



SLOVENSKI STANDARD

SIST EN 12562:1999

01-november-1999

Tekstilije - Paraaramidne multifilamentne preje - Metode preizkušanja

Textiles - Para-aramid multifilament yarns - Test methods

Textilien - Para-Aramid Filament-Garne - Prüfverfahren

Textiles - Fils multifilaments para-aramides - Méthodes d'essai

Ta slovenski standard je istoveten z: **EN 12562:1999**

[SIST EN 12562:1999](https://standards.iteh.ai/catalog/standards/sist/4f4dd9cd-ea28-4e11-a258-4fb9f402a4c6/sist-en-12562-1999)

<https://standards.iteh.ai/catalog/standards/sist/4f4dd9cd-ea28-4e11-a258-4fb9f402a4c6/sist-en-12562-1999>

ICS:

59.100.30 Aramidni materiali Aramide materials

SIST EN 12562:1999

en

iTeh STANDARD PREVIEW
(standards.iteh.ai)

SIST EN 12562:1999

<https://standards.iteh.ai/catalog/standards/sist/4f4dd9cd-ea28-4e11-a258-4fb9f402a4c6/sist-en-12562-1999>

EUROPEAN STANDARD
NORME EUROPÉENNE
EUROPÄISCHE NORM

EN 12562

July 1999

ICS

English version

Textiles - Para-aramid multifilament yarns - Test methods

Textiles - Fils multifilaments para-aramides - Méthodes
d'essai

Textilien - Para-Aramid Filament-Garne - Prüfverfahren

This European Standard was approved by CEN on 27 August 1998.

CEN members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration. Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the Central Secretariat or to any CEN member.

This European Standard exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CEN member into its own language and notified to the Central Secretariat has the same status as the official versions.

CEN members are the national standards bodies of Austria, Belgium, Czech Republic, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and United Kingdom.

iTeh STANDARD PREVIEW
(standards.iteh.ai)

SIST EN 12562:1999
<https://standards.iteh.ai/catalog/standards/sist/4f4dd9cd-ea28-4e11-a258-4fb9f402a4c6/sist-en-12562-1999>



EUROPEAN COMMITTEE FOR STANDARDIZATION
COMITÉ EUROPÉEN DE NORMALISATION
EUROPÄISCHES KOMITEE FÜR NORMUNG

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

Foreword

This European Standard 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 January 2000, and conflicting national standards shall be withdrawn at the latest by January 2000.

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

iTeh STANDARD PREVIEW
(standards.iteh.ai)

SIST EN 12562:1999

<https://standards.iteh.ai/catalog/standards/sist/4f4dd9cd-ea28-4e11-a258-4fb9f402a4c6/sist-en-12562-1999>

STANDARDS INTERNATIONAL
www.standards-international.com
.....
STANDARDS INTERNATIONAL

Introduction

The generic term aramid fibre is defined in ISO 2076:1989. From the group of aramid fibres, para-aramid filament yarns are used for high performance products mostly for industrial and technical textile applications.

Test methods for para-aramid filament yarns for fibre reinforcement of plastics are published by CEN/TC 249.

1 Scope

This standard specifies test methods applicable for para-aramid filament yarns designed for high performance applications. It applies to para-aramid filament yarns for cables, ropes, belts, braids and fabrics as used for sports, protective and industrial-textile applications, reinforced rubber goods, tires etc. It is not applicable for para-aramid filament yarns for fibre reinforced composites.

This standard refers to European standards, but specifies test requirements in addition where needed. The test methods apply to filament yarns and plied or cabled yarns (cords) twisted from such yarns.

This standard includes the following test methods:

- determination of linear density (see 7.2);
- determination of breaking force, elongation at break, modulus and force at specified elongation (see 7.3);
- determination of twist (see 7.4).

SIST EN 12562:1999
<https://standards.iteh.ai/catalog/standards/sist/4f4dd9cd-ea28-4e11-a258-4fb9f402a4c6/sist-en-12562-1999>

2 Normative references

This European Standard incorporates by dated or undated reference, provisions from other publications. These normative references are cited at the appropriate places in the text and the publications are listed hereafter. For dated references, subsequent amendments to or revisions of any of these publications apply to this European Standard only when incorporated in it by amendment or revision. For undated references the latest edition of the publication referred to applies.

EN ISO 291: 1997	Plastics - Standard atmospheres for conditioning and testing (ISO 291 : 1997)
EN 20139 : 1992	Textiles - Standard atmospheres for conditioning and testing (ISO 139:1973)
EN ISO 2060 : 1995	Textiles - Yarn from packages - Determination of linear density (mass per unit length) by the skein method (ISO 2060:1994)
EN ISO 2061 : 1995	Textiles - Determination of twist in yarns -Direct counting method (ISO 2061: 1995)
EN ISO 2062 : 1995	Textiles - Yarn from packages - Determination of single-end breaking force and elongation at break (ISO 2062:1993)
EN ISO 2231 : 1995	Rubber- or plastics coated fabrics - Standard atmospheres for conditioning and testing (ISO 2231: 1989)
ISO 471 : 1995	Rubber - Temperatures, humidities and times for conditioning and testing

ISO 2076 : 1989	Textiles - Man-made fibres - Generic names
ISO 10012-1 : 1992	Quality assurance requirements for measuring equipment - Part 1: Metrological confirmation system for measuring equipment.

3 Definitions

For the purposes of this standard the following definitions apply:

3.1 cabled yarn; cord: Yarn with two or more yarns, of which at least one is a folded yarn, combined by one or more twisting operations.

NOTE : For certain industrial uses, the term cord is used for folded or cabled yarns.

3.2 clamps: Parts of a testing device used to grip the test specimen by means of suitable jaws.

3.3 commercial moisture regain: Arbitrary value formally adopted as the moisture regain to be used with the oven-dry mass when calculating linear density.

3.4 elongation: Ratio of extension of a test specimen to its initial length, expressed as a percentage.

3.5 elongation at break: Elongation of a test specimen at the breaking force.

3.6 extension: Increase in length of a test specimen produced by a tensile force, expressed in units of length.

3.7 filament: Fibre of very great length, considered as continuous.

3.8 filament yarn: Yarn composed of one or more filaments, that run essentially the whole length of the yarn.

NOTE 1: Yarns of one or more filaments are referred to as monofilament or multifilament respectively.

NOTE 2: Filament yarns can have the following morphologies: flat, interlaced, twisted, twistless, textured or combinations of these.

3.9 folded yarn: Yarn in which two or more single yarns are combined by a single twisting operation.

3.10 breaking force: Maximum force applied to a test specimen during a tensile test carried to rupture.

3.11 force at specified elongation: Tensile force associated with a specified elongation on the force - elongation curve.

3.12 gauge length: Distance between the two effective clamping points of a testing device.

NOTE: The effective clamping points of jaws can be checked by clamping a test specimen under the defined pretension with carbon copy paper to produce a gripping pattern on the test specimen and/or faces.

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

NOTE: For a tensile test the initial length is measured between the two effective clamping points (see 3.12).

3.14 jaws: Elements of a clamp which grip the test specimen without damaging it and prevent slippage during the test.

3.15 modulus: Property of a material representative of its resistance to deformation. In tensile testing the modulus is expressed as the ratio of tenacity to strain.

3.15.1 chord modulus: In a tenacity-elongation curve, the ratio of the change in tenacity to the change in elongation divided by 100 between two specified points on the curve.

3.16 oven-dry mass: Constant mass of a specimen obtained by drying in an oven under prescribed conditions of temperature and humidity.

3.17 pretension: Tension applied to a test specimen at the beginning of certain tests.

NOTE: Pretension is used to establish a stable length condition.

3.18 tenacity: Force divided by linear density.

3.19 tenacity at break: Breaking force divided by the linear density of the unstrained material.

SIST EN 12562:1999

<https://standards.iteh.ai/catalog/standards/sist/4f4dd9cd-ea28-4e11-a258-4fb9f402a4c6/sist-en-12562-1999>

4 Principle

The principles of the test methods used in this standard are stated in the appropriate sections of the reference standards specified for each test method.

5 Sampling

Select either samples in accordance with the procedure laid down in the material specification, or as agreed between the interested parties.

Avoid samples which show any signs of damage or accidental dampness incurred in the course of transportation.

6 Atmospheres for preconditioning, conditioning and testing

The atmospheres for preconditioning, conditioning and testing shall be as specified in EN 20139:1992.

Since related industries use these materials other atmospheric conditions can be applied if agreed by the interested parties.

NOTE: Atmospheric conditions

	humidity in %	temperature in°C
according to EN 20139:1992 for textiles	65±2	20±2

according to EN ISO 291:1997 for plastics	50±5	23±2
according to ISO 471:1995 for rubber	50±5	23±2
according to EN ISO 2231:1995 for coated fabrics	50±5	23±2 or
	65±5	20±2
tires	55±2	24±2

The atmospheric conditions used shall be stated in the test report.

Preconditioning of the laboratory sample for 3 h at 50°C is essential, followed by conditioning at least 14 h in the testing atmosphere.

Para-aramid yarns are sensitive to UV exposure. Store in the dark, except during testing.

7 Test methods

7.1 General

The confirmation system for the measuring equipment shall comply with ISO 10012-1:1992.

Use atmospheric conditions according to clause 6.

iTeh STANDARD PREVIEW
(standards.iteh.ai)

7.2 Determination of the linear density

SIST EN 12562:1999

Determine the linear density of the filament yarns or cord in accordance with EN ISO 2060:1995.

<https://standards.iteh.ai/catalog/standards/sist/4f4dd9cd-4a28-4e11-a258-41b9402a4c0/sist-en-12562-1999>

For the purposes of this standard use the following test conditions:

From the various options specified in clause 4 of EN ISO 2060:1995 for the determination of the linear density use one of the two following options as mutually agreed:

Option 1: The mass of the conditioned yarn in equilibrium with the atmosphere for testing or use.

Option 6: The mass of the scoured oven-dry yarn, plus the commercial moisture regain.

For commercial moisture regain use a value as agreed by the parties interested in the test results. If no value can be specified use 4,5 %. The value used shall be stated in the test report.

The test skeins shall be of the following length:

100 m for yarns of linear density below 100 tex;

10 m for yarns of linear density of more than 100 tex.

Wind skeins with a pretension of $(0,5 \pm 0,3)$ cN/tex.

Discard at least 50 m from the outside of the package before winding test skeins. Test five test specimens per laboratory sample, in case of dispute test 10 test specimens. Round the results to the nearest 0,1 tex.

For each laboratory sample tested report the test option used, the mean linear density in tex or dtex and, if required, the coefficient of variation in percentage and the 95% confidence limits in tex or dtex. State atmospheric conditions used and, if option 6 was applied, the percentage value used for commercial moisture regain.

7.3 Determination of breaking force, elongation at break, modulus and force at specified elongation

Determine the breaking force and elongation at break of the filament yarn or cord in accordance with EN ISO 2062:1995.

For the purposes of this standard use the following test conditions:

Gauge length of 500 mm and a crosshead speed of 50 % elongation per minute (250 mm/min) and a pretension of $(2 \pm 0,2)$ cN/tex.

If multifilament yarns are supplied untwisted a twist is inserted for tensile testing. Insert a twist, calculated according the following formula:

$$\text{turns per metre} = \frac{(1055 \pm 50)}{\sqrt{LD}}$$

where:

iTeh STANDARD PREVIEW
(standards.iteh.ai)

LD is the linear density in tex

SIST EN 12562:1999

NOTE 1: The manner of inserting the twist into the yarn, manually or with a twisting machine, can influence the results. Machine twisting is recommended for comparisons. The tolerance of ± 50 allows to apply twist between

$$\frac{(1055 + 50)}{\sqrt{LD}} \text{ and } \frac{(1055 - 50)}{\sqrt{LD}}$$

turns per metre.

Report the method of twist in the test report.

Because of high breaking force and low elongation of para-aramid yarns clamps and jaws have to be selected carefully. In practice air activated bollard type jaws as shown in figure 1 have been found suitable, for linear densities up to 800 tex. For large linear densities clamps with larger jaws and greater holding power may be required to prevent slippage.