
International Standard



8474

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Packaging — Complete, filled transport packages — Water immersion test

Emballages d'expédition complets et pleins — Essai d'immersion dans l'eau

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Descriptors : packing, transport packing, complete-and filled packages, tests, immersion tests, water.

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

International Standard ISO 8474 was prepared by Technical Committee ISO/TC 122 *Packaging*.

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 — Water immersion test

1 Scope and field of application

This International Standard specifies a test method for the immersion in water of complete, filled transport packages. It may be used to pre-condition a package prior to other tests, to investigate reduction in strength caused by exposure to water or to investigate the protection the package gives to its contents from water immersion. The test is principally intended for packages which are waterproof or which are intended to provide some degree of "waterproofness".

The test is performed on the package as prepared for transport and may form part of a test sequence.

2 Reference

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

3 Principle

Conditioning of the package, followed by complete immersion in water, removal and draining and drying in the conditioning atmosphere. The time of immersion, time of draining and drying and the atmospheric conditions are predetermined.

4 Apparatus

4.1 Test area, conditioned in such a manner that evaporation from the wet package and the surface of the water in the water tank (4.2) do not significantly change the atmospheric conditions.

4.2 Water tank, sufficiently large for the test package to be immersed completely under water with the water level at least 100 mm above the package. The tank shall be designed so that it can be easily filled with water and emptied and the water maintained at the temperature specified in 7.1.

4.3 Immersion equipment to contain the test package loosely. It shall be capable of being lowered and lifted. A cage of appropriate dimensions is suitable for this purpose.

NOTE — Some means of hoisting, for example an electric or manual hoist, may be fitted over the water tank to lower and raise the test package conveniently.

4.4 Rigid grill, capable of supporting the wet test package without deformation and positioned so that air is able to flow freely beneath it. The rods or bars from which it is made shall not occupy more than 10 % of the surface area.

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 the such contents shall be as close as possible to those of the intended contents.

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

6 Conditioning

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

7 Procedure

7.1 Fill the tank (4.2) to an appropriate depth with water and ensure that the water temperature is within ± 2 °C of the temperature selected from a range from 5 to 40 °C.

7.2 The test shall be begun within 5 min of removing the package from the atmospheric conditions selected for clause 6.

7.3 Using the immersion equipment (4.3), lower the package into the water at a rate not greater than 300 mm/min.

Alternatively the package may be placed in the empty water tank which is then filled to the required level.

The immersion process shall be considered to be complete when the water level is at least 100 mm above the top of the package.

Keep the package immersed for a period which shall be selected from

5, 15 or 30 min,

or from

1, 2 or 4 h.

7.4 After the predetermined immersion period, raise the package completely out of the water at a rate not exceeding 300 mm/min.

Place the package on the grill (4.4) positioned so that all surfaces of the package are exposed to the atmospheric conditions specified in clause 6. Allow the package to be exposed for a period which shall be selected from

4, 8, 16, 24, 48 or 72 h

or from

1, 2, 3 or 4 weeks.

7.5 Note any obvious damage sustained by the package and its contents as a result of immersion in water and subsequent draining and drying, and any other difference in appearance, including labels and markings.

8 Test report

The test report shall include the following information :

- a) reference to this International Standard;
- b) the number of replicate packages tested;
- c) a full description of the package, including dimensions, structural and material specifications of the package and its fittings, cushioning, blocking or reinforcing arrangements;
- d) a description of contents — if simulated or dummy contents were used, full details shall be given;
- e) the gross mass of the package and the mass of the contents, in kilograms;
- f) the relative humidity, temperature and time of conditioning; a statement whether these values comply with the requirements of ISO 2233;
- g) the temperature of the test area and of the water at the time of immersion;
- h) the orientation of package relative to the floor during immersion and draining, etc.;
- i) the duration of immersion in water;
- j) the duration of the draining and drying method;
- k) any deviations from the test method specified in this International Standard;
- l) a record of the result, with any observations which may assist in correct interpretation;
- m) the date of the test;
- n) the signature of the person responsible for the test.

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