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

GB/T 2543.1-2015

**Textiles -- Determination of twist in yarns -- Part 1: Direct
counting method
(English Translation)**

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1 Scope

1.1

This Part of GB/T 2543 specifies the test method for the determination of twist direction, twist, and change in length on untwisting of yarns by direct counting method.

1.2

This Part applies to:

- a) Single yarns (spun and twisted multifilament);
- b) Plied yarns;
- c) Cabled yarns.

Each type of yarn has a separate test procedure. This method is mainly used for yarn package. After adding a special step, it can be used for yarns taken from fabrics.

Note: For yarns taken from fabrics, see GB/T 29256.4.

1.3

This Part includes the determination of the following twists of plied and cabled yarns:

- a) Plied yarns: Final twist of plied yarns and original twist of the single yarn before plying;
- b) Cabled yarns:
 - The final cabling twist of cabled yarns;
 - The original twist of the plied yarn after plying, but before cabling;
 - The twist of single yarn before plying.

1.4

If necessary, through the special steps of 10.5.7, the twist of single yarn and plied yarn in the final structure can be determined.

1.5

Except by agreement, this Part does not apply to yarns which stretch more than 0.5% when the tension is increased from 0.5 cN/tex to 1.0 cN/tex. This type of yarn can be tested under tension conditions accepted by the parties involved.

specimen; rotate one end of the specimen; remove the twist of the yarn specimen, until the components of the yarn under test are parallel. According to the number of turns required to remove the twist of the yarn, obtain the twist of the yarn.

5.1 Twist counter

5.1.1

It is composed of a pair of clamps. One of which can rotate around an axis in both directions and is connected with a rotation counter. It shall be possible to adjust the position of at least one clamp, so that the measured yarn length can be varied within the range of 10 mm~500 mm. There must be no gaps in the jaws.

5.1.2

There shall be pretensioning device and device for measuring specimen length. The accuracy of the device for measuring specimen length is ± 0.5 mm or $\pm 2\%$ of the specimen length, whichever is less.

5.1.3

The twist counting device shall be able to record the number of revolutions of the rotary clamp.

5.1.4

If it is necessary to determine the contraction or elongation of the specimen length after untwisting, the movable clamp, when moving, shall not produce significant friction.

5.2 Dissecting needle

It is used to check the untwisting state of the yarn under test.

5.3 Magnifying device

It is used to observe the specimen.

5.4 Reeling device (optional)

It is used for reeling laboratory sample skeins.

6.1 The standard atmosphere for pre-conditioning, conditioning and testing

shall meet the requirements of GB/T 6529.

The change of relative humidity will not directly affect the twist. However, a large range of humidity changes will cause the length of some materials to change.

Therefore, the sample should be subject to moisture equilibrium and test in a

10.1.1 According to the provisions of GB/T 6529, condition the laboratory

sample package or the laboratory sample skeins (5.4) wound from the package in the test standard atmosphere for equilibrium.

10.1.2 According to the unwinding method when the package is in use, at the lowest practicable tension, the yarn is unwound from the top or side of the yarn package. In the process of unwinding and handling the sample, pay attention to avoid the change of the original twist. Before taking the first specimen, unwind and discard about 5 m of yarn.

10.1.3 Fix the specimen in the clamp of the twist counter (5.1); then cut the specimen from the package. If it is necessary to continue to take another specimen from the package, it shall use a fixed clamp to clamp; or use a heavy object to press the free end of the yarn, to avoid loss of twist.

10.2 Single spun yarn

10.2.1

According to the nominal length of the fiber in the yarn under test, adjust the position of the movable clamp on the twist counter (5.1) (see 8.1.1), accurate to ± 0.5 mm. The gap between the jaws of the two clamps will affect the gauge length of the specimen and shall be eliminated. Use an accurate gauge or caliper to measure the distance between the clamps, to verify the gauge length of the specimen. Set the revolution counter to zero.

10.2.2

Use a pretension of (0.5 ± 0.1) cN/tex to fix the specimen in the clamp of the tester. Be careful not to lose twist.

If the elongation of the yarn under test reaches or exceeds 0.5% under the specified tension, the pretension shall be adjusted, so that the specimen elongation does not exceed 0.1%. This exceptional situation shall be agreed by the parties concerned. And the pretension used shall be indicated in the test report.

10.2.3 Turn the rotating clamp to untwist the specimen, until the dissecting

needle (5.2) can be passed from the non-rotating clamp to the rotating clamp.

If necessary, it is possible to use a magnifying glass (5.3) to observe, to ensure that the specimen is completely untwisted.

10.2.4 Observe the untwisting; verify whether it is consistent with the twist direction of the specimen determined by the observation in Clause 9.

10.2.5 Record the initial length, twist direction, and number of turns of the specimen.

10.2.6 Repeat the above operation, until the required number n of specimens is tested (see 8.3).

10.3.1 Adjust the distance between the clamps of the twist counter to

(250 ± 0.5) mm [or (500 ± 0.5) mm]. The gap between the jaws of the two clamps will affect the gauge length of the specimen and shall be eliminated. Use an accurate gauge or caliper to measure the distance between the clamps, to verify the gauge length of the specimen. Set the revolution counter to zero.

10.3.2 Follow the steps of 10.2.2~10.2.5 in single spun yarn.

10.3.3 If the information about change in length on untwisting is required, loosen the fixing mechanism of the movable clamp; under pretension, measure the length of the specimen after untwisting; record the change in length; indicate whether the length is increased or decreased.

10.3.4 Repeat the above operation, until the required number n of specimens is tested (see 8.3).