



SLOVENSKI STANDARD
SIST EN 13003-3:2000
01-maj-2000

Para-aramidni vlaknasti nitovi - Del 3: Tehnične specifikacije

Para-aramid fibre filament yarns - Part 3: Technical specifications

Para-Aramidfaser-Filamentgarne - Teil 3: Technische Lieferbedingungen

Fils en fibres de para-aramide - Partie 3: Spécifications techniques

Ta slovenski standard je istoveten z: EN 13003-3:1999

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59.100.30 Aramidni materiali Aramide materials

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EUROPEAN STANDARD

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NORME EUROPÉENNE

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English version

Para-aramid fibre filament yarns - Part 3: Technical specifications

Fils en fibres de para-aramide - Partie 3: Spécifications techniques

Para-Aramidfaser-Filamentgarne - Teil 3: Technische Lieferbedingungen

This European Standard was approved by CEN on 4 March 1999.

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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.

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

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l'application de référence pour la consultation
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sur le site internet
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Foreword

This European Standard has been prepared by Technical Committee CEN/TC 249 "Plastics", the secretariat of which is held by IBN.

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of an identical text or by endorsement, at the latest by October 1999, and conflicting national standards shall be withdrawn at the latest by October 1999.

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.

EN 13003 consists of the following parts, under the general title "*Para-aramid fibre filament yarns*" :

- *Part 1 : Designation*
- *Part 2 : Methods of test and general specifications*
- *Part 3 : Technical specifications*

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1 Scope

This standard applies to high performance para-aramid fibre filament yarns and provides the classification and the technical requirements with tolerances for the different properties of these yarns.

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.

prEN 12562, *Textiles - Para-aramid multifilament yarns - Methods of test.*

EN 13003-1, *Para-aramid fibre filament yarns - Part 1 : Designation.*

EN 13003-2:1999, *Para-aramid fibre filament yarns - Part 2 : Methods of test and general specifications..*

EN ISO 1889, *Reinforcement yarns - Determination of the linear density (ISO 1889:1997).*

EN ISO 1890, *Reinforcement yarns - Determination of twist (ISO 1890:1997).*

EN ISO 2062, *Textiles - Yarns from packages - Determination of single-end breaking force and elongation at break (ISO 2062:1993).*

EN ISO 3344, *Reinforcement yarns - Determination of moisture content (ISO 3344:1997).*

EN ISO 10548, *Carbon fibre - Determination of size content (ISO 10548:1994).*

ISO 10119, *Carbon fibre - Determination of density.*

prEN ISO 10618, *Carbon fibre - Determination of tensile properties of resin-impregnated yarns (ISO/DIS 10618: 1994).*

3 Classification

The para-aramid fibre filament yarns which are described below are manufactured according to a wet spinning process using a PPTA (polyphenyleneterephthalamide) solution.

According to the definitions made in EN 13003-1 para-aramid fibre filament yarns for composite applications can be divided into two different categories :

- HM high modulus type ;
- TM tailor-made modulus type.

Within these categories yarns with the following classes of linear densities are used for the reinforcement of polymer composites.

Table 1 - Classes of linear densities for the two categories of para-aramid fibre filament yarns used for the reinforcement of polymer composites

	Class of linear density
High modulus type	220 dtex
	410 dtex
	800 dtex
	1 240 dtex
	1 600 dtex
	2 400 dtex
	3 200 dtex
	4 810 dtex
	6 440 dtex
7 970 dtex	
Tailor-made modulus type	430 dtex
	1 260 dtex
	1 650 dtex
	2 460 dtex
	8 400 dtex

As the given classes of linear density may differ from the actual linear density offered by the para-aramid fibre filament yarn producers it is recommended to contact these producers to get the actual linear densities.

4 List of required properties

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The required properties of the different para-aramid fibre filament yarn types are given in Tables 2 and 3. Table 2 shows the properties of the high modulus type yarns, while the properties of the tailor-made modulus type yarn are summarized in Table 3.

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Table 2 - Yarn properties of high modulus type

Properties	Test method	Unit	Linear density class (dtex)									
			220	410	800	1240	1600	2400	3200	4810	6440	7970
Density	ISO 10119	g/cm ³	1,45 ± 0,02									
Linear density ^a	EN ISO 1889	dtex	220	410	800	1240	1600	2400	3200	4810	6440	7970
			Tolerance : ± 5 %									
Twist ^a	EN ISO 1890	t/m	0									
Catenary ^a	Annex A, of EN 13003-2:1999	mm	-	-	-	-	-	-	-	-	-	< 20
Moisture content ^a	EN ISO 3344	%	< 7									
Finish content ^a	EN ISO 10548	%	^b 0,2 to 1,2									
Tensile strength ^a	EN ISO 2062 and prEN 12562 ^c or prEN ISO 10618 ^d	MPa	^c 2750 or ^d 3150									
Tensile modulus ^a	EN ISO 2062 and prEN 12562 ^c or prEN ISO 10618 ^d	GPa	^c 125 to 150 ^e 121 to 145 ^d 132 to 158 ^d 128 to 154 ^e 115 to 140 ^d 121 to 145									
Elongation at break ^a	EN ISO 2062 and prEN 12562 ^c or prEN ISO 10618 ^d	%	^{c,d} 2,1 ^{c,d} 2,0									
^a Minimum lot average ;												
^b The finish content is dependent on the application : - low finish content for direct processing eg filament winding ; - high finish content for semi-finished product eg fabrics.												
^c Not impregnated values according to EN ISO 2062 and PrEN 12562 recommended method for yarns used for fabric (prepreg).												
^d Impregnated values according to prEN ISO 10618 : recommended method for yarns and roving used for filament wound articles.												