

ICS 97.180
CCS Y 28



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

GB/T 47711-2026

Test method for the abrasion resistance of brush products

刷制品耐磨性能试验方法

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

5 Principles
6 Instruments and Equipment
6.6 Friction Platform
6.7 Sample Connection Device
6.9 Auxiliary Systems
6.10 Friction Medium
7 Method Selection
9 Experimental Procedure
9.2 Horizontal reciprocating wear method (Method B)
10 Result Calculation
10.1 Mass Wear
10.2 Mass wear rate
10.3 Length wear

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 Daily Necessities (SAC/TC595). This document was drafted by: Qianshan City Market Supervision and Inspection Institute (Adverse Drug Reaction Monitoring Center) and Anhui Huanmei Brush Industry Co., Ltd. Anhui Qianshan County Yida Brush Products Co., Ltd., Shunmei Plastics Co., Ltd., Beijing Yiqing Research Institute Co., Ltd., and Guangzhou Aoqun New Materials Co., Ltd. Limited Company, Beijing Light Industrial Products Quality Supervision and Inspection Station, Anhui Provincial Quality and Brand Promotion Association, Beijiajie Group Co., Ltd., Shanghai Thermal Power Ce Electronics Technology Co., Ltd., Top Daily Chemicals (China) Co., Ltd., Guangzhou Minghui New Materials Co., Ltd., and Henan Jiayi Daily Chemical Products Co., Ltd. Joint-stock company, Zhejiang Huilong Foreign Trade Co., Ltd., Anhui Provincial Institute of Quality and Standardization, Anhui Ankang Plastics Co., Ltd. Anhui Changzhong Brush Industry Co., Ltd., Anhui Longwei Brush Industry Co., Ltd., Anhui

Baozhilin Brush Industry Co., Ltd., Taicang Lefeng Industry and Trade Co., Ltd. Anhui Provincial Brush Industry Chamber of Commerce, Anhui Wanlian Standardization Research Center. The main drafters of this document are. Wang Xin, Sun Hongkui, Zheng Lili, Zheng Lirong, Wang Qi, Han Jun, Zhong Wenquan, Chu Guofei, Liu Xuezhen, and Xu Huabing. Ge Yuanzhen, Xu Yanmiao, Wang Wenbin, Hu Xiaoyan, Gong Baoli, Liu Xiaomei, Gong Xiaoyan, Liu Xuenian, Xu Dazhong, Huang Yimin, Huang Jiaping, Liu Xiaoning Gu Wanjun, Zhang Wenqiu, Zhang Wenxiang, Wang Xiaojian, Xu Wubao, Zhang Shijun, Zhang Xiangkuan, Ding Yuejin, Yu Jingwen. Test method for abrasion resistance of brush products

1.Scope This document describes the testing principles, methods, instruments, equipment, and report writing for the abrasion resistance of brush products. This document applies to abrasion resistance testing of brushes with bristles made of plastic, plant fiber, and animal fiber.

4.Classification Based on the bristle material, they can be divided into.

---Plastics, such as polypropylene (PP), polyethylene terephthalate (PET), polyethylene (PE), and nylon (PA);

---Plant fibers, such as ramie and sisal;

---Animal fibers, such as pig bristles.

5 Principles

Under certain pressure, the bristles of the brush product rub against the friction medium surface at a set speed and motion. After a set time, the friction is measured... By measuring changes in the mass or length of the brush bristles, the amount or rate of bristle wear can be calculated.

6 Instruments and Equipment

6.1 Electronic Balance Select an appropriate electronic balance based on different mass ranges. When the sample mass does not exceed 600g, choose an electronic balance with an accuracy of not less than 0.01g. Electronic balance; when the sample mass exceeds 600g, use an electronic balance with an accuracy of not less than 0.1g.

6.2 Vernier calipers The graduation value shall not be less than 0.02 mm.

6.3 Depth Caliper The graduation value shall not be less than 0.02 mm.

6.4 Drying Oven The temperature control range is 30°C~200°C, and the temperature control accuracy is $\pm 2^{\circ}\text{C}$.

6.5 Equipment Composition The test apparatus consists of a friction platform, a sample connection device, a drive device, and an auxiliary system (see Appendix A). The entire apparatus must meet the requirements of the test process. The stability and parameter repeatability requirements.

6.6 Friction Platform

6.6.1 Structure. A rigid base with a flat surface is used to fix the friction medium (such as sandpaper) and ensure that the friction medium does not shift during the test.

6.6.2 Motion mode. The friction medium is fixed, and the sample moves relative to the medium, which can be adapted to the requirements of different test methods.

6.7 Sample Connection Device

6.7.1 Fixing Function. Equipped with adjustable clamps (including chuck, screw holder, and universal joint), it can fix disc-shaped, strip-shaped, and similar-shaped objects.

6.7.2 Angle adjustment. The angle between the brush friction surface and the platform can be finely adjusted, with an adjustment range of $0^{\circ}\sim 30^{\circ}$ and a positioning accuracy of $\pm 0.5^{\circ}$.

6.8 Drive Unit The drive mechanism, consisting of a rotary drive motor and a horizontal reciprocating drive motor, can drive the sample to achieve horizontal rotation and horizontal reciprocating motion. Dynamic and rotary/reciprocating combined motions.

6.9 Auxiliary Systems

6.9.1 Wet test water supply device. including a water storage tank, flow meter and spray assembly, the water flow rate is displayed in real time by the flow meter, and the water flows through the clamps. The friction medium plane is covered as the sample moves, and the flow rate can be adjusted from 0 L/min to

6.9.2 Counting and Monitoring Module. This module should have programmable test parameter settings and real-time monitoring and recording capabilities, and be able to monitor and record the number of motion/friction cycles. Number of parameters, movement speed (including rotational speed and horizontal displacement speed), and test time (total test time and single test time). Rotational speed adjustment range. The range is 0 r/s to 3.0 r/s, and the horizontal displacement speed adjustment range is 0 mm/s to 300 mm/s.

6.10 Friction Medium

6.10.1 Brown corundum abrasive cloth with a particle size of P240 should be selected as the friction medium.

6.10.2 If other types of abrasive cloth are used, the abrasive cloth used shall comply with

the provisions of JB/T 3889 and shall be noted in the report.

7 Method Selection

7.1 Based on the design and intended use of the sample, test its wear resistance using one of the following methods.

---Horizontal Rotation and Simultaneous Horizontal Reciprocating Motion Wear Method (Method A). The sample rotation axis is perpendicular to the friction platform, and the rotation axis rotates clockwise. Simultaneous horizontal reciprocating motion;

---Horizontal reciprocating motion wear method (method B). The sample brush bristles (friction surface) are parallel to the friction platform and reciprocate in the horizontal direction.

7.2 The selection criteria shall be as specified in Table 1.

8.1 Sample Preparation Select specimens that are intact and free from damage or deformation. Cut the specimens to ensure that the bristle height is uniform. For large specimens, prepare them by cutting or other methods. Prepare two specimens for mass wear test and one specimen for length wear test, according to the specimen dimensions in Table 1.

8.2 Sample Conditioning Plastic material samples shall be prepared in accordance with GB/T 2918, and the temperature shall be adjusted to $(23\pm 2)^{\circ}\text{C}$ and relative humidity $(50\pm 5)\%$ for a period not lower than [the specified value]. 4h; plant fiber and animal fiber samples were tested according to GB/T 6529 at a temperature of $(20.0\pm 2.0)^{\circ}\text{C}$ and a relative humidity of $(65\pm 4)\%$. The environment should be conditioned for no less than 24 hours.

9 Experimental Procedure

9.1 Wear Method Based on Horizontal Rotation and Simultaneous Horizontal Reciprocating Motion (Method A)

9.1.1 Before the test, the sample was cleaned, then dried in a drying oven at $(50\pm 2)^{\circ}\text{C}$ for 24 hours. After conditioning, it was tested using an electronic thermometer. Weigh the sample and take its mass m_0 , or select 10 brush filaments evenly from the sample, mark them, and measure the brush filaments with vernier calipers/depth calipers. The original length L_0 .

9.1.2 Select brown corundum abrasive cloth or other suitable abrasive cloth according to the material of the sample brush bristles and lay it flat on the friction platform.

9.1.3 Fix the sample on the fixture, install it into the test equipment, and apply a certain load so that the brush bristles are perpendicular to the friction platform.