

(19)
(12)

(KR)
(A)

(51) 。 Int. Cl.⁷
C08F 216/14
C08F 116/14
C08F 116/12

(11)
(43)

10-2004-0106316
2004 12 17

(21) 10-2004-7015778

(22) 2004 10 04

2004 10 04

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(87)

WO 2003/087176

(86) 2003 02 04

(87)

2003 10 23

(30) 10/117,715 2002 04 05 (US)

(71) 55133-3427 . . . 33427

(72) , , . 55133-3427 33427

, , . 55133-3427 33427

, , . 55133-3427 33427

(74)

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(54)

(()) 2 . /

(, , , ,)

() ()

/

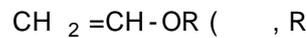
가

가

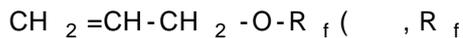
가

가

, US 4,929,471



US 4,029,867



)

. CH₂

=CH-O-R_f

DE 1720799

(PTFE)

(TFE)

가

가

가 US 4,546,157 , US 4,619,983 , US 4,766,190 , US 5,110,385 , US 5,969,066 , US 3,450,684 , US 4,035,565 , US 4,368,308 , US 4,418,186 , US 4,654,394 , US 4,840,998 , US 5,639,838 US 3,316,745

EP 969 055

(PVE)

, PTFE TFE

25 %

420

US 4,670,328

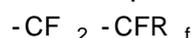
TFE PVE

EP 186186

/

가

09/861,782 (2001 5 21)
% 1 가



2

U.S.S.N
가 4

가

가

가

가

가

a) , 1

b) () , () -

1 , :

$CF_2 = CF - R_f (, R_f)^2 \cdot R_f$, 1 1 가

a) , 1

b) () -

c) , 가 , 가 - 가 ,

d) ,

' 2 . ,

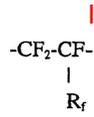
- , - , - ,

- , - , - ,

가 , (/) , ()

()

:



, R_f 1

1

가 ()

(1000g/)

0.5 % , 1000ppm

가

가,

가

가

), 가 0.01 % 4 % ,

가 0.05 % 3 % 4 % (

가

가 ,

/

가

3 %

가

< | >



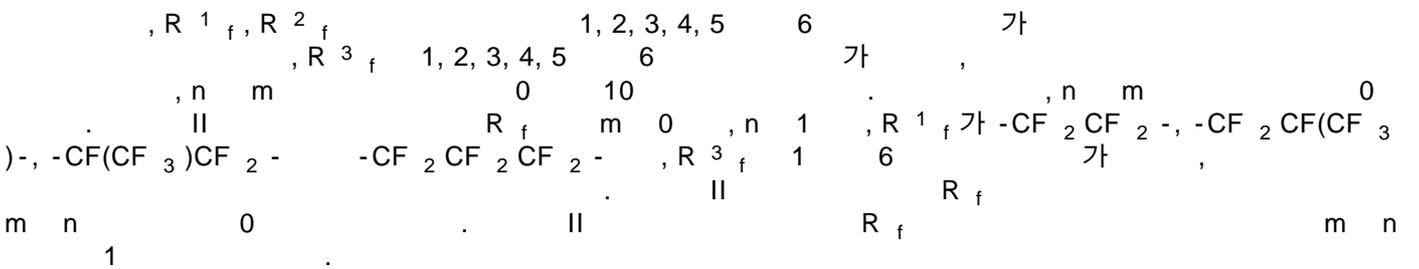
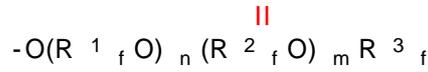
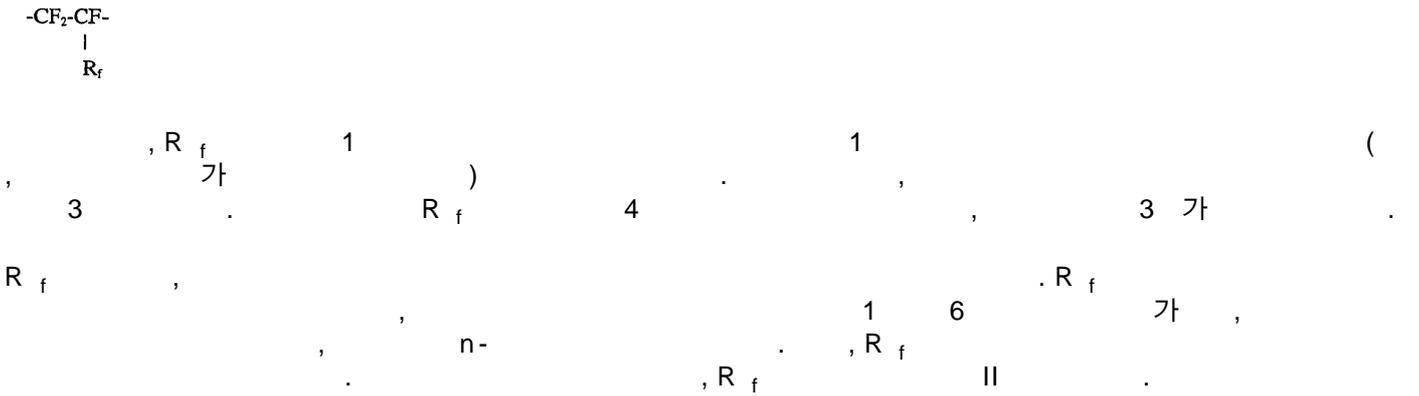
, R_f 1

1

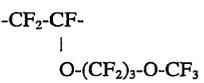
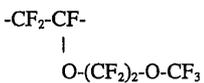
() 가

가 (가) 가

< I >



가 I 가 II ,



CF₃)-O-CF₂CF₂CF₃ () CF₂=CF-O-CF₂CF₃(

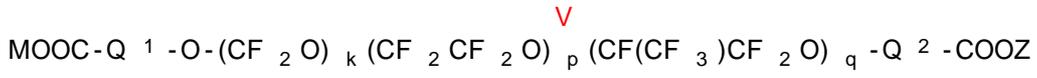
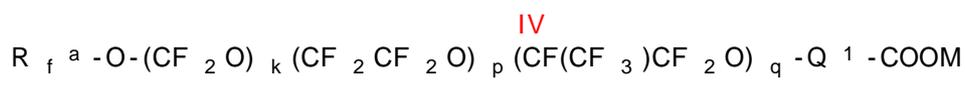
30 90 % .

가
 0 % 50 % .
 () (PPVE-1), (2-(n-)) (PPVE-2) ()
 () , PPVE-1, PPVE-2 () , PP
 VE-1, PPVE-2, () () , ()
 , PPVE-1, PPVE-2 () , PPVE-1, PPVE-2,
 () () , PP
 VE-1, PPVE-2, () () .

() ,
 - 300 , 1 ,
 0 , 6 48 40 80 , 40 6

1 % , 0.1 1 %
 가
 2,567,011) C₈F₁₇SO₃Li (AG 가), C₄F₉SO₃Li C₄F₉SO₃K (US 2,732,398)
 O₂N(C₂H₅)CH₂COOK (US 2,809,990) 가 EP 219065

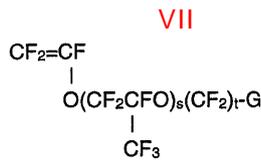
00g/ 가 , 200g/ , 10
 IV V 가 :



, k, p q 0 15 , 0 10 12 , k, p q
 200g/ , 1000g/ , R_{f^a} 2 4



15, R_f^a M IV, X
가 (KRYTOX)TM 157 FSL, EP 219065 (FLUOROLINK)TM C (Ausimont) SpA
가 (E.I. Dupont de Nemours and Company) TM 157 FSM TM 157 FSH (가)
가 VII 가



, s 0, 1 2, t 2 4, G
OH (, n 1 18); -SO₂F; -(CH₂)_n
2가 (, , ,), (, , -COOR (, R 1 3
(, , ,); (, , -CO₂M (, M , 1가
, R ,) (, , -SO₃M (, M
(, , -(CH₂)_nNR₃⁺Cl⁻

VII
US 5,608,022 WO 00/52060
(Nafion)TM (Acipex)TM (Flemion)TM (Asahi Ch (Asahi Glass Co.)
(emical Co.) () 가 가

EP 524585, EP 566974, EP 632009, EP 731081, WO 99/62858, WO 99/62830 D
E 19932771 /

가
Onm 40 100 , 50 80 가 1 30

3 가 (pot life) ($1\mu\text{m}$ 300nm) 가 . 가 150nm 1 , , 10 %가

(Ultra-Turrax) (Ika) , 24000rpm 가 (APV 가 (Gaulin) (Microfluidics) 가

0.01 15 % , 0.1 4 % . 가 가 2- 가 2- 1% 5% () 가 가 ; 가 가

() 2- 1 4 . 가 가 1 6 , 0.01 2.0 % , (0.1 1.8 % , 40 0.3 1.6 % 50 80 30 80

UV가 , 0 가 가 (-) 가 ()

PAS/ , UV (APS) -가 -가

7	n-
8	n-

	/	가
	(NH ₄) ₂ S ₂ O ₈	-
C TM		
HFP	; CF ₂ =CFCF ₃	
2 SE 1017	/	
PBS		3M
PPVE-1	CF ₂ =CFOCF ₂ CF ₂ CF ₃ ;	
PPVE-2	CF ₂ =CFOCF ₂ CF(CF ₃)CFOCF ₂ CF ₂ CF ₃ ; ~ 90%	US 3,450,684(Darby, 가 1)
VDF	; CH ₂ =CF ₂	-

1 : PPVE-2

172 (0.0175g) CTM (3.3g) (0.186g) (90.0g) SE10TM
 PPVE-2 (50.0g) 가 ; (Branson) 450 ()
 VWR 가) 60
 15MR (APV 가)
 8800psi (60.67MPa) 3 , 144nm 가
 3- 250mL , 가
 (10.0g), (NaHCO₃; 0.2g) (0.2g) 가
 (NMR : 29.1%) 97.9% , LA-910 (62nm
 (Horiba Instruments, Inc.))

1 , 2 4 1 2 4
 % ,

C1

1	C1	-	20	24	

[1]

	TM SE10172 (g)	()	(%)	(nm)	(%)

1	0.0175	60	29.1	62	82
2	-	60	27.7	62	77
3	0.0175	71	28.4	79	80
4	-	71	15.7	87	41
C1*	0.0175	60	**	-	-

* -
**

5

TM C PBS , 71 20 , 1
5 , 230nm , 5
8% .

6

TM SE10172 가 , 5 6
157nm , 24% .

7

PPVE -2 PPVE -1 , 1 7
63nm , 48% .

8

(335.5g) SE10172 (2.38g) 가 PPVE -2(72.0g) 가 가
15MR (APV 가) 8800psi (60.67MPa) 3
, 231nm 가 ; (341.6g) (20.0g)
(1.0g) 가 ; , 가 ,
, 800rpm 가 , 71 6 . 2 , 가 ,
6 , 61 %/39 % VDF/HFP 150psi (1034kPa) . 500mL
3.42 , 2.5
150psi (1034kPa) 20psi (138kPa) . 27.0%
112nm 가 .

9

PPVE -2 6 3 , 가 8
2nm (26.8%) , 9 8 .

10

PPVE -2 6 0.8 , 가
127nm (26.9%) , 10 8 .

C2

6 , PPVE -2 VDF/HFP
8 . 115nm (27.
7%) C2 .

[2]

		8-10		C2
	(h)	0.2% SOF	0.5% SOF	1.0% SOF
8	6	1	3	5
9	3	1	3	5-
10	0.8	1-	3-	4
C2	0	0	2	3.5

(57)

1.
 - a) ; , 1
 - b) () ;
2.

1 , 가

$$CF_2 = CF - R_f$$

, R_f 2 , 1 1
3.

2 , R_f 가 , .
4.

2 , R_f 가

$$-O(R^1_f O)_n (R^2_f O)_m R^3_f$$

, R^1_f, R^2_f 1 6
 R^3_f 1 6 가 , , n m
 0 10 .
5.

4 , n m 가 0 .
6.

4 , m 0 , n 1 , R^1_f - $CF_2 CF_2$ -, - $CF_2 CF(CF_3)$ -, - $CF_2 CF_2 CF_2$ -
 R^3_f 1 6 , .
7.

1 , 가 1 70 % .

1 8. , 가 0.1 4 % .

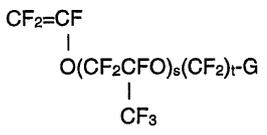
1 9. , 가 0.01 2 % .

1 10. , 가 40 80 6 48 .

1 11. , 가 1% .

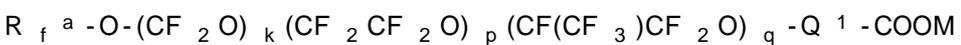
1 12. , 가 50 200 .

1 13. , 가



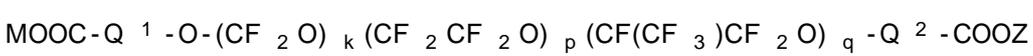
, s 0, 1 2 , t 2 4 , G ,

1 14. , 가



(, k, p q 0 15 , k, p q 200g/
 , R f a 2 4 , M Z
 , Q 1 Q 2 -CF 2 - -CF(CF 3)-)

13 15. ,



, k, p q 0 15 , k, p q 200g/
 , R f a 2 4 , M Z
 , Q 1 Q 2 -CF 2 - -CF(CF 3)- .

1 16. , 가

16 17. , 가 0.01 2 % .

1 18. , 가 50 80 .

19.

1 , 0.01 15 % .

20.

1 , ()

21.

1 , .

22.

21 , 3 % 가 , .

23.

21 , 가 .

24.

21 , 90 170 , 20
10

25.

1 , 3 % , .

26.

25 / , - () .

27.

26 , , .

28.

1 , 가 20 40 % .