SLOVENSKI STANDARD
SIST EN 14970:2006

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Tekstilije - Pletiva - Ugotavljanje dolžine petlje in dolžinske mase preje v kulirnih pletivih

Textiles - Knitted fabrics - Determination of stitch length and yarn linear density in weft knitted fabrics

Textilien - Maschenwaren - Bestimmung der Maschenlänge und der längenbezogenen Garnfeinheit bei Gestricken

Textiles - Étoffes a mailles - Détermination de la longueur de fil absorbée et de la masse linéique du fil dans les tricots a mailles cueillies

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Textiles - Knitted fabrics - Determination of stitch length and yarn linear density in weft knitted fabrics

Textiles - Étoffes à mailles - Détermination de la longueur de fil absorbée et de la masse linéique du fil dans les tricots à mailles cueillies

Textilien - Maschenwaren - Bestimmung der Maschenlänge und der längenbezogenen Garnfeinheit bei Gestricken

This European Standard was approved by CEN on 9 December 2005.

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Contents

page

Foreword 3
Introduction 4
1 Scope 5
2 Normative references 5
3 Terms and definitions 5
4 Apparatus 6
5 Conditioning and testing atmosphere 6
6 Method A: Stitch length 6
7 Method B: Linear density 8
8 Test report 8
Annex A (informative) Example of exploitation of the test method "barré analysis" 9
Annex B (informative) Example of measurement on typical knitted fabrics 11
Annex C (informative) Statistical evaluation of the precision 12
Bibliography 13

Foreword

This European Standard (EN 14970:2006) has been prepared by Technical Committee CEN/TC 248 “Textiles and textile products”, the secretariat of which is held by BSI.

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of an identical text or by endorsement, at the latest by July 2006, and conflicting national standards shall be withdrawn at the latest by July 2006.

According to the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland and United Kingdom.

Introduction

The stitch length and yarn linear density, as defined and determined within this European Standard is part of the characterisation of a knitted fabric's structure.

1 Scope

This European Standard specifies test methods for the determination of stitch length and yarn linear density of a weft knitted fabric. They can be applied to warp knitted fabrics, if it is possible to de-knit the fabric.

The measurements will be applied to yarns from each knitting machine feeder and/or different patterning courses.

The results can be used for the analysis of fabric fault, e.g. barré analysis.

2 Normative references

The following referenced documents are indispensable for the application of this European Standard. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

EN ISO 139, *Textiles — Standard atmospheres for conditioning and testing (ISO 139:2005)*

3 Terms and definitions

For the purposes of this European Standard, the following terms and definitions apply.

3.1
weft-knitted fabrics
generic name applied to knitted fabrics in which the stitches made by each weft thread are formed substantially across the width of the fabric

NOTE Weft-knitted fabrics are characterised by the fact that each weft thread is fed at right angles to the direction in which the fabric is produced.

3.2
warp-knitted fabrics
generic name applied to knitted fabrics in which the stitches made from each warp thread are formed substantially along the length of the fabric

NOTE Warp knitted fabrics are characterised by the fact that each warp thread is fed more or less in line with the direction in which the fabric is produced.

3.3
stitch loop
basic unit of most knitted fabrics consisting of a loop meshed at its base with a previously formed loop

3.4
stitch length
length of yarn knitted into one stitch in a weft-knitted or in a warp-knitted fabric

3.5
linear density
mass per unit length of linear textile materials

3.6
course
row of stitches across the width of a weft-knitted or of a warp-knitted fabric

3.7
wale
column of stitches along the length of a weft-knitted or of a warp-knitted fabric

3.8
rack length
480 courses of warp knitted fabric

3.9
barré
stripiness (weft knitting)
fault in weft-knitted fabric (usually knitted on multi-feeder machine) appearing as light or dark course-wise stripe(s). In warp-knitted fabric the same fault may occur in the vertical direction

4 Apparatus

4.1 Length measurement apparatus

The apparatus for the length measurement of the yarn shall contain the following:

— clamps for firmly securing the yarn ends;

— the means of application of tension to the yarn being measured by the moving of one of the clamps;

— a graduated measuring scale having 1 mm division positioned such that the length of yarn secured within the clamps is included in the total length measurement.

4.2 Balance, accurate to 1 mg or better.

5 Conditioning and testing atmosphere

The standard temperate atmosphere for preconditioning, conditioning and testing textiles as specified in EN ISO 139 shall be used.

6 Method A: Stitch length

6.1 Principle

A length of yarn taken from the fabric sample over a defined number of stitch loops is measured under an appropriate tension. Stitch length is determined by calculation, dividing the length measured by the number of stitch loops.

6.2 Test specimens

The test specimen shall be large enough to enable a minimum length of yarn of 250 mm to be taken from the shortest course.

A minimum of 10 yarns from each course type shall be taken for the length measurement determination of stitch length.

During removal and during the measurement of yarns, avoid loss of twist.

NOTE Where a widthways pattern is included in the fabric, this should be the distance over which the number of stitch loops is counted.

6.3 Procedure

Identify the courses. If the structure is complex, describe the structure or the pattern according to EN ISO 8388.

Clarify the de-knitting direction of the sample. Cut along one wale of a sample, count the required number of stitch loops as described in Annex B starting from this cut then cut along the wale at the required distance. Record the number of stitch loops counted.

Remove the first yarn from the prepared fabric specimen and secure in the clamps of the measuring device, carefully preventing loss of twist. Slide the moving clamp so as to apply the required tension as given in Table 1. Measure and record in millimetres the length of yarn.

Table 1 —Application of tension

Yarn type	Tension to be applied
Fibre staple yarn (excluding bare elastane)	0,5 cN/tex ± 0,1 cN/tex
Filament yarn (excluding bare elastane)	2,0 cN/tex ± 0,5 cN/tex

NOTE Bare elastane yarns are measured untensioned.

If knitting crimp still remains in the yarn at this tension, increase the tension as necessary to remove this knitting crimp, and achieve a straightened state. This revised tension shall be included within the final report.

Remove subsequent lengths of yarn and measure in the same manner as for the first, achieving a total of 10 measurements.

If different course/ feeder types exist within the fabric sample, this procedure should be carried out on each type.

For the analysis of fabric faults, refer to the example in Annex B.

6.4 Calculation and expression of results

Record the individual values measured for each course/feeder type and calculate the mean of the individual results for each.

Calculate the stitch length per one stitch, expressed in millimetres, for each course type as follows:

$$C = \frac{A}{B}$$

where

A is the mean yarn length (mm);

B is the number of stitch loops;

C is the stitch length (mm).

Express the result per one stitch.

Other expressions of results may be used, for example:

- yarn length for 100 stitches;