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National Standard

of the People's Republic of China

GB/T 10004-2008
Replacing GB/T 10004-1998, GB/T 10005-1998

Plastic Laminated Films and Pouches for Packaging - Dry Lamination and Extrusion Lamination

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Jointly issued by: General Administration of Quality Supervision, Inspection and Quarantine;
Standardization Administration Committee of PRC.

Table of Contents

Foreword

This standard refers to JIS Z 1707-1997 "General Provisions on the Plastic Film for Food Packaging".

This standard replaces GB/T 10004-1998 "*Laminated Retort Film and Pouch*" and GB/T 10005-1998 "*Biaxially Oriented Polypropylene Laminated Polyethylene (BOPP/LDPE) Films and Pouches*".

Compared with GB/T 10004-1998 and GB/T 10005-1998, main technical changes of this standard are as follows:

— Aluminum foil structure is deleted in this standard. It is classified as ordinary grade, boiling grade, semi-high temperature cooking grade, and high temperature cooking grade according to product application temperature;

— Peel force is re-established according to product classification;

— Friction factor is modified into (inner face/steel plate, static/kinetic) ≤ 0.4;

— For heat resistance, it further clarifies the sample size, cooking condition and operation steps;

— For solvent residual amount, it is modified as the total amount ≤ 5.0mg/m^2. In which, the benzene solvent is not detected;

— ADD puncture strength, luminous transmittance, haze, and surface resistivity. The specific indexes shall be negotiated by the supplier and purchaser;

— For the hygienic index, the testing method of sensory indexes is specified;

— The index requirements of the specific chemical substances are added;

— The hygienic index requirements of the raw material and additive are added;

— The maximal quantity of group-batch is modified.

This standard was proposed by China National Light Industry Council.

This standard shall be under the jurisdiction of the National Technical Committee on Plastic Products of Standardization Administration of China.

The drafting organizations of this standard: Foshan Plastics Group Co., Ltd., Shanghai People's Plastic Printing Factory, Zhejiang Great Southeast Packaging Co, Ltd., and Shanghai Shenhua Scientific and Technological Co, Ltd.

Chief drafting Staffs of this standard: Huang Jianhao, Shi Yazheng, Chen Conggong, Fang Daguan, Cai Mingyu, Zhang Lieyin, and Liang Wanxia.

The previous editions replaced by this standard are:

— GB/T 10004-1998,

— GB/T 10005-1998.

Plastic Laminated Films and Pouches for Packaging – Dry Lamination and Extrusion Lamination

1 Scope

This standard specifies the classification, requirements, test methods, inspection rules, marks, packaging, transportation and storage of the laminated films and pouches for packaging which is produced by dry lamination and extrusion lamination process of different plastic materials.

This standard is applicable to the plastic, plastic laminated films and pouches used for food and non-food packaging.

This standard is not applicable to the plastic films and pouches which are made of plastic material and paper base (or aluminum foil). It is also not applicable to the plastic films and pouches which are made of wet lamination and direct coextru-lamination process.

2 Normative References

The following standard contains provisions which, through the reference in the following text, constitute provisions of this standard. For dated reference, the subsequent amendments (excluding corrigendum) or revisions of these publications do not apply. However, the parties who enter into agreement based on this standard are encouraged to investigate the possibility of applying the latest editions of the standards indicated below. For undated references, the latest edition of the normative document referred to apply.

GB/T 191 Packaging - Pictorial Marking for Handling of Goods (GB/T 191-2008, ISO 780: 1997, MOD)

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 (ISO 527-3:1995, IDT)

GB/T 1410-2006 Methods of Test for Volume Resistivity and Surface Resistivity of Solid Electrical Insulating Materials (IEC 60093: 1980, IDT)

GB/T 2410-2008 Determination of the Luminous Transmittance and Haze of Transparent Plastics

GB/T 2828.1-2003 Sampling Procedures for Inspection by Attribute – Part 1: Sampling Schemes Indexed by Acceptance Quality Limit (AQL) for Lot-by-lot Inspection (ISO 2859-1:1999, IDT)

GB/T 2918-1998 Plastics - Standard Atmospheres for Conditioning and Testing (idt ISO 291:1997)

GB/T 5009.60 Method for Analysis of Hygienic Standard of Products of Polyethylene,

Polystyrene and Polypropyrene for Food Packaging

GB/T 5009.119 Determination of Diaminomethylbezen of Complex for Food Packaging Material

GB/T 6672-2001 Plastics Film and Sheeting - Determination of Thickness by Mechanical Scanning (idt ISO 4593:1993)

GB/T 6673-2001 Determination of Length and Width of Plastics Film and Sheeting (idt ISO 4592: 1992)

GB/T 7707 The Intaglio Prints for Decorating

GB/T 8808-1988 Test Method for Peel Force of Flexible Laminated Plastics

GB/T 8809-1988 Test Method for Pendulum Impact Resistance of Plastic Films

GB 9683 Hygienic Standard for Composite Laminated Food Packaging Bag

GB 9685 Hygienic Standards for Uses of Additives in Food Containers and Packaging Materials

GB 9691 Hygienic Standard for Polyethylene Resin used as Food Packaging Material

GB 9693 Hygienic Standard for Polypropyrene Resin used as Food Packaging Material

GB/T 10006-1988 Plastics; Film and Sheeting-Determination of the Coefficients of Friction

GB 12904-2003 Bar Code for Commodity

GB 13114 Hygienic Standard for Polyethylene Terephthalate Resin Used as Food Containers and Packaging Materials

GB/T 14257-2002 Location of Bar Code Symbol for Commodity

GB/T 14258-2003 Information Technology - Automatic Identification and Data Capture Techniques - Verification of Print Quality of Bar Code Symbols (ISO/IEC 15416:2000, MOD)

GB 15204 Hygienic Standard of Vinylidene Chloride - Vinyl Chloride Copolymer Resins for Food Containers and Packaging Material

GB 16331 Hygienic Standard of Nylon 6 Resins for Food Packaging Material

GB/T 17497-1998 Decorative Products by Flexo Printing

GB/T 18348-2008 Verification of Print Quality of Bar Code for Commodity

GB/Z 21274-2007 Determination of Regulated Substances (Lead Mercury and Cadmium) in Electrical and Electronic Equipment

GB/Z 21275-2007 Determination of Regulated Substance (Hexavalent Chromium) in Electrical and Electronic Equipment

GB/Z 21276-2007 Determination of Restricted Substances - Polybrominated Biphenyls and Polybrominated Diphenyl ethers in Electrical and Electronic Equipment

QB/T 1130-1991 Test Method for the Right-angled Tearing of Plastic

QB/T 2358-1998 Test Method for the Heat Sealing Strength of Plastic-film Packaging Bag

3 Classifications

3.1 Functional classification

According to their usage purpose, the products are classified as food package and non-food package.

3.2 Service-temperature classification

According to their usage temperature, the products are classified as ordinary grade, boiling grade, semi-high temperature cooking grade and high temperature cooking grade.

3.2.1 Ordinary grade

The product usage temperature is less than 80°C (including 80°C).

3.2.2 Boiling grade

The product usage temperature is between 80°C ~ 100°C (including 100°C).

3.2.3 Semi-high temperature cooking grade

The product usage temperature is between 100°C ~ 121°C (including 121°C).

3.2.4 High temperature cooking grade

The product usage temperature is between 121°C ~ 145°C (including 145°C).

4 Hygienic Indexes of Raw Materials and Additives

4.1 General provisions

For the laminated films and pouches for food package and the package of non-food with hygiene requirements, the raw materials shall meet the food-package hygienic standard of the corresponding raw materials. The additive shall meet the hygienic standard of additive used for food container and packing material.

4.2 Polyethylene resin

The hygienic index of polyethylene resin shall meet the provisions in GB 9691.

4.3 Acrylic resin

The hygienic index of acrylic resin shall meet the provisions in GB 9693.

4.4 Polyethylene terephthalate resin

The hygienic index of polyethylene terephthalate resin shall meet the provisions in GB 13114.

4.5 Polyamide resin

The hygienic index of polyamide resin shall meet the provisions in GB 16331.

4.6 Vinylidene Chloride-Vinyl Chloride Copolymer Resins

The hygienic index of Vinylidene Chloride-Vinyl Chloride Copolymer Resins shall meet the provisions in GB 15204.

4.7 Additives

It shall adopt hydrogen ion detection-type gas chromatograph.

6.6. 17.2 Test conditions

Nitrogen is used as the carrier gas. Column temperature is determined according to the to-be-measured solvent's boiling point and the separating effect of the instrument. Generally it is controlled at 50°C ~ 90°C. The temperature at injection and detection outlets is controlled at 90°C ~ 200°C.

6.6. 17.3 Test steps

6.6. 17.3.1 The preparation of standard solvent samples

Standard solvent samples are prepared according to the solvent types used in actual production. In order to improve the precision of solvent standard curve, DMF is used as the thinner to prepare mixed standard samples. Use micro-liter syringes to take 0.5 μL, 1 μL, 2 μL, 3 μL and 4 μL of samples respectively. Convert into the mass of each standard solvent.

6.6.17.3.2 Standard curve measurement

The mixed standard samples are respectively injected into the clean and dry triangular flasks (about 500 mL) which are properly sealed with silastic plugs. Place the triangular flasks in a (80±2) °C drying cabinet for 30 minutes. Use 5 mL syringe to take 1 mL of gas from the triangular flask. Rapidly inject into the chromatogram for measurement. Then standard curve is drawn out according to the peak area and the respectively corresponding sample mass.

For instrument with headspace device, refer to above condition to handle and inject the sample. The sample injection amount of mixed standard sample may be appropriately selected according to headspace bottle volume and mixed standard sample concentration.

6.6.17.3.3 To-be-measured sample preparation

Cut 0.2 m^2 to-be-measured samples. And rapidly cut the samples into 10 mm× 30 mm fragments. Place into a clean bottle which has been preheated under 80°C. Seal it rapidly. Place in a (80±2)°C drying cabinet for 30 minutes.

6.6.17.3.4 Sample testing

Use 5 mL syringe to take 1 mL of gas from bottle. Rapidly inject into the chromatogram for measurement. Find out the corresponding amount from the standard curve according to sample peak area.

For instrument with headspace device, it may select appropriate to-be-measured sample area according to headspace bottle volume. And refer to above condition to handle and inject the sample.

6.6.17.4 Results calculation

Solvent residual amount is calculated according to formula (2):

$$W = \frac{P}{S} \times \frac{V_1}{V_2} \qquad (2)$$

Where,

W — Solvent residual amount (mg/m^2);

P — The corresponding amount (mg);

marking method shall meet the provisions in GB/T 191.

8.4 Storage

The products shall be stored in clean, dry and ventilated storage house with suitable temperature. Avoid the direct sunlight. The products shall be at least 1m away from heat source and piled up properly. The storage duration is one year, from the production date.

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