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Testing methods for heat sealed flexible packages

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Foreword

This translation has been made based on the original Japanese Industrial Standard revised by the Minister of International Trade and Industry through deliberations at the Japanese Industrial Standards Committee in accordance with the Industrial Standardization Law. Consequently **JIS Z 0238:1995** is replaced with **JIS Z 0238:1998**.

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Testing methods for heat sealed flexible packages

1 Scope This Japanese Industrial Standard specifies the testing methods for heat-sealed flexible packages (hereafter referred to as “packages”) and heat-sealed semi-rigid containers (hereafter referred to as “containers”), which are used for packaging.

Remarks 1 These testing methods shall apply to both the heat-sealed package whose total mass, together with its contents, weighs less than 20 kg, and the container whose total mass weighs less than 2 kg.

2 The units and numerical values given in { } in this Standard are based on the traditional units, and are appended for informative reference.

2 Normative references The following standards contain provisions which, through reference in this Standard, constitute provisions of this Standard. The most recent editions of the standards indicated below shall be applied.

JIS K 6900 *Plastics—Vocabulary*

JIS K 7100 *Standard atmospheres for conditioning and testing of plastics*

Remarks : ISO 291 : 1988 *Plastics—Standard atmospheres for condition and testing* is equivalent to the said standard.

JIS P 8113 *Paper and board—Determination of tensile properties*

Remarks : The articles cited from ISO 1924-1 : 1992 *Paper and board—Determination of tensile properties—Part 1 : Constant rate of loading method* and ISO 1924-2 : 1992 *Paper and board—Determination of tensile properties—Part 2 : Constant rate of elongation method* are equivalent to the items referred to the said standard.

JIS Z 0108 *Glossary of terms for packaging*

JIS Z 0200 *Packaged freights—General rules of testing*

Remarks : The articles cited from ISO 2248 : 1985 *Packaging—Complete, filled transport packages—Vertical impact test by dropping* are equivalent to the items referred to the said standard.

JIS Z 0217 *Kraft paper sacks—Method of drop test*

Remarks : The articles cited from ISO 2206 : 1987 *Packaging—Complete, filled transport packages—Identification of parts when testing* and ISO 7965-1 : 1984 *Packaging—Sacks—Drop test—Part 1 : Paper sacks* are equivalent to the items referred to the said standard.

JIS Z 8401 *Rules for rounding off of numerical values*

JIS Z 8751 *Reading methods of the vacuum gauges by means of the head difference in the hydrostatic pressure*

3 Definitions For the purpose of this Standard, the definitions in JIS K 6900 and JIS Z 0108 apply, and the rest of the terms are as follows.

- a) **heat-sealed flexible packages** Flexible packages, composed of plastic materials for the whole or the part, which have been tightly sealed by applying heat. It does not include the packages composed of paper only.
- b) **heat-sealed semi-rigid containers** Semi-rigid containers, composed of plastic materials for the whole or the part, which have been tightly sealed by applying heat.
- c) **strength of heat seal** Strength at heat-sealed part of packages filled with contents.
- d) **bursting strength** Strength at heat-sealed part of containers filled with contents.
- e) **dropping strength** Strength to withstand the shock caused by free-fall dropping of packages or containers filled with contents.
- f) **compression strength** The strength of packages or containers filled with contents to withstand compressive load applied upward and downward.
- g) **leakage** The leakage of contents kept inside a package or container due to the differential pressure or external force, or contrarily the inrush of such as liquid from the outside of a package or container into them.
- h) **volume of emptiness** The volume obtained by subtracting the volume of contents from the total volume of package or container in which contents have been packed.
- i) **total mass** Whole mass of the packaged article, that is, mass of contents (net mass) plus mass of packaging material (tare mass).

4 Items to be tested Items to be tested shall be as follows.

- a) Test of heat-seal strength of package
- b) Test of bursting strength of container
- c) Test of dropping strength
- d) Test of compression strength
- e) Leakage test

5 General conditions for tests The standard conditions at test site shall be the second class of standard temperature and humidity condition [$23\text{ }^{\circ}\text{C} \pm 2\text{ }^{\circ}\text{C}$ in temperature and $(50 \pm 5)\%$ in relative humidity] specified in JIS K 7100, and prior to the test, test piece and tester shall be conditioned to bring into a state of equilibrium with these conditions. When other special conditions than this standard conditions are required, however, follow the agreement between the parties concerned with delivery, and mention the fact in a report. As for the leakage test, this test condition may not be followed.

6 Preparation of sample Fill actual or similar contents in a package or container, seal it tightly with heat-sealing method, further, treat it under ordinary employing condition to prepare the sample.

7 Test on seal-heat strength of package

7.1 Test apparatus The apparatus shall be of constant-rate extension type tensile tester (pendulum type) or constant-rate elongation type tensile tester (electric-resistance strain gauge type), and it shall conform to the following requirements.

- Two grips shall be arranged so that their centers are on the same plane parallel to tensile direction, and while testing, a test piece shall be held on the same plane without slippage.
- The load before breakage of the test piece can be indicated to the nearest $\pm 2\%$ in accuracy. Calibrate its accuracy in accordance with JIS P 8113.
- The load needed for breakage shall be 15 % to 85 % of capacity of the tester.
- Relative travelling speed of grips shall be 300 ± 20 mm/min.

7.2 Sample Principally, take at least 3 packages from the same lot, and from the following parts, take the test pieces, measuring $15.0 \text{ mm} \pm 0.1 \text{ mm}$ in width and 100 mm or longer developed length, in the rectangular direction to heat-sealed line. If the test piece with 100 mm or longer developed length cannot be taken, admissibly, reinforce it by the same material as the package, as shown in Fig. 1, using such as cellophane adhesive tape to prepare the test piece with at least 100 mm developed length.

Unit : mm

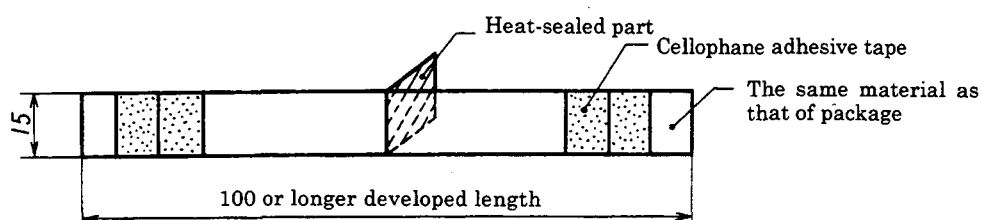


Fig. 1 Test piece

As shown in Fig. 2, the test piece taken from side-sealed part of package shall be prepared as the test piece for side-seal test, the test piece taken from back-sealed part of package for back-seal test, and the test piece taken from top-sealed part and bottom-sealed part of package respectively for top-seal test and bottom-seal test.

The number of test pieces shall respectively be at least 10 pieces for side-, back-, top-, and bottom-sealed parts.