INTERNATIONAL STANDARD ISO 2234

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Packaging — Complete, filled transport packages
Part III : Stacking test

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FOREWORD

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Draft International Standards adopted by the Technical Committees are circulated to the Member Bodies for approval before their acceptance as International Standards by the ISO Council.

International Standard ISO 2234 was drawn up by Technical Committee ISO/TC 122, *Packaging*.

It was approved in August 1971 by the Member Bodies of the following countries :

Belgium	Israel	Switzerland
Czechoslovakia	Italy	Thailand
Germany	Netherlands	Turkey
Egypt, Arab. Rep. of	New Zealand	United Kingdom
France	Norway	U.S.A.
Hungary	Romania	U.S.S.R.
India	South Africa, Rep. of	Yugoslavia
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The Member Bodies of the following countries expressed disapproval of the document :

Austria
Japan
Sweden

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Packaging — Complete, filled transport packages Part III : Stacking test

1 SCOPE AND FIELD OF APPLICATION

This International Standard specifies a method of making a stacking test on a complete, filled transport package. This 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 subjected to stacking. It may be performed either as a single test to investigate the effects (deformation, creep, collapse or failure) of stacking or as part of a sequence of tests designed to measure the ability of a package to withstand a distribution system that includes a stacking hazard.

The test may also be used to investigate performance under particular conditions of loading, as for example, when the bottom package in a stack rests on an open-decked pallet; or when the profile of the superimposed load is eccentric, as when it is supported on the bearers of a single-decked pallet which rests on a container.

2 REFERENCE

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

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

3 PRINCIPLE

In simple testing, the package is placed on a flat horizontal surface and a load placed upon it. The load, atmospheric conditions, period of time under load and attitude of the package are predetermined. The top-to-bottom or the side-to-side deflection of the package during the test may be measured, if appropriate.

4 APPARATUS

4.1 Horizontal surface, which is flat (the difference in height between the highest and lowest points not exceeding 2 mm) and rigid. A concrete floor at least 150 mm thick is suitable.

4.2 Loading platform which, when placed centrally on top of the package, shall be large enough to extend to at least 100 mm over all sides of the top surface of the package and rigid enough to support the load completely without deformation.

The load and the loading platform may be integral.

4.3 Means of loading, such that the loading platform can be placed centrally over the test package and the weights making up the load can be positioned on the loading platform without impact, being in full contact with the loading platform before being released.

4.4 Means of measuring deflection (if necessary), accurate to ± 1 mm and capable of indicating either an increase or a decrease in dimensions.

Additionally the apparatus shall meet the requirements and tolerances of section 6.

NOTE — Stable and safe loading during the test is dependent on the friction between the top surface of the package and the bottom surface of the loading platform, as well as the ability of the package to resist deformation. Means must therefore be provided to produce a stable test assembly and to ensure that if failure occurs the load is restrained and does not cause danger to personnel in the vicinity.

5 CONDITIONING

The package shall be conditioned in accordance with and using one of the conditions described in ISO 2233.

6 PROCEDURE

The test shall be carried out if possible in the same atmospheric conditions as used for conditioning, or if not the test must commence within 5 min of removing the package from those atmospheric conditions.

6.1 Place the test package in the predetermined attitude on the flat horizontal surface (4.1).