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NATIONAL STANDARD OF THE
PEOPLE'S REPUBLIC OF CHINA

ICS 83.140.01

CCS Y 28

GB/T 10457-2021

Replacing GB/T 10457-2009

**General requirement of plastic self-cling wrap film for
keeping food fresh**

食品用塑料自粘保鲜膜质量通则

Issued on: October 11, 2021

Implemented on: May 01, 2022

Issued by: State Administration for Market Regulation;

Standardization Administration of the People's Republic of China.

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General requirement of plastic self-cling wrap film for keeping food fresh

1 Scope

This Standard specifies the terms and definitions, product classification, requirements, test methods, inspection rules, packaging signs, packaging, transportation and storage of plastic self-cling wrap film for food.

This Standard applies to plastic self-cling wrap film for food (hereinafter referred to as the wrap film) that takes polyethylene (PE), polyvinyl chloride (PVC), polyvinylidene chloride (PVDC), ethylene-vinyl acetate copolymer (EVA), polybutylene terephthalate-adipate (PBAT) and other resins as the main raw material, is produced by single-layer extrusion or multi-layer co-extrusion process.

2 Normative references

The following referenced documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

GB/T 1037-1988, *Test method for water vapor transmission of plastic film and sheet. Cup method*

GB/T 1038-2000, *Plastics - Film and Sheeting - Determination of Gas Transmission - Differential-pressure Method*

GB/T 1040.3-2006, *Plastics - Determination of Tensile Properties - Part 3: Test Conditions for Films and Sheets*

GB/T 2410-2008, *Determination of the luminous transmittance and haze of transparent plastics*

GB/T 2828.1-2012, *Sampling procedures for inspection by attribute - Part 1: Sampling schemes indexed by acceptance quality limit (AQL) for lot-by-lot inspection*

GB/T 2918-2018, *Plastics - Standard atmospheres for conditioning and testing*

GB/T 6672-2001, *Plastics film and sheeting - Determination of thickness by mechanical scanning*

GB/T 6673-2001, *Determination of Length and Width of Plastics Film and Sheeting*

QB/T 1130-1991, *Plastics Angle Tear Performance Test Method*

3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

3.1 self-cling wrap film for keeping food fresh

The film that has self-adhesive and food preservation or cleaning function when it is used for packaging food.

3.2 self-cling

The ability to stick that the self-cling wrap film has.

NOTE: It is quantitatively expressed as shear peel strength.

3.3 open-wrapping

The ease with which the wrap film is drawn out of the film roll during use.

3.4 anti-fogging

The ability of the wrap film to prevent water droplets or mist from forming on the surface.

4 Classification

According to the processing technology of wrap film, wrap film can be divided into single-layer self-cling wrap film and multi-layer co-extruded self-cling wrap film.

According to the material of the wrap film, the single-layer wrap film can be divided into polyethylene self-cling wrap film, polyvinyl chloride self-cling wrap film, polyvinylidene chloride self-cling wrap film, polybutylene terephthalate-adipate glycol ester self-cling wrap.

5 Requirements

5.1 Size deviation

5.1.1 Thickness deviation

The thickness deviation of the wrap film shall meet the requirements in Table 1.

H_0 - Nominal moisture permeability, in grams per square meter 24 hours [$\text{g}/(\text{m}^2 \cdot 24\text{h})$];

ΔH - Moisture permeability deviation.

6.4.5 Right angle tear strength

Test according to QB/T 1130-1991. The sample is a single-layer film.

6.4.6 Self-cling (shear peel strength)

6.4.6.1 Specimen preparation

Cut ten specimens of 50mm long and 25mm wide. Two pieces is a set. Make each set of specimens overlap end to end. The length of the overlapping joint is 15mm. The width is 25mm. Lay the specimen on a smooth surface. Use a rubber roller (diameter is 40mm, length is 100mm, mass is 300g) to reciprocate 3 times on the overlapping part of the specimen. Make sure that no air remains between the two layers of wrap film at the overlap. Place the prepared specimen in the test environment for 20min. Then test.

6.4.6.2 Test method

Stretch each set of specimens on a tensile machine. Measure the force required to separate two specimens. The result is the arithmetic mean of five sets of specimens. The test equipment shall comply with the provisions of GB/T 1040.3-2006. The stretching speed is $250\text{mm}/\text{min} \pm 50\text{mm}/\text{min}$.

Calculate self-cling (shear peel strength) according to formula (7):

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

Where,

T - Self-cling (shear peel strength), in Newtons per square centimeter (N/cm^2);

P - The force required to separate the specimen, in Newtons (N);

b - The overlapping width, in centimeters (cm);

a - The overlapping length, in centimeters (cm).

6.4.7 Determination of open-wrapping

6.4.7.1 Preparation of specimen

Cut out six specimens with a width of 50mm and a length of 150mm. Two pieces is one set. Adhesive surfaces are laminated to each other oppositely. The laminated length is 100mm. The processing and treatment methods are the same as 6.4.6.1.

7.2.1 Exit-factory inspection

The factory inspection items are appearance, size, tensile strength, nominal strain at break, and self-cling.

7.2.2 Type inspection

Type inspection items are all the items specified in Chapter 5. Type inspection shall be carried out when one of the following conditions exists:

- a) When it is the first production;
- b) When the variety of raw materials, product structure, production process or equipment is changed;
- c) When there is a big difference between the exit-factory inspection results and the last type inspection results;
- d) When the production is stopped for three months or more, when the production is resumed;
- e) When the production continues for one year;
- f) When required by the relevant quality supervision departments of the country.

7.3 Sampling plan

7.3.1 Thickness deviation, width deviation, appearance

Adopt the special inspection level S-4 specified in GB/T 2828.1-2012 and the secondary sampling plan of normal inspection, as shown in Table 5. The sample unit is volume.

8 Packaging signs, packaging, transportation, storage

8.1 Packaging signs

The boxes and bags shall be marked with at least:

- a) Product name;
- b) Product quantity, specification (nominal thickness, nominal width, nominal length);
- c) Manufacturer's name;
- d) Production date and effective use period;
- e) Product material and type;
- f) Reference to this document;
- g) Words like "for food contact" and "for food";
- h) Use warnings or other instructions.

Non-PVDC wrap film shall be marked with the nominal values of oxygen permeation [unit is $\text{cm}^3/(\text{m}^2 \cdot 24\text{h} \cdot 0.1\text{MPa})$], carbon dioxide permeation [unit is $\text{cm}^3/(\text{m}^2 \cdot 24\text{h} \cdot 0.1\text{MPa})$] and moisture permeability [unit is $\text{g}/(\text{m}^2 \cdot 24\text{h})$].

For all kinds of additives with a mass content of more than 1%, their specific names or chemical structural formulas shall be marked.

If the wrap film is declared to be microwaveable, it shall be marked with "microwaveable", the heating method and the maximum temperature resistance.

8.2 Packaging

8.2.1 Inner packaging

Pack in airtight film bags or carton with rack.

8.2.2 Outer packaging

The product is packaged in a carton or other suitable packaging.

8.3 Transportation

Pay attention to moisture and sun protection during product transportation. In the process of loading and unloading, it shall be lifted and placed lightly, without heavy pressure.

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