which it is made. The in-plane crush resistance of these components can be measured by the ring crushing the dependence of the design of the container of the body from which it is made. The in-plane crush resistance of these components can be dependence of the design of the container of the body from which it is made. The in-plane crush resistance of these components can be dependence of the design of the container of the body from which it is made. The in-plane crush resistance of these components can be dependence of the design of the container.

## Paper and board — Compressive strength — Ring crush method

## 1 Scope

This International Standard specifies a method for the determination of the edgewise compressive strength (ring crush resistance) of paper and paperboard, especially board used in the manufacture of cartons and packing cases.

This International Standard appres to all paper and paperboard with a thickness in the range of 280  $\mu$ m to 580  $\mu$ m. It may also be used for paper and board having a thickness less than 280  $\mu$ m but those results are more a reflection of the paper's stiffness than its compressive strength. For paper and board having a thickness exceeding 580  $\mu$ m, it may be impossible to bend them to the circumference without disturbing the structure.

## 2 Normative references

The following normative documents contain provisions which, through reference in this text, constitute provisions of this International Standard. For dated references, subsequent amendments to, or revisions of, any of these publications do not apply. However, parties to agreements based on this International Standard are encouraged to investigate the possibility of applying the most recent editions of the normative documents indicated below. For undated references, the latest edition of the normative document referred to applies. Members of ISO and IEC maintain registers of currently valid International Standards.

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

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

ISO 534, Paper and board — Determination of thickness and apparent bulk density or apparent sheet density

ISO 13820, Paper, board and corrugated fibreboard — Description and calibration of compression-testing equipment

## 3 Principle

A test piece of paper or board, in the form of a narrow strip held in a ring form, is subjected to an increasing edgewise compressive force until collapse occurs.

## 4 Apparatus

**4.1 Cutting device,** consisting of a die cutter, capable of accurately cutting the test pieces to the specified dimensions with clean, sharp, parallel and straight edges.

Other cutting devices such as a double-knife cutter may be used, provided they can be shown to give similar test results. The parallelism of the test piece will be determined by the quality of the cutting device. The width of the male die or the anvil of the double-knife cutter shall be 12,7 mm  $\pm$  0,1 mm, and parallel to within 0,015 mm over its entire length.