

(19)  
(12)

(KR)  
(A)

(51) 。 Int. Cl. <sup>7</sup>  
C07C 51/363

(11)  
(43)

2002 - 0062359  
2002 07 25

(21)	10 - 2002 - 7007916
(22)	2002 06 20
	2002 06 20
(86)	PCT/US2000/10812
(86)	2000 04 20

(87)	WO 2001/46116
(87)	2001 06 28

(81)

: 가  
가  
가  
가  
가  
가  
가  
가  
가  
가

AP ARIPO : , 가 ,  
EA : , ,  
EP : , , , , , , , , , ,  
OA OAPI : , , , , , , , , , 가 ,

(30)	09/470,035	1999 12 22	(US)
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(71)

55128	6744
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(72)

55133 - 3427	33427
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55133 - 3427	33427
55133 - 3427	33427
55133 - 3427	33427
55133 - 3427	33427
55133 - 3427	33427
55133 - 3427	33427

(74)

:

(54)

( 3 - ) .

3 -

(TFE)

(mPTFE)

/

Modern Fluoropolymers, John Scheirs, Wiley Series in Polymer Science, 1997 . Emel ' yanov et al, Zh.Org.Khim(1994), 30(8), 1266 - 70 .

가 .

Modern Fluoropolymers, J.Scheirs, Wiley Series in Polymer Science, 1997

3 -

가

2,713,593

V.V. Berenblit

[Zh. Prikl. Khim.(Leningrad), (1975) 48(3) 709 - 11]

( 15 % )

3

EPA 148,482 (Ohsaka )

EPA 290,848 (Oka )

2가

가

가

가

1

1

 $R_f OCF_2 CF_2 COF$ ,  $R_f$ 

가 1 20 ( 1 5 )

1가

(a) (c)

(a) 2

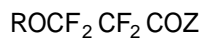
;

(b)

;

(c)

(b)

<sup>2</sup>

, R

1 20 ( 1 5 )

1가

( ) ;

Z -OH,

( ,

)

1 20 ( 1 5 )

1가

, R'COO - [ R' R ROCF<sub>2</sub>CF<sub>2</sub>COO - , R ]

R Z

. , R Z 1

.

"

"

가

.

1

(

50 % ).

1

50 %

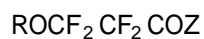
, 25 % . , .

2

2

, .

2

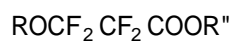


, R Z

. R Z

.

, 3 .

<sup>3</sup>

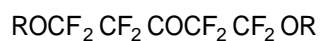
R'' 1 20 ( 1 5 )

1가



.

, 4 .



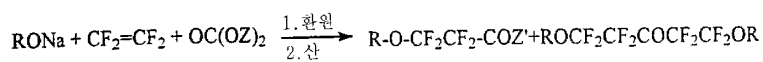
, R

.

(TFE)

2,988,537 (Wiley)

2



, Z' , 가 1 20 1가 , R

, 3 5,235,094 (Darst  
) .

3

가

가

(ECF)

(DF)

2,713,593 WO 98/50603

1

가

2

가

5,488,142 (Fall ); 4,523,039 (Lagow ); Kirk Othmer Encyclopedia of Chemical Technology, 3<sup>rd</sup> Edition, V. 10, pp 636, 840 - 855, John Wiley & Sons, Inc., New York, NY(1980); Lagow et al., Progress in Inorganic Chemistry, 26, 161 - 210(1979); 4,859,747 (Bierschenk et al.) .

( , , ). 가

가

50 ) 가 가 가 ( , 1

2

가 ,  
5,466,877 (Moore)

$$\left( \frac{1}{2}, \frac{1}{2}, \frac{1}{2} \right) \quad \left( \frac{1}{2}, \frac{1}{2}, \frac{1}{2} \right), \quad 3$$
$$\text{CF}_3\text{OCF}_2\text{CF}_2\text{COF}$$
$$\text{CF}_3\text{CF}_2\text{OCF}_2\text{CF}_2\text{COF}$$
$$\text{CF}_3\text{CF}_2\text{CF}_2\text{OCF}_2\text{CF}_2\text{COF}$$
$$(\text{CF}_3)_2\text{CFOCF}_2\text{CF}_2\text{COF}$$
$$\text{CF}_3\text{CF}_2\text{CF}_2\text{CF}_2\text{OCF}_2\text{CF}_2\text{COF}$$
$$\text{CF}_3\text{CF}_2\text{CF}_2\text{CF}_2\text{CF}_2\text{OCF}_2\text{CF}_2\text{COF}$$
$$\text{CF}_3\text{OCF}_2\text{CF}_2\text{OCF}_2\text{CF}_2\text{COF}$$

4,599,386 (Carlson ), 5,115,038 (Ihara ), 4,774,304  
(Kuhls ), 5,696,616 , 5,639,838 , 4,931,511 , 4,418,1  
86 5,891,965 .

2,713,593 (Brice ) 1000 Mℓ 0.037 m<sup>2</sup> (0.40  
 ft<sup>2</sup>) (anode), - 40 - 80 ( 0.3  
 ) 1800 torr(35 psig) 58 HF 900 Mℓ 90%( ) C  
 $\text{H}_3\text{OCF}_2\text{CF}_2\text{CO}_2\text{CH}_3$ , 5% ( $\text{CH}_3\text{OC}_2\text{F}_4$ )<sub>2</sub>C=O 5% 2224.5 g 218.9  
 가 HF 가 900 Mℓ

WO 98/50603 1 19.5 amp 6.  
 0 80  
 1 (T<sub>e</sub>) 19.5 amp 1 4 2 (T<sub>i</sub>)

2384.6 g HF  
 ( 618.3 g) 25 % w/w .  $\text{CF}_3\text{OCF}_2\text{CF}_2\text{C(O)F}$  GC/IR, GC/  
 MS 19F/1H NMR 55 % ,  $\text{CHF}_2\text{OCF}_2\text{CF}_2\text{C(O)F}$  15 %

( ) ,  
 21 % .

2

5,488,142 (Fall Guerra) , 90%(w  
 /w)  $\text{CH}_3\text{OC}_2\text{F}_4\text{COOCH}_3$  - 10% THF 108.9 g (N - ) 5472.7 g  
 10 Mℓ/ 가 , 400 Mℓ/ F<sub>2</sub> 1600 Mℓ/ N<sub>2</sub> . 9.3  
 20 . 19F/1H NMR  
 75 %  
 . THF , 51 % .

( ) ,  
 31 % .

3

2,713,593 (Brice ) 1000 Mℓ 0.037 m<sup>2</sup> (0.40  
 ft<sup>2</sup>) (anode), - 40 - 80 ( 0.3  
 ) 1800 torr(35 psig) 58 HF 900 Mℓ 95%( ) C  
 $\text{H}_3\text{OCF}_2\text{CF}_2\text{C(O)CF}_2\text{CF}_2\text{OCH}_3$  5% 977.9 g 93.0 가 .  
 HF 가 900 Mℓ

1 WO 98/50603  
 19.5 amp 6.0  
 80 1 (T<sub>e</sub>) 17.8 amp 1 4 2 (T<sub>i</sub>)

1269.9 g HF  
 ( 364.1 g) 2 % w/w .  $\text{CF}_3\text{OCF}_2\text{CF}_2\text{C(O)F}$  GC/IR, GC/M  
 S 19F/1H NMR 50 % .

4

$(\text{CH}_3\text{OC}_2\text{F}_4\text{CO})_2\text{O}$   $\text{CH}_3\text{OC}_2\text{F}_4\text{COOCH}_3$  (83 g, 0.4  
 38 )  $\text{CH}_3\text{OC}_2\text{F}_4\text{COOCH}_3$  NaOH MeOH HCl 가 88%  
 68 g  $\text{CH}_3\text{OC}_2\text{F}_4\text{COOH}$ , bp 76–78 /15 mm  $\text{CH}_3\text{OC}_2\text{F}_4\text{COOH}$  48 g  $\text{P}_2\text{O}_5$  36 g (C  
 $\text{H}_3\text{OC}_2\text{F}_4\text{CO})_2\text{O}$ , bp 72–76 /15 mm 5,4  
 88,142 (Fall Guerrain)  
 10% THF 25 (N - )  $(\text{CH}_3\text{OC}_2\text{F}_4\text{CO})_2\text{O}$  19.6 g  
 14.5 g  $(\text{CH}_3\text{OC}_2\text{F}_4\text{CO})_2\text{O}$  , 19F NMR 56%  
 , , KF  
 , HF  
 .  
 .

(57)

1.

(a) 2 ;

(b) ;

(c) (b)

1 :

1

 $\text{R}_f\text{OCF}_2\text{CF}_2\text{COF}$ 

2

 $\text{R}-\text{O}-\text{CF}_2\text{CF}_2\text{COZ}$ 

,

 $\text{R}_f$  가 1–20 ;

$\text{R}-1$  가 1–20 1–20 1가 , Z -OH,  
 $\text{R}-\text{ROCF}_2\text{CF}_2\text{COO}-$  ] ,  $\text{R}'\text{COO}-[\text{R}'$

2.

1 , R Z .

3.

1 , R Z .

4.



1, R Z 1 5 .

5.

1, R Z .

6.

1, Z가 .

7.

1, (b)가 .

8.

1, (b)가 .

9.

1, 3 :

3

R - O - CF<sub>2</sub>CF<sub>2</sub>COOR"

, R 가 1 20  
1가



, R" 1 20

10.

9, R R" 가 .

11.

9, R R" 가 .

12.

9, R R" 가 1 5 .

13.

9, R R" .

14.

9 , R .

15.

1 , 4 :

4

$\text{ROCF}_2\text{CF}_2\text{COCF}_2\text{CF}_2\text{OR}$

, R 가 1 20 .

16.

(a) 2 ;

(b) ;

(c) (b) ;

(d) (c)

1 :

1

$\text{R}_f\text{OCF}_2\text{CF}_2\text{COF}$

2

$\text{R-O-CF}_2\text{CF}_2\text{COZ}$

,

$\text{R}_f$  가 1 20 ;

R 가 1 20 1가 , Z -OH, 1 20  
1가 ,  $\text{R}'\text{COO}-[\text{R}'\text{R}\text{ROCF}_2\text{CF}_2\text{COO}-$   
]

17.

18 , (b) 10 % .

18.

17 , 가 .

19.

17 , .

20.

17 , .