

ICS 59.060.01



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

GB/T 14343-2008

Replacing GB/T 14343-2003

Testing method for linear density of man-made filament yarns

化学纤维 长丝线密度试验方法

(English Translation)

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Table of Contents

Foreword	3
1 Scope	5
2 Normative references	5
3 Terms and definitions	6
4 Test of multifilament yarn density	6
5 Linear density test of monofilament (determination of multifilament number)	11
6 Calculation results	12
7 Data rounding	13
8 Allowed errors	13
9 Test Report	14
Appendix A	15
Appendix B	16
Appendix C	17

Foreword

Compared with BISFA standards "The testing method for polyester filament yarns" (2004), "The testing method for nylon filament yarns" (2004), and "The testing method for rayon, cupra, acetate, triacetate, and lyocell filament yarn" (1997), the consistency degree of linear density of this Standard is non-equivalent.

This Standard replaces GB/T 14343-2003 "Testing method for linear density of synthetic fiber filament yarns". Compared with GB 14343-2003, the main changes are as follows.

- MODIFY the scope of application; EXPAND it from synthetic filament to cellulose chemical fiber filament (see Chapter 1);
- MODIFY the sampling requirements, SAMPLE according to parts or bulk samples (see 4.3.1);
- INCREASE pre-controlled humidity temperature, relative humidity and time (see 4.3.21);
- MODIFY humidity and experimental standard atmospheric conditions and time (see 4.3.2.2);
- ADD the calculation of pre-tension load (see 4.3.3.1);
- ADD the half-width value of the confidence interval ($\pm 1.5\%$) (see 4.3.5);

- ADD the test methods and calculations to the thread number determination of monofilament linear density and multifilament linear density;
- MODIFY the digital rounding of calculated results (see Chapter 7).

Appendix C of this Standard is normative; Appendix A and Appendix B are informative.

1 Scope

This Standard specifies the testing method for linear density of filament yarns (multifilament and monofilament) such as polyester (PET), polyamide (nylon), polypropylene (PP), and cellulose chemical fibers.

This Standard applies to the testing of linear density of filament yarns which are drawn from roll-packed or fabric. Strands and cables can refer to this Standard for implementation.

This Standard does not apply to the filament yarns of which the elongation is greater than 0.5% when the tension increases from 0.05 cN/dtex to 0.1 cN/dtex.

2 Normative references

The following normative documents contain provisions which, through reference in this text, constitute provisions of this Standard. For dated reference, all the subsequent amendments (excluding corrections) or revisions do not apply to this Standard, however, it is encouraged that the parties, who reach an agreement according to this Standard, study whether the latest versions of these documents can be used. For undated references, the latest editions of the normative documents referred to apply to this Standard.

GB/T 3291.3 Textiles - Terms of textile material properties and test - Part 3: General

GB/T 6502 Sampling method of man-made filament yarns

GB/T 6529 Textiles. Standard atmospheres for conditioning and testing

GB/T 8170 Rules of rounding off for numerical values

3 Terms and definitions

The following terms and definitions and those determined by GB/T 3291.3 apply to this Standard.

3.1 Nominal linear density

Product linear density indicated in the sales contract, invoice or packaging.

4.1 Principle

Under the specified test conditions, MEASURE the mass of the sample of which the length is known, CALCULATE the linear density.

The linear density shall be represented by Tex system, the recommended unit is decitex (dtex).

4.2 Devices

4.2.1

Strands of yarn length measuring instrument

4.2.2

Single thread length measurement frame

4.2.2.1

Vertical ruler. measuring range is 1 m; the minimum scale value is 1mm.

4.2.2.2

Devices applying pre-tension. the accuracy of applying pre-tension is 10%.

4.2.3

Tension measuring instrument

4.2.4

Balance. with a suitable weighing range. The minimum scale value of skein filament method is 1 mg; the minimum scale value of single thread method is 0.1 mg.

4.2.5

Oven. operating temperature is 40°C -150°C

4.2.6

Auxiliary devices. sample trays, stopwatch, scissors, and black velvet panels

4.3.2 Pre-humidity, humidity and experimental standard atmosphere

USE the humidity and experimental standard atmosphere of textiles prescribed by GB/T 6529.

4.3.2.1 Pre-humidity

When the sample regain exceeds nominal moisture regain, pre-humidity is required.

4.3.2.2 The humidity and experimental standard atmosphere

Polyester, polypropylene filament humidity and experimental standard atmosphere.

4.3.3 The pre-tension of samples

4.3.3.1

Pre-tension samples shall be calculated according to formula (1).

4.3.4.1 Skein method

Sample length used in nominal linear density of different sizes is shown in Table 1.

4.3.4.2 Single thread method

Each sample length is $(1.000 \pm 0.0001)\text{m}$.

4.4.1 Length measurement of sample

This Standard provides 2 forms of length measurement - hank (applicable to supportable package) and single-yarn (for non-supportable package).

4.5 Collection of data

Respectively COLLECT measurement length and mass of each sample. The length of hank shall be obtained by multiplying frame length and the number of circles.

5.1 Principle

Visually COUNT the number of monofilament in multifilament; and then the linear density of the multifilament is divided by the number of threads to obtain the linear density of the monofilament.

5.2.2 Test Procedure

STRIP the surface filament of laboratory samples. TAKE a piece of sample with suitable length. PRESS one end of the sample with a platen. TACK the other end to be loosen with teasing needle.

5.3 The linear density of monofilament

It is obtained through that measured linear density of multifilament yarns is divided by the number of monofilament.