ICS 85.060
CCS Y 30

# NATIONAL STANDARD OF THE PEOPLE'S REPUBLIC OF CHINA



# GB/T 2679.14-2026

Replacing GB/T 2679.14-1996

## Paper and board - Determination of pore diameter

纸和纸板 孔径的测定

**Issued on: May 25, 2026** **Implemented on: December 1, 2026**

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

# Table of Contents





## 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 14 of GB/T 2679.GB/T 2679 has the following parts published.

---Determination of paper transparency using the diffuse reflectance method (GB/T 2679.1);

---Determination of moisture permeability of thin sheet materials by gravimetric (permeability cup) method (GB/T 2679.2);

---Determination of flat crush strength of corrugated core paper after corrugation in the laboratory (GB/T 2679.6);

---Determination of puncture strength of cardboard (GB/T 2679.7);

---Determination of ring crush strength of paper and paperboard (GB/T 2679.8);

---Determination of short-range compressive strength of paper and paperboard (GB/T 2679.10);

---Qualitative analysis of inorganic fillers and inorganic coatings for paper and paperboard by electron microscopy/X-ray energy dispersive spectroscopy (GB/T 2679.11);

---Qualitative Analytical Chemistry Methods for Inorganic Fillers and Inorganic Coatings in Paper and Paperboard (GB/T 2679.12);

---Determination of pore size in paper and paperboard (GB/T 2679.14);

---Determination of edge crush strength of corrugated cardboard. edge reinforcement method (GB/T 2679.17). This document replaces GB/T 2679.14-1996 "Determination of Maximum Pore Size of Filter Paper and Paperboard". Compared with GB/T 2679.14-1996, Apart 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.1996 edition);

b) The terminology and definition of pores (see

## 6 Method for determining the maximum aperture

6.1 Principle Completely wet the paper or paperboard with the wetting solution, increase the gas pressure on one side of the paper or paperboard at a predetermined speed, and observe the bubbling of gas on the other side. In this case, the maximum pore size of paper or paperboard can be calculated by measuring the bubble point pressure.

### 6.2.1 Bubble Point Test Apparatus

6.2.1.1 Fixture The fixture is shown in Figure

1.Depending on the fixture, the diameter of the test sample can be 25 mm, 47 mm, or other suitable sizes.

6.2.1.2 Bubble Point Test Apparatus The bubble point test apparatus system and simplified apparatus are shown in Figures 2 and 3.

6.2.2 Pressure gauge The measuring range should cover the pressure range required for measuring the orifice diameter, and its accuracy class should be no less than 0.4.

6.2.3 Gas Source Filtered air or nitrogen.

6.3 Immersion Solution The wetting solution has low surface tension and its contact angle with the sample hole wall is approximately zero (i.e., costheta~1), thus avoiding or minimizing changes to the sample. The fiber morphology is adjusted to stabilize the original pore structure of the sample. The type of wetting solution should be specified in the test report; isopropanol is recommended. Isopropanol at 20°C... The density of the alcohol should be 790 kg/m^3, and the surface tension should be 0.0215 N/m.

### 6.4 Test Procedure

6.4.1 Based on the size of the fixer, cut at least 5 samples transversely along the paper web, place the samples in the wetting solution (6.3) and wet them completely. If necessary, a vacuum method can be used to assist in completely wetting the sample.

6.4.2 Place the fully wetted sample into the holder (6.2.1.1). Tighten the locking ring of the

holder and pour the wetting solution into the reservoir until it reaches the specified level. Set a fixed height and keep the level of the wetting liquid constant.

6.4.3 Slowly increase the gas pressure and record the pressure at which the first string of continuous bubbles appears in the center of the reservoir. An incomplete seal may lead to problems within the reservoir. If misleading air bubbles appear at the sealing joint, the test results are invalid and the test should be repeated.

### 6.4.4 Repeat steps

6.4.3 to measure the remaining samples, and measure 5 valid data for each sample.

6.5 Results Presentation The maximum aperture is calculated according to formula (1), and the result is expressed as the arithmetic mean of 5 test values, with the result rounded to one decimal place.

## 7 Methods for determining average pore size and pore size distribution

7.1 Principle A gradually increasing gas pressure is applied to one side of the saturated wetted sample. The pressure, flow rate, and pore size of the gas as it passes through the sample pores are varied. Relatedly, the wetting fluid in larger pores is expelled by gas more quickly, while the wetting fluid in smaller pores is expelled more slowly. This can be observed by measuring the gas passing through saturated pores. The pressure-flow rate relationship curve of the sample is obtained by measuring the pressure and flow rate changes when the sample is wetted and dried. The average pore size can then be calculated. Aperture distribution.

### 7.2 Instruments and Equipment

7.2.1 Gas Source Filtered air or nitrogen.

7.2.2 Pressure gauge The measuring range should cover the pressure range required for measuring the orifice diameter, and its accuracy class should be no less than 0.4.

7.2.3 Fixture The fixing device is shown in Figure 4.

7.2.4 Flow meter The measuring range should cover the flow range required for measuring the orifice diameter, and its accuracy class should be no less than 2.5.

7.2.5 Test Apparatus The experimental setup is shown in Figure 4.

7.3 Immersion Solution Same as 6.3.

### 7.4 Test Procedure

7.4.1 Based on the size of the fixer, cut at least 5 samples transversely along the paper

web, and place the samples in the wetting solution until completely wetted. If If necessary, a vacuum method can be used to assist in completely wetting the sample. Place the fully wetted sample in the holder and tighten the holder.

7.4.2 Slowly increase the gas pressure and record the pressure at which the bubble point detector detects the airflow, i.e., the bubble point pressure.

7.4.3 Continue to increase the gas pressure, and use data acquisition circuitry and software to collect gas flow rate and corresponding gas pressure data, with the data acquisition frequency as follows: The flow rate should be no less than 8 times/s, and a wet flow curve should be plotted.

7.4.4 Reduce the gas pressure to the initial state, remove the wet sample, and clean the holder.

7.4.5 Place the dried sample in the holder and tighten the holder. Slowly increase the gas pressure and record the gas flow rate and corresponding gas pressure. The data is used to plot the dry flow curve in the wet flow curve (7.4.3).

7.4.6 Reduce the gas pressure to the initial state, remove the sample, and clean the holder for the next test.



### 7.4.7 Repeat steps

7.4.6 to measure the remaining samples, obtaining 5 valid data for each sample.

### 7.5 Calculation and Representation of Results

7.5.1 Average Aperture In the graph drawn in 7.4.5, the semi-dry flow rate curve is plotted based on the measured dry flow rate curve, as shown in Figure

5.Find the wet flow rate curve and the semi-dry flow rate curve. The intersection of the dry flow curves is used to calculate the pressure value corresponding to the intersection point, and then the pressure value is substituted into formula (2) for calculation. The arithmetic of 5 test values is used. The average value represents the result, which is rounded to one decimal place.

7.5.2 Aperture Distribution Select the pore size range of the paper or paperboard sample, and calculate the pressure value corresponding to the limit value of the pore size range according to formula (1). Based on the wet flow curve... The orifice distribution is calculated using formula (3) based on the curve of the dry flow and the line. The result is expressed as the arithmetic mean of the five calculations, and the result is rounded to one decimal place.

## 8 Test Report

The test report should include the following.