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

GB/T 21782.10-2025

Replacing GB/T 21782.10-2008

**Coating powders - Part 10: Determination of deposition
efficiency**

粉末涂料 第10部分：沉积效率的测定

(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 10 of GB/T 21782 "Powder Coatings". GB/T 21782 has already published the following parts.

- Part 1: Determination of particle size distribution by sieving method;
- Part 2: Determination of density using a gas comparative hydrometer (arbitration method);
- Part 3: Determination of density using the liquid displacement specific gravity bottle method;
- Part 4: Calculation of the Lower Explosive Limit;
- Part 5: Determination of the flowability of powder-air mixtures;
- Part 7: Determination of mass loss during baking;
- Part 8: Assessment of the storage stability of thermosetting powders;
- Part 9: Sampling;
- Part 10: Determination of Deposition Efficiency;
- Part 11: Determination of the Flowability of Inclined Plates;
- Part 12: Compatibility Determination;

---Part 13: Particle Size Analysis by Laser Diffraction;

---Part 14: Terminology.

This document supersedes GB/T 21782.10-2008 "Powder Coatings - Part 10: Determination of Deposition Efficiency" and is consistent with GB/T 21782.10-2008, aside from structural adjustments and editorial changes, the main technical changes are as follows.

---The content of the "Test Report" has been changed (see Chapter 9, Chapter 10 in the 2008 edition);

---Precision data has been removed (see Chapter 9 of the 2008 edition).

This document is modified to adopt ISO 8130-10:2021 "Powder coatings - Part 10: Determination of deposition efficiency".

This document has undergone the following structural adjustments compared to ISO 8130-10:2021.

---Chapter 5, section 5.1 corresponds to sections 5.1 and 5.3 of ISO 8130-10:2021, and sections 5.3 to 5.8 correspond to sections 5.4 of ISO 8130-10:2021.

---Chapter 7 adds sections 7.1, 7.2~7.11 corresponding to sections 7.1~7.10 of ISO 8130-10:2021;

---Chapter 9, corresponding to Chapter 10 of ISO 8130-10:2021.

The technical differences between this document and ISO 8130-10:2021, and the reasons therefor, are as follows.

---The scope has been changed, with some content moved to a note (see Chapter 1, ISO 8130-10:2021). This content pertains to the scope...

The explanation of the enclosure would be more appropriately placed in the footnote;

---The standard upon which the "Terms and Definitions" are based has been changed, replacing ISO 8130-14 with GB/T 21782.14 (see Chapter 3).

Chapter 3 of ISO 8130-10:2021 conforms to my country's actual operational requirements;

---The grounding resistance of the "device" has been added (see 5.1) to facilitate standardized operation;

---A specification for "cleaning aluminum foil" has been added (see 5.2) to facilitate standardized operations;

---The specifications for "vacuum cleaning bags" have been added (see 5.3) to facilitate standardized operations;

---The requirements for "explosion-proof ovens" have been revised (see 5.4, 5.5 of ISO

8130-10:2021) to improve operability and facilitate this document.

application;

---The standard for "sampling" has been changed, replacing ISO 15528 (see Chapter 6, ISO 8130-10:2021) with GB/T 3186.

Chapter 6), conforms to my country's actual operational requirements;

---Figure 1, "Spraying Diagram" (see 7.7), has been added to improve operability and facilitate the application of this document;

---The chapter on "Precision" (see Chapter 9 of ISO 8130-10:2021) has been removed to improve operability and facilitate the application of this document.

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 and is under the jurisdiction of the National Technical Committee on Standardization of Hazardous Chemicals Management (SAC/TC251).

Introduction

The GB/T 21782 series of standards covers the testing and evaluation of key indicators of powder coatings, such as particle size distribution, density determination, and storage stability.

This series of standards defines a set of tests and applications for powder coatings. Each document in this series describes a specific set of tests and applications. The GB/T 21782 series of standards aims to provide a standard for powder coatings.

This standard provides a unified and reliable testing process for manufacturers and powder coating testers, and supports product quality control, safe production, and international standards.

Trade provides scientific support. The GB/T 21782 series of standards is proposed to consist of the following 13 parts.

---Part 1: Determination of Particle Size Distribution by Sieving Method. The purpose is to specify two methods, manual and mechanical sieving, for determining particle size distribution.

Powder coating particle size distribution.

---Part 2: Determination of Density by Gas Comparative Hydrometer Method (Arbitration Method). The purpose is to define a method for determining density based on the principle of gas displacement, using gas...

A method for determining the density of powder coatings using a volumetric specific gravity

meter.

---Part 3: Determination of Density by Liquid Displacement Specific Gravity Bottle Method. The purpose is to define a method for determining density based on Archimedes' principle using liquid displacement specific gravity bottles.

A method for determining the density of powder coatings using a heavy-duty bottle.

---Part 4: Calculation of the Lower Explosive Limit. The purpose is to specify the calculation method for the lower explosive limit of powder coatings based on the total calorific value or the calorific value of the combustible components.

Methods to lower the limit.

---Part 5: Determination of the flowability of powder-air mixtures. The aim is to express, by measuring the fluidization factor and powder flow rate, the flowability of powder-air mixtures.

Characterize the flow properties of powder during transport and spraying.

---Part 7: Determination of mass loss during baking. The purpose is to specify the application methods for powder coatings onto substrates using electrostatic spraying.

A method for measuring mass loss during the curing and baking process.

---Part 8: Assessment of the Storage Stability of Thermosetting Powders. The aim is to assess the storage stability of thermosetting powder coatings by placing them in a specific storage environment.

Storage stability is assessed by observing changes in free flow properties after the product is stored at a specified temperature for a specified period of time in an environment.

---Part 9: Sampling. The purpose is to define a standard procedure for sampling from the delivery batch, and to quantitatively reduce the sample to test samples.

Technical requirements for the sample.

---Part 10: Determination of Deposition Efficiency. The purpose is to specify the deposition efficiency on test samples under known spray gun and environmental conditions.

The method for determining the percentage by mass of powder used in coating.

---Part 11: Determination of the flowability of an inclined plate. The purpose is to specify the flowability of thermosetting powder coatings when applied at a fixed angle along an inclined plate.

Methods for detecting flow characteristics during molten flow.

---Part 12: Compatibility Testing. The aim is to define the surface properties of the final coating resulting from mixing two different powder coatings.