

ICS 59.060.20

CCS W 50



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

GB/T 14338-2022

Replacing GB/T 14338-2008

**Man-made fibre - Test method for crimping performance of
staple fibre**

化学纤维 短纤维卷曲性能试验方法

Issued on: April 15, 2022

Implemented on: November 1, 2022

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

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1 Scope

GB/T 14338-2022 is the Chinese national standard on man-made fibre - test method for crimping performance of staple fibre, in the field of textile and leather technology. The /T suffix marks it as a recommended standard: it is not compulsory by itself, but it becomes binding as soon as a contract, a tender or a customer specification calls it up - which in practice is how most foreign buyers meet it. It was issued on 15 April 2022 by the State Administration for Market Regulation; Standardization Administration of China, and has been in force since 1 November 2022. Classification: ICS 59.060.20, CCS W 50. This page is published from the official record of the standard held by the Chinese standards administration: the identification, the dates, the classification and the issuing body are taken from there. The clause text, the tables and the numeric limits are in the document itself, which is delivered complete in English translation.

This document describes the test method for the crimping performance of man-made fiber

--- staple fiber. This document is applicable to man-made fiber

--- staple fiber.

2 Normative References

The contents of the following documents constitute indispensable clauses of this document through the normative references in the text. In terms of references with a specified date, only versions with a specified date are applicable to this document. In terms of references without a specified date, the latest version (including all the modifications) is applicable to this document.

GB/T 4146 (all parts) Textiles - Man-made Fibers

GB/T 9994 Conventional Moisture Regains of Textile Materials

GB/T 14334 Sampling Method for Man-made Staple Fibers

3 Terms and Definitions

The terms and definitions defined in GB/T 4146 (all parts) are applicable to this document.

4 Principle

Under the specified tension, read the crimp peak and crimp valley of the fiber; under different tensions, within a certain stress time, determine the length variation of the fiber. Thus, the crimping performance data, such as: crimp number, crimp rate, crimp recovery rate and crimp elasticity of the fiber is obtained.

5 Instruments and Tools

5.1 Crimp elasticity tester, which needs to satisfy the following requirements:

- a) The force measurement error is less than or equal to 1%;
- b) Length resolution:
0.01 mm;
- c) Equipped with a device for precise calibration of the instrument.

5.2 Fleece board: form a contrasting color with the fiber.

5.3 Tweezers, etc.

6 General Rules of Test

6.1 Sampling The rules of the sampling are as follows:

---For the laboratory samples of bulk items, take out as needed, and the minimum size shall not be less than 10 g;

---For the laboratory samples from batch samples, conduct the sampling in accordance with the stipulations of GB/T 14334. Packages that are accidentally damp, damaged or opened during transportation shall not be taken as samples.

6.2 Pre-conditioning, Standard Atmosphere for Humidity-conditioning and Testing, and Humidity-conditioning Time

6.2.1 Pre-conditioning When the sample complies with one of the following conditions, pre-conditioning is required:

---When the moisture regain of the specimen exceeds the conventional moisture regain;

---When the sample is in an atmosphere with a relative humidity higher than the upper limit of the relative humidity of the laboratory;

---When the temperature of the sample is 5 °C lower than the laboratory temperature.

Conditions for pre-conditioning: at a temperature not exceeding 50 °C and a relative humidity of 10% ~ 25%, place for at least 30 min. The conventional moisture regain shall comply with the stipulations of GB/T 9994.

6.2.2 Standard atmosphere for humidity-conditioning and testing For the staple fiber with a conventional moisture regain less than 4.5%, the temperature is (20 ± 2) °C and the relative humidity is (65 ± 5)%. For the staple fiber with a conventional moisture regain greater than or equal to 4.5%, the Calculate in accordance with Formula (5): Where, J_{di}

---the crimp elasticity of a single fiber, expressed in (%); L_{1i}

---the length of a single fiber when it is subject to heavy tension (7.4), expressed in (mm); L_{2i}

---after the load is removed, the length of a single fiber when it recovers for 2 min, then, is subject to light tension (7.5) again, expressed in (mm); L_{0i}

---the length of a single fiber when it is subject to light tension (7.3), expressed in (mm).

8.5 Result Expression All test results are expressed as the arithmetic mean of valid test values.

9 Test Report

The test report shall include:

- a) The Standard used (including year of issue);
 - b) The name and specifications of the sample;
 - c) The test method used and all test parameters;
 - d) The results of various performance tests of laboratory samples; if the standard deviation and coefficient of variation are calculated, then, they should be written into the report;
 - e) After negotiation, reminders for modification of test procedures and other parts inconsistent with this document;
 - f) Abnormal phenomena observed in the test;
 - g) Test personnel, test date. Where, CV
- the coefficient of variation of n test results; s
- the standard deviation of n test results;

---the arithmetic mean of n tests. B.2 Calculation of Increased Number of Test Fibers B.2.1
Half-width value of confidence interval The half-width value (c) of confidence interval of n test results is calculated in accordance with Formula (B.4): Where, c

---the half-width value of confidence interval of n test results; t

---the value of t distribution (at the required 95% confidence level, it can be found through Table B.1); s

---the standard deviation of n test results; n