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

**GB/T 45760-2025**

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**Fine ceramics - Determination of bulk density of powders -  
Untapped density**

精细陶瓷 粉体堆积密度测定 松装密度

**(English Translation)**

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### Foreword

This document is in accordance with the provisions of GB/T 1.1-2020 "Guidelines for standardization work Part 1: Structure and drafting rules for standardization documents" Drafting.

This document is modified to adopt ISO 23145-2:2012 "Fine ceramics (advanced ceramics, advanced technical ceramics) - Ceramic powder bulk density determination" Part 2: Bulk density. This document adds Chapter 3 "Terms and Definitions".

The technical differences between this document and ISO 23145-2:2012 and their reasons are as follows.

- Changed the scope of the statement to clarify that the scope of application of this document is the field of fine ceramics (see Chapter 1, ISO 23145-2:2012 Chapter 1);
- Added the term and definition of "bulk density" to make the concepts of this document clearer (see 3.1);
- Deleted the expression of "1kg/m<sup>3</sup>" for the calculated result, which is more in line with the actual situation [see Chapter 7 and Chapter 9 of ISO 23145-2:2012 Chapter g)];
- Replaced ISO 80000-1:2009 with the normative reference GB/T 8170 to comply with my country's numerical rounding rules and adapt to my country's Technical conditions (see Chapter 8, Chapter 7 of ISO 23145-2:2012);
- Replaced ISO /IEC 17025:2005 with the normative reference GB/T 27025 to improve operability (see Chapter 9, ISO 23145-2:2012, Chapter 8). The following editorial changes have been made to this document.
- To coordinate with the existing standard, the name of the standard is changed to "Determination of bulk density of fine ceramic powders - Apparent density";
- Delete the annotation in Figure 2;

--- Added detailed explanation of formula (1) (see Chapter 8).

## 1 Scope

This document describes a test method for determining the bulk density of ceramic powders with regular or irregular particle shapes by volumetric measurement.

This document is applicable to the determination of bulk density --- bulk density of fine ceramic powders.

## 2 Normative references

The contents of the following documents constitute the essential clauses of this document through normative references in this document.

For referenced documents without a date, only the version corresponding to that date applies to this document; for referenced documents without a date, the latest version (including all amendments) applies to This document.

GB/T 6005-2008 Test sieves - Basic dimensions of mesh openings for wire mesh, perforated plate and electroformed sheet (ISO 565. 1990, MOD)

**Note:** There is no technical difference between the referenced content in GB/T 6005-2008 and the referenced content in ISO 565:1990.

GB/T 8170 Rules for rounding off values and expression and determination of limit values

GB/T 27025 General requirements for the competence of testing and calibration laboratories (GB/T 27025-2019, ISO /IEC 17025:2017, IDT)

## 3 Terms and Definitions

The following terms and definitions apply to this document.

### 3.1 Untapped density

The bulk density of a powder is measured after it freely fills a standard container under specified conditions.

**Note:** This refers to the mass per unit volume of powder in a loosely packed state, in g/cm<sup>3</sup>.

## 4 Principles

The powder falls freely into a standard container of known volume in a static state, its mass is weighed, and then divided by the volume of the standard container to calculate the mass. The bulk density of the powder.

## 5 Test instruments

### 5.1

Funnel. It should be made of non-magnetic, corrosion-resistant metal material (such as 304 stainless steel) with sufficient wall thickness and hardness to withstand deformation.

The funnel orifice diameter is 2.5mm or 5.0mm (as shown in Figure 1).