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

GB/T 31128-2025

**Testing and evaluation of the resistance to pile loop extraction
for towel products**

毛巾产品毛圈钩拉力测试与评价

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Foreword

This document is in accordance with the provisions of GB/T 1.1-2020 "Guidelines for standardization work Part

1. Structure and drafting rules for standardization documents" Drafting. This document replaces GB/T 31128-2014 "Test method for terry hook tension of towel products". Compared with GB/T 31128-2014, In addition to 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.2014 edition);
- b) The definition of terry hook tension has been changed (see 3.1, 3.1 of the.2014 edition);
- c) The principle has been changed (see Chapter 4, Chapter 4 of the.2014 edition);
- d) Added sensor requirements [see 6.1c)];
- e) Added the provisions for sample conditioning time and description of sampling precautions (see 7.1,
- f) The sample clamping method and the selection and hooking method of the tested loops (groups) have been changed (see 8.1.2, 8.2.3, 8.1.1,.2014 edition 8.2.1);
- g) Added description of abnormal situation of loop breakage during test (see 8.1.7, 8.2.8);
- h) The selection of displacement in the position-shift method has been changed (see 8.2.1, 8.2.3 of the.2014 edition);
- i) The settings of pre-tension and selected displacement in the position-shift method have been changed (see 8.2.2, 8.2.1 of the.2014 edition);

1 Scope

China's national test method and evaluation for the resistance of towel products to pile loop extraction, and the current edition of GB/T 31128, replacing the 2014 edition. It describes two test methods for the force required to pull a pile loop out of a towel, together with the sampling, the specimen conditioning, the procedure, the expression of results and, new in this edition, an evaluation index against which the measured force is judged. Pile loop pull-out is the characteristic failure of a towel and the one a consumer notices first. A towel is a woven fabric with a third warp - the pile warp - fed at several times the rate of the ground warp so that it stands up in loops on both faces. Those loops are what give the towel its absorbency and its feel, and they are held in place only by the friction of the ground weave closing on them. When a loop is caught - on a fingernail, a ring, a hook, a rough surface - it can be pulled out as a long single thread, leaving a run across the towel that grows with every wash. The test grips a single loop or a group of loops and measures the force required to extract it, which is a direct measure of how tightly the ground weave holds the pile. The 2025 revision revises the scope, the definition and the principle, adds a sensor requirement, adds specimen conditioning times and sampling precautions, revises how specimens are clamped and how the loops to be tested are selected and hooked, adds the treatment of a loop that breaks during the test, and revises the pre-tension and displacement settings of the position-shift method. Issued on 28 February 2025 and in force since 1 September 2025.

2 Normative references

The contents of the following documents constitute essential clauses of this document through normative references in this document. For referenced documents without a date, only the version corresponding to that date applies to this document; for referenced documents without a date, the latest version (including all amendments) applies to This document.

GB/T 3923.1-2013 Tensile properties of textile fabrics Part

GB/T 6529 Standard atmospheres for conditioning and testing textiles

GB/T 6682 Specifications and test methods for water used in analytical laboratories

GB/T 8170 Rules for rounding off values and expression and determination of limit values

FZ/T 60044-2014 Test method for terry height of towel products

3 Terms and definitions

The following terms and definitions apply to this document.

3.1 Terry hook tension resistancetopileloopextraction The maximum force required to hook

a certain number or length of loops from a towel tissue. [Source: FZ/T 60053-2024, 7.5, modified]

4 Principle

Use a strong tensile tester with a yarn hooking device to measure the time required to hook a certain number or length of loops from the towel tissue. The maximum force value is used to evaluate the anti-hooking performance of the sample.

5 Humidity Control and Test Atmosphere

The standard atmosphere for pre-humidification, humidity adjustment and testing shall be carried out in accordance with the provisions of GB/T 6529.

6 Equipment, Materials, and Reagents

6.1 Constant rate of extension (CRE) testing apparatus. in accordance with the requirements of 6.1a) to

c) of GB/T 3923.1-2013, and equipped with the following equipment.