Australian Standard®

Complete, filled transport packages—Methods of test

Method 15: Toppling test

PREFACE

This Standard was prepared by Standards Australia Committee PK-012, Physical Testing of Packages and Containers, as an additional part to the AS 2582 series of test methods. It is identical with and has been reproduced from ISO 8768, *Packaging—Complete, filled transport packages—Toppling test.*

As this Standard is reproduced from an International Standard, the following modifications apply:

(a) Its number does not appear on each page of text and its identity is shown on the cover and title page.

(b) In the source text, 'this International Standard' should read 'this Australian Standard.'

(c) A full point substitutes for a comma when referring to a decimal marker.

References to International Standards should be replaced by references to equivalent Australian Standards as follows:

Reference to International Standard		*Australian Standard*	
ISO		AS	
2206	Packaging—Complete, filled transport packages—Identification of parts when testing	2582	Complete, filled transport packages—Methods of test
		2582.1	Method 1: Identification of parts when testing
2233	Packaging—Complete, filled transport packages—Conditioning for testing	2582.2	Method 2: Conditioning for testing
2244	Packaging—Complete, filled transport packages—Horizontal impact tests (horizontal or inclined plane test; pendulum test)	2582.5	Method 5: Horizontal impact tests
2248	Packaging—Complete, filled transport packages—Vertical impact test by dropping	2582.4	Method 4: Vertical impact test by dropping
2876	Packages—Complete, filled transport packages—Rolling test	2582.13	Method 13: Rolling test

NOTES

1 Scope and field of application

This International Standard specifies a method for carrying out a toppling test on a complete, filled transport package which may be exposed to the danger of toppling during storage, transport and handling. The test may be used to assess the performance of a package in terms of its strength or the protection that it offers to its contents when it is subject to toppling. It may be performed either as a single test to investigate the effects of toppling or as part of a sequence of tests designed to measure the ability of the package to withstand a distribution system that includes a toppling hazard.

The test, which is complementary to the tests described in ISO 2244, ISO 2248 and ISO 2876, may be used to investigate the performance of packages which are tall in relation to their base dimensions. It is also applicable to packages the height of which is small by comparison with base dimensions but which may be stored or transported resting on a side face in order to conserve storage/transport space (see figures 1 and 2). The test is recommended for packages where the ratio of the longest to the shortest sides is of the order of 3 : 1 or greater.

2 References

ISO 2206, *Packaging — Complete, filled transport packages — Identification of parts when testing.*

ISO 2233, *Packaging — Complete, filled transport packages — Conditioning for testing.*

ISO 2244, *Packaging — Complete, filled transport packages — Horizontal impact tests (horizontal or inclined plane test; pendulum test).*

ISO 2248, *Packaging — Complete, filled transport packages — Vertical impact test by dropping.*

ISO 2876, *Packaging — Complete, filled transport packages — Rolling test.*

3 Principle

In simple testing, placing of the test package on a flat, horizontal surface and subjection of the package to an increasing horizontal force applied at a position above its centre of gravity until it topples freely about a lower edge. The atmospheric conditions and package attitude are predetermined.

4 Apparatus

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

In normal circumstances, the impact surface provided shall be

— flat, so that no two points on its surface differ in level by more than 2 mm;

— rigid, so that it will not be deformed by more than 0,1 mm when a force of 100 mm^2 is loaded statically with 10 kg anywhere on the surface;

— sufficiently large to ensure the test package falls entirely upon the surface.

It shall have a mass at least 50 times that of the heaviest package to be tested.

NOTE — A concrete floor at least 150 mm thick is suitable provided it complies with the above requirements.

4.2 Means of loading, capable of applying a horizontal force to the vertical faces of the test package at a particular height above the centre of gravity and of sufficient force to cause toppling without causing the package to slide on the horizontal surface.

5 Package preparation

The test package shall normally be filled with its intended contents. However, under certain circumstances, simulated or dummy contents may be used on condition that the dimensions and physical properties of such contents shall be as close as possible to those of the intended contents.

Ensure that the test package is closed normally, as if ready for distribution. If simulated or dummy contents are used, ensure that the normal method of closure is still employed.