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

GB/T 46442-2025

**Plastics - Determination of colour difference of recycled
plastics**

塑料 再生塑料色差的测定

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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. 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). This document was drafted by: Zhonglan Chenguang Chengdu Testing Technology Co., Ltd., Caipu Technology (Zhejiang) Co., Ltd., and Huikeqi (Shanghai) Technology. Limited Liability Company, Sinopec (Beijing) Chemical Research Institute Co., Ltd., Beijing Huashengchenguang Technology Co., Ltd., Shandong Dawn Polymer Materials Co., Ltd. Joint-stock company, Fuyang Municipal Product Quality Supervision and Inspection Institute, Ningbo Customs Technology Center, China National Petroleum Corporation Petrochemical Company Limited Industrial Research Institute, Shanghai Pulite Composite Materials Co., Ltd., Wanrong Rili New Materials (Hunan) Co., Ltd., Guangdong Xihuwei Industrial Investment Limited Liability Company, Recycling New Materials (Handan) Co., Ltd., Kingfa Science & Technology Co., Ltd., Guangzhou Institute of Quality Supervision and Inspection, Tonggui Technology Chengdu Limited Liability Company, Anhui Xintao Optoelectronic Technology Co., Ltd., Taizhou Yongning Acrylic Products Co., Ltd., and Tomson (Jiangsu) Materials Technology Co., Ltd. Limited Liability Company, Zhaoqing Xishun Polymer Materials Factory, Suzhou Runjia Polymer Materials Co., Ltd., Qingdao Customs Technology Center, South China University of Technology Xinjiang Turpan Natural Environment Experiment and Research Center. The main drafters of this document are: Cao Jinpeng, Xie Peng, Yuan Kun, Xu Xiaoqing, Ma Herong, Chen Hongyuan, Zhao Lei, Zhang Chunhai, Luo Chuan, Qu Jingbo, and Song Zhen. Liang Jiajun, Dong Yuting, Zhao Liping, Zheng Wen, Ye Yuanjian, Zheng Huiqin, Yang Huahao, Wan Yi, Chen Xiaoyi, Zhou Xiaoer, Tang Jiachen, Xiao Jianxia, Jia Siyang Chen Minjian, Wang Qiaolin, He Lina, Liu Jie, Dai Huizhao, Wang Liwen, Wang Lun, He Hui, Zhou Pingtao, Yang Yifan, Guo Chunyun, Li Zhou.

The plastics industry is an important pillar industry of the national economy. With the rapid development of my country's plastics industry and the large-scale use of plastic products, the plastics... Recycling and reuse are important issues facing the industry and are one of the ways to achieve sustainable development. They also help solve environmental problems such as "white pollution." The problem provides an effective approach. Compared to virgin plastics, recycled plastics sometimes show significant color differences, and color variations between different batches of recycled plastics are not uncommon. Color difference has an adverse effect on the appearance of recycled plastic products, making its characterization particularly important. This document describes sampling from the test samples and using spectrophotometry. The instrument measures the color difference between samples to characterize their color uniformity, in order to obtain information about the color of recycled plastics. Determination of color difference in recycled plastics

1 Scope

GB/T 46442-2025 is the Chinese national standard covering measuring how far a recycled batch has drifted in colour - the specimen preparation and the illuminant and observer used, the colour coordinates and the difference calculated against a reference, and the reporting. Colour variation between batches is the practical obstacle to using recycled resin in visible parts. First edition, in force from 1 May 2026. Issued on 31 October 2025, it has been in force since 1 May 2026.

This document describes the determination of refraction using a spectrophotometer under specified International Commission on Illumination (CIE) standard light sources and photodetectors. Methods to address color differences in raw plastics. This document applies to recycled plastic pellets and flakes made from waste thermoplastics through mechanical recycling. Sample. Note

- 1.The shapes of recycled plastic granules include flat, spherical, strip, flake, and fine granules. Different shapes may affect the measurement of color difference. Note
- 2.Polyethylene terephthalate (PET) (REC) sheets can be tested using this method. Note
- 3.Synthetic resins and plastics can also be tested using this method. This document does not apply to recycled plastics containing fluorescent agents.

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 2547 Sampling Methods for Plastics

GB/T 2918 Standard Environment for Conditioning and Testing of Plastic Specimens ISO
/CIE 11664-

3 Terms and Definitions

The following terms and definitions apply to this document.

3.1 recycled plastics Plastics processed from waste plastics and used for their original or other purposes, but excluding energy recovery. Note

1. In a broad sense, plastic recycling includes any reuse of scraps or waste products, such as depolymerization to recover organic chemicals. Note

2. Recycled plastics may or may not be formulated with fillers, plasticizers, stabilizers, pigments, etc. [Source: GB/T 45090-2024, 3.1]

3.2 CIELAB Color Space A three-dimensional approximately uniform color space generated by $L^*a^*b^*$ is constructed on a rectangular coordinate system.