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C07C 51/363

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(43)

2002 - 0062359  
2002 07 25

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(86) PCT/US2000/10812  
(86) 2000 04 20

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

(71)

1999 12 22 (US)

(71)

55128

6744

(72)

55133 - 3427	33427
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  
yanov et al, Zh.Org.Khim(1994), 30(8), 1266 - 70

Emel

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

 $R_fOCF_2CF_2COF$ ,  $R_f$ 

가 1 20 ( 1 5 )

1가

(a) (c)

(a)

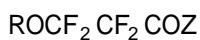
2

(b)

;

(c)

(b)

**2**

, R

(

1 20 (

1 5 )

1가

Z - OH,

( ,

)

1 20 (

1 5 )

1가

, R

]

R Z

, R Z 1

"

"

가

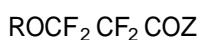
50 % , ). 1  
, 25 % . ,

1

(

50 %

2

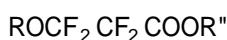


, R Z

. R Z

3

3



R" 1 20 (

1 5 )

1가

C-R

,

4

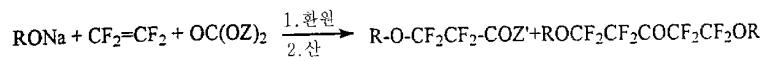


, R

(TFE)

2

2,988,537 (Wiley)



, 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

4 -

2 -

10 %

2  
가  
5,466,877 (Moore)

3

( , , )

CF3OCF2CF2COFCF3CF2OCF2CF2COFCF3CF2CF2OCF2CF2COF(CF3)2CFOCF2CF2COFCF3CF2CF2CF2OCF2CF2COFCF3CF2CF2CF2OCF2CF2COFCF3OCF2CF2OCF2CF2COF

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

1

ft<sup>2</sup>) 2,713,593 (Brice ) 1000 Mℓ 0.037 m<sup>2</sup> (0.40  
 (anode), - 40 - 80 ( 0.3 HF 900 Mℓ 90% ( ) C  
 ) . 1800 torr(35 psig) 58 2224.5 g 218.9  
 H<sub>3</sub>OCF<sub>2</sub>CF<sub>2</sub>CO<sub>2</sub>CH<sub>3</sub>, 5% (CH<sub>3</sub>OC<sub>2</sub>F<sub>4</sub>)<sub>2</sub>C=O 5%  
 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>)  
 ( 618.3 g) 25 % w/w 2384.6 g HF  
 MS 19F/1H NMR 55 % . , CF<sub>3</sub>OCF<sub>2</sub>CF<sub>2</sub>C(O)F GC/IR, GC/  
 CHF<sub>2</sub>OCF<sub>2</sub>CF<sub>2</sub>C(O)F 15 %  
 ( 21 % )

2  
 5,488,142 (Fall Guerra) , 90% (w  
 /w) CH<sub>3</sub>OC<sub>2</sub>F<sub>4</sub>COOCH<sub>3</sub> - 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  
 ft<sup>2</sup>) 2,713,593 (Brice ) 1000 Mℓ 0.037 m<sup>2</sup> (0.40  
 (anode), - 40 - 80 ( 0.3 HF 900 Mℓ 95% ( ) C  
 ) . 1800 torr(35 psig) 58 977.9 g 93.0  
 H<sub>3</sub>OCF<sub>2</sub>CF<sub>2</sub>C(O)CF<sub>2</sub>CF<sub>2</sub>OCH<sub>3</sub> 5%  
 HF 가 900 Mℓ

19.5 amp 1 WO 98/50603  
 . 6.0 ,  
 80 1 (T<sub>e</sub>) 17.8 amp 1 4 2 (T<sub>i</sub>)  
 ( 364.1 g) 2 % w/w 1269.9 g HF  
 S 19F/1H NMR 50 % . , CF<sub>3</sub>OCF<sub>2</sub>CF<sub>2</sub>C(O)F GC/IR, GC/M

4

(83 g, 0.4  
88%  
36 g (C  
5.4  
KF  
HF)

38 )  $\text{CH}_3\text{OC}_2\text{F}_4\text{COOCH}_3$        $(\text{CH}_3\text{OC}_2\text{F}_4\text{CO})_2\text{O}$       NaOH       $\text{CH}_3\text{OC}_2\text{F}_4\text{COOCH}_3$   
 68 g  $\text{CH}_3\text{OC}_2\text{F}_4\text{COOH}$ , bp 76 78 /15 mm      MeOH      .  $\text{CH}_3\text{OC}_2\text{F}_4\text{COOH}$       HCl      가  
 $\text{H}_3\text{OC}_2\text{F}_4\text{CO})_2\text{O}$ , bp 72 76 /15 mm      .  $\text{P}_2\text{O}_5$       48 g      ,  
 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%

(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 ;

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

2.

1      , R      Z

3.

1      , R      Z

4.

1 , R Z 1 5

5.

1 , R Z

6.

1 , Z†

7.

1 , (b)†

8.

1 , (b)†

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"†

11.

9 , R R"†

12.

9 , R R"† 1 5

13.

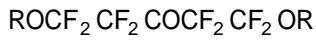
9 , R R"

14.

9 , R

15.

1 , 4  
4



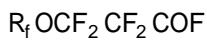
, R 가 1 20

16.

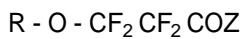
- (a) 2 ;
- (b) ;
- (c) (b) ;
- (d) (c)

1 :

1



2



,

$\text{R}_f$  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 ,