

ICS 59.080.01
CCS W 04



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

GB/T 47787-2026

**Textiles - Quantitative microscopical analysis - General
principles of testing**

纺织品 显微镜定量分析 试验通则

(English Translation)

Issued on: July 2, 2026

Implemented on: February 1, 2027

Issued by: State Administration for Market Regulation

Table of Contents

Foreword
Introduction
1 Scope
2 Normative references
3 Terms and Definitions
4 Principles
5 Equipment
5.1 Transmitted light microscope

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.

This document is modified to adopt ISO 20705:2019 "Textiles - General rules for quantitative analysis by microscopy".

The technical differences between this document and ISO 20705:2019, and the reasons therefor, are as follows.

---GB/T 2910.1 has replaced ISO 1833-1 (see 7.1.1); FZ/T 01057.3 has replaced ISO/T R11827 (see 8.1), for convenient use of standards;

---The content that overlapped with the scope in the principle has been revised, and the expression is now more standardized (see Chapter 4);

---The requirement for microscope magnification has been changed from "magnification of 150-500" to "magnification of 150x and above," for easier...

Operation (see 5.1);

The relevant standards remain consistent for ease of operation (see 7.1.5.1);

---The density of some fibers in Appendix A has been revised, and the density of other fibers has been increased to align with existing domestic standards (see Appendix A).

Appendix A).

The following editorial changes have been made to this document.

- The way the scope is expressed has been changed (see Chapter 1);
- Notes 1 and 3 have been added for easier use of the standard (see 5.1);
- Added "Note. Other curing agents that achieve equivalent results can also be used" for easier laboratory operation (see 6.2);
- Appendix B (see Appendix B of ISO 20705:2019) has been deleted.

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 Textile and Apparel Council.

This document is under the jurisdiction of the National Technical Committee on Standardization of Textiles (SAC/TC209).

Introduction

Quantitative microscopy analysis involves identifying and measuring fibers using a microscope [optical microscope (LM) or scanning electron microscope (SEM)].

The percentage of fibers in the mixed sample is calculated using the number, diameter or area of fibers, and fiber density. Then, based on the sample structure (loose fibers,...),...

Calculate the fiber mass fraction of laboratory samples (yarn, woven fabric, knitted fabric, etc.).

General Rules for Quantitative Microscopic Analysis of Textiles

1 Scope

This document describes a general method for the quantitative microscopic analysis of various fiber mixtures. This method uses an optical microscope (LM) or scanning electron microscope.

Electron microscopy (SEM) is used to determine the diameter of the fiber (longitudinal view) or the area of the fiber cross-section (cross-sectional view). Appendix A provides the standard procedures.

Fiber density.

This document applies to blends of fibers such as cashmere and wool, cotton and linen, and flax and hemp, which are not easily separated by hand or chemical methods.

Compound.

Note: When the cross-sectional shape is circular or approximately circular, a longitudinal view is used; when the cross-section has other shapes, a cross-sectional view is used. FZ/T 01057.3 provides...

Examples of longitudinal and cross-sectional views of some fibers are shown.

2 Normative references

The contents of the following documents, through normative references within the text, constitute essential provisions of this document. Dated citations are not included.

For references to documents, only the version corresponding to that date applies to this document; for undated references, the latest version (including all amendments) applies.

This document.

GB/T 2910.1 Quantitative chemical analysis of textiles-Part 1: General tests (GB/T 2910.1-2009, ISO 1833-1.

2006, IDT)

FZ/T 01057.3 Textile Fiber Identification Test Methods Part 3: Microscopic Method

3 Terms and Definitions

test specimen unit

The straight portion of a single yarn.

Note 1: The length of the sample unit depends on the size of the sample base.

Note 2: This statement does not apply to specimens prepared from loose fibers (see 7.1.2) or fiber strips (see 7.1.3).

4 Principles

The longitudinal or cross-sectional views of representative samples are magnified to an appropriate scale/size under an optical microscope or scanning electron microscope.

Identify and count all fiber types in the sample based on differences in fiber morphology, measure the diameter or cross-sectional area of each fiber, and combine this with fiber density.

Calculate its mass fraction in the mixture.

5.1 Transmitted light microscope

This includes a light source, condenser, stage, objective lens, and graduated eyepiece (eyepiece grating or micrometer scale). The microscope's objective lens and eyepiece should be capable of...