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English version

Textiles - Determination of twist in yarns - Direct counting method (ISO 2061:1995)Textiles - Détermination de la torsion des fils
- Méthode par comptage direct (ISO 2061:1995)Textilien - Bestimmung der Drehung von Garnen
- Direktes Zählverfahren (ISO 2061:1995)**STANDARD PREVIEW**
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CENEuropean Committee for Standardization
Comité Européen de Normalisation
Europäisches Komitee für Normung

Central Secretariat: rue de Stassart, 36 B-1050 Brussels

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Foreword

The text of the International Standard ISO 2061:1995 has been prepared by Technical Committee ISO/TC 38 "Textiles" in collaboration with CEN/TC 248 "Textiles and textile products".

This European Standard shall be given the status of a National Standard, either by publication of an identical text or by endorsement, at the latest by April 1996, and conflicting national standards shall be withdrawn at the latest by April 1996.

According to the CEN/CENELEC Internal Regulations, the following countries are bound to implement this European Standard: Austria, Belgium, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and the United Kingdom.

Endorsement notice

The text of the International Standard ISO 2061:1994 has been approved by CEN as a draft European Standard without any modification.

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INTERNATIONAL
STANDARD

ISO
2061

Second edition
1995-10-15

**Textiles — Determination of twist in
yarns — Direct counting method**

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*Textiles — Détermination de la torsion des fils — Méthode par comptage
direct*

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Reference number
ISO 2061:1995(E)

ISO 2061:1995(E)

Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

International Standard ISO 2061 was prepared by Technical Committee ISO/TC 38, *Textiles*, Subcommittee SC 5, *Yarn testing*.

This second edition cancels and replaces the first edition (ISO 2061:1972), which has been technically revised.

Annex A of this International Standard is for information only.

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Textiles — Determination of twist in yarns — Direct counting method

1 Scope

1.1 This International Standard specifies a method for the determination of the direction of twist in yarns, the amount of twist, in terms of turns per unit length, and the change in length on untwisting, by the direct counting method.

1.2 This International Standard is applicable to:

- a) single yarns (spun or multifilament);
- b) folded (plied) yarns;
- c) cabled yarns.

Separate procedures are given for each type of yarn. The method is designed primarily for yarns in packages, but with special precautions the procedures can be used for yarns taken from fabrics. It is not suitable for the determination of twist in a monofilament.

NOTE 1 See also ISO 1890:—¹⁾, *Reinforcement yarns — Determination of twist*, which was prepared especially for the needs of glass textile technology, and ISO 7211-4:1984, *Textiles — Woven fabrics — Construction — Methods of analysis — Part 4: Determination of twist in yarn removed from fabric*.

1.3 This International Standard covers the determination of twist in plied and cabled yarns as follows.

- In plied yarns: the final twist of the plied yarns and the original twist of the single yarn before plying.
- In cabled yarns:
 - a) the final cabling twist of the yarn;

b) the original twist of the plied yarn after plying, but prior to the last stage of processing;

c) the twist of the single yarn before plying.

1.4 If desired, the twist of single and plied yarn components as they lie in the final structure may be determined by the special procedure given in 10.5.7.

1.5 This International Standard is not applicable, except by agreement, to yarns which stretch more than 0,5 % when the tension increases from 0,5 to 1,0 cN per unit linear density of the yarn expressed in tex. Such yarns may be tested under special conditions of tension which are accepted by all parties interested in the test results.

1.6 This International Standard is not suitable for products of open-end spinning and intermingled (interlaced) multifilament yarns.

1.7 This International Standard is not applicable to yarns which are too large to permit their being placed in the clamps of the testing apparatus without crushing or distortion severe enough to affect the test results.

2 Normative references

The following standards contain provisions which, through reference in this text, constitute provisions of this International Standard. At the time of publication, the editions indicated were valid. All standards are subject to revision, and parties to agreements based on this International Standard are encouraged to investigate the possibility of applying the most recent editions of the standards indicated below.

1) To be published. (Revision of ISO 1890:1986)

Members of IEC and ISO maintain registers of currently valid International Standards.

ISO 2:1973, *Textiles — Designation of the direction of twist in yarns and related products*.

ISO 139:1973, *Textiles — Standard atmospheres for conditioning and testing*.

ISO/TR 8091:1983, *Textiles — Twist factor related to the Tex System*.

3 Definitions

For the purposes of this International Standard, the following definitions apply.

3.1 twist: Number of turns about the axis of a yarn based on its nominal gauge length before untwisting.

Twist should preferably be expressed as turns per metre (turns/m), but it may be expressed as turns per centimetre (turns/cm).

3.2 gauge length: Distance between two effective clamping points of the test specimen mounted in the testing equipment.

3.3 initial length: Length of a test specimen under a specified pretension at the beginning of a test.

3.4 change in length on untwisting: Increase or decrease in initial length observed when the specimen is untwisted, expressed as the percentage extension, or contraction, based on the specimen initial length.

3.5 moisture equilibrium for testing: That state reached when the rate of increase in mass of a sample or specimen in a specified (test) atmosphere does not exceed that prescribed for the material being tested. (See ISO 139.)

A textile material is in moisture equilibrium with the ambient atmosphere when it does not exchange water with this atmosphere; its mass then remains constant as long as the experiment is carried out in an unchanged atmosphere. For test purposes, moisture equilibrium is reached by absorption, starting from a relatively low moisture content.

3.6 yarn package: Length or lengths of yarn in a form suitable for use, handling, storing or shipping.

Packages may be comprised of unsupported yarn, such as balls, or supported yarn, such as skeins,

cakes, bobbins, cops, cones, pirns, spools, tubes or beams.

3.7 twist factor: Measure of the spiralling orientation of the fibres in a spun yarn or of the filaments in a filament yarn.

It is related to the angle which fibres on the surface of the yarn make with the axis of the yarn and is a measure of the hardness of the resulting yarn due to twist.

4 Principle

The twist in a known length of yarn is removed by rotating one end of the specimen with respect to the other until the components of the yarn being tested are parallel. The exact number of turns required to remove the twist is reported in terms of turns per unit length of yarn.

5 Apparatus

5.1 Twist counter, consisting of a pair of clamps, one of which is rotatable in either direction and positively connected to a revolution counter. The position of one or both clamps shall be adjustable to permit testing yarn lengths from 10 mm to 500 mm. There shall be no play in the clamp which might affect the gauge length.

Means shall be provided for applying tension to the specimen and for rapidly determining the specimen length with an accuracy of $\pm 0,5$ mm or ± 2 %, whichever is smaller.

NOTE 2 The limit of 2 % is consistent with the highest accuracy required in counting the number of turns in the specimen.

The counting device shall be capable of recording the number of revolutions of the rotatable clamp.

If the contraction or extension of the untwisted specimen is to be measured, the movable but nonrotatable clamp shall be capable of travelling with essentially no friction.

5.2 Dissecting needle.

5.3 Means for magnifying the specimen being tested.

5.4 Equipment for reeling laboratory sample skeins (optional).

6 Standard atmosphere

The standard atmospheres for preconditioning, conditioning and testing shall be as specified in ISO 139.

NOTE 3 The amount of twist is not affected directly by changes in relative humidity, but since wide changes in humidity cause changes in length of some materials, all determinations should be made on samples in equilibrium with the appropriate standard atmosphere.

Generally it is not necessary to precondition samples before conditioning for twist tests.

7 Sampling

Samples shall be taken in one of the following ways:

- a) according to directions, if any, given in the material specification;
- b) according to procedures approved by ISO for textile products, if directions on sampling are not included in the material specification;
- c) according to the method given in annex A, if neither a) nor b) is applicable.
 - 1) Bulk samples shall be taken as directed in A.1 of annex A.
 - 2) Laboratory sample packages shall be taken from the bulk sample as directed in A.2 of annex A.

8 Test specimens

8.1 Length

8.1.1 Single spun yarns

The initial length of the specimen shall be as great as possible, but shall be somewhat less than the average length of the staple fibre used to spin the yarn. The initial lengths of specimens listed in table 1 are commonly used.

Table 1 — Specimen lengths

Type of yarn material	Specimen initial length mm
Cotton	10 and 25
Worsted	25 and 50
Woollen	25 and 50
Bast fibre	100 and 250

8.1.2 Single multifilament yarns

Take an initial length of 250 mm \pm 0,5 mm if the nominal twist is \geq 1 250 turns/m.

Take an initial length of 500 mm \pm 0,5 mm if the nominal twist is $<$ 1 250 turns/m.

8.1.3 Folded and cabled yarns

Take an initial length of 250 mm \pm 0,5 mm if the nominal twist is \geq 1 250 turns/m.

Take an initial length of 500 mm \pm 0,5 mm if the nominal twist is $<$ 1 250 turns/m.

8.2 Selection

8.2.1 Test specimens shall be taken, at the lowest tension practicable, from the end of the package if this is the normal method of use; otherwise, take the yarn from the side of the package. Discard the few metres of yarn at the beginning and end of the package in order to avoid damaged sections.

If it is desired to reel laboratory sample skeins, the yarn specimens shall be taken as specified in 8.2.1 and shall be representative of the original package.

8.2.2 If two or more test specimens are taken from an individual yarn package, they shall be taken at random intervals of at least 1 m in order to minimize the effects of cyclic variation introduced during manufacture. If more than two specimens are taken from an individual package, take groups of specimens, not more than five to a group, at intervals of several metres.

8.3 Number of test specimens

8.3.1 Take the number of specimens required in the material specification, when applicable.

8.3.2 In the absence of material specification, take a number of specimens designed to give the precision specified below, following the directions given in 8.3.3 or 8.3.4, depending on the information available on the variation of twist results in the material being tested.

8.3.3 If information on variation is available, take a number of specimens, n , calculated by the formula given in table 2, to secure the precision specified at a probability of 95 %.