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Replacing GB 10457-1989

Plastic cling wrap film for keeping fresh of food

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Foreword

Chapter 5 and clause 6.6 of this standard are mandatory, AND the rest is recommended.

This standard replaces GB 10457-1989 “Cling wrap polyethylene film for keeping fresh of food”.

Compared with GB 10457-1989, the main changes of this standard are as follows:

- CHANGE the standard name from the “Cling wrap polyethylene film for keeping fresh of food” to the “Plastic cling wrap film for keeping fresh of food”;
- EXTEND the scope of standard from the cling wrap polyethylene film for keeping fresh of food to the other plastic cling wrap film for keeping fresh of food;
- ADD the technical requirements for raw materials;
- CHANGE the length deviation to the roll weight deviation;
- CHANGE the gas transmission to gas transmission deviation;
- CHANGE the moisture transmission to moisture transmission deviation;
- ADD the nominal value of the marking volume, gas transmission, and moisture transmission;
- ADD the requirements for the marking material.

This standard was proposed by the China Light Industry Federation.

This standard shall be under the jurisdiction of the National Plastic Product Standardization Technical Committee.

The drafting organizations of this standard: Institute of Light Industry Plastics Processing and Application, Shenzhen Wandajie Plastic Products Co., Ltd., Shenzhen Junhao Plastic Products Co., Ltd., National Quality Supervision and Inspection Center for Plastics (Beijing).

The main drafters of this standard: Chen Jiaqi, Weng Yunxuan, Chen Qian, Xu Lidan, Wei Wenchang, Su Junming.

This Standard replaces the standard previously issued as follows:

- GB 10457-1989.

Plastic cling wrap film for keeping fresh of food

1 Scope

This standard specifies the terms and definitions, product classification, identification, requirements, test methods, inspection rules and marking, packaging, transportation and storage of plastic cling wrap film for keeping fresh of food.

This standard applies to the plastic cling wrap film for keeping fresh of food which is produced using the polyethylene, polyvinyl chloride, polyvinylidene chloride and other resins as the main raw material through a single layer extrusion or multi-layer co-extrusion process (hereinafter referred to as wrap film).

2 Normative references

The provisions in following documents become the provisions of this Standard through reference in this Standard. For the dated references, the subsequent amendments (excluding corrections) or revisions do not apply to this Standard; however, parties who reach an agreement based on this Standard are encouraged to study if the latest versions of these documents are applicable. For undated references, the latest edition of the referenced document applies.

GB/T 1037 Plastics - Films and sheeting – Water vapor transmission test method - Cup method

GB/T 1038 Plastics – Film and sheeting – Determination of gas transmission – Differential pressure method (GB/T 1038-2000, neq ISO 2556:1974)

GB/T 1040.3 Plastics - Determination of tensile properties - Part 3: Test conditions for films and sheets (GB/T 1040.3, ISO 527-3:1995, IDT)

GB/T 2410 Determination of the luminous transmittance and haze of transparent plastics

GB/T 2828.1 Sampling procedures for inspection by attributes – Part 1: Sampling schemes indexed by acceptance quality limit (AQL) for lot-by-lot inspection (GB/T 2828.1-2003, ISO 2859-1:1999, IDT)

GB/T 2918 Plastics - Standard atmospheres for conditioning and testing (GB/T 2918-1998, idt ISO 291:1997)

GB/T 5009.60 Method for analysis of hygienic standard of products of polyethylene, polystyrene and polypropylene for food packaging

GB/T 5009.67 Method for analysis of hygienic standard of products of polyvinyl chloride for food packaging

GB/T 6672 Plastic film and sheeting – Determination of thickness by mechanical scanning (GB/T 6672-2001, idt ISO4593:1993)

GB/T 6673 Determination of length and width of plastic films and sheeting (GB/T 6673-2001, idt ISO 4592:1992)

GB 9681 Hygienic standard for polyvinyl chloride molding of food packaging

GB 9685 food containers, packaging materials used in the use of health standards

GB 9687 Hygienic standard of products of polyvinyl chloride for food packaging

GB/T 16288 Marking of plastic products

GB/T 17030 Polyvinylidene chloride (PVDC) flat-film for food-packaging

QB/T 1130 Plastic angle tear performance test method

3 Terms and definitions

The following terms and definitions apply to this standard.

3.1

Cling wrap film for keeping fresh of food

It refers to, for the purpose of packaging food, a type of film which has the self-adhesive function and food preservation or cleaning function.

3.2

Polyethylene cling wrap film for keeping fresh of food

It refers to the cling wrap film for keeping fresh of food which is produced using the polyethylene (PE) as raw material.

3.3

Polyvinylchloride cling wrap film for keeping fresh of food

It refers to the cling wrap film for keeping fresh of food which is produced using the polyvinyl chloride (PVC) as raw material.

3.4

Polyvinyl dichloride cling wrap film for keeping fresh of food

Moisture transmission deviation / %	± 20
Self-cling (shear peeling strength) / (N/cm ²)	≥ 0.5
Open-wrapping	The sample shall be totally opened in 5 s.
Anti-fogging	Under the test conditions, the surface of the wrap film shall be free from water droplet attachment OR otherwise there is only local small droplet attachment. It is not allowed to have large area of water droplet to attach to the surface of the wrap film.

6.6 Hygienic performance

The hygienic performance of the polyethylene cling wrap film for keeping fresh of food shall be consistent with the provisions of GB 9687.

The hygienic performance of the polyvinylchloride cling wrap film for keeping fresh of food shall be consistent with the provisions of GB 9681.

The hygienic performance of the polyvinyl dichloride cling wrap film for keeping fresh of food shall be consistent with the provisions on hygienic performance of GB/T 17030.

The hygienic performance of multilayer extrusion cling wrap film for keeping fresh of food shall be in accordance with the hygienic standard of the corresponding item in contact with food, AND during the test, the plastic film in contact with food is used for the hygienic performance test.

The wrap films of other materials shall comply with the provisions of the corresponding material standard on hygienic performance.

7 Test method

7.1 Sample state conditioning and test environment

PERFORM test in accordance with the standard environment 23 °C ± 2 °C in GB/T 2918. AND the state conditioning time shall be more than 4 h.

7.2 Size and mass deviation

7.2.1 Thickness

MAKE measurement in accordance with the provisions of GB/T 6672; MAKE 10 measurements uniformly along the width direction of the plastic wrap film; USE the formula (1) to calculate the thickness limit deviation.

$$\Delta t = t_{\min \text{ or } \max} - t_0 \dots\dots\dots (1)$$

Where:

$T_{\min \text{ or } \max}$ - Measured maximum or minimum thickness, in millimeters (mm);

Where:

H - Measured moisture transmission, in grams per square meter • 24 hours
[g / (m² • 24h)];

H₀ - Nominal moisture transmission, in grams per square meter • 24 hours
[g / (m² • 24h)];

ΔH - Moisture transmission deviation, %.

7.7 Light transmittance and haze

PERFORM test in accordance with the provisions of GB/T 2410.

7.8 Self-cling (shear peeling strength)

7.8.1 Preparation of sample

CUT 10 pieces of samples which are 50 mm in length and 25 mm in width; USE 2 pieces as a group; MAKE the cling side of the sample opposite to each other along the length direction; MAKE the head overlap the tail, AND the overlapping length is 15 mm and width is 25 mm; PAVE the sample on a smooth plane; USE a rubber roller (diameter 40 mm, length 100 mm, the mass 300 g) to make repeated rolling for 3 times at the sample overlapping part, to remove the air from between the two layers of wrap films at the overlapping part. PLACE the prepared sample at the test environment conditions for 20 min; PERFORM test.

7.8.2 Test methods

STRETCH each group of samples on the tensile machine; MEASURE the force required for the separation of the two samples. TAKE the arithmetic mean of the 5 groups of samples as the result. The test equipment shall comply with the provisions of GB/T 1040.3; AND the tensile speed is 250 mm/min ± 50 mm/min.

USE the formula (7) to calculate the self-cling (shear peeling strength):

$$T = \frac{P}{a \times b} \dots\dots\dots (7)$$

Where:

T – Self-cling (shear peeling strength), in newton per square centimeter (N/cm²);

P - Force required for sample separation, in newton (N);

b - Overlap width, in centimeters (cm);

a - Overlap length, in centimeters (cm).

7.11 Hygienic performance

When the material is polyethylene, PERFORM test in accordance with GB/T 5009.60.

When the material is polyvinylchloride, PERFORM test in accordance with GB/T 5009.67.

When the material is polyvinylidene chloride, PERFORM test in accordance with GB/T 17030.

The plastic wrap films of other materials will be tested in accordance with the analysis method of the hygienic standard for the corresponding material finished product; OR otherwise refer to GB/T 5009.60 if it is not available.

8 Inspection rules

8.1 Batching

Products are accepted in batches. As for the products continuously produced by the raw materials of same designation, same specification, and same formula, a batch is not more than 10000 rolls.

8.2 Inspection classification

8.2.1 Exit-factory inspection

The exit-factory inspection items include the appearance, size, tensile strength, elongation at break, and self-cling.

8.2.2 Type inspection

Type inspection items are all items in the technical requirements. AND such inspection shall be performed at least once a year.

8.3 Sampling plan

8.3.1 Size deviation and appearance

USE the secondary normal sampling plan of GB/T 2828.1. The inspection level (IL) is the general inspection level II, the acceptance quality level (AQL) is 6.5, AND the sample and number of determination groups are as detailed in Table 6. Each roll is used as a sample unit.

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