

ICS 83.080.20

CCS G 31



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

GB/T 46018.1-2025

**Plastics - Technical specification for evaluation of recycled
plastic products - Part 1: Poly(ethylene terephthalate) (PET)
materials**

塑料 再生塑料产品评价技术规范 第1部分：聚对苯二甲酸乙二醇酯（PET）材料

Issued on: August 1, 2025

Implemented on: February 1, 2026

**Issued by: State Administration for Market Regulation;
Standardization Administration of the PRC**

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1 Scope

This document establishes the evaluation principles, contents, and method for recycled polyethylene terephthalate [PET(REC)] plastic materials, specifies the evaluation indicators and weights, and provides verification methods, calculation of the total evaluation score, and forms of evaluation.

This document applies to the evaluation of flake PET (REC) plastic materials (hereinafter referred to as "bottle flakes") obtained through mechanical recycling of polyethylene terephthalate (PET) plastic packaging bottles, or pelletized PET (REC) plastic materials (hereinafter referred to as "pellets or chips") produced through mechanical recycling by melt extrusion and pelletizing of PET plastic packaging bottles and/or other PET products.

This document does not apply to the evaluation of PET (REC) plastic materials derived from hazardous wastes, such as medical wastes and pesticide packaging wastes, or from radioactive wastes.

This document does not apply to the evaluation of PET (REC) plastic materials prepared by processing polyethylene terephthalate (PET) materials together with other plastic materials.

This document does not apply to the evaluation of chemically recycled PET (REC) plastic materials.

2 Normative references

GB/T 2035

GB/T 19001

GB/T 20861

GB/T 23331

GB/T 24001

GB/T 30102

GB/T 37547

GB/T 37821

GB/T 39171

GB/T 40006

GB/T 40006.1-2021

GB/T 43836

GB/T 45001

GB/T 45090

GB/T 45091-2024

GB/T 46043-2025

3 Terms and definitions

For the purposes of this document, the following terms and definitions, as well as those given in GB/T 2035, GB/T 20861, GB/T 30102, GB/T 37821 and GB/T 40006.1-2021, apply.

3.1 mechanical recycling

Process of converting waste plastics into secondary raw materials or products through operations such as sorting, shredding, washing, or melt extrusion and pelletizing, during which the chemical structure of the material does not undergo significant changes.

[Source. GB/T 45090-2024, 3.2]

3.2 traceability

Ability to trace the history, application, or location of an object.

Note. When considering products or services, traceability involves.

-- the source of raw materials and components; -- the history of processing;

-- the distribution and location of the product or service after delivery.

[Source. GB/T 19000-2016, 3.6.13]

4.1.1 Principle of "life cycle thinking"

Starting from the life cycle stages of PET plastic material recycling and regeneration, CONSIDER factors such as energy consumption and environmental impacts, quality control, process management, and traceability information at different stages;

ESTABLISH an evaluation index system by selecting indicators that can represent the main characteristics of recycling and regeneration and can be quantified or verified through testing.

4.1.2 Principle of "applicability" and "guidance"

The "applicability" indicator is established in consideration of the actual development level of the recycled plastics in China, which conforms to domestic industry specifications for recycled plastics and considers advanced international indicator requirements to meet internationalization needs, and maintains coordination and consistency with GB/T 40006 (all parts). At the same time, it plays a guiding role in promoting the high-quality recycling and application of waste plastics in China, balancing applicability and guidance.

4.2 Evaluation contents

4.2.1 The evaluation of PET (REC) plastic materials is a process of reflecting the overall performance of PET (REC) plastic materials by selecting evaluation indicators for PET plastics from the recycling stage to the regeneration stage, obtaining the corresponding data, and assigning graded scores to the indicators.

4.2.2 The evaluation requirements consist of basic requirements and evaluation

indicator requirements. The basic requirements include the environmental protection regulations, safety requirements, and management system requirements to be met by enterprises engaged in the recycling and regeneration of PET materials. The evaluation indicator requirements include the following aspects.

-- Environmental and energy evaluation, including comprehensive electricity consumption per item, freshwater consumption per item, energy management system certification, and carbon emission factor evaluation;

-- Quality evaluation, including general properties, restricted hazardous substances, odor rating, radioactivity requirements, and stability factor evaluation;

- Process management evaluation, including factor evaluation of the recycling process and the regeneration process;
- Traceability evaluation, including traceability of the recycling process, traceability of the regeneration process, characterization and identification of recycled products, intended applications, and certification factor evaluation;
- Evaluation of enterprise scientific and technological innovation capability, including factor evaluation of core technology research and development capability, scientific and technological achievement commercialization capability, and digitalization enhancement capability.

4.3 Evaluation method

The weighted comprehensive evaluation method shall be adopted. In accordance with the evaluation indicator requirements specified in Chapter 5, the evaluator shall collect the data and supporting evidence corresponding to the requirements for the evaluation benchmark values given in Table 1, assign a score to each indicator, and calculate the indicator scores based on the scoring results and weighting factors to obtain the evaluation result.

5.1 Requirements for evaluation indicators

The evaluation indicators consist of 6 primary indicators and 22 secondary indicators.

The primary indicators include basic requirements, environmental and energy