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

GB/T 47920-2026

**Plastics - Testing and characterization of mechanically recycled
polypropylene (PP) and polyethylene (PE) for intended use in
different plastics processing techniques**

塑料 用于不同塑料加工技术的机械回收聚丙烯 (PP) 再生塑料和聚乙烯 (PE)
再生塑料的测试和表征

(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 modified to adopt ISO 5677:2023 "Mechanical recycling of polypropylene (PP) and recycled plastics using different plastics processing techniques".

Tests and characterization of recycled polyethylene (PE) plastics.

This document has undergone the following structural adjustments compared to ISO 5677:2023.

---Table 1's "Filtration Grades and Contaminant Assessment" corresponds to "Filtration Grades" and "Contaminant Assessment" in Table 1 of ISO 5677:2023;

---Table 2's "Filtration Grades and Contaminant Assessment" corresponds to "Filtration Grades" and "Contaminant Assessment" in Table 2 of ISO 5677:2023;

This document differs significantly from ISO 5677:2023. The relevant clauses are indicated in vertical single-line margins.

The lines (I) are marked. A summary of these technical differences and their causes can be found in Appendix A.

The following editorial changes have been made to this document.

---To harmonize with existing standards, the standard title has been changed to "Mechanical Recycling of Polypropylene (PP) for Different Plastics Processing Technologies".

Tests and characterization of recycled plastics and recycled polyethylene (PE) plastics;

---Informative references to GB/T 40006.3 and GB/T 40006.2 have been added (see Introduction);

---Added notes to Chapter 1, 4.1, and 4.5;

---ISO 9001 has been replaced with GB/T 19001 (informative reference), and GB/T 24001 (informative reference) has been added (see 6.2).

Referenced in this document is GB/T 45090-2024 (see 6.3);

---Added Appendix A (informative) "Technical differences between this document and ISO 5677:2023 and the reasons thereof".

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

In the context of the global circular economy, countries are promoting and enacting regulations to use recycled plastics in various plastic processing technologies in order to transform [the plastics industry].

It is transformed into various end products. In some countries, guidelines or regulations regarding the use of mechanically recycled pellets can be found from their national standardization bodies.

Obtain.

This document helps plastics processors and end-users who are preparing to use recycled plastics to reach an agreement on product specifications where applicable.

Consistent.

The purpose of this document is.

---This section lists important testing methods that will help in the mechanical recycling of polypropylene (PP) and polyethylene (PE) granular recycled plastics.

Processing;

---Provide recyclers with a unified guide for testing and characterization to develop product standards;

--- This helps plastic processors select qualified mechanically recycled scrap or granules based on test reports.

The publication of this document will provide a basis for revisions to GB/T 40006.3 and GB/T 40006.2, as well as other standards for recycled polypropylene and polyethylene granules.

It provides a reference for the formulation and revision of material standards, product manufacturing and application.

Plastics used in different plastic processing technologies Mechanical recycling of polypropylene (PP) recycled plastics and

1 Scope

This document describes the evaluation of mechanical recycling of recycled polypropylene (PP(REC)) and recycled polyethylene using different plastics processing technologies.

Test methods for the main properties of plastic [PE(REC)] scrap or granules (hereinafter collectively referred to as granules).

Note: In different application scenarios, mechanically recycled polypropylene and polyethylene plastics are generally melt-granulated granules, but may also be unrecycled materials.

Melt-granulated flakes or pulverized materials.

This document provides a general guideline for determining the properties of PP(REC) and PE(REC), applicable to 100% PP(REC) and PE.

(REC) or a mixture thereof with standard (virgin) materials is processed using equipment employing injection molding, blow molding, and various extrusion technologies.

This document does not apply to mixtures of recycled PP (REC) and PE (REC) plastics.

In addition to this document, if national laws, regulations, rules, and other health, food safety, and environmental standards provide otherwise regarding the use of recycled plastics...

According to its regulations.

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 1033.1 Determination of density of non-foamed plastics - Part 1: Impregnation method, liquid pyrometer method and titration method (GB/T 1033.1-2008, ISO 1183-1:2004, IDT) GB/T 1040.1 Determination of tensile properties of plastics-Part 1: General (GB/T 1040.1-2025, ISO 527-1.

2019, MOD)

GB/T 1040.2 Determination of tensile properties of plastics - Part 2: Test conditions for molded and extruded plastics (GB/T 1040.2-GB/T 1043.1 Determination of impact properties of simply supported plastic beams - Part 1: Non-instrumental impact testing (GB/T 1043.1-2008, ISO 179-1:2000, IDT) GB/T 1845.2 Plastics - Polyethylene (PE) Molding and Extrusion Materials - Part 2: Specimen Preparation and Determination of Properties (GB/T 1845.2-2021, ISO 17855-2:2016, MOD) GB/T 2035 Plastics Terminology (GB/T 2035-2024, ISO 472:2013, NEQ) GB/T 2546.2 Plastics - Polypropylene (PP) Molding and Extrusion Materials - Part 2: Specimen Preparation and Determination of Properties (GB/T 2546.2-2022, ISO 19069-2:2016, MOD) GB/T 3682.1 Determination of melt mass flow rate (MFR) and melt volumetric flow rate (MVR) of thermoplastics Part 1: Standard Methods (GB/T 3682.1-2018, ISO 1133-1:2011, MOD) GB/T 9341 Determination of Flexural Properties of Plastics GB/T 9345.1 Determination of ash content in plastics-Part 1: General methods (GB/T 9345.1-2008, ISO 3451-1.

1997, IDT)

GB/T 19466.1 Differential Scanning Calorimetry (DSC) for Plastics - Part 1: General Rules (GB/T 19466.1-2025)