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Plastics - Polyetheretherketone (PEEK) resin

塑料 聚醚醚酮（PEEK）树脂

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Plastics - Polyetheretherketone (PEEK) resin

1 Scope

This document specifies the product classification, technical requirements, test methods, inspection rules, marking, packaging, transportation, and storage of polyetheretherketone resin.

This document is applicable to polyetheretherketone resins that use hydroquinone and 4,4'-difluorobenzophenone as monomers and contain repeating units of one ketone bond and two ether bonds in the main chain structure.

This document does not apply to pigmented, filled, reinforced, blended polyetheretherketone resins.

2 Normative references

The contents of the following documents, through normative references in this text, constitute indispensable provisions of this document. Among them, for dated references, only the edition corresponding to that date applies to this document. For undated references, the latest edition (including all amendments) applies to this document.

GB/T 1033.1 Plastics - Methods for determining the density of non-cellular plastics - Part 1: Immersion method, liquid pycnometer method and titration method

GB/T 1040.1 Plastics - Determination of tensile properties - Part 1: General principles

GB/T 1040.2 Plastics - Determination of tensile properties - Part 2: Test conditions for moulding and extrusion plastics

GB/T 1634.2 Plastics - Determination of temperature of deflection under load - Part 2: Plastics and ebonite

GB/T 1843 Plastics - Determination of izod impact strength

GB/T 2547 Plastic resins - Sampling

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

GB/T 3682.1 Plastics - Determination of the melt mass-flow rate (MFR) and melt volume-flow rate (MVR) of thermoplastics - Part 1: Standard method

GB/T 8170 Rules of rounding off for numerical values and expression and judgement of limiting values

GB/T 9341 Plastics - Determination of flexural properties

GB/T 17037.1 Plastics - Injection moulding of test specimens of thermoplastic materials - Part 1: General principles, and moulding of multipurpose and bar test specimens

GB/T 19466.2 Plastics - Differential scanning calorimetry (DSC) - Part 2: Determination of glass transition temperature

GB/T 19466.3 Plastics - Differential scanning calorimetry (DSC) - Part 3: Determination of temperature and enthalpy of melting and crystallization

GB/T 25278 Plastics - Determination of the fluidity of plastics using capillary and slit-die rheometers

YY/T 0660 Standard Specification for Polyetheretherketone (PEEK) polymers for Surgical Implant Applications

ISO 23153-1 Plastics - Polyetheretherketone (PEEK) moulding and extrusion materials - Part 1: Designation system and basis for specifications

3 Terms and definitions

This document does not have terms and definitions that need to be defined.

4 Designation and specifications

The designation of products in this document is carried out in accordance with the provisions of ISO 23153-1.

Example: A polyetheretherketone resin is granular (G, see Table 1 for classification); has a melt viscosity of 410 Pa · s (A4, see Table 2 for classification). It is designated as:

rate is 1000 s^{-1}. The die length-to-diameter ratio L/D is 20 : 1.

6.6 Tensile yield stress

Carry out in accordance with the methods specified in GB/T 1040.1 and GB/T 1040.2. The test specimen is type 1A. The test speed is 50 mm/min.

6.7 Tensile modulus

Carry out in accordance with the methods specified in GB/T 1040.1 and GB/T 1040.2. The test specimen is type 1A. The test speed is 1 mm/min.

6.8 Flexural strength and flexural modulus

Carry out according to the method specified in GB/T 9341. The test speed is 2 mm/min.

6.9 Izod notched impact strength

Carry out in accordance with the method specified in GB/T 1843. The type of notch is type A.

6.10 Glass-transition temperature

The glass-transition temperature shall be carried out according to the regulations in GB/T 19466.2.

6.11 Melting peak temperature

The melting peak temperature shall be carried out according to the regulations in GB/T 19466.3.

6.12 Temperature of deflection under load

Carry out in accordance with the provisions in GB/T 1634.2. The bending load is 1.80 MPa; lay flat.

6.13 Density

Carry out in accordance with the provisions in GB/T 1033.1. Use the immersion method. The test sample shall be the specimen after injection moulding.

7 Inspection rules

7.1 Inspection classification

Product inspection is divided into two types: Type inspection and exit-factory inspection.

7.2 Inspection items

All items specified in Clause 5 are type inspection items. Type inspection shall be carried out in the following situations:

a) When new products are trial-formulated and identified;

b) After formal production, if the raw materials or processes have changed significantly, which may affect the product performance;

c) When the product device is overhauled and production is resumed;

d) When the exit-factory inspection results are significantly different from the last type inspection results;

e) Other situations that require type inspection.

The exit-factory inspection items of polyetheretherketone resin shall at least include fluidity and mechanical properties.

7.3 Rules for lot grouping

It shall take polyetheretherketone products of the same designation - produced on the same production line, with the same raw materials, and with the same process - as one lot. The production plant can also batch the products according to a certain production cycle or a storage bin. Products are inspected and accepted in lots.

7.4 Sampling plan

The manufacturer can, according to the actual situation such as the production cycle, determine the specific sampling plan.

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

7.5 Determination rules

The inspection shall be carried out in accordance with the test methods specified in this document. According to the inspection results and the requirements of this document, make a conformity determination on the product. Only when all item indicators meet the requirements, can it be determined as conformity.

7.6 Re-inspection rules

If a certain indicator in the inspection results does not meet the requirements of this document, it is possible to re-sample from this lot of products with double the number of sampling units AND re-inspect the item. The re-inspection results shall be used as

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