



Europäisches Patentamt
European Patent Office
Office européen des brevets



(11) **EP 1 172 430 A3**

(12) **EUROPEAN PATENT APPLICATION**

(88) Date of publication A3:
03.04.2002 Bulletin 2002/14

(43) Date of publication A2:
16.01.2002 Bulletin 2002/03

(21) Application number: **01305635.3**

(22) Date of filing: **28.06.2001**

(51) Int Cl.7: **C10M 173/00**, B29D 30/38,
B29B 15/14, B21C 9/02,
C10M 135/12, C10M 135/28,
C10M 135/18, C10M 159/18,
C10M 135/36, C10M 129/06,
C10M 129/10, C10M 135/14,
C10M 139/00, C10M 137/10,
C10M 129/32, C10M 129/40,
C10M 135/22, C10M 135/26,
C10M 125/10, C10M 125/12,
C10M 125/14, C10M 125/16,
C10M 125/18, C10M 125/20,
C10M 125/22, C10M 125/24,
C10M 125/26, C07C 321/14

(84) Designated Contracting States:
**AT BE CH CY DE DK ES FI FR GB GR IE IT LI LU
MC NL PT SE TR**
Designated Extension States:
AL LT LV MK RO SI

(30) Priority: **29.06.2000 JP 2000195648**
29.06.2000 JP 2000196243
29.06.2000 JP 2000196244
29.06.2000 JP 2000196245
11.06.2001 JP 2001175826

(71) Applicant: **Bridgestone Corporation**
Tokyo (JP)

(72) Inventors:
• **Fukushima, Yasuo,**
Bridgestone Corp. Tech. Center
Kodaira City, Tokyo (JP)
• **Kondo, Hajime, Bridgestone Corp. Tech. Center**
Kodaira City, Tokyo (JP)

(74) Representative: **Whalley, Kevin et al**
MARKS & CLERK,
57-60 Lincoln's Inn Fields
London WC2A 3LS (GB)

(54) **Lubricant composition for steel filament and rubber-steel filament composite body**

(57) A lubricant composition for a surface treatment of a steel filament comprises at least one specified compound as a lubricant component and a rubber-steel filament composite body is prepared by using a steel filament treated with the lubricant composition.

EP 1 172 430 A3



European Patent
Office

PARTIAL EUROPEAN SEARCH REPORT

Application Number

which under Rule 45 of the European Patent Convention EP 01 30 5635 shall be considered, for the purposes of subsequent proceedings, as the European search report

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.7)
X,D	PATENT ABSTRACTS OF JAPAN vol. 1995, no. 03, 28 April 1995 (1995-04-28) & JP 06 341073 A (KUNIO MORI;OTHERS: 02), 13 December 1994 (1994-12-13) * abstract *	1,8-10, 24,25	C10M173/00 B29D30/38 B29B15/14 B21C9/02 C10M135/12 C10M135/28 C10M135/18
X	PATENT ABSTRACTS OF JAPAN vol. 1997, no. 05, 30 May 1997 (1997-05-30) & JP 09 003206 A (BRIDGESTONE CORP), 7 January 1997 (1997-01-07) * abstract *	1,8-10, 24,25	C10M159/18 C10M135/36 C10M129/06 C10M129/10 C10M135/14 C10M139/00 C10M137/10
X	EP 0 979 880 A (NIPPON PAINT CO LTD) 16 February 2000 (2000-02-16) * page 3, line 14 - page 3, line 22 * * page 6, table 1, example 8 * * claims 5,9 * --- -/--	1,24	C10M129/32 C10M129/40 C10M135/22 C10M135/26
			TECHNICAL FIELDS SEARCHED (Int.Cl.7)
			C10M B29D B29B B21C
INCOMPLETE SEARCH			
The Search Division considers that the present application, or one or more of its claims, does/do not comply with the EPC to such an extent that a meaningful search into the state of the art cannot be carried out, or can only be carried out partially, for these claims. Claims searched completely : Claims searched incompletely : Claims not searched : Reason for the limitation of the search: see sheet C			
Place of search		Date of completion of the search	Examiner
MUNICH		1 February 2002	Perakis, N
CATEGORY OF CITED DOCUMENTS			
X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document			

EPO FORM 1503 03 82 (P04C07)



European Patent
Office

INCOMPLETE SEARCH
SHEET C

Application Number
EP 01 30 5635

Claim(s) searched incompletely:
1,7

Reason for the limitation of the search:

In view of the discrepancy between claim 1 (sodium 1,6-hexamethylenediamine-dithiosulfate dihydrate) and the formula provided in the description (cf. page 5, paragraphs [0013] and [0014]) the search was carried out for the compound illustrated by the formula.

Claim 7 was not searched because it does not belong to the invention number 15. The formula to which reference is made is wrong and cannot be (12) but rather (1). It seems that this claim should belong to the invention number 2.



European Patent
Office

PARTIAL EUROPEAN SEARCH REPORT

Application Number
EP 01 30 5635

DOCUMENTS CONSIDERED TO BE RELEVANT			CLASSIFICATION OF THE APPLICATION (Int.Cl.7)
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	
X	EP 0 470 280 A (TOKYO ROPE MFG CO) 12 February 1992 (1992-02-12) * abstract * * page 2, line 27 - page 2, line 52 * * page 3, line 20,21,32,40,46 * * claim 1 *	1,8-10, 24,25	C10M125/10 C10M125/12 C10M125/14 C10M125/16 C10M125/18 C10M125/20 C10M125/22 C10M125/24 C10M125/26 C07C321/14
X	US 5 173 341 A (SHIRATORI NOBUYOSHI ET AL) 22 December 1992 (1992-12-22) * abstract * * column 1, line 60 - column 2, line 35 * * claim 1 *	1,8-10, 24,25	
X	CA 2 022 890 C (TOKYO ROPE MFG CO) 9 February 1992 (1992-02-09) * abstract * * page 3, line 8 - page 8, line 29 * * page 5, line 23,24 * * page 6, line 10,14 * * page 7, line 2,13 *	1,8-10, 24,25	TECHNICAL FIELDS SEARCHED (Int.Cl.7)
A	EP 0 329 194 A (DOW CHEMICAL CO) 23 August 1989 (1989-08-23) * claims 1-8 *	1,24,25	
A	EP 0 169 357 A (DOW CHEMICAL CO) 29 January 1986 (1986-01-29) * abstract * * page 3, line 4-23 * * page 19, line 19 - page 21, line 33 * * page 25, line 20 - page 27, line 30 * * claims 1-5,9 *	1,24,25	
A	US 4 519 924 A (KAR KISHORE K) 28 May 1985 (1985-05-28) * abstract * * column 3, line 26-54 * * claims 1-4,9-13 *	1,24,25	
	--- -/--		



European Patent
Office

PARTIAL EUROPEAN SEARCH REPORT

Application Number
EP 01 30 5635

DOCUMENTS CONSIDERED TO BE RELEVANT			CLASSIFICATION OF THE APPLICATION (Int.Cl.7)
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	
A	US 4 594 335 A (BURBA III JOHN L ET AL) 10 June 1986 (1986-06-10) * abstract * * column 1, line 14-23 * * claim 1 *	1,24,25	
X	--- PATENT ABSTRACTS OF JAPAN vol. 1998, no. 12, 31 October 1998 (1998-10-31) & JP 10 195237 A (BRIDGESTONE CORP), 28 July 1998 (1998-07-28) * the whole document *	1,24,25	
X	--- EP 0 079 302 A (CIBA GEIGY AG) 18 May 1983 (1983-05-18) * the whole document *	1,23-25	TECHNICAL FIELDS SEARCHED (Int.Cl.7)
X	--- EP 0 291 236 A (BP CHEMICALS ADDITIVES) 17 November 1988 (1988-11-17) * the whole document *	2,23-25	
X	--- FR 2 599 045 A (ELF FRANCE) 27 November 1987 (1987-11-27) * abstract * * page 2, line 1-3 * * examples 2,4,7 *	2,23-25	
X	--- WO 98 44079 A (CRAIG JOHN WILLIAM THOMAS ;DOWLING MICHAEL (GB); EXXON CHEMICAL PA) 8 October 1998 (1998-10-08) * abstract * * page 4, line 15 - page 5, line 15 * * page 16, line 26 - page 19, line 13 * * claims 1,4-7 *	1,24,25	
	--- -/--		

Application Number

DOCUMENTS CONSIDERED TO BE RELEVANT			CLASSIFICATION OF THE APPLICATION (Int.Cl.7)
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	
X	EP 0 825 247 A (LUBRIZOL CORP) 25 February 1998 (1998-02-25) * page 1, line 3-5 * * page 4, line 6-19 * * page 5, line 47-53 * * claims 1,7,10 * ---	1,20,21, 24,25	
X	EP 0 972 808 A (KYOWA YUKA KK) 19 January 2000 (2000-01-19) * abstract * * paragraphs [10.0011],[0035],[0049]-[0056] * * examples 2,3 * * claims 10,11 * ---	1,20,21, 24,25	
A	US 4 569 797 A (SNYDER DONALD M) 11 February 1986 (1986-02-11) * the whole document * -----	1,20,21, 24,25	TECHNICAL FIELDS SEARCHED (Int.Cl.7)

**ANNEX TO THE EUROPEAN SEARCH REPORT
ON EUROPEAN PATENT APPLICATION NO.**

EP 01 30 5635

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report. The members are as contained in the European Patent Office EDP file on
The European Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

01-02-2002

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
JP 06341073	A	13-12-1994	NONE	
JP 09003206	A	07-01-1997	NONE	
EP 0979880	A	16-02-2000	JP 2001073162 A EP 0979880 A1 US 6309477 B1	21-03-2001 16-02-2000 30-10-2001
EP 0470280	A	12-02-1992	EP 0470280 A1 DE 69029389 D1 DE 69029389 T2	12-02-1992 23-01-1997 22-05-1997
US 5173341	A	22-12-1992	JP 1967315 C JP 2209930 A JP 6096795 B JP 2009982 C JP 2212524 A JP 7037630 B	18-09-1995 21-08-1990 30-11-1994 02-02-1996 23-08-1990 26-04-1995
CA 2022890	C	09-02-1992	CA 2022890 A1	09-02-1992
EP 0329194	A	23-08-1989	US 4519924 A EP 0329194 A2 AU 589364 B2 AU 4335585 A BR 8502752 A CA 1290137 A1 DE 3576169 D1 DE 3587219 D1 DE 3587219 T2 DK 260685 A EP 0169357 A2 ES 544019 D0 ES 8705455 A1 FI 852308 A ,B, IE 143885 L JP 8026334 B JP 61043700 A JP 6220474 A NO 852322 A ,B, NZ 212377 A PT 80599 A ,B US 4910246 A US 4727167 A US 4812245 A US 4610797 A	28-05-1985 23-08-1989 12-10-1989 19-12-1985 12-02-1986 08-10-1991 05-04-1990 29-04-1993 01-07-1993 12-12-1985 29-01-1986 01-05-1987 16-07-1987 12-12-1985 11-12-1985 13-03-1996 03-03-1986 09-08-1994 12-12-1985 24-02-1989 01-07-1985 20-03-1990 23-02-1988 14-03-1989 09-09-1986

EPO FORM P0459

For more details about this annex : see Official Journal of the European Patent Office, No. 12/82

**ANNEX TO THE EUROPEAN SEARCH REPORT
ON EUROPEAN PATENT APPLICATION NO.**

EP 01 30 5635

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report. The members are as contained in the European Patent Office EDP file on
The European Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

01-02-2002

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
EP 0169357	A	29-01-1986	US 4519924 A	28-05-1985
			AU 589364 B2	12-10-1989
			AU 4335585 A	19-12-1985
			BR 8502752 A	12-02-1986
			CA 1290137 A1	08-10-1991
			DE 3576169 D1	05-04-1990
			DE 3587219 D1	29-04-1993
			DE 3587219 T2	01-07-1993
			DK 260685 A	12-12-1985
			EP 0169357 A2	29-01-1986
			EP 0329194 A2	23-08-1989
			ES 544019 D0	01-05-1987
			ES 8705455 A1	16-07-1987
			FI 852308 A ,B,	12-12-1985
			IE 143885 L	11-12-1985
			JP 8026334 B	13-03-1996
			JP 61043700 A	03-03-1986
			JP 6220474 A	09-08-1994
			NO 852322 A ,B,	12-12-1985
			NZ 212377 A	24-02-1989
			PT 80599 A ,B	01-07-1985
			US 4910246 A	20-03-1990
			US 4727167 A	23-02-1988
			US 4812245 A	14-03-1989
			US 4610797 A	09-09-1986
US 4519924	A	28-05-1985	AU 589364 B2	12-10-1989
			AU 4335585 A	19-12-1985
			BR 8502752 A	12-02-1986
			DE 3576169 D1	05-04-1990
			DE 3587219 D1	29-04-1993
			DE 3587219 T2	01-07-1993
			DK 260685 A	12-12-1985
			EP 0169357 A2	29-01-1986
			EP 0329194 A2	23-08-1989
			ES 544019 D0	01-05-1987
			ES 8705455 A1	16-07-1987
			FI 852308 A ,B,	12-12-1985
			IE 143885 L	11-12-1985
			JP 8026334 B	13-03-1996
			JP 61043700 A	03-03-1986
			JP 6220474 A	09-08-1994
			NO 852322 A ,B,	12-12-1985
			NZ 212377 A	24-02-1989
			PT 80599 A ,B	01-07-1985
			US 4610797 A	09-09-1986

EPO FORM P0459

For more details about this annex : see Official Journal of the European Patent Office, No. 12/82

**ANNEX TO THE EUROPEAN SEARCH REPORT
ON EUROPEAN PATENT APPLICATION NO.**

EP 01 30 5635

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report. The members are as contained in the European Patent Office EDP file on
The European Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

01-02-2002

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
US 4594335	A	10-06-1986	NONE	
JP 10195237	A	28-07-1998	NONE	
EP 0079302	A	18-05-1983	EP 0079302 A2 JP 58083097 A	18-05-1983 18-05-1983
EP 0291236	A	17-11-1988	AT 103274 T AU 621539 B2 AU 1581588 A BR 8802286 A DE 3888569 D1 DE 3888569 T2 DK 257388 A EP 0291236 A2 ES 2063035 T3 JP 1290657 A US 4902438 A ZA 8803355 A	15-04-1994 19-03-1992 17-11-1988 13-12-1988 28-04-1994 30-06-1994 13-11-1988 17-11-1988 01-01-1995 22-11-1989 20-02-1990 31-01-1990
FR 2599045	A	27-11-1987	FR 2599045 A1	27-11-1987
WO 9844079	A	08-10-1998	AU 7042898 A WO 9844079 A1 EP 1115815 A1	22-10-1998 08-10-1998 18-07-2001
EP 0825247	A	25-02-1998	AU 3421297 A CA 2213050 A1 EP 0825247 A2 JP 10088168 A	26-02-1998 21-02-1998 25-02-1998 07-04-1998
EP 0972808	A	19-01-2000	AU 6522098 A EP 0972808 A1 US 6160044 A CN 1259159 T WO 9845373 A1	30-10-1998 19-01-2000 12-12-2000 05-07-2000 15-10-1998
US 4569797	A	11-02-1986	NONE	

EPO FORM P0459

For more details about this annex : see Official Journal of the European Patent Office, No. 12/82