



(51) International Patent Classification:

D01F 6/66 (2006.01) *A63B 51/02* (2006.01)
A46D 1/00 (2006.01) *D21F 1/00* (2006.01)
A01K 91/00 (2006.01)

(21) International Application Number:

PCT/US2013/077076

(22) International Filing Date:

20 December 2013 (20.12.2013)

(25) Filing Language:

English

(26) Publication Language:

English

(30) Priority Data:

61/739,981 20 December 2012 (20.12.2012) US
61/783,925 14 March 2013 (14.03.2013) US

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(81) Designated States (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM,

AO, AT, AU, AZ, BA, BB, BG, BH, BN, BR, BW, BY, BZ, CA, CH, CL, CN, CO, CR, CU, CZ, DE, DK, DM, DO, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN, IR, IS, JP, KE, KG, KN, KP, KR, KZ, LA, LC, LK, LR, LS, LT, LU, LY, MA, MD, ME, MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO, NZ, OM, PA, PE, PG, PH, PL, PT, QA, RO, RS, RU, RW, SA, SC, SD, SE, SG, SK, SL, SM, ST, SV, SY, TH, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, ZA, ZM, ZW.

(84) Designated States (unless otherwise indicated, for every kind of regional protection available): ARIPO (BW, GH, GM, KE, LR, LS, MW, MZ, NA, RW, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, RU, TJ, TM), European (AL, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HR, HU, IE, IS, IT, LT, LU, LV, MC, MK, MT, NL, NO, PL, PT, RO, RS, SE, SI, SK, SM, TR), OAPI (BF, BJ, CF, CG, CL, CM, GA, GN, GQ, GW, KM, ML, MR, NE, SN, TD, TG).

Published:

- with international search report (Art. 21(3))
- before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments (Rule 48.2(h))

(88) Date of publication of the international search report:

23 October 2014

(54) Title: MONOFILAMENT FIBERS MADE FROM A POLYOXYMETHYLENE COMPOSITION

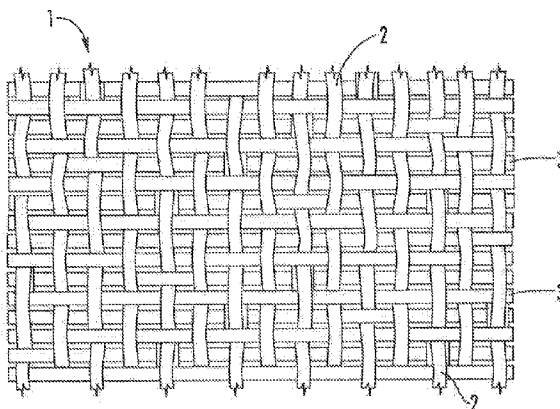


FIG. 1

(57) Abstract: A monofilament fiber as described made from a polyoxymethylene polymer. Polyoxymethylene polymer can be blended with an abrasion additive in order to improve abrasion resistance. The polyoxymethylene polymer may be combined with a thermoplastic elastomer and a coupling agent. The fiber can be used as fishing line, as bristles for a brushing device, or the like.



INTERNATIONAL SEARCH REPORT

International application No
PCT/US2013/077076

A. CLASSIFICATION OF SUBJECT MATTER
 INV. D01F6/66 A46D1/00 A01K91/00 A63B51/02 D21F1/00
 ADD.
 According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED
 Minimum documentation searched (classification system followed by classification symbols)
 D01F A46D A01K A63B D21F C08L

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)
 EPO-Internal, WPI Data

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	EP 2 269 485 A1 (MITSUBISHI GAS CHEMICAL CO [JP]; NAT UNIV CORP KYOTO INST TECH [JP]) 5 January 2011 (2011-01-05) examples 1,2 paragraph [0012] claims 1-4	1-21
X	----- WO 93/11206 A2 (DU PONT [US]) 10 June 1993 (1993-06-10) claims 1,5,10 page 2, line 31 - page 4, line 20 page 7, lines 34-36 page 8, line 17 - page 10, line 13	1-21
X	----- US 2011/028609 A1 (LAWSON JAMES R [US]) 3 February 2011 (2011-02-03) paragraphs [0006], [0049], [0067], [0068] ----- -/--	1-21

Further documents are listed in the continuation of Box C.

See patent family annex.

* Special categories of cited documents :

"A" document defining the general state of the art which is not considered to be of particular relevance	"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
"E" earlier application or patent but published on or after the international filing date	"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)	"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art
"O" document referring to an oral disclosure, use, exhibition or other means	"&" document member of the same patent family
"P" document published prior to the international filing date but later than the priority date claimed	

Date of the actual completion of the international search 14 March 2014	Date of mailing of the international search report 02/09/2014
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Name and mailing address of the ISA/ European Patent Office, P.B. 5818 Patentlaan 2 NL - 2280 HV Rijswijk Tel. (+31-70) 340-2040, Fax: (+31-70) 340-3016	Authorized officer Verschuren, Jo
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INTERNATIONAL SEARCH REPORT

International application No.
PCT/US2013/077076

Box No. II Observations where certain claims were found unsearchable (Continuation of item 2 of first sheet)

This international search report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. Claims Nos.:
because they relate to subject matter not required to be searched by this Authority, namely:

2. Claims Nos.:
because they relate to parts of the international application that do not comply with the prescribed requirements to such an extent that no meaningful international search can be carried out, specifically:

3. Claims Nos.:
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

Box No. III Observations where unity of invention is lacking (Continuation of item 3 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

see additional sheet

1. As all required additional search fees were timely paid by the applicant, this international search report covers all searchable claims.

2. As all searchable claims could be searched without effort justifying an additional fees, this Authority did not invite payment of additional fees.

3. As only some of the required additional search fees were timely paid by the applicant, this international search report covers only those claims for which fees were paid, specifically claims Nos.:

4. No required additional search fees were timely paid by the applicant. Consequently, this international search report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

1-21

Remark on Protest

- The additional search fees were accompanied by the applicant's protest and, where applicable, the payment of a protest fee.
- The additional search fees were accompanied by the applicant's protest but the applicable protest fee was not paid within the time limit specified in the invitation.
- No protest accompanied the payment of additional search fees.

INTERNATIONAL SEARCH REPORT

International application No
PCT/US2013/077076

C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	<p>JP 2009 001930 A (KAO CORP) 8 January 2009 (2009-01-08) paragraphs [0054] - [0066], [0027] - [0028] paragraph [0019]</p> <p style="text-align: center;">-----</p>	1-21
A	<p>US 5 043 399 A (SUZUKI YOSHIO [JP] ET AL) 27 August 1991 (1991-08-27) claim 1 column 15, line 34 - column 16, line 3</p> <p style="text-align: center;">-----</p>	1-21
A	<p>YANG GAO ET AL: "Effect of poly(ethylene oxide) on tribological performance and impact fracture behavior of polyoxymethylene/polytetrafluoroethylene fiber composites", COMPOSITES PART B: ENGINEERING, ELSEVIER, UK, vol. 42, no. 7, 30 May 2011 (2011-05-30), pages 1945-1955, XP028263620, ISSN: 1359-8368, DOI: 10.1016/J.COMPOSITESB.2011.05.044 [retrieved on 2011-06-21] the whole document</p> <p style="text-align: center;">-----</p>	1-21
A	<p>EP 2 465 834 A2 (TICONA LLC [US]) 20 June 2012 (2012-06-20) cited in the application claim 8 paragraphs [0040] - [0049]</p> <p style="text-align: center;">-----</p>	1-21

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No

PCT/US2013/077076

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			EP 2465834 A2	20-06-2012
			US 2012157576 A1	21-06-2012

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

This International Searching Authority found multiple (groups of) inventions in this international application, as follows:

1. claims: 1-21

Monofilament fibre and its applications, the fibre comprising polyoxymethylene and an abrasion additive comprising a melt-blended polymer.

2. claims: 22-31

Monofilament fibre and its applications, the fibre comprising polyoxymethylene, a thermoplastic elastomer and a coupling agent.
