

ICS 77.160
CCS H21



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

GB/T 11107-2018

Replacing GB/T 11107-1989

**Metallic and its compound powder - Determination of specific
surface and particle size - Air permeating method**

金属及其化合物粉末 比表面积和粒度测定 空气透过法

Issued on: September 17, 2018

Implemented on: June 1, 2019

**Issued by: State Administration for Market Regulation;
Standardization Administration of China**

Table of Contents

- 1 Scope
- 2 Normative references
- 3 Terms and definitions
- 8.1.1 Calibration and adjustment of air supply pressure" and "

Foreword

This standard was drafted in accordance with the rules given in GB/T 1.1-2009. This standard replaces GB/T 11107-1989 "Metal and its compound powder specific surface area and particle size determination air permeation method". Compared with GB/T 11107-1989, this standard changes the main technical contents except editorial changes as follows:

- Added "normative references" (see Chapter 2);
- Split "terms and symbols" into "terms and definitions" and "symbols and names" (see Chapters 3 and 4, 3rd edition of the 1989 edition) chapter);
- Change the "porous bed" to "powder bed" (see 3.3, 3.1.3 of the 1989 edition);
- Change the symbol "Kozeny-carman coefficient, agreed to 5" to "K=5.0 in this national standard" (see Chapter 4, 1989 edition) 3.2);
- Delete the sample size according to the thickness of the powder, the powder with a particle size of less than 1 μ m, the powder weighing can be less than 0.3rhoe grams; For powders with a degree greater than 2 μ m, the mass to be weighed shall be greater than the number of grams of 1.2 rhoe, an increase of 6.1.2 (see 6.1.2, 1989 edition) 5.1);
- Change the "quality of the sample to 0.001g" to "accurate to 0.001g" and incorporate it into 6.1.2 (see 6.1.2, 1989 edition) 5.2);
- Change the "sample diameter not less than 8mm, the sample thickness is not less than 4mm" to "the thickness of the sample layer (height) should not be less than the average 50 times the diameter of the particle, the diameter of the sample layer should not be less than 100 times the average particle diameter" (see 6.2, 5.2 of 1989 edition);
- Analytical balance "for weighing powder, its sensitivity is 0.001g or 0.0001g" changed to "measurement accuracy should not be less than 0.001g (see 7.1, 1989 edition of 6.1);

1 Scope

GB/T 11107-2018 is the Chinese national standard on metallic and its compound powder - determination of specific surface and particle size - air permeating method, in the field of metallurgy. The /T suffix marks it as a recommended standard: it is not compulsory by itself, but it becomes binding as soon as a contract, a tender or a customer specification calls it up - which in practice is how most foreign buyers meet it. It was issued on 17 September 2018 by the State Administration for Market Regulation; Standardization Administration of China, and has been in force since 1 June 2019. Classification: ICS 77.160, CCS H21. This page is published from the official record of the standard held by the Chinese standards administration: the identification, the dates, the classification and the issuing body are taken from there. The clause text, the tables and the numeric limits are in the document itself, which is delivered complete in English translation.

This standard specifies the method for determining the specific surface area and particle size of metal powders and their compounds - air permeation. This standard applies to the determination of the specific surface area and particle size of metal powders and their compound powders. This standard does not apply to the determination of fibrous or flake powder, but this standard can also be used when the supplier and the buyer agree. This standard does not apply to the determination of the specific surface area and particle size of mixed powders of different materials and powders containing binders or lubricating powders.

2 Normative references

The following documents are indispensable for the application of this document. For dated references, only dated versions apply to this article. Pieces. For undated references, the latest edition (including all amendments) applies to this document.

GB/T 5161 Determination of effective density of metal powders - Liquid immersion method

ISO 10070 Metallic powders - Steady-state flow conditions - Determination of external specific surface area envelope-Specific surface area from measurement of the permeability to air of a powder bed under steady-State flow conditions)

3 Terms and definitions

The following terms and definitions apply to this document.

3.1 Permeability The ability of porous materials to transport fluids.

Note. Fluid in this standard refers to dry air.

3.2 Clearance hole interstices The pores between the particles through which air can be transported.

3.3 Effective porosity Permeability permeableporosity The ratio of the clearance pore volume to the volume of the powder bed.

3.4 Envelope volume envelopevolume Powder effective volume effectivevolumeofpowders The volume occupied by the powder particles in addition to the clearance holes in the powder bed.

3.5 Volume specific surface The ratio of the surface area of the powder particles to its effective volume.

8.1.1 Calibration and adjustment of air supply pressure" and "

8.1.2 Calibration of precision valves" (see 8.1,

--- "Accurately measure the thickness L of the powder bed and the diameter d of the sample tube, and calculate the effective porosity ϵ_{p} of the powder bed according to the formula (10). The error of the effective porosity caused by the sample thickness should be no more than 0.2%. "Adjusted to 8.2.1 (see 8.2.1,

--- Change the "Powder and Porous Material Tester" to "Air Permeability Particle Size Analyzer" (see Appendix A, Appendix A, 1989 Edition). This standard was proposed by the China Nonferrous Metals Industry Association. This standard is under the jurisdiction of the National Nonferrous Metals Standardization Technical Committee (SAC/TC243). This standard is drafted by: Zhuzhou Cemented Carbide Group Co., Ltd., Shenzhen Yingcheng Technology Co., Ltd., Chongyi Zhangyuan Tungsten Industry Co., Ltd., Nanchang Cemented Carbide Co., Ltd., Zigong Cemented Carbide Co., Ltd., Nonferrous Metals Technology and Economic Research Institute. The main drafters of this standard. Zhang Weidong, Li Huifang, Peng Yu, Zhang Yue, Liang Hong, Zhang Zhiwei, Yang Ligeng, Deng Tao, Li Siyuan, Yang Jun, Wu Yanhua. The previous versions of the standards replaced by this standard are.

---GB/T 11107-1989. Metal and its compound powder Specific surface area and particle size determination air permeation method