

ICS 85.080
CCS Y 39



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

GB/T 47492-2026

**Sanitary paper products - Determination of air and moisture
permeability**

卫生用纸制品 透气（湿）性能的测定

Issued on: April 30, 2026

Implemented on: November 1, 2026

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

Table of Contents

4 Principles
4.1 Principle of air permeability test
5 Instruments
5.1 Air permeability tester
5.1.1 Horizontal air permeability tester
5.1.2 Vertical air permeability tester
5.2 Dry-state moisture permeability tester
6 Sample collection and pre-test treatment
7 Experimental Procedure
7.1 Horizontal air permeability test procedure
7.1.4 When the gas pressure in the gas storage device drops to
7.2 Vertical air permeability test procedure
7.2.5 When the gas pressure inside the gas storage device drops to
7.3 Dry-state moisture permeability test procedure
8 Results
9 Test Report

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. 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 National Light Industry Council. This document is under the jurisdiction of the National Technical Committee on Standardization of Paper Industry (SAC/TC141). This document was drafted by: Fujian Heng'an Household Products Co., Ltd., King Hong Ye Paper Group Co., Ltd., and China Pulp and Paper Research Institute. Yuanyuan Co., Ltd., Zhejiang Yiwei Personal Care Products Co., Ltd., Lulu Health Technology Co., Ltd., Chongqing Baiya Hygiene Products Co., Ltd. Company, Beijing Procter & Gamble Technology Co., Ltd., Unicharm Household Products (China) Co., Ltd., Zhejiang Zhenqi Nursing Products Co., Ltd., Fujian Meike Paper Co., Ltd., Hangzhou Keai Personal Care Products Co., Ltd., Shenzhen PurCotton Technology Co., Ltd., China Light Industry (Jinjiang) Hygiene Products Research Institute Limited Liability Company, China Light

Industry Paper Products Inspection and Certification Co., Ltd. The main drafters of this document are. Tang Shengde, Li Hailong, Jia Xiaolong, Wu Xiaobiao, Lü Weijun, Liu Junjie, Xu Yong, Wang Jiajun, Zou Chao, and Ren Yong. Tian Miao, Xie Zhijuan, Yu Feiying, Zeng Canhai, Li Shaolian, Wang Zhongcai, Luo Gai, Bo Wenfei, Zhu Yunping, Pang Bing, Liu Bing, Zhang Xian, Gao Juyi, Yu Liuqing Zheng Youbin, Zhang Jiefei, Zhang Yi, Liu Yang, Qiu Wenlun, Cui Min, Yuan Taojing. Determination of the air permeability (moisture permeability) of sanitary paper products

1.Scope This document describes the methods for determining the air permeability and moisture permeability of sanitary paper products. This document applies to the determination of the air permeability and moisture permeability of sanitary paper products, including baby diapers (sheets, pads) and adult diapers (sheets, pads). Products such as sanitary napkins (panty liners) and feminine hygiene underwear.

4.1 Principle of air permeability test

4.1.1 Horizontal air permeability The sample is placed between a test plate and a test head with a vent at the bottom. A certain pressure is applied to the upper part of the test head to make the test... The bottom surface of the test head contacts the sample under a certain pressure. Under specified test conditions, the time it takes for a certain volume of compressed air to pass through the sample is used to represent the pressure. Its horizontal breathability is demonstrated.

4.1.2 Vertical air permeability The sample is placed between a test plate with a circular air vent and a hollow test cup with a circular bottom. The upper part of the test cup... Pressure is applied to press the bottom of the test cup tightly against the surface of the sample, forming a sealed cavity inside the test cup. Under specified test conditions, the contents of the test cup... The time required for compressed air to pass vertically through a specimen of a specified area is used to characterize its vertical permeability.

4.2 Principle of Dry-State Moisture Permeability Test The dry sample is placed on a moisture permeability test plate, then positioned between the upper and lower test chambers, and sealed by applying pressure. The sample will then be tested. The cavity is divided into two sealed chambers. Under the action of the temperature and humidity control device, a humidity difference is created between the two sealed chambers. Within a specified time, the temperature and humidity are adjusted to maintain a high humidity level. The mass of water vapor penetrating the sample into the low-humidity cavity characterizes its dry-state moisture permeability.

5.1.1 Horizontal air permeability tester

5.1.1.1 The horizontal air permeability tester, as shown in Figure 1, mainly consists of a horizontal air permeability test plate, a test head, a pressure sensor, and an air storage device. It consists of ball valves, timing devices, etc.

5.1.1.2 Horizontal air permeability test plate. used to lay and fix the sample flat, and the surface should be flat.

5.1.1.3 Test Head. The bottom is made of circular silicone material, with the bottom area of the circular silicone material being $(20.0 \pm 0.1) \text{ cm}^2$, $(38.0 \pm 0.2) \text{ cm}^2$, and... $(64.0 \pm 0.2) \text{ cm}^2$ in three specifications.

5.1.1.4 Gas storage device. can provide a certain volume of compressed air, with a pressure bearing capacity $\geq 10 \text{ kPa}$ and a volume of $(30.0 \pm 0.5) \text{ L}$.

5.1.1.5 Pressure sensor. range 0 kPa~40 kPa, accuracy 0.075%FS.

5.1.1.6 Timing device. accuracy is $\pm 0.1 \text{ s}$.

5.1.2 Vertical air permeability tester

5.1.2.1 The vertical air permeability tester, as shown in Figure 2, mainly consists of a vertical air permeability test plate, a test cup, a pressure sensor, and an air storage device. It consists of ball valves, timing devices, etc.

5.1.2.2 Vertical air permeability test plate. Used to lay and fix the sample flat; the surface should be flat. The test plate should have a circular air permeability in the center. The vent area is available in three specifications. $(5.0 \pm 0.1) \text{ cm}^2$, $(20.0 \pm 0.1) \text{ cm}^2$, and $(50.0 \pm 0.2) \text{ cm}^2$.

5.1.2.3 Test cup. The inside is a hollow cavity with an internal volume of $(300 \pm 10) \text{ mL}$, and it is generally made of 304 stainless steel or similar material.

5.1.2.4 Gas storage device. can provide a certain volume of compressed air, with a pressure bearing capacity of $\geq 10 \text{ kPa}$ and a volume of $(30.0 \pm 0.5) \text{ L}$.

5.1.2.5 Pressure sensor. range 0 kPa~40 kPa, accuracy 0.075%FS.

5.1.2.6 Timing device. accuracy is $\pm 0.1 \text{ s}$.

5.1.2.7 Combed pure cotton plain knit fabric. yarn linear density of 16tex~18tex, unit area mass of $120 \text{ g/m}^2 \sim 140 \text{ g/m}^2$, length $(120 \pm 5) \text{ mm}$, width $(65 \pm 2) \text{ mm}$. Combed pure cotton weft-knitted fabric with an air permeability $\geq 700 \text{ mm/s}$. According to GB/T 5453, the test area is 20 cm^2 and the pressure difference is 100 Pa .

5.2 Dry-state moisture permeability tester

5.2.1 The dry-state moisture permeability tester, as shown in Figure 3, mainly consists of a dry-state moisture permeability test plate, a low-humidity chamber, a high-humidity chamber, and a temperature and humidity control device. It consists of a flow meter, a circulating pump, a desiccant, a timing device, etc.

5.2.2 Dry-state moisture permeability test plate. Used to lay and fix the sample flat; the surface should be flat. There is a circular moisture permeability hole in the center of the test

plate. The area is available in three specifications. $(5.0 \pm 0.1) \text{cm}^2$, $(20.0 \pm 0.1) \text{cm}^2$, and $(50.0 \pm 0.2) \text{cm}^2$.

5.2.3 Test Chamber. Includes a low-humidity chamber and a high-humidity chamber, mainly providing a specific temperature and humidity environment for sample testing. The sample and the test chamber should be tightly sealed. It must be sealed well to ensure it is airtight and moisture-proof.

5.2.4 Temperature and Humidity Control Device. The device should include temperature and humidity sensors, with a temperature control accuracy of $\pm 2^\circ\text{C}$. Relative humidity control accuracy... For $\pm 3\%$, the device should have a continuous and stable circulating airflow, and the temperature and humidity within the test space should be uniform. During the test, the sample surface... Condensation should not occur.

5.2.5 Desiccant. The main component is molecular sieve, with a particle size of 1.6mm~2.5mm. Static temperature is measured at 25°C using saturated saline solution. Water adsorption capacity $\geq 30\%$, and tapped bulk density between

0.64 g/mL and

0.68 g/mL.

5.2.6 Circulation pump. Provides a stable circulating airflow and should not cause changes in humidity in the pipeline during the circulation process.

5.2.7 Flow meter. test range 0L/min~5.0L/min, accuracy 0.5%FS.

5.2.8 Timing device. accuracy is $\pm 0.1\text{s}$.

5.3 Electronic Balance The graduation value is 0.01g.

6 Sample collection and pre-test treatment

6.1 Pre-test treatment for air permeability performance For breathability testing, at least 10 samples should be taken, with 5 samples used for vertical breathability testing and 5 samples used for horizontal breathability testing. (To be tested) The sample should be placed under the conditions specified in GB/T 10739 for more than 4 hours and tested under these conditions.

6.2 Pretreatment before dry-state moisture permeability test For dry moisture permeability testing, at least three samples should be taken. The samples to be tested should be placed in a drying oven and dried for 120 minutes at a temperature of [temperature missing]. During the drying process at 65°C , the surface layer should face outwards. After drying, place the sample in a sealed bag and seal it for later use. The dried sample should be kept in a sealed bag. The sealing time should not exceed 24 hours. The test sample shall be subjected to a dry-state moisture permeability test under the conditions of GB/T 10739.