International Standard 2872

INTERNATIONAL ORGANIZATION FOR STANDARDIZATION•МЕЖДУНАРОДНАЯ ОРГАНИЗАЦИЯ ПО СТАНДАРТИЗАЦИИ•ORGANISATION INTERNATIONALE DE NORMALISATION

Packaging — Complete, filled transport packages — Compression test

Emballages — Emballages d'expédition complets et pleins — Essai de compression

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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.

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. They are approved in accordance with ISO procedures requiring at least 75 % approval by the member bodies voting.

International Standard ISO 2872 was prepared by Technical Committee ISO/TC 122, *Packaging*.

This second edition cancels and replaces the first edition (ISO 2872-1973), which has been technically revised as follows:

— the specification of the compression tester has been modified slightly (clause 4 "Apparatus");

— a new clause on "Package preparation" has been added.

Users should note that all International Standards undergo revision from time to time and that any reference made herein to any other International Standard implies its latest edition, unless otherwise stated.

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Packaging — Complete, filled transport packages — Compression test

1 Scope and field of application

This International Standard specifies two methods for testing complete, filled transport packages for compression resistance. The test may be used to assess the performance of a package in terms of its strength or of the protection it offers to its contents when it is subjected to compressive forces. It may be performed either as a single test to investigate the effects (deformation, collapse or failure) of compression or as part of a sequence of tests designed to measure the ability of a package to withstand a distribution system that includes a compression hazard.

NOTE — A test method using a compression tester to determine the stacking resistance of a package is given in ISO 2874.

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 2874, *Packaging — Complete, filled transport packages — Stacking test using compression tester.*

3 Principle

Placing of the test package between the platens of a compression tester, and compression, the load and platen displacement being recorded until failure occurs or predetermined values for load or displacement are reached.

4 Apparatus

4.1 Compression tester, motor-driven, mechanical or hydraulic, platen-type, capable of applying load through uniform movement of one or both platens at a relative speed of 10 ± 3 mm/min.

The platens shall be

— flat, so that when placed horizontally the difference in height between the lowest and highest points does not exceed 1 mm;

— dimensioned so as to extend over the whole area of the panels with which they are in contact;

— rigid, so as not to deform by more than 1 mm at any point when the tester applies a load of 75 % of its maximum rating, either to a centrally placed 100 mm × 100 mm × 100 mm block having sufficient strength to accept this load without failure, or to four similar blocks placed at the four corners, in the case of swivel-mounted platens.

One platen shall remain horizontal, within two parts per 1 000 at all times during the test.

The other platen shall be either rigidly mounted so as to remain horizontal within two parts per 1 000 at all times during the test, or be held by a universal joint at its centre and so be free to tilt in any direction.

The working surfaces of platens suitable for testing packages with a length or width or diameter greater than 1 000 mm may be locally recessed for fixing bolts, etc.

4.2 Recording device or other means of measurement, with a percentage of error for loads not exceeding ± 2 % of the load and an accuracy of platen displacement of ± 1 mm.

5 Package preparation

The test package shall normally be filled with its intended contents. However, 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.

6 Conditioning

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

7 Procedure

Whenever possible the test shall be carried out in the same atmospheric conditions as used for conditioning, where this is critical to the materials or application of the package. In other circumstances, the test shall be carried out in atmospheric conditions which are as near as practicable to those used for conditioning.

7.1 Method 1

7.1.1 Place the test package centrally on the lower platen of the test machine (4.1), in the predetermined attitude.

7.1.2 Apply the load by relative movement of the platens at 10 ± 3 mm/min until the predetermined value is reached or until premature collapse.

In measuring deformation, the datum zero point shall be taken as the reading corresponding to a load of 220 N.

7.2 Method 2

Where it is desired to measure the ability of a complete, filled transport package to resist external compressive loads applied to opposite edges or corners of the package, the procedure is the same as in Method 1, but it is essential to use a tester in which the platens are not free to tilt.

8 Test report

The test report shall include the following particulars :

a) reference to this International Standard;

b) number of replicate packages tested;

c) full description of the package, including dimensions, structural and material specifications of the package and its fittings, cushioning, blocking, closure or reinforcing arrangements;

d) description of contents — if simulated or dummy contents were used, full details shall be given;

e) gross mass of the package and mass of contents, in kilograms;

f) relative humidity, temperature and time of conditioning; temperature and relative humidity of test area at time of test; whether these values comply with the requirements of ISO 2233;

g) the attitude in which the package was tested, using the method of identification given in ISO 2206;

h) load imposed, in newtons, and the duration of time of the package under load;

j) location of points on packages and stage of test at which measurements were made;

k) type of apparatus used, including whether the tester was mechanically or hydraulically operated and whether or not both platens were rigidly mounted;

m) any deviations from the test methods described in this International Standard;

n) a record of the result, including load/platen displacement recording, with any observations which may assist in correct interpretation;

p) date of the test;

q) signature of tester.