



**International  
Standard**

**ISO 7965-1**

**Packaging — Drop test —**

**Part 1:  
Paper sacks**

*Emballages — Essai de chute —  
Partie 1: Sacs en papier*

**Second edition  
2024-04**

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Published in Switzerland

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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 document 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](http://www.iso.org/directives)).

ISO draws attention to the possibility that the implementation of this document may involve the use of (a) patent(s). ISO takes no position concerning the evidence, validity or applicability of any claimed patent rights in respect thereof. As of the date of publication of this document, ISO had not received notice of (a) patent(s) which may be required to implement this document. However, implementers are cautioned that this may not represent the latest information, which may be obtained from the patent database available at [www.iso.org/patents](http://www.iso.org/patents). ISO shall not be held responsible for identifying any or all such patent rights.

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For an explanation of the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT), see [www.iso.org/iso/foreword.html](http://www.iso.org/iso/foreword.html).

This document was prepared by Technical Committee ISO/TC 122, *Packaging*, Subcommittee SC 3, *Performance requirements and tests for means of packaging, packages and unit loads (as required by ISO/TC 122)*, in collaboration with the European Committee for Standardization (CEN) Technical Committee CEN/TC 261, *Packaging*, in accordance with the Agreement on technical cooperation between ISO and CEN (Vienna Agreement).

This second edition cancels and replaces the first edition (ISO 7965-1:1984), which has been technically revised.

The main changes are as follows:

- ISO 6599-1 has been added to [Clause 2](#), replacing ISO 2233;
- two additional subclauses have been added to [Clause 5](#) to include information on ensuring correct drop height and placement of the sack, respectively;
- a new subclause has been added to [Clause 7](#) for information on testing in non-laboratory situations;
- the limit height method has been deleted from [Clause 9](#), keeping only the progressive- and constant drop height methods, respectively;
- the principle of testing for the constant drop method in [9.3](#) has been changed to exclude the side constant height drop test;
- Annex C has been deleted and [Clause 10](#) has been added to outline the information that the test report shall include;
- some editorial changes have been made to the document in line with ISO/IEC Directives, Part 2.

A list of all parts in the ISO 7965 series can be found on the ISO website.

Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at [www.iso.org/members.html](http://www.iso.org/members.html).

# Packaging — Drop test —

## Part 1: Paper sacks

### 1 Scope

This document specifies a method of vertical impact testing on a filled paper sack by dropping. It is performed either as a single test to investigate the effects of vertical impact or as part of a sequence of tests designed to measure the ability of a sack to withstand a distribution system that includes a vertical impact hazard.

This document specifies the testing procedure and how the results of tests are presented. It is based on ISO 2248 but is specifically related to paper sacks.

### 2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO 6590-1, *Packaging — Sacks — Vocabulary and types — Part 1: Paper sacks*

ISO 6599-1, *Packaging — Sacks — Conditioning for testing — Part 1: Paper sacks*

ISO 7023, *Packaging — Sacks — Method of sampling empty sacks for testing*

### 3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 6590-1 apply.

ISO and IEC maintain terminology databases for use in standardization at the following addresses:

- ISO Online browsing platform: available at <https://www.iso.org/obp>
- IEC Electropedia: available at <https://www.electropedia.org/>

### 4 Principle

The filled sack is raised above a rigid plane surface and released to strike this surface after a free fall, with the height of drop and the position of the package being set in advance.

### 5 Apparatus

#### 5.1 General

This document stipulates that an appropriate drop test apparatus shall be used to ensure that a drop can be performed according to the described procedure. An example of apparatus for drop testing is provided in [Annex A](#).

The usual laboratory apparatus and, in particular, the following shall be used.

**5.2 Drop height**, ensuring that the drop test can be correctly performed in accordance with the selected testing method.

**5.3 Lifting arrangement**, which will not damage the sack during either lifting or release.

**5.4 Platform**, where the sack can be placed prior to release in its predetermined position.

**5.5 Release mechanism**, in such a way that the fall of the sack is not obstructed by any part of the apparatus before striking the impact surface (5.6).

**5.6 Impact surface**, horizontal and flat, massive enough to be immovable and rigid enough to be non-deformable under test conditions.

## 6 Sampling

For assessing an average quality of a consignment, sampling shall be carried out in accordance with the procedure in ISO 7023.

## 7 Test conditions

### 7.1 General

Since paper is a hygroscopic material, it will change some of its mechanical properties, like paper strength (tensile energy absorption), with the moisture content of the paper. This will vary according to the ambient atmospheric conditions and the temperature of the filling content. Hence, it is very important to register and record the conditions in which the drop test is performed continuously throughout the test; the ambient temperature and relative humidity (RH) as well as the temperature of the filling content.

### 7.2 Conditioning for testing of paper sacks

Separate tests can only be directly compared if all conditions are the same in the respective test. For direct comparisons, it is essential that the sack is conditioned in a laboratory according to the requirements of ISO 6599-1.

### 7.3 Testing in non-laboratory situations

In a situation where a laboratory is not available, the methodology in this document can still be followed. In this case, the temperature and the humidity shall be recorded and reported.

### 7.4 Surface conditions

Ensure that the platform and impact surface are clean and free from any objects, particles or contamination that can affect the testing procedure.

A thin and clean plastic film may be used on the impact surface to not damage the sack while moving it.

In normal circumstances, the impact surface provided should be:

- a) one piece, with a mass at least 50 times that of the heaviest sack to be tested;
- b) flat, such that no two points on its surface differ in level by more than 2 mm;
- c) rigid, such that it will not be deformed by more than 0,1 mm when an area of 100 mm<sup>2</sup> is loaded statically with 10 kg anywhere on the surface;
- d) sufficiently large to ensure that the sack falls entirely upon the surface.