

ICS 83.080.20

CCS G32



**NATIONAL STANDARD OF THE
PEOPLE'S REPUBLIC OF CHINA**

GB/T 12670-2008

Replacing GB 12670-1990

Polypropylene (PP) resin

聚丙烯(PP)树脂

Issued on: February 26, 2008

Implemented on: August 1, 2008

**Issued by: General Administration of Quality Supervision, Inspection and
Quarantine of the People's Republic of China;
Standardization Administration of China**

Table of Contents

1 Scope
2 Normative References
3 Classification and Naming
4 General Requirements...
5 Requirements...
6 Test Methods...
6.2.3 Preparation of blown film sample
6.2.4 Preparation of casting film sample
6.3 Sample Conditioning and Standard Environment of Test
7 Inspection Rules
7.3 Determination Rules and Re-inspection Rules
8 Marking
9 Packaging, Transportation and Storage

1 Scope

GB/T 12670-2008 is the Chinese national standard on polypropylene (pp) resin, in the field of rubber and plastic industries. The /T suffix marks it as a recommended standard: it is not compulsory by itself, but it becomes binding as soon as a contract, a tender or a customer specification calls it up - which in practice is how most foreign buyers meet it. It was issued on 26 February 2008 by the General Administration of Quality Supervision, Inspection and Quarantine of the People's Republic of China; Standardization Administration of China, and has been in force since 1 August 2008. Classification: ICS 83.080.20, CCS G32. This page is published from the official record of the standard held by the Chinese standards administration: the identification, the dates, the classification and the issuing body are taken from there. The clause text, the tables and the numeric limits are in the document itself, which is delivered complete in English translation.

This Standard stipulates the classification, naming, requirements, test methods, inspection rules, marking, packaging, transportation and storage of polypropylene (PP) resin. This Standard is applicable to additive-containing granular propylene homopolymer (PP-H), propylene impact copolymer (PP-B) or propylene random copolymer (PP-R) prepared by the polymerization of propylene or propylene and ethylene under the effect of catalyst. This Standard is inapplicable to coloring, filling, reinforcement and blending of polypropylene resin and masterbatch material.

2 Normative References

Through the reference in this Standard, clauses of the following documents become clauses of this Standard. In terms of references with a specific date, all the subsequent modification sheets (excluding the corrected content) or the revised editions are inapplicable to this Standard. However, all parties that reach an agreement in accordance with this Standard are encouraged to explore the possibility of adopting the latest version of these documents. In terms of references without a specific date, the latest version is applicable to this Standard.

GB/T 1040.2-2006 Plastics - Determination of Tensile Properties - Part 2: Test Conditions for Molding and Extrusion Plastics (ISO 527-2:1993, IDT)

GB/T 1250-1989 Rules for Expression and Judgement of Limiting Values

GB/T 1634.2-2004 Plastics - Determination of Temperature of Deflection under Load - Part 2: Plastics, Ebonite and Long-fiber-reinforced Composites (ISO 75-2:2003, IDT)

GB/T 2410-1980 Determination of the Luminous Transmittance and Haze of Transparent Plastics

GB/T 2412-1980 Polypropylene - Method of Determination of Normal Indices

GB/T 2546.1-2006 Plastics - Polypropylene (PP) Molding and Extrusion Materials - Part 1: Designation System and Basis for Specifications (ISO 1873-1:1995, MOD)

GB/T 2546.2-2003 Plastics - Polypropylene (PP) Molding and Extrusion Materials - Part 2: Preparation of Test Specimens and Determination of Properties (ISO 1873- 2:1997, MOD)

GB/T 2547-1981 Plastic Resins; Sampling

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

GB/T 3682-2000 Determination of the Melt Mass-flow Rate (MFR) and the Melt Volume-flow Rate (MVR) of Thermoplastics (idt ISO 1133:1997)

GB/T 6595-1986 Test Method for Fish Eye Count of Polypropylene Resin

GB/T 9341-2000 Plastics - Determination of Flexural Properties (idt ISO 178:1993)

GB/T 9342-1988 Plastics - Determination of Hardness by the Ball Indentation Method (eqv ISO 2039-2:1981)

3 Classification and Naming

The classification and naming of polypropylene resin shall comply with the stipulations in GB/T 2546.1-2006. For the purpose of naming, each designation of polypropylene resin

shall have a nominal value of tensile elastic modulus and Charpy impact strength of simply supported beam.

6.2.2 Preparation of compression molding test piece The preparation of polypropylene resin compression molding test piece is shown in the stipulations in

3.3 in GB/T 2546.2-2003, for example, compression molding test piece for the determination of electrical performance.

6.2.3 Preparation of blown film sample

6.2.3.1 Blown film machine at least shall be possessed with the following basic conditions:

- a) Standard screw, screw's length to diameter ratio shall be not less than 25; recommended screw diameter is 40 mm;
- b) Above four temperature control points.

6.2.3.2 The preparation of blown film sample shall stipulate the following process conditions:

- a) Melt temperature: may be adjusted in accordance with different MFRs of materials;
- b) Height of cooling line;
- c) Blow-up ratio.

6.2.3.3 The thickness of blown film sample is:

0.030 mm $\pm$

0.005 mm.

6.2.4 Preparation of casting film sample

6.2.4.1 Casting film machine at least shall be possessed with the following basic conditions:

- a) Cooling roll temperature shall be controllable;
- b) Screw's length to diameter ratio shall be not less than 25.

6.2.4.2 The preparation of casting film sample at least shall stipulate the following process conditions:

- a) Melt temperature: may be adjusted in accordance with different MFRs of materials;
- b) Cooling temperature.

6.2.4.3 The thickness of casting film sample:

0.030 mm $\pm$

0.005 mm.

6.3 Sample Conditioning and Standard Environment of Test

6.10 Bending Test Sample is 80 mm 10 mm 4 mm injection molding strip sample prepared in accordance with the stipulations in 6.2.1. Sample conditioning shall comply with the stipulations in 6.3. The test shall be conducted in accordance with the stipulations in GB/T 9341-2000. Test speed is 2 mm/min.

6.11 Charpy Impact Strength of Simply Supported Beam Sample is 80 mm 10 mm 4 mm injection molding strip sample prepared in accordance with the stipulations in 6.2.1. Within 1 h ~ 4 h after the injection molding, strip sample shall receive notch machining; the type of notch is: Type-A in ISO 179- 1:2000. After the notching machining, the strip sample is sample for the Charpy impact test of simply supported beam. Sample conditioning shall comply with the stipulations in 6.3. The test shall be conducted in accordance with the stipulations in ISO 179-1:2000. In low-temperature test, post-conditioning sample shall be placed in the environment of -20 °C for at least 1 h; each impact shall be completed within 10 s.

6.12 Deformation Temperature under Load Sample is 80 mm 10 mm 4 mm injection molding strip sample prepared in accordance with 6.2.1. Sample conditioning shall comply with the stipulations in 6.3. The test shall be conducted in accordance with Method B (load: 0.45 MPa) in GB/T 1634.2-2004. During the test, the initial temperature of the heating device shall be lower than 27 °C. Heating rate is 120 °C/h $\pm$ 10 °C/h.

6.13 Rockwell Hardness Sample may be injection molding sample (recommended size: 50 mm 50 mm 6 mm) prepared in accordance with 6.2.1. Sample conditioning shall comply with the stipulations in 6.3. The test shall be conducted in accordance with the stipulations in GB/T 9342-1988.

6.14 Fish Eye In accordance with 6.2.3, prepare blown film sample; or, in accordance with 6.2.4, prepare casting film sample. Sample conditioning shall be conducted in accordance with the stipulations in 6.3. At a distance of more than 1 m from the film end, start cutting sample. Sample sizes shall comply with the stipulations in GB/T 6595-1986. The test shall be conducted in accordance with the stipulations in GB/T 6595-1986.

6.15 Haze In accordance with 6.2.3, prepare blown film sample; or, in accordance with 6.2.4, prepare casting film sample. Sample conditioning shall be conducted in accordance with 6.3. At a distance of more than 1 m from the film end, start cutting sample. Sample sizes shall comply with the stipulations in GB/T 2410-1980. The test shall be conducted in accordance with the stipulations in GB/T 2410-1980.

6.16 Related Combustibility, Oxygen Index and Electrical Performance The stipulations regarding combustibility, oxygen index and electrical performance of polypropylene resin are shown in Table 3 of Chapter 5, GB/T 2546.2-2003.