

ISO

INTERNATIONAL ORGANIZATION FOR STANDARDIZATION

ISO RECOMMENDATION R 1890

TEXTILE GLASS

DETERMINATION OF THE TWIST
IN TEXTILE GLASS CONTINUOUS FILAMENT YARNS AND STAPLE FIBRE YARNS

1st EDITION

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BRIEF HISTORY

The ISO Recommendation R 1890, *Textile glass – Determination of the twist in textile glass continuous filament yarns and staple fibre yarns*, was drawn up by Technical Committee ISO/TC 61, *Plastics*, the Secretariat of which is held by the American National Standards Institute (ANSI).

Work on this question led to the adoption of Draft ISO Recommendation No. 1890, which was circulated to all the ISO Member Bodies for enquiry in October 1969. It was approved, subject to a few modifications of an editorial nature, by the following Member Bodies :

Australia	Israel	Spain
Austria	Italy	Sweden
Belgium	Japan	Switzerland
Canada	Korea, Rep. of	Turkey
Czechoslovakia	Netherlands	U.A.R.
France	New Zealand	United Kingdom
Germany	Roumania	U.S.A.
Greece	South Africa, Rep. of	U.S.S.R.

No Member Body opposed the approval of the Draft.

This Draft ISO Recommendation was then submitted by correspondence to the ISO Council, which decided to accept it as an ISO RECOMMENDATION.

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IN TEXTILE GLASS CONTINUOUS FILAMENT YARNS AND STAPLE FIBRE YARNS

1. SCOPE

This ISO Recommendation describes a method for determining the twist in textile glass continuous filament yarns and staple fibre yarns.

In the case of staple fibre yarns, the results obtained should be regarded as indicative only.

2. PRINCIPLE

Counting, by means of a twist tester, of the number of turns necessary for the complete untwisting of 500 mm of yarn secured between the clamps of the apparatus, and calculation of the mean of a specified number of measurements.

3. APPARATUS

Twist tester, i.e. an apparatus which has two clamps, one fixed and one movable, mounted on a bar, and a means for securely fastening a section of yarn stretched under tension between the clamps. The movable clamp has a means for untwisting the yarn and the tensioning device maintains constant tension on the yarn along its axis. The yarn is untwisted and the number of turns to completely untwist the yarn is counted. The change in length of the yarn may be determined by accurate measurement of the length of yarn before and after the untwisting operation.

Additionally the twist tester must satisfy the following conditions :

- it should be capable of yielding results accurate to one twist;
- it must be possible to set the yarn between clamps under a known and adjustable tension, the distance between clamps being 500 mm for yarns of any type;
- the clamps must not damage the yarn;
- an indicator should permit measurement with an accuracy of 1 mm of the change in the length of the specimen between the clamps.

4. SAMPLING AND NUMBER OF TESTS

The size of the sample from a given consignment of packages should be in accordance with ISO Recommendation R 1886, *Textile glass – Procedure for sampling batches or consignments of textile glass continuous filament yarn, staple fibre yarn and roving packages*.*

If the textile glass continuous filament yarns and staple fibre yarns have another origin (fabrics, mats, etc.) refer to the specifications concerning the products from which the yarns come whenever sampling procedures are given. If not, the method for selection of samples should be decided by previous agreement.

In cases where only a small sample is available, the procedure described in this ISO Recommendation may be followed, but the result thus obtained will only be approximate.

4.1 First, untwist the yarn to determine its construction, i.e. the number of individual yarns used.

The aim of this operation is

- (1) to find out if the yarn is a single, folded or cabled yarn;
- (2) to determine the value of the standard pre-tension or pre-tensions (for definition and value refer to ISO Recommendation R 1889, *Textile glass – Determination of the linear density of textile glass continuous filament yarn, staple fibre yarn and roving in the form of packages*), which must be known to determine the twist in accordance with this ISO Recommendation.

4.2 From each package of the sample, pull off yarn tangentially, allowing the package to revolve, or alternatively pull off yarn over-end, if this is the intended method of use of the package, under a slight tension lower than the standard pre-tension.

4.3 Reject 10 m of yarn before making a series of ten measurements in conformity with the procedure specified in section 5 and without cutting the yarn.

Make five measurements at random along the yarn, at irregular intervals of not less than 2 m. Wind off about 100 m of the yarn and make a further set of five random measurements at intervals of not less than 2 m. of at least 2 m.

If there is any doubt concerning the regularity of the twist between beginning and end of the packages, first make the measurements as indicated in the previous paragraph on the outside sections of the package, then unwind enough yarn to reach the deeper layers and make a second series of ten measurements according to the same procedure.

5. PROCEDURE FOR EACH TWIST TEST

For each test, unwind the yarn from the outside of the package perpendicularly to the axis or over-end, as appropriate, and without cutting it, directly from the package to the twist tester and secure it under standard pre-tension between the fixed clamp and the rotatable clamp.

In order to avoid any change in twist before or while securing the yarn in the clamps, it is important

- (a) to select a length of yarn slightly greater than the required initial length, so as to necessitate handling the yarn only once before securing it between the clamps;
- (b) to adjust the initial length of yarn without the yarn rubbing on any part of the apparatus, for instance against the half-opened jaws of the clamp where the yarn will ultimately be secured.

5.1 Single yarn

Remove the twist completely; this can be checked by passing a needle between the untwisted elements. Record the number of turns necessary for this complete untwisting, as well as the S or Z direction of the twist (see ISO Recommendation R 2*, *Designation of the direction of twist in textile yarns and related products*).

5.2 Folded yarn

In a folded yarn the standard pre-tension is the sum of the standard pre-tensions found for each of the single yarns constituting the folded yarn. It is useful, in carrying out the test, to apply this pre-tension by means of two weights, the first weight corresponding to the pre-tension of one single constituent yarn, the other weight added to reach the pre-tension of the folded yarn.

Completely untwist the folded yarn. Record the number of turns necessary for this operation as well as the direction of twist in the folded yarn.

Next, reduce the pre-tension to the value found for a single constituent yarn by removing the second weight initially added. By cutting close to the clamps, remove all but one of the individual yarns separated by the first untwisting operation. Record the length of the remaining yarn.

Completely remove the twist of the remaining yarn, recording the number of turns necessary as well as the direction of twist.

* 2nd Edition, 1966.