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Acrylonitrile-butadiene-styrene (ABS) resin

丙烯腈-丁二烯-苯乙烯（ABS）树脂

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Table of Contents

Foreword.....	3
1 Scope	4
2 Normative references.....	4
3 Classification and naming	5
4 Requirements.....	6
5 Test method	6
6 Inspection rules.....	8
7 Signs.....	9
8 Packaging, transportation, storage.....	9
Appendix A (Informative) Comparison of national standard naming and enterprise designation of ABS resin products	11

Acrylonitrile-butadiene-styrene (ABS) resin

1 Scope

This standard specifies the classification, nomenclature, requirements, test methods, inspection rules, marking, packaging, transportation, storage of acrylonitrile-butadiene-styrene (ABS) resin (hereinafter referred to as ABS resin).

This standard is applicable to ABS resin, which is composed of styrene and acrylonitrile copolymer as continuous phase AND polybutadiene and other components as dispersed phase.

This standard does not apply to flame retardant, reinforced or other modified ABS resins.

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 1040.2-2006 Plastics - Determination of tensile properties - Part 2: Test conditions for moulding and extrusion plastics (ISO 527-2:1993, IDT)

GB/T 1043.1-2008 Plastics - Determination of Charpy impact properties - Part 1: Non - instrumented impact test

GB/T 1633-2000 Plastics - Thermoplastic materials--Determination of Vicat softening temperature (VST) (idt ISO 306:1994)

GB/T 2547-2008 Plastic resins - Sampling

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

GB/T 3398.2-2008 Plastics - Determination of hardness - Part 2: Rockwell hardness (ISO 2039-2:1987, IDT)

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)

of $23\text{ }^{\circ}\text{C} \pm 2\text{ }^{\circ}\text{C}$, a relative humidity of $50\% \pm 10\%$, for a duration of at least 16 hours.

All tests shall be carried out, in the standard test environment, which is specified in GB/T 2918-1998, at a temperature of $23\text{ }^{\circ}\text{C} \pm 2\text{ }^{\circ}\text{C}$, a relative humidity of $50\% \pm 10\%$.

5.4 Appearance of particles

Carry out in accordance with the provisions of SH/T 1541-2006.

5.5 Melt's mass flow rate (MFR)

Carry out according to the provisions of method A in GB/T 3682-2000. The test conditions are U (temperature: $220\text{ }^{\circ}\text{C}$, load: 10 kg).

5.6 Tensile properties

The specimen is 1A-type specimen, which is prepared in accordance with 5.2.

The state conditioning of the specimen shall be carried out, according to the provisions of 5.3.

The test is carried out in accordance with the provisions of GB/T 1040.2-2006. When testing the tensile modulus of elasticity, the test speed is 1 mm/min. When testing tensile yield stress, the test speed is 50 mm/min.

5.7 Bending properties

The specimen is a long specimen of $80\text{ mm} \times 10\text{ mm} \times 4\text{ mm}$, which is prepared according to 5.2.

The state conditioning of the specimen shall be carried out, according to the provisions of 5.3.

The test is carried out, according to the provisions of GB/T 9341-2008, at the test speed of 2 mm/min.

5.8 Notched impact strength of simply supported beams

The specimen is a long specimen of $80\text{ mm} \times 10\text{ mm} \times 4\text{ mm}$, which is prepared according to 5.2. The specimen strip shall be notched, within 1 h ~ 4 h after injection molding. The notch is the type-A notch in GB/T 1043.1-2008.

The state conditioning of the specimen shall be carried out, according to the provisions of 5.3.

The test is carried out, according to the provisions of GB/T 1043.1-2008.

5.9 Vicat softening temperature

The specimen is a long specimen of 80 mm × 10 mm × 4 mm, which is prepared according to 5.2.

The state conditioning of the specimen shall be carried out, according to the provisions of 5.3.

The test is carried out, according to the provisions of the B₅₀ method in GB/T 1633-2000 (using a force of 50 N and a heating rate of 50 °C/h).

5.10 Rockwell hardness

The specimen is an injection-molded specimen, which has a recommended size of 50 mm × 50 mm × 6 mm AND is prepared in accordance with 5.2.

The state conditioning of the specimen shall be carried out, according to the provisions of 5.3.

The test is carried out, according to the provisions of GB/T 3398.2-2008.

6 Inspection rules

6.1 Inspection classification and inspection items

The tensile modulus of elasticity only needs to be checked when the designation of ABS resin product is determined. In addition to this item, the inspection of ABS resin products is divided into two categories: type inspection and exit-factory inspection.

All items in Chapter 4 are type inspection items.

The exit-factory inspection of various ABS resins shall include particle appearance, melt's mass flow rate, tensile yield stress, simply supported beam impact strength, flexural strength, Vicat softening temperature, Rockwell hardness.

6.2 Group-batching rules and sampling plan

6.2.1 Group-batching rules

ABS resin is batched, by the same designation of products, which are produced on the same production line, by the same raw materials, through the same process. The manufacturer can also batch the products, according to a certain production cycle or storage silo.

Products are inspected and accepted in batches.

6.2.2 Sampling plan

Production inspection can be sampled at the sampling port of the silo, OR a specific

sampling plan can be determined, according to the actual situation, such as the production cycle.

The sampling of the packaged products shall be carried out, in accordance with the provisions of GB/T 2547-2008.

6.3 Judgment rules and re-inspection rules

6.3.1 Judgment rules

ABS resin shall be inspected by the quality inspection department of the manufacturer, in accordance with the test methods, which are specified in this standard. The quality of the product shall be judged, according to the inspection results and the technical requirements in this standard; meanwhile a certificate shall be provided.

When the product leaves the factory, each batch of products shall be accompanied by a product quality inspection certificate. The certificate of conformity shall indicate the product name, designation, batch number, implemented standard; meanwhile it shall be stamped with a special seal for quality inspection and an inspector seal.

6.3.2 Re-inspection rules

If any indicator of the inspection result does not meet the requirements of this standard, the item can be re-inspected by re-sampling. The re-inspection results are used as the basis for the quality judgment of the batch of products.

7 Signs

There shall be obvious signs on the outer packaging bags of ABS resin products. The content of the sign may include: trademark, name and address of the manufacturer, standard number, product name, designation, production date, batch number, net content, etc.

8 Packaging, transportation, storage

8.1 Packaging

ABS resin can be used in composite plastic woven bags or other packaging forms. Packaging materials shall ensure no pollution and leakage, during transportation, stacking, storage.

The net content of each bag is 25 kg or other.

8.2 Transportation

ABS resin is non-hazardous. Sharp tools, such as iron hooks, shall not be used, during

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