GB

NATIONAL STANDARD OF

THE PEOPLE'S REPUBLIC OF CHINA

UDC 677.017.6

W 04

GB/T 14577-93

Textiles - Determination of water repellency of fabrics by the Bundesmann rain-shower test

织物拒水性测定 邦迪斯门淋雨法

Issued on: August 29, 1993 **Implemented on: March 1, 1994**

Issued by: China Bureau of Technical Supervision

Table of Contents

Textiles - Determination of water repellency of fabrics by the Bundesmann rain-shower test

This Standard equivalently adopts the International standard ISO 9865-1991 “Textiles -- Determination of water repellency of fabrics by the Bundesmann rain-shower test”.

1 Thematic content and scope of application

This Standard specifies the determination of water repellency of fabrics by the Bundesmann rain-shower test.

This Standard applies to evaluate the effect of water repellency finishing process of the fabrics subjected to the shower under exercise conditions.

2 Normative references

GB 6529, *Textiles - Standard atmospheres for conditioning and testing*

3 Definition

water repellency

the ability of fabrics to resist rainwater absorption over the specified time under the designated artificial rain gear; it may be also used to evaluate the amount of water absorbed through the fabric and outflow through the fabric

4 Principle

Place the sample on the sample cup to make it subjected to man-made rain under the specified conditions. Then, use reference sample and wet sample for visual comparison to evaluate the water repellency. Weigh the moisture absorbed by the sample during the test. Record the amount of water collected in the sample cup through the sample.

5 Equipment and materials

The aluminum and aluminum alloy substrates shall comply with the provisions of GB 11333.

5.1 The rain-shower instrument consists of rain-shower utensil, sample loader and frame.

5.1.1 The rain-shower utensil consists of 300 identical drippers that are evenly distributed on a plane with a diameter of 406 mm (the area is about 1300 cm^2).

The surface diameter of drop formed by each dripper is about 4 mm. About 0.07 mL of the drops of water come from the dripper. The water flow of the rain-shower equipment is adjustable. The flow can be set before the test. The flow of per 100 cm^2 of the shower surface is 100±5 mL/min. The distance from the dripper to the sample surface center is 1500 mm. The test water is passed through a mechanical filter to remove larger impurities. The water temperature shall be 20±3°C.

5.1.2 The sample loader consists of sample clip, sample cup and wiper. It has a cup-shaped structure. It can collect and measure the water permeated through the sample.

5.1.2.1 The sample clip is placed on the upper of the sample loader, which consists of buckle and sample clamping ring. It can clamp the sample. The sample clamping ring of thick fabric shall be bigger than that of thin fabric. After clamping, the exposed surface of sample shall be 80 cm^2.

5.1.2.2 The outer diameter of sample cup is 100 mm. The center of the cup is angled by 15° to the vertical to ensure water flow on the surface of the sample. Each sample cup has a 7±1 mm diameter vent.

5.1.2.3 Each sample cup is attached with a pair of wipers, in cross shape. The test scraper shall be close to the lower of the sample. The force value is about 250 cN. It rotates 20 times per minute. The rotation angle is about 100°. The arm length of the cross-shaped scraper is 48mm; the width is 5 mm. It is made of stainless steel, with surface polished. It is slightly curved along the length direction (about 630 mm in radius). The radius of the arc cross-section is about 5 mm.

5.1.2.4 When several samples are to be tested in the same way, 4 sample loaders shall be uniformly arranged in a ring shape on the same component of the sample holder. During the rain-shower test, the cup holder is rotated around the center of the instrument at 6 r/min, so all the samples are subjected to the same rain-shower conditions.

5.2 The centrifuge consists of a 700 r/min horizontal loading tray.

The loading tray is circular and has a diameter of 175 mm. There are about 50 fine ribs on the surface which are arranged radially. About 1 mm high ribs around the loading tray are evenly distributed so that the wet sample shall not cling to the tray.

conditioning, to the nearest of 0.01 g. After identifying the test surface of the sample, put it on the sample cup without any tension. Use suitable sample clamping ring to clamp the sample.

Pull the rain board, so that the sample is showered for 10 min.

Use reference sample (see 5.3) for visual evaluation of wet sample's water repellency according to the following 5 levels.

Level 5	Small drops of water drip quickly
Level 4	Large drops of water form
Level 3	Some samples are stained with water beads
Level 2	Partial are wetted
Level 1	Entire surface is wetted

It shall evaluate the water repellency after 1 min and 5 min.

Observe the wetting condition of the un-showered surface of the sample.

Centrifuge 15s for sample dehydration, immediately weigh its mass m2, to the nearest of 0.01 g (if it cannot immediately weigh after dehydration, it shall weigh in the weighing bottle).

In the rain-shower test, in addition to the determination of the amount of water absorbed by the sample, it can also measure the water amount penetrated through the sample. Measure the water collected in the sample cup in milliliters.

10 Results expression

Calculate the water absorption rate, in mass percentage. The equation is as follow:

This is an excerpt of the PDF (Some pages are marked off intentionally)

------ The End ------