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

GB/T 46607.1-2025

**Plastics - Injection moulding of test specimens of thermosetting
powder moulding compounds (PMCs) - Part 1: General principles and
moulding of multipurpose test specimens**

**塑料 热固性粉末模塑料 (PMCs) 试样的制备 第1部分: 一般原理及多用途试样的
制备**

(English Translation)

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Foreword

This document complies with the provisions of GB/T 1.1-2020 "Standardization Work Guidelines Part 1: Structure and Drafting Rules of Standardization Documents".

Drafting.

This document is Part 1 of GB/T 46607 "Preparation of specimens for thermosetting powder molding compounds (PMCs)". GB/T 46607 the following sections have been released.

---Part 1: General Principles and Preparation of Versatile Samples;

---Part 2: Small Board.

This document is modified to adopt ISO 10724-1:1998 "Preparation of specimens for thermosetting powder molding compounds (PMCs) - Part 1.

General principles and preparation of multi-purpose samples.

This document has undergone the following structural adjustments compared to ISO 10724-1:1998.

- a) Appendix A corresponds to Appendix C in ISO 10724-1:1998;
- b) Appendix B corresponds to Appendix A in ISO 10724-1:1998;
- c) Appendix C corresponds to Appendix B in ISO 10724-1:1998.

The technical differences between this document and ISO 10724-1:1998, and the reasons therefor, are as follows.

- a) ISO 472 (see Chapter 3) has been replaced with the normatively referenced GB/T 2035 to adapt to my country's technical conditions and add [further details needed].

Operability;

- b) Specific category names for relevant materials have been added (see 5.1, 5.2.1).

The following editorial changes have been made to this document.

a) Footnotes 1) and 2) of Chapter 2 and footnote 3) of Appendix D have been deleted.

b) ISO 10350-1 has been replaced by GB/T 19467.1 (an informative reference), and ISO 11403-1 has been replaced by GB/T 37188.1.

GB/T 37188.2 replaces ISO 11403-2, and GB/T 37188.3 replaces ISO 11403-3 (see 4.1.1);

c) ISO 2577 has been replaced by GB/T 39818 (see 4.1.4), which is cited in the informational reference.

d) ISO 10724-2 has been replaced by the informative standard GB/T 46607.2-2025 (see 4.1.4, Appendix A);

e) ISO 294-1 has been replaced by GB/T 17037.1 (informative reference), and ISO 294-2 has been replaced by GB/T 17037.2 (informative reference).

GB/T 17037.3 replaces ISO 294-3 (see Appendix A).

Please note that some content in this document may involve patents. The issuing organization of this document assumes no responsibility for identifying patents.

This document was proposed by the China Petroleum and Chemical Industry Federation.

This document is under the jurisdiction of the National Technical Committee on Plastics Standardization (SAC/TC15).

Introduction

During the injection molding process, many factors can affect the performance of the specimen, thereby influencing the specimen measurements obtained in the testing methods. The heat of the specimen...

The chemical and mechanical properties depend to a large extent on the molding process conditions for preparing the specimen. Precise determination of the main parameters of the molding process is necessary.

The purpose is to achieve repeatability of the injection molding process and comparability of operating conditions.

When determining molding conditions, consider any effects these conditions may have on the properties to be measured. Thermosetting plastics may be affected by fillers.

Differences can be observed due to variations in the orientation, length, and curing process of the material (such as short fibers). Residual ("frozen") stress in the molded specimen can also contribute to these variations.

It can affect performance. Due to the molecular cross-linking of thermosetting plastics, molecular orientation has less impact on mechanical properties than that of thermoplastics.

Strictly adhere to these guidelines.

All these phenomena are controlled to avoid fluctuations in performance measurement values.

GB/T 46607 "Preparation of specimens for thermosetting powder molding compounds (PMCs)" is proposed to consist of two parts.

---Part 1: General Principles and Preparation of Versatile Specimens. This section specifies the procedures for preparing specimens of thermosetting powder molding compounds (PMCs).

Following general principles, ensure the consistency of key parameters in the molding process.

---Part 2: Small Plate. Two types of dual-cavity molds are specified, which can be used for electrical properties, water absorption properties, dynamic mechanical properties, and multiaxial impact strength.

Degree and molding shrinkage tests are used to study the anisotropy of mechanical and thermal properties and the influence of welding lines.

The two parts complement each other and constitute a complete standard system for the preparation of thermosetting powder molding compound (PMC) specimens.

Thermosetting powder molding compounds (PMCs) Sample Preparation Part 1: General Principles and Preparation of multipurpose samples

1 Scope

This document specifies the general principles to be followed when preparing specimens of thermosetting powder molding compounds (PMCs) and provides methods for establishing repeatable...

Mold design for molded specimens. The aim is to promote consistency in describing the key parameters of the molding process and to standardize the reporting of molding conditions. Preparation the specific conditions required for repeatable test specimens vary depending on the material used. These conditions are specified in the relevant material standards.

The decision may be made by the relevant parties or agreed upon by them.

Note: Cyclic tests on phenolic (PF), urea-formaldehyde (UF), melamine (MF), melamine-phenolic (MP), and unsaturated polyester (UP) injection molding materials show that...

Mold design is an important factor in the reproducibility of sample preparation.

2 Normative references

The contents of the following documents, through normative references within the text, constitute essential provisions of this document. Dated citations are not included.

For references to documents, only the version corresponding to that date applies to this document; for undated references, the latest version (including all amendments) applies.

This document.

GB/T 2035 Plastics Terminology (GB/T 2035-2024, ISO 472:2013, NEQ)

3 Terms and Definitions

The terms and definitions defined in GB/T 2035 and the following terms and definitions apply to this document.

mold temperature

After the system reaches thermal equilibrium, the mold is opened, and the average temperature of the mold cavity surface is measured immediately.

Note: The unit is degrees Celsius (°C).

melt temperature

The temperature of the plasticized material during free spraying.

Note: The unit is degrees Celsius (°C).

melt pressure

During the molding process, the pressure of the plastic material at the front end of the screw (see Figure 1).

Note: The unit is megapascals (MPa).