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

GB/T 21782.1-2025

Replacing GB/T 21782.1-2008

**Coating powders - Part 1: Determination of particle size
distribution by sieving
(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 21782 "Powder Coatings". GB/T 21782 has the following parts published.

- 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: Determination of compatibility;

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

---Part 14: Terminology.

This document supersedes GB/T 21782.1-2008 "Powder Coatings - Part 1: Determination of Particle Size Distribution by Sieve Analysis". (The last sentence appears to be incomplete and unrelated to the preceding text.) Compared to 2008, aside from structural adjustments and editorial changes, the main technical changes are as follows.

- a) A new chapter on "Terms and Definitions" has been added (see Chapter 3);
- b) A chapter on "Principles" has been added (see Chapter 4);
- c) A vibrating screen device was added (see 5.3);
- d) Increased the selection of screening methods and screening selectivity (see Chapter 7);
- e) Manual screening and vibrating screening have been added (see 9.2, 9.4).

This document is modified to adopt ISO 8130-1:2019 "Powder coatings - Part 1: Determination of particle size distribution by sieving".

Compared with ISO 8130-1:2019, this document has undergone the following structural adjustments.

---Chapter 9, sections 9.3.1 to 9.3.4 correspond to sections 9.3.2 to 9.3.5 of ISO 8130-1:2019;

---Chapter 11, corresponding to Chapter 12 of ISO 8130-1:2019.

The technical differences between this document and ISO 8130-1:2019, and the reasons therefor, are as follows.

---The scope has been changed (see Chapter 1 of ISO 8130-1:2019) to suit my country's testing requirements and technical conditions;

---The standard upon which the "Terms and Definitions" are based has been changed, replacing ISO 8130-14:2014 with GB/T 21782.14 (see Chapter 3).

Chapter 3 of ISO 8130-1:2019 conforms to my country's actual operational requirements;

---The standard upon which the "Metal Wire Braided Mesh Test Sieve" is based has been changed, replacing ISO 3310-1:2016 with GB/T 6003.1 (see...).

5.1 (ISO 8130-1:2019, 5.1) conforms to the actual operational requirements in my country;

---The standard upon which the "Metal Perforated Plate Test Sieve" is based has been changed, replacing ISO 3310-2:2013 with GB/T 6003.2 (see...).

5.1 (ISO 8130-1:2019, 5.1) conforms to the actual operational requirements in my country;

---The standard for "sampling" has been changed, replacing ISO 15528 (see Chapter 6, ISO 8130-1:2019) with GB/T 3186.

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

---The content regarding the "Airflow Screen Device" has been modified (see 9.3, 9.3.1 of ISO 8130-1:2019) to improve operability and facilitate this document.

application.

The following editorial changes have been made to this document.

---The note in Figure 1 has been deleted;

---The note for Chapter 10 has been deleted.

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.

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. This part specifies two methods for determining particle size distribution. manual sieving and mechanical vibrating sieving.

Determine the particle size distribution and the mass percentage of residue on the sieve of the powder coating.

---Part 2: Determination of Density by Gas Comparative Hydrometer Method (Arbitration Method). This part specifies the method for determining density based on the principle of gas displacement, using gas...

A comparative method for determining the density of powder coatings using a specific gravity meter.

---Part 3: Determination of Density by Liquid Displacement Specific Gravity Bottle Method. This part specifies the method for determining density based on Archimedes' principle using liquid displacement specific gravity bottles.

A method for determining the density of powder coatings.

---Part 4: Calculation of the Lower Explosive Limit. This part specifies the calculation of the lower explosive limit of powder coatings based on the total calorific value or the calorific value of the combustible components.

The method of lower limit.

---Part 5: Determination of the flowability of powder-air mixtures. This part characterizes the flowability of powder-air mixtures by measuring the fluidization factor and powder flow rate.

Flow characteristics of powder during conveying and spraying.

---Part 7: Determination of mass loss during baking. This part specifies the application of powder coatings to substrates using an electrostatic spraying process.

Then, a method for measuring mass loss during the curing and baking process was developed.

---Part 8: Evaluation of the Storage Stability of Thermosetting Powders. This part assesses the storage stability of thermosetting powder coatings by placing them in specific storage environments.

In this study, storage stability is assessed by observing changes in free flow properties after storing the product at a specified temperature for a specified period of time.

---Part 9: Sampling. This part specifies the standard procedure for sampling from the delivery batch, and the quantitative reduction of the sample into test samples.

Technical requirements for the product.

---Part 10: Determination of Deposition Efficiency. This part specifies the spraying process for depositing on test samples under known spray gun and environmental conditions.

Methods for determining the percentage of powder by mass.