

ICS 87.040
CCS G 50



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

GB/T 21782.13-2026

Replacing GB/T 21782.13-2009

**Coating powders - Part 13: Particle size analysis by laser
diffraction**

粉末涂料 第13部分：激光衍射法分析粒度

(English Translation)

Issued on: July 2, 2026

Implemented on: February 1, 2027

Issued by: State Administration for Market Regulation

Table of Contents

Foreword
Introduction
1 Scope
2 Normative references
3 Terms and Definitions

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 13 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 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 replaces GB/T 21782.13-2009 "Powder Coatings - Part 13: Laser Diffraction Analysis of Particle Size". (The last part, "and GB/T 21782.13-", appears to be a standard

version of GB/T 21782.13 and is not directly related to the document's format.) Compared to 2009, aside from structural adjustments and editorial changes, the main technical changes are as follows.

- a) The scope has been changed (see Chapter 1, Chapter 1 of the 2009 edition);
- b) Terms and definitions have been changed (see Chapter 3, Chapter 3 of the 2009 edition);
- c) The principle has been changed (see Chapter 4, Chapter 4 of the 2009 edition);
- d) The instruments and equipment were changed (see Chapter 5, Chapter 5 of the 2009 edition);
- e) The sampling method has been changed (see Chapter 6, Chapter 6 in the 2009 edition);
- f) The test conditions have been changed (see Chapter 7, Chapter 7 in the 2009 edition);
- g) The test procedure has been modified (see Chapter 8, Chapter 8 of the 2009 edition);
- h) An assessment has been added (see Chapter 9);
- j) Added error sources (see Chapter 10);
- k) The result representation has been changed (see Chapter 11, Chapter 10 in the 2009 edition);
- l) Precision has been removed (see Chapter 11 in the 2009 edition);
- m) The test report has been amended (see Chapter 12, Chapter 12 of the 2009 edition).

This document is equivalent to ISO 8130-13:2019 "Powder coatings - Part 13: Laser diffraction analysis of particle size".

The following minimal editorial changes have been made to this document.

---3.1 added "Note. Opacity is also known as 'optical density'";

---Corrected editing errors in 9.4.1, changing "see 9.2" to "see 9.3", changing "median diameter X10" to "X10", and changing "median diameter X10" to "X10".

Change "position diameter X90" to "X90".

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 Standardization of Coatings and Pigments (SAC/TC5).

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.

The standard provides a unified and reliable set of testing procedures for producers, users, and testing institutions, and supports product quality control, safe production, and national security.

It provides scientific support for international trade and is planned to consist of 13 parts.

---Part 1: Determination of Particle Size Distribution by Sieving Method. The purpose is to standardize the determination of particle size distribution in powder coatings using manual and mechanical sieving methods.

Two methods of applying cloth.

---Part 2: Determination of Density by Gas Comparative Hydrometer Method (Arbitration Method). The purpose is to standardize the method of 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 standardize the method based on Archimedes' principle, using liquid displacement specific gravity bottles to determine density.

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 standardize the calculation of 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 standardize the measurement of fluidization factor and powder flow rate.

Methods to characterize the flow properties of powder during transport and spraying.

---Part 7: Determination of mass loss during baking. The purpose is to standardize the process of mass loss during electrostatic spraying, flocking spraying, or fluidized bed coating.

Method for determining mass loss during powder coating baking.

---Part 8: Assessment of the Storage Stability of Thermosetting Powders. The purpose is to standardize the assessment of the storage stability of thermosetting powder coatings by placing them in specific conditions.

Coating changes are used to assess storage stability.

---Part 9: Sampling. The purpose is to standardize the sampling methods for powder coatings in delivery batches, and to quantitatively reduce the sample size for testing.

Sample method.

---Part 10: Determination of Deposition Efficiency. The aim is to standardize the deposition process 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 inclined plates. The purpose is to standardize 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 standardize the surface properties of the final coating resulting from the mixing of two different powder coatings.

Methods for determining degradation.

---Part 13: Particle Size Analysis by Laser Diffraction. The purpose is to standardize the determination of equivalent spherical particle size in powder coatings using laser diffraction.

Methods for radial distribution.

---Part 14: Terminology. The purpose is to standardize the concepts of powder coatings, deposition rate, gelation time, etc., for the powder coating industry.

Provide a unified terminology standard.

Powder Coating

Part 13: Particle Size Analysis by Laser Diffraction

1 Scope

This document describes a method for determining the equivalent spherical particle size of powder coatings with a particle size range of 1 μm to 300 μm using laser diffraction.

Distribution methods.

Note: Particles larger than 300 μm may require different optical models.