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(71) -51368

(72) ,
47803 - - 15

,
47443 68

(74)

:

(54)

, , 1 - , 10 40 1
2 40
가 .
, 가

A) 1 , 55 93.99 %,

B) , 3 15 %,

C) 1 - , 3 15 %,

$$D) 10 \quad 40 \quad 1, 0.01 \quad 5 \quad 2, 40 \quad \%,$$

E) 가 , 0 10 %

가

가 4 가 (flame - retardant)

, (), 가

가 가 , ().

JP-A 03/281 652 , , - (가 +5)

EP-A 0932643

(가)

가

1.6 mm. 1.0 mm

, 10 ~ 40 1 1 2 ~ 40

(, UL94-V2, GWF1 960) ()

A) 1 , 55 93.99 %,

B) , 3 15 %,

C) 1 - , 3 15 %,

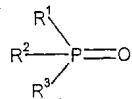
D) 10 40 1 , 0.01 5 %, 2 40

E) 0, 10%, (), 가 () 가

가 [A) E) % 100 %]

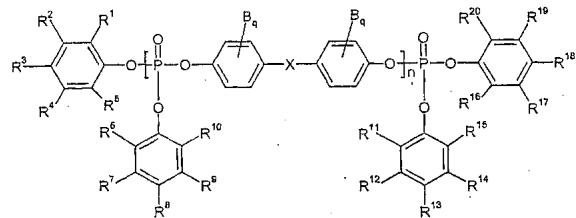
C) | 1 가

◀ ▶



R¹, R² R³ 8 ~ 40

C) 1 1 가



R 1 R 20 , 6

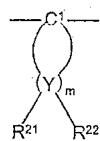
n 0.5 50

$$B \quad C_1 - C_{12} - \dots ,$$

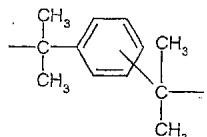
q 0, 1 2 ,

X , C₆-C₁₂- , C=O, S, O, SO₂, C(CH₃)₂, C₁-C₅- , C₂-C₅- , C₅-C₆- ,
(, II III :)

< ||>



< |||>



[, Y

R 21 R 22 Y

m 4 7,

$$R_1 \sim R_{20}$$

X가 SO_2 , O, S, C=O, C₂ ~ C₅ -
 . X = C(CH₃)₂ 가

$$, q = 0$$

C₆ ~ C₁₂ -

가,

C) 가

,

A

55 ~ 93.99 %.

A) 1 가

75 ~ 93

가

1

$$2 \approx 10$$

가

$$2 \approx 10$$

$$a \approx \sum_i a_i =$$

), C

30 % 2,6 10

, 2 ~ 6 , 1,2- , 1,4- , 1,6-

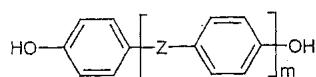
A) 2 ~ 6

A) (viscosity number) /o- (25 1:1) 0.5
 % 70 ~ 220, 80 ~ 160
 .
 100 mval/kg , 50 mval/kg , 40 mval/kg
 . DE-A 44 01 055
 . (:)
 .
 A) (PET) (PBT)
 0 % A) 100 % 5
 10 ~ 30 %

PBT PET (recyclate) PET

5 mm, 6 mm,
가 (0.01 ~ 0.7 %, 0.2 ~ 0.6 %)
가
100 % 0 ~ 95 % 80 % 20 % 5 ~

< |>



(母)

- () ,

- () ,

- () ,

- () ,

- () ,

- () ,

, ' - - () ,

- () ,

- () ,

,

,

,

,

4 - ,

2,4 - - (4' -) - 2 - ,

, ' - - (3' - - 4' -)

2,2 - - (3' - - 4' -) ,

2,2 - - (4' -) ,

2,2 - - (3',5' -) ,

1,1 - - (4' -) ,

3,4' - ,

4,4' - -

2,2 - - (3',5' - - 4' -)

, 20 ~ 98 %

2 ~ 80 %

(A)]

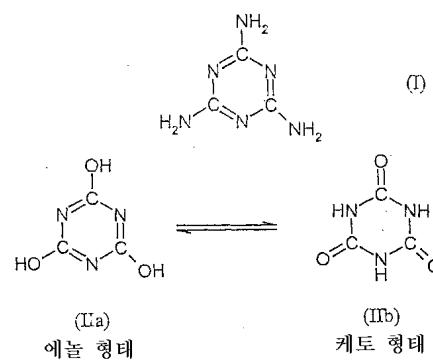
[- (4 -) - 2,2 - ,

A) 100 % , 90 % , 50 %

가 . , Hytrel (DuPont).

B) , 가 3 ~ 15 %, 3 ~ 10 %, 3 ~ 6 %

(IIa IIb) (B) (I)



90 100 d 5
0 1.5 7μm

C) 3 6 % A) E) , 3 15 %, 3 10 %,

C) () 가 -3 +5
가 [-3] [-2] (-1), (+0), (+4), (+5)

['Lehrbuch der Anorganischen Chemie' by A.F. Holleman and E. Wiberg, Walter de Gruyter & Co. (1964, 57th to 70th Edition), pages 166 to 177]

가 -3 +5 (-3), (-2), (-1), (+0), (+4), (+5)

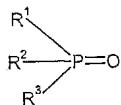
가 -3

가 -2

가 -1

|
I
가

< |>



, R¹, R² R³ 8 40

, -(n-) , -(n-) , -(n-) ,

$$\text{가} \quad \pm 0$$

' + 1

1,10-

+ 3

) , (2,4- -t-) 가 +3 - 1,2- - () , (4- ()

가

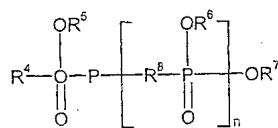
+4

()

+5

,) , - (3,5,5-) , , 2- , 2- () , , () -p- , , () -p- , , p- - (2,5,5-) ,) 2- 2- , , .

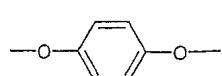
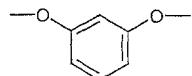
가



R⁴, R⁷

6 20

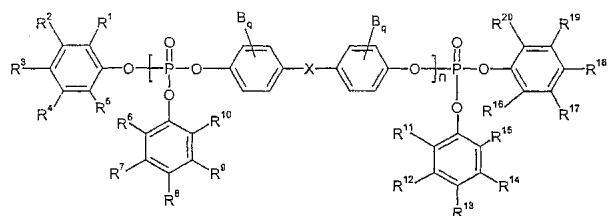
R 8



n 1 100, 1 5 .

, 가

< I>



, R 1 R 20 , 6 , ,

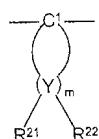
n 0.5 50 가 ,

B C 1 -C 12 , , , , ,

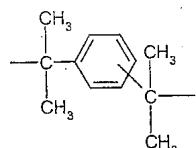
q 0, 1 2 , ,

X C 6 -C 12 , C=O, S, O, SO 2 , C(CH 3) 2 , C 1 -C 5 가 , C 2 -C 5 , , C 5 -C 6 II III ,

< II>



< III>



, Y , ,

Y R 21 R 22 C 1 -C 6 ,

m 4 7 , 4 5 , Y , R 21 R 22 가

R 1 R 20 , q 0 I , X
가 SO 2 , O, S, C=O, C 2 -C 5 , C 5 -C 6 가 C 6 -C 12

10 n 0.5 - 5, n 1 . 가 60% n 100%,
70% 100%, 0.7 2.5 100% . 가 60% n 100%,

%, 0 4%, 0 2.5% | . , 0 5%, 5

I (, EP-A 363 608, EP-A 640 655),
 (; [Ullmann's Encyklopädie der Technischen Chemie
 , Vol. 18, p. 301 ff. 1979]; [Houben-Weyl, Methoden der Organischen Chemie, Vol. 12/1, p.43]; [Beilstein V
 ol. 6, p.177]).

가 A (A -
 A , BDP) , , Fyroflex BDP(Akzo Nobel Chemicals BV,
 Amersfoort, Holland), Ncndx P-30(Albemarle, Baton Rouge, Louisiana, USA), Reofos BAPP(Great Lakes, West Lafayette, Indiana, USA) CR 741(Daihachi, Osaka, Japan) .

가, (가) . ,

DE-A 20 36 173

500 7,000, 700 2,000

-1

(I) - DE-A 31 40 520 ()

± 1

, , , , , 2,3,5-

가.

EP-B 8 486 (; Mobil A
ntiblaze 19 (Mobil Oil))

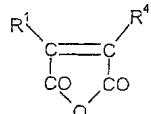
D) , 2 40, 10 2 6 40, 16 22 1
 0.01 5 %. 0.05 3 %. 0.1 2 %

· · · , (· · · , 30 40 · · · , 가 · · ·)

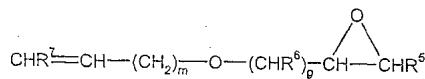
1가 4가

[Houben-Weyl, Methoden der Organischen Chemie, Vol. 14/1 (Georg Thieme-Verlag, Stuttgart, 1961), pp. 392 to 406] [C.B. Bucknall, 'Toughened Plastics' (Applied Science Publishers, London, 1977)]

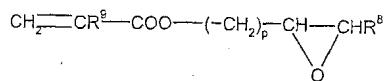
$$< \quad | >$$



< ||| >



< IV >



$$, R^{-1} \quad R^9 \\ , p^0 \quad 5 \quad . \quad 1 \quad 6 \quad , m^0 \quad 20 \quad , g^0 \quad 10$$

, R 1 R 9 , m 0 1 , g 1

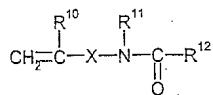
, 0.1 20 %, 50 %, 98 %, () ().

50 98 %, 55 95 %,

%, 0.3 20 (%, , () () 0.1 40
- () 2- 1 45 %, 10 40 %

() , , i- t-

Emulsion Polymerization)' . 가 (Blackley) . (E



R¹⁰ C₁-C₄,
 R¹¹, C₁-C₈,
 R¹², C₁-C₁₀, C₆-C₁₂-OR¹³,
 R¹³ O N C₁-C₈ C₆-C₁₂,
 X, C₁-C₁₀ C₆-C₁₂ $\begin{array}{c} \text{O} \\ \parallel \\ -\text{C}-\text{Y} \end{array}$,
 Y O-Z HN-Z,

P-A 208 187

2 가 , , , () 가 .

US-A 4 148 846

3 % .

I	-1,3-, , , n-	, ,	
,			
II	I , 가	I	
III	I II	n- , -1,3-, , , ,	
IV	I II	I III ,	
V	, ,	I II I IV	1 2

, ABS () ASA 40 % PBT
 , 40 %
 Ultradur s(BASF AG Ultrablend S) 가 ABS/ASA
 Terlbend (BASF AG)

, , - 1,3 - , 가 n -

n- / () , n- /

가

DE-A 37 25 576, EP-A 235 690, DE-A 38 00 603 EP-A 319 290

UV 2 % , 가

， ， ， ， 가 ，

0.3 % , , , , ,

: Ca 32 Zn 1 % (:), (: - -) (:), (가), 가 28 .

가 (PTFE), (50 %) 가
 가 (Schildknecht) [' (Vinyl and Related Polymers)', Wiley Publishers, 1952, pp. 484-494] (Wall) [' (Fluoropolymers)', Wiley Interscience, 1972]

) 0.05 10 μm , 0.1 5 μm .

가 , ,
(. .) , 가
230 290

2 , B) D) 가 E) , . , A)

가 . 가 , ,

A: PBT Pocan B 1300 000000(Leverkusen Bayer AG)

B: (Melapur MC 25, Heerlen DMS - Melapur)

C/1: A (Reefos BAPP, West Lafayette Great Lakes)

C/2: (Disflamoll TP, Leverkusen, Bayer AG)

D: (E wax. Frankfurt am M. Hoechst

E/1 PBT Pocan B 1300 000000 10%

E/2:

E(

F(). (ES 7982, Leverkusen, Bayer AG)

A	94.6	90.6	90.6	64.6	60.6	60.6
B	2.0	4.0	4.0	2.0	4.0	4.0
C/1	2.0	4.0	--	2.0	4.0	--
C/2	--	--	4.0	--	--	4.0
D	0.3	0.3	0.3	0.3	0.3	0.3
E/1	1.0	1.0	1.0	1.0	1.0	1.0
E/2	0.1	0.1	0.1	0.1	0.1	0.1
F	--	--	--	30	30	30

IZOD	ISO 180/IU 23	99 kJ/m ²	79 kJ/m ²	78 kJ/m ²	39 kJ/m ²	41 kJ/m ²	47 kJ/m ²
UL94, 0.8 mm			V-2	V-2			
m	(IEC-695-2-1) 2 m	960	960	960	700	700	700

(57)

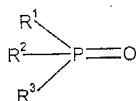
1.

- A) 1 , 55 93.99 %,
B) , 3 15 %,
C) 1 - , 3 15 %,
D) 10 40 1 , 0.01 5 2 40 %,
E) , 0 10), % (), 가 , - (가

2.

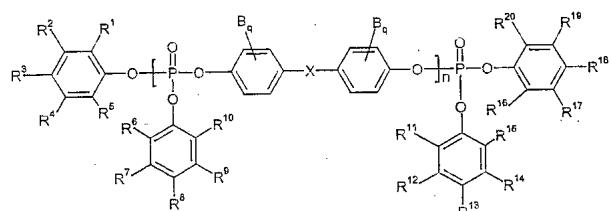
- 1 , C) | 1 가 :

< |>



R¹, R² R³ 8 40

3.



R 1 R 20

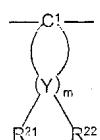
n 0.5 50

$$B = C_{-1} - C_{-12} = \dots, \quad C = \dots, \quad D = \dots, \quad E = \dots,$$

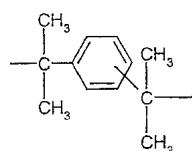
q 0, 1 2

X , C₆-C₁₂- (|| III : , C=O, S, O, SO₂, C(CH₃)₂, C₁-C₅- , C₂-C₅- , C₅-C₆-)

< ||>



< |||>



[, Y]

$$R^{21} \quad R^{22} \quad Y \quad , \quad , \quad , \quad , \quad C_1 \sim C_6 = , \quad , \quad , \quad , \quad ,$$

$$m \quad 4 \quad 7, \quad 4 \quad 5 \quad , \quad Y \quad R^{21} \quad R^{22} \quad 1.$$

4.

1 3 , - (), 가

1

5

1 4 , D) 가

6.

1 5 , A)가

가

7

1 6 , A)가
가 .

8.

1 7 , 10 30 %
가 .

9.

1 8 가 , . 가

10.

1 9

가 , , ,

11.

1 10

가 , , ,