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

GB/T 46828.1-2025

**Plastics - Determination of the total luminous transmittance of
transparent materials - Part 1: Single-beam instrument**

塑料 透明材料总透光率的测定 第1部分：单光束仪器

(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 46828 "Determination of Total Light Transmittance of Transparent Plastic Materials". GB/T 46828 has been published.

The following section.

---Part 1: Single-beam instruments;

---Part 2: Dual-beam instrumentation.

This document is modified to adopt ISO 13468-1:2019 "Determination of total transmittance of transparent plastic materials - Part 1: Single beam instruments".

This document has undergone the following structural adjustments compared to ISO 13468-1:2019.

---Appendix A corresponds to Chapter 9 of ISO 13468-1:2019.

---Appendix B corresponds to Appendix A in ISO 13468-1:2019.

The technical differences between this document and ISO 13468-1:2019, and the reasons therefor, are as follows.

---ISO 291 (see 6.1) has been replaced with the normatively referenced GB/T 2918 to adapt to my country's technical conditions and increase operability;

---ISO 5725-1 has been replaced by GB/T 6379.1 (normative reference), and ISO 5725-2 and GB/T 6379.3 have been replaced by GB/T 6379.1 (normative reference).

ISO 5725-3 (see Appendix A) has been replaced to adapt to my country's technical conditions and increase operability.

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

GB/T 46828, "Determination of Total Transmittance of Transparent Plastic Materials", describes the method of improving the integral transmittance by using a compensation window or a double-beam system.

A method for improving ball efficiency and reducing measurement error is used to determine the light transmittance of transparent plastics.

GB/T 46828 specifies the use of different types of photometers to measure light sources and photodetectors under the prescribed CIE (International Commission on Illumination) standard light sources.

A method for determining the total transmittance of a nearly colorless, planar transparent plastic in the visible spectrum region is proposed to consist of the following parts.

---Part 1: Single-beam instrument. The purpose is to introduce a compensation window to reduce testing errors and determine the transmittance of plastics.

---Part 2: Dual-beam instrument. The purpose is to introduce a dual-beam instrument to reduce testing errors and determine the light transmittance of plastics.

Determination of total light transmittance of transparent plastic materials Part 1:
Single-beam instruments

1 Scope

This document describes the measurement of light using a single-beam photometer under specified CIE (International Commission on Illumination) standard light sources and photodetectors.

A method for determining the total transmittance of near-colorless, planar transparent plastics in the visible spectrum region.

This document applies to transparent molding materials, films, and sheets with a thickness not exceeding 10 mm.

This document does not apply to plastics containing fluorescent materials.

Note 1: Total transmittance can also be determined using a double-beam spectrophotometer

according to GB/T 46828.2. However, this document provides a simple, accurate, practical, and rapid method.

The determination method is applicable to both analysis and quality control.

Note 2: Nearly colorless plastics include very light-colored plastics.

Note 3: If the instrument can test samples with a thickness of more than 10 mm, the results are not comparable to those of samples with a thickness of less than 10 mm.

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.

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

document.

GB/T 2918 Standard environment for conditioning and testing of plastic specimens (GB/T 2918-2018, ISO 291:2008, MOD) GB/T 6379.1 Accuracy (Correctness and Precision) of Measurement Methods and Results - Part 1: General Principles and Definitions (GB/T 6379.1-2004, ISO 5725-1:1994, IDT) GB/T 6379.2 Accuracy (correctness and precision) of measurement methods and results - Part 2: Determining the repeatability of standard measurement methods Basic methods for sex and reproducibility (GB/T 6379.2-2004, ISO 5725-2:1994, IDT) GB/T 6379.3 Accuracy (Correctness and Precision) of Measurement Methods and Results - Part 3: Precision of Standard Measurement Methods Intermediate metrics (GB/T 6379.3-2012, ISO 5725-3:1994, IDT) ISO 11664-1 Colorimetry - Part 1: CIE standard colorimetry observer CIE Publication 15. Colorimetry

1) Also published as IEC 60050-845.

3 Terms and Definitions

The terms and definitions defined in CIE Publication 17, as well as the following terms and definitions, apply to this document.

transparent plastics Plastics that transmit light in a basically regular manner in the visible spectrum region and have high light transmittance.

Note: If its geometry is appropriate, the object can be clearly seen through transparent plastic within the visible spectrum.