

(19)
(12)

(KR)
(A)

(51) 。 Int. Cl. ⁷
C08K 5/372

(11)
(43)

2002 - 0034190
2002 05 08

(21)	10 - 2002 - 7003591
(22)	2002 03 18
	2002 03 18
(86)	PCT/EP2000/09928
(86)	2000 10 10

(87)	WO 2001/29126
(87)	2001 04 26

(81)

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- 가

, 가 , 가

가

가

AP ARIPO : 가

EA :

EP :

OA OAPI : 가

(30) 1901/99 1999 10 18 (CH)

(71)

4057	141
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(72)

- 4055	74
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- 4312 25

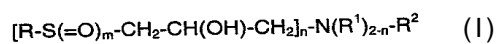
- 1723 17

(74)

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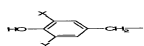
(54)

, , , - / -
(I) :



,

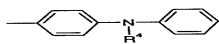
R C₄ - C₂₀ , - C₄ - C₂₀ ; , , - , , - ,
(CH₂)_qCOOR³ , m 0 , R 가



;

n 1 R⁴ 가 , R 가 $R^2-R^1N-CH_2-CH(OH)-CH_2-S(=O)_m-(CH_2)_x$ 또는 $R^2-R^1N-CH_2-CH(OH)-CH_2-S(=O)_m-CH_2-CH_2-(O-CH_2-CH_2)_y$;

R¹ , C₃ - C₁₂ ;

R²

;

R³ C₁ - C₁₈ ;

R⁴ - CH₂ - CH(OH) - CH₂ - S(=O)_m - R ;

X C₁ - C₈ ;

Y C₁ - C₈ ;

m 0 1 ;

n 1 2 ;

q 1 2 ;

x 2 6 ;

y 1 2 . (I)

- (3 - / ' -2 - /) S - 4
 , S - 4 - (3 - / -2
 -)
 .

가 (가) , , (가) (가)
) .

International" 1994, pp.36 - 46; , Rubber World, [, " Tire Technology
 가 200(5), 13 - 23(1989)] 가
 (), , () , " - (non -
 / black)
 () .

가 , 가
 가 .

1 - - 2 - - 3 -
 4,863,621 .

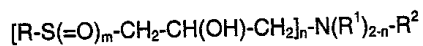
S - 4 - (3 - / -2 -) , ,
 / .

, ,

a) , , , / ,

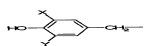
b) (I) :

I



,

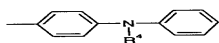
R C₄ - C₂₀ , - C₄ - C₂₀ ; , , - , , - , -
 (CH₂)_qCOOR³ , m 0 , R 가



;

n 1 R⁴ 가 , R 가
$$\begin{aligned} &R^2-R^1N-CH_2-CH(OH)-CH_2-S(=O)_m-(CH_2)_x \text{ 또는} \\ &R^2-R^1N-CH_2-CH(OH)-CH_2-S(=O)_m-CH_2-CH_2-(O-CH_2-CH_2)_y \end{aligned}$$
 ;

R¹ , C₃ - C₁₂ ;

R²

;

R³ C₁ - C₁₈ ;

R⁴ - CH₂ - CH(OH) - CH₂ - S(=O)_m - R ;

X C₁ - C₈ ;

Y C₁ - C₈ ;

m 0 1 ;

n 1 2 ;

q 1 2 ;

x 2 6 ;

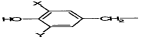
y 1 2 .

20, n-, 1-, 1,3-, n-, 1-, n-, 1,1,3,3-, 1-, 3-, n-, 2-, 1,1,3-, 1,1,3,3-, 1-, 1,1,3,3,5,5-. R, C₄-C₂₀, C₆-C₁₂, C₈-C₁₂, R, R¹, C₃-C₈, C₃-C₆, R¹, C₁-C₁₈, C₄-C₁₂, C₆-C₈, X, Y, 1,3-, R³, C₁-C₈, C₁-C₄.

- C₄-C₂₀ 1 3, 1 2, 3-, 2-, 4-, 3-, 2-, 5-, 4-, 5-, 3-, 2-, 3-, 7-, 2-, 6-, 5-, 5-, 4-, 3-, 2-, 8-, 7-, 6-, 5-, 4-, 3-, 2-, 9-, 10-, 11-, 12-, 13-, 14-, 15-, 16-, 17-, 18-, 20-. R, C₅-C₁₂, C₅-C₁₁, C₄-12.

n 2, R, R³ (I) b)

R C₄-C₁₂, C₄-C₁₂; - (CH₂)_qCOOR³, m

R 가  ;

n 1 R⁴ 가, R 가

$R^2-R^1N-CH_2-CH(OH)-CH_2-S(=O)_m-(CH_2)_x-$ 또는 $R^2-R^1N-CH_2-CH(OH)-CH_2-S(=O)_m-CH_2-CH_2-(O-CH_2-CH_2)_y-$;

R¹, C₃-C₈ ;

R³ C₄-C₁₂ ;

X C₁-C₄ ;

Y C₁-C₄ ;

m 0 1 ;

q 1 2 ;

x 2 4 ;

y 1 2 (I) b) .

R C₆ - C₁₂ , - C₆ - C₁₂ ; - (CH₂)_qCOOR³ , n 1 R⁴가 , R

$R^2-R^1N-CH_2-CH(OH)-CH_2-S(=O)_m-(CH_2)_x$ 또는 $R^2-R^1N-CH_2-CH(OH)-CH_2-S(=O)_m-CH_2-CH_2-(O-CH_2-CH_2)_y$;

R¹ C₃ - C₆ ;

R³ C₆ - C₁₀ ;

m 0 1 ;

q 1 2 ;

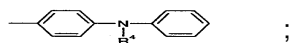
x 2 ;

y 1 2 (I) b) .

R C₈ - C₁₂ - (CH₂)_qCOOR³ , n 1 R⁴가 , R 가 R²-R¹N-CH₂-CH(OH)-CH₂-S(=O)_m-CH₂-CH₂-(O-CH₂-CH₂)_y ;

R¹ 1,3 - ;

R²



R³ C₆ - C₈ ;

R⁴ - CH₂ - CH(OH) - CH₂ - S(=O)_m - R ;

m 0 1 ;

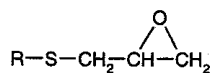
n 1 2 ;

q 1 ;

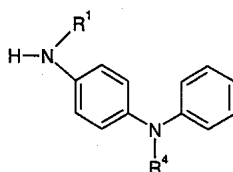
y 1 2 (I) b) .

(I) (II) (III) 4,
863,621 1 :

11



III



2 -
(II) (III)
0.05 10 %
0.5 5 %
Fulcat 22B
100 220 , 110 170 , 120 150
(III) (II)
(III) 1.05:1 1.5: 1
m 1 (I) () , m 0 (I) ()
n=2
R⁴ 가 , 가 ,
가 가 , /
(II) (III)
b) , , - / - ,

. Hans - Georg Elias, " An Introduction to Polymer Science" , Section 12, " Elastomers" , pp. 388 - 393, 1997, VCH Verlagsgesellschaft mbH, Weinheim, Germany " Ullmann 's Encyclopedia of Industrial Chemistry, fifth, , Volume A 23" , pp.221 - 440 (1993) .

3. $\frac{1}{x^2} = x^{-2}$

$$= \frac{d}{dx} x^{-2} = -2x^{-3} = -\frac{2}{x^3}$$

$\therefore \frac{d}{dx} \left(\frac{1}{x^2} \right) = -\frac{2}{x^3}$

4. - , , -
().

5. .

6. _____, _____ - _____.

가
가 , - 가 , 가
가 - 가 가 .

b) 0.05 10 %, 0.1 5 %, 0.5 3.0 % 가 .

a) b) , 가 :

1.

$$\begin{aligned}
 & 1.1. \quad , \quad 2,6 - \quad - \quad - 4 - \quad , 2 - \quad - 4,6 - \quad , 2,6 - \quad - \quad - \\
 & 4 - \quad , 2,6 - \quad - \quad - 4 - n - \quad , 2,6 - \quad - \quad - 4 - \quad , 2,6 - \quad - \quad - 4 - \\
 & \quad , 2 - (\quad - \quad) - 4,6 - \quad , 2,6 - \quad - \quad - 4 - \quad , 2,4,6 - \quad , 2, \\
 & 6 - \quad - \quad - 4 - \quad , \quad , 2,6 - \quad - \quad - 4 - \quad , 2,4 - \\
 & \quad - 6 - (1' - \quad - \quad - 1' - \quad) - \quad , 2,4 - \quad - 6 - (1' - \quad - \quad - 1' - \quad) - \quad , 2,4 - \quad - 6 - \\
 & (1' - \quad - \quad - 1' - \quad) - \quad .
 \end{aligned}$$

1.2. , 2,4 - - -6 - , 2,4 - - -6 - , 2,
4 - -6 - , 2,6 - - -4 - .

$$\begin{array}{ccccccc} 1.3. & & & & 2,6 - & - & -4 - \\ 2,5 - & - & & , 2,6 - & -4 - & & , 2,6 - \\ -4 - & & , 3,5 - & - & -4 - & & , 3,5 - \\ (3,5 - & - & -4 - &) & & & -4 - \end{array}$$

1.4. , - , - , - , - (E)

1.5. $\begin{pmatrix} 2,2' - (6 - -4 -), 2,2' - (4 - \\), 4,4' - (6 - -3 -), 4,4' - (6 - -2 -), 4,4' - (3,6 - \\ -), 4,4' - (2,6 - -4 -) \end{pmatrix}$.

1.6. , 2,2' - (6 - - 4 -), 2,2' - (6 - - 4 -
), 2,2' - [4 - - 6 - (-) -], 2,2' - (4 - - 6 -
), 2,2' - (6 - - 4 -), 2,2' - (4,6 - -), 2,2' - (4,6 -
 -), 2,2' - (6 - - 4 -), 2,2' - [6 - (-) - 4 -
], 2,2' - [6 - (, -) - 4 -], 4,4' - (2,6 - -), 4,4'
 - (6 - - 2 -), 1,1 - (5 - - 4 - - 2 -) , 2,6 - (3 -
 - 5 - - 2 -) - 4 - , 1,1,3 - (5 - - 4 - - 2 -) , 1,1
 - (5 - - 4 - - 2 - -) - 3 - n - , [3,3 - (3' -
 - 4' -)], (3 - - 4 - - 5 - -) , [2 - (3'
 - - 2' - - 5' -) - 6 - - 4 -] , 1,1 - - (3,5 - - 2 -
) , 2,2 - (3,5 - - - 4 -) - , 2,2 - (5 - - 4 - -
 2 -) - 4 - n - , 1,1,5,5 - (5 - - 4 - - 2 -) .

1.7. O - , N - S - , 3,5,3',5' - - - 4,4' - - ,
 - 4 - - 3,5 - , - 4 - - 3,5 - - ,
 (3,5 - - - 4 -) , (4 - - 3 - - 2,6 -)
 , (3,5 - - - 4 -) , - 3,5 - - - 4 -
 .

1.8. , - 2,2 - (3,5 - - - 2 -) ,
 - - 2 - (3 - - 4 - - 5 -) - , - - 2,2 - (3,5 -
 - - 4 -) , - [4 - (1,1,3,3 -)] - 2,2 - (3,5 - -
 - 4 -) .

1.9. , 1,3,5 - (3,5 - - - 4 -) - 2,4,6 -
 , 1,4 - (3,5 - - - 4 -) - 2,3,5,6 - , 2,4,6 - (3,5 - - -
 4 -) .

1.10. , 2,4 - () - 6 - (3,5 - - - 4 -) - 1,3,5 -
 , 2 - - 4,6 - (3,5 - - - 4 -) - 1,3,5 - , 2 - - 4,6
 - (3,5 - - - 4 -) - 1,3,5 - , 2,4,6 - (3,5 - - - 4 -
) - 1, 2,3 - , 1,3,5 - (3,5 - - - 4 -) , 1,3,5 - (4 -
 - 3 - - 2,6 -) , 2,4,6 - (3,5 - - - 4 -)
 - 1,3,5 - , 1,3,5 - (3,5 - - - 4 -) - 1,3,5 - , 1,
 3,5 - (3, 5 - - 4 -) .

1.11. , - 2,5 - - - 4 - , - 3,5 - -
 - 4 - , - 3,5 - - - 4 - ,
 5 - - 4 - - 3 - , 3,5 - - - 4 - -
 .

1.12. , 4 - , 4 - , N - (3,5 - -
 - 4 -) .

1.13. 17가 가 , , n - , i - , 1,6 - , 1,9 - ,
 , 1,2 - , ,
 , () , N,N' - () , 3 - , 3 -
 , 4 - - 1 - - 2,6,7 - [2.2.2]
 - (3,5 - - - 4 -) - .

1.14.17가 가 , , , n- , i- , , 1,6- , 1,9-
 , , 1,2- , ,
 , () , N,N' - () , 3- , 3-
 , , 4- - 1- - 2,6,7- - [2.2.2
] - (5- - 4- - 3-) - .

1.15.17가 가 , , , n- , i- , , 1,6- , 1,9-
 , , 1,2- , ,
 , () , N,N' - () , 3- , 3-
 , , 4- - 1- - 2,6,7- - [2.2.2
] - (3,5- - 4-) - .

1.16.17가 가 , , , n- , i- , , 1,6- , 1,9-
 , , 1,2- , ,
 , () , N,N' - () , 3- , 3-
 , , 4- - 1- - 2,6,7- - [2.2.2
] 3,5- - - 4- .

1.17. - (3,5- - - 4-) , N,N' - (3,5- - - 4-
) , N,N' - (3,5- - - 4-)
 , N,N' - (3,5- - - 4-) - , N,N' - [2 - (3 - [3,5 -
 - 4- -])] (Naugard^RXL - 1,).

1.18. (C)

1.19. , N,N' - - -p- , N,N' - - -p- , N,N'
 - (1,4-) -p- , N,N' - (1- - 3-) -p- , N,N' - (1-
) -p- , N,N' - -p- , N,N' - -p- , N,N' - (2-
) -p- , N- -N' - -p- , N- (1,3-) -N' - -p-
 , N- (1-) -N' - -p- , N- -N' - -p- , 4- (p-
) - , N,N' - -N,N' - - -p- , N- , 4-
 , N- - 1- , N- (4-) - 1- , N- - 2- ,
 , p,p' - - , 4- n- , 4- , 4-
 - , 4- , 4- , (4-) , 2,6- - - 4-
 , 2, 4' - - , 4,4' - , N,N,N',N' - - 4,4' - -
 , 1,2- [(2-)] , 1,2- () , (o-) , [4
 - (1',3' -)] , N- - 1- , - /
 , - , - /
 , 2,3- - - 3,3- - 4H-1,4- , ,
 / , N- , N,N,
 N',N' - - 1,4- - 2- .

2. UV

2.1. 2 - (2' -) - , 2 - (2' - - 5' -) , 2 - (3', 5' - -
 - 2' -) , 2 - (5' - - 2' -) , 2 - (2' - - 5' -
 - (1,1,3,3 -)) , 2 - (3', 5' - - 2' -) - 5 - -
 , 2 - (3' - - 2' - - 5' -) - 5 - - , 2 - (3' - - 5' - - 2' -
) , 2 - (2' - - 4' -) , 2 - (3', 5' - - 2' -
) , 2 - (3', 5' - - (, -) - 2' -) , 2 - (3' - - 2' -
 - 5' - (2 -)) - 5 - - , 2 - (3' - - 5' - [2 - (2 -
) -] - 2' -) - 5 - - , 2 - (3' - - 2' - - 5' - (2 -
)) - 5 - - , 2 - (3' - - 2' - - 5' - (2 -))
 , 2 - (3' - - 2' - - 5' - (2 -)) , 2 - (3' -
 - 5' - [2 - (2 -)] - 2' -) , 2 - (3' - - 2' - - 5' -
) , 2 - (3' - - 2' - - 5' - (2 -)) , 2,2' -
 - [4 - (1,1,3,3 -) - 6 - - 2 -] ; 300 2 - [3' -
 - 5' - (2 -) - 2' - -] - 2H - ; R 3' -
 - 4' - - 5' - 2H - - 2 - , 2 - [2' - - 3' - (, -) - 5' - (1,1,3,
 3 -)] , 2 - [2' - - 3' - (1,1,3,3 -) - 5' - (, -)
] $[R-CH_2CH_2-COO-CH_2CH_2]_2$.

2.2. 2 - , 4 - , 4 - , 4 - , 4 - , 4 - ,
 4,2',4' - 2' - - 4,4' - .

2.3. , 4 - - , , 2,4 - - ,
 , (4 - -) , , 3,5 - - 4 - , 3,5 -
 3,5 - - 4 - , 2 - - 4,6 - - 3,5 - - 4 - .

2.4. , - , - , - , - , - , - , -
 , - , - , - - p - - , - , - -
 - p - , - - p - - N - (- - -
) - 2 - .

2.5. , 가 (: n - , N -
)가 2,2' - - [4 - (1,1,3,3 -)] (1:1 1:2),
 , 4 - - 3,5 - - (:
) , (: 2 - - 4 -) , 가
 가 1 - - 4 - - 5 - .

2.6. , (2,2,6,6 - - 4 -) , (2,2,6,6 - - 4 -) , (1,2,2,6,6 - - 4 -) , (1 - - 2,2,6,6 - - 4 -) , (1,2,2,6,6 - - 4 -) n - - 3,5 - - 4 - , 1 - (2 -) - 2,2,6,6 - - 4 - , N,N' - (2,2,6,6 - - 4 -) - 2,6 - - 1,3,5 - , (2,2,6,6 - - 4 -) - 1,2,3,4 - - , 1,1' - (1,2 -) (3,3,5,5 -) , 4 - - 2,2,6,6 - , 4 - - 2,2,6,6 - , (1,2,2,6,6 -) - 2 - n - - 2 - (2 - - 3,5 - -) , 3 - n - - 7,7,9,9 - - 1,3,8 - [4.5] - 2,4 - , (1 - - 2,2,6,6 -) , (1 - - 2,2,6,6 -) , N,N' - (2,2,6,6 - - 4 -) , 2 - - 4,6 - (4 - n - - 2,2,6,6 -) - 1,3,5 - 1,2 - (3 -) , 2 - - 4,6 - - (4 - n - - 1,2,2,6,6 -) - 1,3,5 - 1,2 - (3 -) , 8 - - 3 - - 7,7,9,9 - - 1,3,8 - [4.5] - 2,4 - , 3 - - 1 - (2,2,6,6 - - 4 -) - 2,5 - , 3 - - 1 - (1,2,2,6,6 - - 4 -) - 2,5 - , 4 - - 4 - - 2,2,6,6 - , N,N' - - (2,2,6,6 - - 4 -) 4 - - 2,6 - - 1,3,5 - , 1,2 - (3 -) 2,4,6 - - 1,3,5 - (CAS Reg.No.[136504 - 96 - 6]); 1,6 - 2,4,6 - - 1,3,5 - N,N - 4 - - 2,2,6,6 - (CAS Reg. No. [192268 - 64 - 7]); N - (2,2,6,6 - - 4 -) - n - , N - (1,2,2,6,6 - - 4 -) - n - , 2 - - 7,7, 9,9 - - 1 - - 3,8 - - 4 - - [4,5] , 7,7,9,9 - - 2 - - 1 - - 3,8 - - 4 - [4,5] , 1,1 - (1,2,2,6,6 - - 4 -) - 2 - (4 -) , N,N' - - N,N' - (2,2,6,6 - - 4 -) - , 4 - 1,2,2,6,6 - - 4 - , - [- 3 - - 4 - 2,2,6,6 - - 4 -)] - , - - 2,2,6,6 - - 4 - 1,2, 2,6,6 - - 4 - .

2.7. , 4,4' - , 2,2' - , 2,2' - - 5,5' - - , 2,2' - - 5,5' - - , 2 - - 2' - , N,N' - (3 -) , 2 - - 5 - - 2' - 2 - - 2' - - 5,4' - - , o - p - - o - p - - .

2.8. 2 - (2 -) - 1,3,5 - , 2,4,6 - (2 - - 4 -) - 1,3,5 - , 2 - (2 - - 4 -) - 4,6 - (2,4 -) - 1,3,5 - , 2 - (2,4 -) - 4,6 - (2,4 -) - 1,3,5 - , 2,4 - (2 - - 4 -) - 6 - (2,4 -) - 1,3,5 - , 2 - (2 - - 4 -) - 4,6 - (4 -) - 1,3,5 - , 2 - (2 - - 4 -) - 4,6 - (2,4 -) - 1,3,5 - , 2 - [2 - - 4 - (2 - - 3 - -)] - 4,6 - (2,4 -) - 1,3,5 - , 2 - [2 - - 4 - (2 - - 3 - -)] - 4,6 - (2,4 -) - 1,3,5 - , 2 - [4 - (/ - 2 -) - 2 - -] - 4, 6 - (2,4 -) - 1,3,5 - , 2 - [2 - - 4 - (2 - - 3 - -)] - 4, 6 - (2,4 -) - 1,3,5 - , 2 - (2 - - 4 -) - 4,6 - - 1,3,5 - , 2 - (2 - - 4 -) - 4,6 - - 1,3,5 - , 2,4,6 - [2 - - 4 - (3 - - 2 - -)] - 1,3,5 - , 2 - (2 - - 4 - (4 -) - 6 - - 1,3,5 - , 2 - {2 - - 4 - [3 - (2 - - 1 -) - 2 -]} - 4,6 - (2,4 -) - 1,3, 5 - .

10. , (;), (;),
 , ; (-) , 4 -
 , ; , (" "
 "). 1,3: 2,4 - (3',4' -) , 1,3: 2,4 - () , 1,3: 2,4 -
 () .

[illegible]

12. 가 , 가 , , , , 가 , , , , , .

13. , US - A - 4 325 863 , US - A - 4 338 244 , US - A - 5 175 312 , US - A - 5 216 052 , US - A - 5 252 643 , DE - A - 4 316 611 , DE - A - 4 316 622 , DE - A - 4 316 876 , EP - A - 0 589 839 EP - A - 0 591 102 3 - [4 - (2 -)] - 5,7 - - - 2 - , 5,7 - - 3 - [4 - (2 -)] - 2 - , 3,3' - [5,7 - - 3 - (4 - [2 -] -) - 2 -], 5,7 - - 3 - (4 -) - 2 - , 3 - (4 - 3,5 -) - 5,7 - - - 2 - , 3 - (3,5 - 4 -) - 5,7 - - - 2 - , 3 - (3,4 -) - 5,7 - - - 2 - , 3 - (2,3 -) - 5,7 - - - 2 - .

7) 가 .

가	가	가	0.01	10	%	.
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b) 가 , , 가 ,
() , b) 가 2.
25 % .

b) 가 / 가 (crude),
가 .

(I) 가 (, 가) . (I)

(I)

b) 가 ,

b) 가 가 (가) , 가

()

b)

/

b)

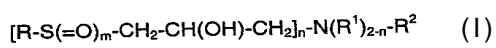
b)

b)

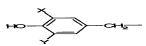
(I) [b)]

(I)

:



R C₄ - C₂₀ , - C₄ - C₂₀ ; , - , - , -
 (CH₂)_qCOOR³ , m 0 , R 가

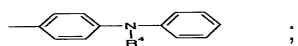


;

n 1 R⁴ 가 , R 가 $R^2-R^1N-CH_2-CH(OH)-CH_2-S(=O)_m-(CH_2)_x-$ 또는 $R^2-R^1N-CH_2-CH(OH)-CH_2-S(=O)_m-CH_2-CH_2-(O-CH_2-CH_2)_y-$;

R¹ , C₃ - C₁₂ ;

R²



R^3 $C_1 - C_{18}$;

R^4 $-CH_2 - CH(OH) - CH_2 - S(=O)_m - R$;

X $C_1 - C_8$;

Y $C_1 - C_8$;

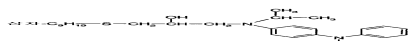
m 0 1 ;

n 1 2 ;

q 1 2 ;

x 2 6 ;

y 1 2 , (Ia)



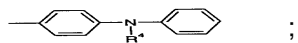
(I)

R $C_4 - C_{20}$, $- C_4 - C_{20}$; , , - , , - , -

$(CH_2)_q COOR^3$,

R^1 , $C_3 - C_{12}$;

R^2



R^3 $C_1 - C_{18}$;

R^4 $-CH_2 - CH(OH) - CH_2 - S(=O)_m - R$;

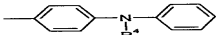
m 0 1 ;

n 1 2 ;

q 1 2 ; (Ia) (I)

R^1 $C_8 - C_{12}$; $-(CH_2)_q COOR^3$, $n = 1$ R^4 가 , R^2 $R^2-R^1N-CH_2-CH(OH)-CH_2-S(=O)_m-CH_2-CH_2-(O-CH_2-CH_2)_y$

R^1 1,3- ;

R^2
 ;

R^3 $C_6 - C_8$;

R^4 $-CH_2-CH(OH)-CH_2-S(=O)_m-R$;

$m = 0, 1$;

$n = 1, 2$;

$q = 1$;

$y = 1, 2$; (Ia) (I) .

%

1: 4 - {N - N - [3 - (n -) - 2 -] } (101, 1)

n - (31.6 g) 4 - [27.2 g, Vulkanox 4010 (RTM),
] (0.8 g) 150 8 .

220 /0.02

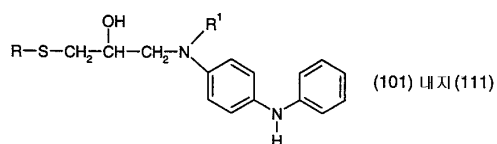
51.2 g(99.5%) 4 - {N - N - [3 -) - 2 -] } (101, 1) . $C_{26}H_{40}N_2OS(428.68)$. : C 72.85; H 9.41; N 6.53; S 7.48%. : C 71.94; H 9.63; N 5.87; S 7.86%. EI - MS: 428 (M^+), 239 (M^- - $SCH_2CH(OH)$,).

1 n - , 98%
 4 - {N - N - [3 - () - 2 -] } (102, 1)
 . $C_{27}H_{42}N_2OS(442.71)$. : C 73.25; H 9.56; N 6.33; S 7.24%.
 : C 73.21; H 9.70; N 6.26; S 7.33%. EI - MS: 442 (M^+), 239 (M^- - $SCH_2CH(OH)$,).

, 1 n - n - ,
 - 103, 104 111(
 1) .

1 4 - 4 - (1,3 -)
 107(1) . 가 n - n -
 105, 106 108 (1)

1 n - 4 - (2 -) 10
 9 (1) , 1 n - 4 -
 110 (1)



화합물	R	R ¹	구성	M ⁺
101	n-옥틸	이소프로필	점성 오일	428
102	삼차-노닐	이소프로필	점성 오일	442
103	n-도데실	이소프로필	갈색 덩어리	484
104	삼차-도데실	이소프로필	점성 오일	484
105	n-도데실	1,3-디메틸부틸	암갈색 오일	526
106	삼차-도데실	1,3-디메틸부틸	암갈색 오일	526
107	n-옥틸	1,3-디메틸부틸	암갈색 오일	470
108	삼차-노닐	1,3-디메틸부틸	암갈색 수지	484
109	n-도데실	2-옥틸	암갈색 수지	554
110	n-도데실	시클로헥실	암갈색 수지	524
111	이소-C ₈ H ₁₇ OOCCH ₂ -	이소프로필	암갈색 오일	486

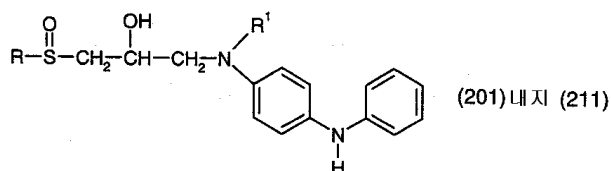
2: 4 - {N - - N - [3 - (n -) - 2 -] } (201, 2)

4.53 g 30% (H₂O₂) 25 ml 10g 101 (1, 1)
가 40 9 100 ml 50 ml

/ / (12:7:1) 7.14 g(69%) 4 - {N - - N -
[3 - (n -) - 2 -] } (201, 2) C
26 H₄₀ N₂ O₂ S(444.68). : C 70.23; H 9.07; N 6.30; S 7.21%. : C 70.04; H 9.04; N 6.4
2; S 7.05%. EI - MS: 444 (M⁺), 239 (M⁻ - S(=O)CH₂CH(OH),).

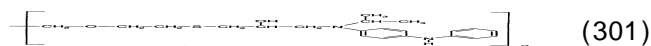
, 2 102 (1, 1) , 62% 4 - {N - - N - [3 - (
) - 2 -] } (202, 2) C₂₇ H₄₂ N
2 O₂ S(458.71). : C 70.70; H 9.23; N 6.11; S 6.99%. : C 70.84; H 9.19; N 6.05; S 7.3
5%. EI - MS: 458 (M⁺), 332 (M⁻ C₉H₁₈), 239 (M⁻ - S(=O)CH₂CH(OH),).

2 103 111 (1, 1) 203 211 (2)



화합물	R	R ¹	구성	M ⁺
201	n-옥틸	이소프로필	갈색 수지	444
202	삼차-노닐	이소프로필	갈색 수지	458
203	n-도데실	이소프로필	융점 48°C	500
204	삼차-도데실	이소프로필	점성 오일	500
205	n-도데실	1,3-디메틸부틸	암갈색 오일	542
206	삼차-도데실	1,3-디메틸부틸	암갈색 오일	542
207	n-옥틸	1,3-디메틸부틸	암갈색 오일	486
208	삼차-노닐	1,3-디메틸부틸	암갈색 수지	500
209	n-도데실	2-옥틸	암갈색 수지	570
210	n-도데실	시클로헥실	암갈색 수지	540
211	이소-C ₈ H ₁₇ OOCCH ₂ -	이소프로필	암갈색 오일	502

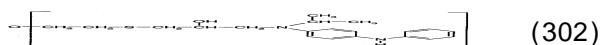
3: 4,13 - - 7,10 - - 1,16 - [N - - 4 - () -] - 2,15 -
(301)



3,6 - - 1,8 - 20.6 g (0.07) 150 2 22.6 g (0.
10) 4 - [Vulkanox 4010 (RTM),] 0.28 g (2)
가 . 150 6 .
/ (1:1)

13.25 g(36%) 4,13 - - 7,10 - - 1,16 - [N -
- 4 - ()] - 2,15 - (301) . C₄
2 H₅₈ N₄ O₄ S₂ (747.08). : C 67.52; H 7.83; N 7.50; S 8.58%. : C 67.58; H 7.78; N 7.2
1; S 7.93%. EI - MS: 746 (M⁺), 239 (C₆H₅NHC₆H₄N(C₃H₇)CH₂⁺ ,).

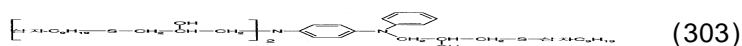
4: 302



3 - - 1,5 - 17.5 g (0.07) 150 2 22.6 g (0.10)
4 - [Vulkanox 4010 (RTM),] 0.28 g (2)
가 . 150 6 .
/ (1:1)
37.0 g (92%) 302 . EI - MS: 702 (M⁺),
239 (C₆H₅NHC₆H₄N(C₃H₇)CH₂⁺ ,).

5: 303

28.1 g (0.13) 150 2 9.2 g (0.05) 4 -
0.14 g (1) 가 . 150 2 .
/ (1:3)
6.1 g (16.5%) 303
C₄₈ H₈₄ N₂ O₃ S₃ (833.40). : C 69.23; H 10.09; N 3.36; S 11.53%.
: C 68.83; H 10.09; N 3.54; S 11.68%. EI - MS: 833(M⁺), 127 (C₉H₁₉⁺ ;).



6: 가

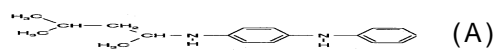
40.0 Cariflex^R 1220 [,] 60 60.0 55.0
 (N 330), 6.0 Ingralen 450 (RTM) [], 5.0 [가
], 2.0 [가], 0.2 IRGANOX 1520 (RTM) [가 ,
], 2.0 [가], 0.6 Vulkacit MOZ (RTM) [가 ,
] 2.0 3 가 , 가 [V
 ulkacit MOZ (RTM)] 가 . 150 가
 가 2 mm, 21 cm 8.0 cm . 2 mm
 50 5 . ()
 : 0 = (AO가) 5 = .
 . 3 .

실시예	안정화제 (화합물)	접촉변색 -목측
6a ^{a)}	—	0
6b ^{a)}	Vulkanox 4020 (RTM) ^{c)}	5
6c ^{b)}	103	0-1
6d ^{b)}	106	0-1
6e ^{b)}	107	0-1
6f ^{b)}	108	0-1
6g ^{b)}	109	0-1
6h ^{b)}	110	0-1
6i ^{b)}	111	0-1
6k ^{b)}	203	0-1
6l ^{b)}	205	0-1
6m ^{b)}	206	0-1
6n ^{b)}	210	0-1

a)

b)

c) Vulcanox 4020 (RTM) [] (A) 4 - [1,3 -] :

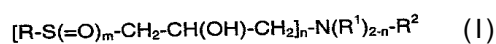


(57)

1.

a) , , , / ,

b) (I) :



,

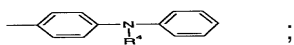
R C₄ - C₂₀ , - C₄ - C₂₀ ; , , - , , - , -
 (CH₂)_qCOOR³ ,

m 0 , R 가



n 1 R⁴ 가 , R 가 $R^2-R^1N-CH_2-CH(OH)-CH_2-S(=O)_m-(CH_2)_x$ 또는 $R^2-R^1N-CH_2-CH(OH)-CH_2-S(=O)_m-CH_2-CH_2-(O-CH_2-CH_2)_y$;

R¹ , C₃ - C₁₂ ;

R²

R³ C₁ - C₁₈ ;

R⁴ - CH₂ - CH(OH) - CH₂ - S(=O)_m - R ;

X C₁ - C₈ ;

Y C₁ - C₈ ;

m 0 1 ;

n 1 2 ;

q 1 2 ;

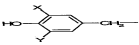
x 2 6 ;

y 1 2 .

2.

1 ,

R C₄ - C₁₂ , - C₄ - C₁₂ ; , - , - (CH₂)_qCOOR³ , m
0 ,

R 가  ;

n 1 R⁴ 가 , R 가

R²-R¹N-CH₂-CH(OH)-CH₂-S(=O)_m-(CH₂)_x- 또는
R²-R¹N-CH₂-CH(OH)-CH₂-S(=O)_m-CH₂-CH₂-(O-CH₂-CH₂)_y- ;

R¹ , C₃ - C₈ ;

R³ C₄ - C₁₂ ;

X C₁ - C₄ ;

Y C₁ - C₄ ;

m 0 1 ;

q 1 2 ;

x 2 4 ;

y 1 2 .

3.

1 ,

R C₆ - C₁₂ , - C₆ - C₁₂ ; - (CH₂)_qCOOR³ , n 1 R⁴ 가 , R
가

R²-R¹N-CH₂-CH(OH)-CH₂-S(=O)_m-(CH₂)_x- 또는
R²-R¹N-CH₂-CH(OH)-CH₂-S(=O)_m-CH₂-CH₂-(O-CH₂-CH₂)_y- ;

R^1 $C_3 - C_6$;

R^3 $C_6 - C_{10}$;

m 0 1 ;

q 1 2 ;

x 2 ;

y 1 2 .

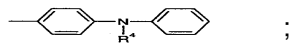
4.

1 ,

R $C_8 - C_{12}$ - $(CH_2)_q COOR^3$, n 1 R^4 가 , R 가 $R^2 \cdot R^1 N-CH_2-CH(OH)-CH_2-S(=O)_m-CH_2-CH_2-(O-CH_2-CH_2-$

R^1 1,3 - ;

R^2



R^3 $C_6 - C_8$;

R^4 - $CH_2 - CH(OH) - CH_2 - S(=O)_m - R$;

m 0 1 ;

n 1 2 ;

q 1 ;

y 1 2 .

5.

1 , a) .

6.

1 , a) 가 .

7.

1 , a) 가 , - 가 , 가
- 가 .

8.

1 , a) b) 가 가 .

9.

8 , 가 가 , , , , , 가 , 가 , 가 , 가 , 가 , 가 .

10.

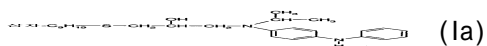
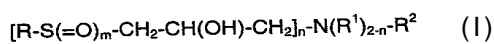
8 , 가 가 , , / .

11.

1 , b) a) 0.05 10 % .

12.

(Ia) , (I) :



,

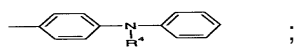
R C₄ - C₂₀ , - C₄ - C₂₀ ; , , - , , - , -
(CH₂)_qCOOR³ , m 0 , R 가



n 1 R⁴ 가 , R 가 $R^2-R^1N-CH_2-CH(OH)-CH_2-S(=O)_m-(CH_2)_x-$ 또는 $R^2-R^1N-CH_2-CH(OH)-CH_2-S(=O)_m-CH_2-CH_2-(O-CH_2-CH_2)_y-$;

R¹ , C₃ - C₁₂ ;

R²

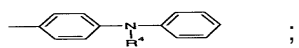


;

 $R^3 \quad C_1 - C_{18} \quad ;$
 $R^4 \quad -CH_2 - CH(OH) - CH_2 - S(=O)_m - R \quad ;$
 $X \quad C_1 - C_8 \quad ;$
 $Y \quad C_1 - C_8 \quad ;$
 $m \quad 0 \quad 1 \quad ;$
 $n \quad 1 \quad 2 \quad ;$
 $q \quad 1 \quad 2 \quad ;$
 $x \quad 2 \quad 6 \quad ;$
 $y \quad 1 \quad 2 \quad .$

13.

12 ,

 $R \quad C_4 - C_{20} \quad , \quad - \quad C_4 - C_{20} \quad ; \quad , \quad , \quad - \quad , \quad , \quad - \quad , \quad -$
 $(CH_2)_q COOR^3 \quad ,$
 $R^1 \quad , \quad C_3 - C_{12} \quad ;$
 R^2 

;

 $R^3 \quad C_1 - C_{18} \quad ;$
 $R^4 \quad -CH_2 - CH(OH) - CH_2 - S(=O)_m - R \quad ;$
 $m \quad 0 \quad 1 \quad ;$
 $n \quad 1 \quad 2 \quad ;$
 $q \quad 1 \quad 2 \quad (I) \quad .$

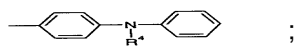
14.

12 ,

R^1 $C_8 - C_{12}$; $-(CH_2)_qCOOR^3$, $n = 1$ R^4 가 , $R^2-R^1N-CH_2-CH(OH)-CH_2-S(=O)_m-CH_2-CH_2-(O-CH_2-CH_2)_y$

R^1 1,3 - ;

R^2



R^3 $C_6 - C_8$;

R^4 $-CH_2-CH(OH)-CH_2-S(=O)_m-R$;

$m = 0, 1$;

$n = 1, 2$;

$q = 1$;

$y = 1, 2$ (I) .

15.

1 b) , , , ,
- / - .

16.

1 b) ,
.

17.

1
b) .

18.

1 b) .