

Translated English of Chinese Standard: FZ/T01057.3-2007

[www.ChineseStandard.net](http://www.ChineseStandard.net)

[Sales@ChineseStandard.net](mailto:Sales@ChineseStandard.net)

# FZ

TEXTILE INDUSTRY STANDARD

OF THE PEOPLE'S REPUBLIC OF CHINA

ICS 59.080.01

W 04

## FZ/T 01057.3-2007

Replacing FZ/T 01057.3-1999

---

### Test Method for Identification of Textile Fibers - Part 3: Microscopy

纺织纤维鉴别试验方法 第3部分：显微镜法

#### **FZ/T 01057.3-2007 How to BUY & immediately GET a full-copy of this standard?**

1. [www.ChineseStandard.net](http://www.ChineseStandard.net);
2. Search --> Add to Cart --> Checkout (3-steps);
3. No action is required - Full-copy of this standard will be automatically & immediately delivered to your EMAIL address in 0~25 minutes.
4. Support: [Sales@ChineseStandard.net](mailto:Sales@ChineseStandard.net). Wayne, Sales manager

**Issued on: May 29, 2007**

**Implemented on: November 1, 2007**

---

**Issued by: National Development and Reform Commission of the  
People's Republic of China**

## Table of Contents

<b>1</b>	<b>Scope</b> .....	<b>5</b>
<b>2</b>	<b>Normative References</b> .....	<b>5</b>
<b>3</b>	<b>Principle</b> .....	<b>5</b>
<b>4</b>	<b>Reagents</b> .....	<b>5</b>
<b>5</b>	<b>Instruments and Tools</b> .....	<b>5</b>
<b>6</b>	<b>Test Specimen</b> .....	<b>6</b>
<b>7</b>	<b>Procedures</b> .....	<b>6</b>
<b>8</b>	<b>Cross and Longitudinal Sections Morphological Characteristics of Various Fibres</b> .....	<b>7</b>
<b>9</b>	<b>Test Report</b> .....	<b>7</b>
	<b>Appendix A (Informative) Slice Cutter Structure Diagram</b> .....	<b>9</b>
	<b>Appendix B (Informative) Longitudinal and Cross Sections Morphological Characteristics of Various Fibers</b> .....	<b>11</b>
	<b>Appendix C (Informative) Longitudinal and Cross Sections Morphology Micrographs of Various Fibers</b> .....	<b>14</b>

## Foreword

FZ/T 01057 "Test Method for Identification of Textile Fibers" includes the following nine parts:

- Part 1: General Introduction;
- Part 2: Burning Behavior;
- Part 3: Microscopy
- Part 4: Solubility;
- Part 5: Qualitative Observation of Colour-production for Chloring and Nitrogen;
- Part 6: Fibre Melting Point;
- Part 7: Density Gradient Column Method;
- Part 8: Infrared Absorption Spectrum;
- Part 9: Birefringence.

This part is part 3 of FZ/T 01057.

This part replaces "Test Method for Identification of Textile Fibres - Microscopy" (FZ/T 01057.3-1999).

In this revision, the former 11 parts of FZ/T 01057-1999 were integrated into 9 parts and the order of each part was adjusted. Namely, Part 5 "Staining Test Method" and Part 11 "Systematic Identification Method" were deleted; the former Part 6 "Qualitative Observation of Colour-production for Chloring and Nitrogen" was changed to Part 5; the former Part 7 "Fibre Melting Point" was changed to Part 6; the former Part 9 "Density Gradient Column Method" was changed to Part 7; and the former Part 10 "Birefringence" was changed to Part 9.

The following changes were made to FZ/T 01057.3-1999:

- 1) The name was changed for "Test Method for Identification of Textile Fibers - Part 3: Microscopy";
- 2) The clause "Normative References" was added;
- 3) The clause "Test Report" was added;
- 4) The morphological descriptions of longitudinal and cross sections of 18 kinds

# Test Method for Identification of Textile Fibers –

## Part 3: Microscopy

### 1 Scope

This part of FZ/T 01057 specifies a kind of test method for identification of textile fibres - microscopy.

This part is applicable to the identification of various textile fibres.

### 2 Normative References

The following normative documents contain the provisions which, through reference in this part of FZ/T 01057, constitute the provisions of this part. For dated reference, the subsequent amendments (excluding corrigendum) or revisions of these publications do not apply. However, the parties who enter into an agreement according to this part are encouraged to study whether the latest editions of these documents are applicable. For undated references, the latest edition of the normative document is applicable to this part.

FZ/T 01057.1 Test Method for Identification of Textile Fibers - Part 1: General Introduction

### 3 Principle

The category of unknown fibre is identified by observing the longitudinal and cross section morphology of unknown fibre with a microscope and comparing it to the standard photo and morphological description of fiber.

### 4 Reagents

Absolute ethyl alcohol, glycerol, ethyl ether, liquid paraffin, collodion, paraffin section, etc..

### 5 Instruments and Tools

Fiber slice cutter (or other similar device, rotary microtome), cutter blade, small rotary

microtome.

**7.2.2.2** Take a bundle of fibres; make them to straight and even by hand drawing; place them in 80% ethyl alcohol for soaking for 2min; take them out; twist them for 2~3 times with fingers; then treat them in 90% ethyl alcohol, anhydrous ethanol, mixed solution of ethyl ether and ethyl alcohol (1:1) and 3%~5% collodion solution in turn with the same method; after the fibre bundle are air dried, embed them in paraffin.

**7.2.2.3** Glue the embedded and finished fiber wax block on the wood block.

**7.2.2.4** Clip one end of the wood block on the specimen fixing frame, turn the set screw of wax block to tightly clamp the wax block and parallel to the slicing knife; adjust the wax block until it close to the cutting edge.

**7.2.2.5** Calibrate the adjuster of the rotary microtome to the required slice thickness; generally, 6 $\mu$ m~10 $\mu$ m are most appropriate for fibre slices.

**7.2.2.6** Waggle the hand wheel clockwise to move the wood block up and down and cut out strip serial slices; take down slices with tweezers or writing brush and place them in a black carton for use.

### **7.2.3 Cross section observation**

Place the fibre cross section slice on the glass slide and add a drop of transparent medium (pay attention not to bring gas bubble) and put on the cover glass, place the glass slide on the stage of biological microscope and observe the morphology of the fibres under 100 times~500times of magnification factor and then compare it with standard photo or material.

## **8 Cross and Longitudinal Sections Morphological**

### **Characteristics of Various Fibres**

See Table B.1 in Appendix B for the cross and longitudinal sections characteristics of various fibres; see Appendix C for the longitudinal and cross sections morphology micrographs of various fibers.

## **9 Test Report**

The test report shall cover the following contents:

- a) Description for that the test is carried out according to this part;
- b) Information of test specimen;

- c) Deviation with established procedures;
- d) Longitudinal and cross sections morphology specimen;
- e) Fiber category of the specimen.

## Appendix B

### (Informative)

## Longitudinal and Cross Sections Morphological Characteristics of Various Fibers

Table B.1

Fiber name	Cross section morphology	Longitudinal section morphology
Cotton	Possessing of middle chamber, irregular kidney shape.	Flat strip shape, slightly natural twist.
Mergerized cotton	Possessing of middle chamber, approximately circular or irregular kidney shape.	Approximately cylinder shape, possessing of luster and gap.
Ramie	Kidney shape, possessing of middle chamber.	Fiber is thicker, possessing of long stripe and bamboo-shaped cross marking.
Flax	Polygon, possessing middle chamber.	Fiber is thinner, possessing of bamboo-shaped cross marking.
Hemp	Polygon, oblate ness, kidney shape, etc., possessing of middle chamber.	Fiber diameter and morphological differences are very large, cross marking is not obvious.
Apocynum	Polygon, kidney shape, etc.	Possessing of luster, cross marking is not obvious.
Jute	Polygon, possessing of middle chamber.	Possessing of long stripe, cross marking is not obvious.
Bamboo fiber	Kidney shape, possessing of cavity.	Fiber is plucked, possessing of long stripe and bamboo-shaped cross marking.
Mulberry silk	Triangle or polygon, angle is round.	Possessing of luster, fiber diameter and morphology are different.
Tussah silk	Long and thin triangle.	Flat and strip shape, possessing of minuteness stripe.
Wool	Circular or approximately circular (or elliptic shape).	Rough surface, possessing of scales.
White cashmere	Circular or approximately circular.	Smooth surface, scales are relatively thin and coat completely in relatively large distance.
Purple cashmere	Circular or approximately circular, possessing of color spot.	Besides the morphological characteristics of white cashmere, it also possesses of color spot.
Rabbit hair	Circular, approximately circular or irregular quadrilateral, possessing of medullary	Scales are relatively small, the scales and fiber are skewed in longitudinal direction,

---

		pits.
Polytetrafluoroethylene fiber	Rectangle.	Smooth surface.
Carbon fiber	Irregular carbon powder shape.	Black and uniform pole shape.
Metal fiber	Irregular rectangle or circular.	The border line is out of straight, black pole shape.
Asbestos	Non uniform carbon black paste shape.	Plucked.
Fiberglass	Clear ballpoint shape.	Smooth and clear surface.
Phenolic fiber	U shaped	Surface is possessed of stripe, similar to middle chamber.
Polysulphonamide fiber	Similar to potato shape.	Surface is similar to leaves shape.



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

**Full-copy PDF can be purchased from 1 of 3 websites:**

1. <https://www.ChineseStandard.us>

- SEARCH the standard ID, such as GB 4943.1-2022.
- Select your country (currency), for example: USA (USD); Germany (Euro).
- Full-copy of PDF (text-editable, true-PDF) can be downloaded in 9 seconds.
- Tax invoice can be downloaded in 9 seconds.
- Receiving emails in 9 seconds (with download links).

2. <https://www.ChineseStandard.net>

- SEARCH the standard ID, such as GB 4943.1-2022.
- Add to cart. Only accept USD (other currencies - <https://www.ChineseStandard.us>).
- Full-copy of PDF (text-editable, true-PDF) can be downloaded in 9 seconds.
- Receiving emails in 9 seconds (with PDFs attached, invoice and download links).

3. <https://www.google.com/search?tbm=bks&q=ChineseStandard.net>

- SEARCH the standard ID, such as GB 4943.1-2022.
- Google Books -- Select your currency.
- Processed by Google (delivery, tax invoice etc.). Delivered in 9 seconds by Google.
- Tips: Download an unprotected **True-PDF** (text-editable) from Google-Books:
  1. <https://play.google.com/books> → 2. Sign in → Google account
  3. Find the **BOOK** you bought → 4. Click "3-dots" → Export
  5. Save as "\*.pdf" (Save True-PDF to your local computer for offline reading/printing)

Translated by: Field Test Asia Pte. Ltd. (Incorporated & taxed in Singapore. Tax ID: 201302277C)

Accountable person and shareholder: Wayne Zheng

About Us (Goodwill, Policies, Fair Trading...): <https://www.chinesestandard.net/AboutUs.aspx>

Contact: Wayne Zheng, [Sales@ChineseStandard.net](mailto:Sales@ChineseStandard.net)

Linkin: <https://www.linkedin.com/in/waynezhengwenrui/>

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