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

GB/T 42918.2-2023

**Plastics - Thermoplastic polyurethanes for moulding and
extrusion - Part 2: Preparation of test specimens and
determination of properties**

塑料 模塑和挤出用热塑性聚氨酯 第2部分：试样制备和性能测定

(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 2 of GB/T 42918 "Thermoplastic polyurethanes for plastic molding and extrusion": GB/T 42918 has been released the following sections are included:

---Part 1: Nomenclature system and classification basis;

---Part 2: Sample preparation and performance determination:

This document is modified from ISO 16365-2:2014 "Thermoplastic polyurethanes for plastic molding and extrusion - Part 2: Specimen preparation and properties" can be measured":

A "Terms and Definitions" chapter has been added to this document:

Compared with ISO 16356-2:2014, there are many technical differences between this document and the clauses involved in the outer page blanks:

Straight single lines (|) are marked: A list of these technical differences and their causes is provided in Appendix A:

The following editorial changes have been made to this document:

---Replace ISO 10350-1 with the informative reference GB/T 19467.1 (see Chapter 1 and 6:1);

---Replace ISO 16365.1 with the informative reference GB/T 42918.1 (see Chapter 1);

---Deleted the note in Chapter 1;

--- Added notes on injection molding sample preparation conditions (see 4.2);

--- Added Note 2 in sample adjustment (see Chapter 5);

---Added Appendix A (informative) "Technical differences between this document and ISO 16365-2:2014 and their reasons";

---Added Appendix D (informative) "Result expression and precision in thermoplastic

polyurethane performance measurement methods";

---Deleted Appendix A (Informative) "Material Identification" in ISO 16356-2:2014:

Please note that some content in this document may be subject to patents: The publisher of this document assumes no responsibility for identifying patents:

Introduction

GB/T 42918 "Thermoplastic Polyurethane for Plastic Molding and Extrusion" is a specification for thermoplastic polyurethane products for molding and extrusion:

The basic standards for inspection are planned to consist of three parts:

---Part 1: Nomenclature system and classification basics: The purpose is to establish a nomenclature system for thermoplastic polyurethanes used in molding and extrusion, giving Nomenclature table for thermoplastic polyurethane:

---Part 2: Sample preparation and performance determination: The purpose is to describe methods for the preparation and property determination of thermoplastic polyurethane specimens:

---Part 3: Distinguish between ether-based polyurethane and ester-based polyurethane using the ester group content determination method: The purpose is to describe the use of ester group content determination How to distinguish between ether-based polyurethane and ester-based polyurethane:

Thermoplastic polyurethanes for plastic molding and extrusion Part 2: Sample preparation and performance determination

1 Scope

This document describes specimen preparation and determination methods for performance testing of thermoplastic polyurethanes for molding and extrusion: It also specifies processing Requirements for test materials and requirements for conditioning the test material before molding and the condition of the sample before testing:

This document gives the steps and conditions for preparing test samples under specified conditions, as well as the steps for testing the material properties of these samples:

A list is given of properties suitable and used for characterizing thermoplastic polyester/polyurethane and polyether/polyurethane (TPU) materials for molding and extrusion:

Energy and its measurement method, the performance is selected from the general measurement methods of GB/T 19467.1:

This document also includes other testing methods that are widely used or have special

significance for materials used in molding and extrusion, such as in GB/T 42918.1 Specified performance specified in :

In order to obtain reproducible and comparable test results, the sample preparation and condition adjustment methods and sample rulers specified in this document need to be used:

dimensions and test steps: The test data obtained from samples of different sizes or prepared by different steps and conditions are not necessarily exactly the same:

2 Normative reference documents

The contents of the following documents constitute essential provisions of this document through normative references in the text: Among them, the dated quotations for undated referenced documents, only the version corresponding to that date applies to this document; for undated referenced documents, the latest version (including all amendments) applies to this document:

GB/T 528 Determination of tensile stress and strain properties of vulcanized rubber or thermoplastic rubber (GB/T 528-2009, ISO 37:

2005, IDT)

GB/T 529-2008 Determination of tear strength of vulcanized rubber or thermoplastic rubber (trouser-shaped, right-angled and crescent-shaped specimens) (ISO 34-1:2004, MOD)

GB/T 1033.1-2008 Determination of density of plastic non-foam plastics Part 1: Dip method, liquid pycnometer method and titration method (ISO 1183-1:2004, IDT) GB/T 1040.2

Determination of tensile properties of plastics Part 2: Test conditions for molded and extruded plastics (GB/T 1040.2-2022, ISO 527-2:2012, MOD) GB/T 1043 (all parts)

Determination of impact properties of plastic simply supported beams [ISO 179 (all parts)]

Note: GB/T 1043.1-2008 Determination of impact properties of plastic simply supported beams Part 1: Non-instrumented impact test (ISO 179-1:2000, IDT) GB/T 1043.2-2018

Determination of impact properties of plastic simply supported beams Part 2: Instrumented impact test (ISO 179-2:1997, IDT) GB/T 1408.1 Test methods for electrical strength of

insulating materials Part 1: Test at power frequency (GB/T 1408.1-2016, IEC

60243-1:2013, IDT) GB/T 2408 Horizontal and vertical methods for determination of combustion properties of plastics (GB/T 2408-2021, IEC 60695-11-10:

2013, MOD)

GB/T 2410 Determination of transmittance and haze of transparent plastics GB/T 2411

Determination of indentation hardness (Shore hardness) of plastics and hard rubber using a durometer (GB/T 2411-2008, ISO 868:

2003, IDT)

GB/T 3682.2 Determination of melt mass flow rate (MFR) and melt volume flow rate (MVR)
of plastic thermoplastics