

(74)

:

(54)

3

[5,464,477 , 5,529,788 , 4,308,229 , 4,448,750 , WO 94/07989 , WO 9
 7/16263 , WO 94/23852 , WO 93/06947 , 2,204,321 , 258,819 , 9
 4,100,682 , 10036892 , 08157888]

(a)

; (b)

(i)

; (ii)

"/ (Hz) Hz

가 , , (i) (ii)

(Branson Ultrasonic Bath)
 " "(DP Wash Machine Sonic Wash Ball),
 Teldyne Water Pik SR-400R 가

가 (sonotrode) PZT

가 " (chisel)
 50mm 가 0.05 5mm 10
 가 , 50kHz, 30 40 가

10 100mm 가 ,

20 500 가

가 ,

가 가

/ / 가 가 /

1 가 [1998 11 16 60/180,629 ,

7341]
 100Hz 20,000kHz, 100Hz 10,000kHz, 1
 50Hz 2000kHz, 150Hz 1,000kHz, 10
 0kHz, 200Hz 50kHz , 1000H
 z 100kHz, 10,000Hz 70kHz ,
 0.02 /cm² , 0.05 /cm² , 0.07 /cm²
 0.08 /cm² , 20 2 , 가 30
 1 , 1 5 ,

가

가

(/) Termamyl[®]

(: Novo Nordisk), Fungamyl[®] BAN[®] (: Novo Nordisk) 0.00

01 2 %, 0.0001 0.5 %, 0.0005 0.1 %, 0.001 0.05 %

[WO 95/26397 Novo Nordisk PCT/DK96/00056]

:

(a) Phadebas[®] , 25 55 8 10 pH
Termamyl[®] 25% Phadeb
as[®] [WO 95/26397 , 9 10]

(b) (a) -

(c) N- : His - His - Asn - Gly - Thr - Asn - Gly - Thr - Met - Met - Gln - Tyr - Phe - Glu - Trp -
Tyr - Leu - Pro - Asn - Asp (a) -
[Lipman and Pearson, Science 227, 1985, p. 1435]

가 X% X%

(d) , NCIB 12289, NCIB 12512, NCIB 12513 DSM 935
, (a) (c) - " " DNA DNA

(e) (a) (d) - -

(f) (i) (a) (e) - 80% / , (ii) -
DNA DNA - - ,

1. - / ;
2. - / ;
3. - ;

가 - 가 : 가
, 가 , Ca , pH 가 - 가 - pH
(pl) pl 가 .

[PCT/DK96/00056] [Novo 1,296,839] -
; RAPIDASE[®] (: International Bio-Synthetics, Inc.), TERMAMYL[®] (: Novo) FUNG
AMYL[®] (: Novo)
[: , J. Biological Chem., Vol. 260, No. 11, June 1985, pp. 6518-6521].
, 1993 TE

RMAMYL[®] , , pH 9 10
/ ; , pH 8 11 , 60
가 ; " - " [: , WO 9402597].
- (Novo Genencor International) 가 -
, -
, (a) [

(LAS), (AS), (AES)

M, F⁻, SO₄⁻², NCS⁻, SCN⁻, S₂O₃⁻², NH₃, PO₄⁻³

HCO₃⁻¹, H₂PO₄⁻, HOC(O)CH₂C(O)O⁻

RC(O)O-[C₁-C₃₀ (C₁-C₁₈) C₃-C₃₀ (C₆-C₁₈) NR'₃, -NR'₄⁺, -C(O)OR', -OR', -C(O)NR'₂ R'₄⁺ (C₁-C₃₀ 16, 2, 10, 가 R -(CH₂)_nOH -(CH₂)_nN

가 M R, 가 R C₄-C₁₂, M, 2-

B, 2, (,), [M. L. Tobe, "Base Hydrolysis of Transition-Metal Complexes", Adv. Inorg. Bioinorg. Mech., (1983), 2, pages 1-94]

0⁻⁴ M⁻¹ s⁻¹ (25), (k_{OH} = 2.5 x 10⁻⁴ M⁻¹ s⁻¹ (25)), NCS⁻ (k_{OH} = 5.0 x 10⁻⁴ M⁻¹ s⁻¹ (25)), (k_{OH} = 5.8 x 10⁻⁴ M⁻¹ s⁻¹ (25)), (k_{OH} = 9.6 x 10⁻⁴ M⁻¹ s⁻¹ (25))

가 [Co(NH₃)₅OAc]T_y (OAc), [Co(NH₃)₅OAc]Cl₂, [Co(NH₃)₅OAc](OAc)₂, [Co(NH₃)₅OAc](PF₆)₂, [Co(NH₃)₅OAc](SO₄), [Co(NH₃)₅OAc](BF₄)₂, [Co(NH₃)₅OAc](NO₃)₂

[5,559,261 , 5,581,005 5,597,936 ,] 가 " (speckle)"

1 25 ppm, 0.05 ppm, 10 ppm, 가 0.1 ppm 0.01 ppm 5 ppm 0.0005 0.

2 %, 0.004, 0.08 % [5,705,464 , 5,804,542 , 5,798,326 , 5,703,030 5,599,781 ,]

(builder), pH, 가 (hydrotrope),

10 80 %, 15 50 % 1 %

P- (

(underbuilt)" ,

1987 5 12 H. P. Rieck , SiO₂:Na₂O 1.6:1 3.2:1 , [

NaSKS-6 (Hoechst) 4,664,839] ("S

KS-6") , NaSKS-6

NaSKS-6 -Na₂SiO₅ [DE-A-3,417,649

DE-A-3,742,043] . SKS-6

2 , y 0 20, 0) , M , x 1.9 4,

(Hoechst) , NaSKS-5, NaS

KS-7 NaSKS-11 , -Na₂SiO₅(NaSKS-6)가

가 가

(crispening agent) ,

[1973 11 15 [2,321,001]

가 가

O(, z y 6 z y 1.0 0.5 , x 15 $M_z(zAlO_2)_y] \cdot xH_2O$)

[1976 10 12 Krummel 3,985,669]

MAP X A, P(B),

Na₁₂ [(AlO₂)₁₂ (SiO₂)₁₂] · xH₂O(, x 20 30, 27)

(x 0 10)

0.1 10

" " , 3

가 가

가

[1964 4 7 Berg 3,128,287 , 1972 1 8 Lamberti

3,635,830]

[1987 5 5 Bush 4,663,071 "TMS/TDS"].

158,635 , 4,120,874 4,102,903] [3,923,679 , 3,835,1634 , 4,

, 1,3,5- -2,4,6-

가 , , 1,3,5-

가 (,)

[1986 1 28 Bush 4,566,984

] 3,3- -4- -1,6- C5-C20

, 2-

() , 2-

[1986 11 5

86200690.5/0,200,263]

[1979 3 13 Crutchfield 4,144,226

1967 3 7 Diehl 3,723,322]. [Diehl

, C12-C18 , /

가 가

0.1 80 %, 0.01 99.9 % 0
 0.5 60 % [McCutcheon's EMULSIFIERS AND DETERGENTS, North American Edition, 1997, McCutcheon Division, MC Publishing Company, 1975 12 30 Laughlin 3,929,678 , 1981 3 3
 1 Murphy 4,259,217 ; in series :Surfactant Science", Marcel Dekker, Inc., New York and Basel; in "Handbook of Surfactants", M.R. Porter, Chapman and Hall, 2nd Ed., 1994; in "Surfactants in Consumer Products", Ed. J. Falbe, Springer - Verlag, 1987 and "Surface Active Agents and Detergents" (Vo l. I and II by Schwartz, Perry and Berch),]

C11-C18 1 , 2
 , C10-C18 , C10-C18
 , C12-C18 - , C12-C18 (, C 6
 C 18 /), C12-C18 ("), C10-C18 , C 6 C 18
 , C 6 가

8 , C 6 C 18 , C 6 C 18 C 6 C 1
 %가 0.5 90 %, 5 60 %, 10 30

ROSO₃M[, R , C₁₀-C₂₄ C
 , M H (IA) (C₁₂-C₁₈)
 (, - , -) 4 (, -
)] C₁₆-C₁₈ , C₁₂-C₁₆ (50) (, 50

RO(A)_mSO₃M[, R C₁₀-C₂₄ C₁₀-C₂₄
 , A C₁₂-C₂₀ , m 0 , C₁₂-C₁₈
 0.5 3 , M H (, , , 0.5 6,
 -]
 4 (,) , (, -
 -C₁₈ (3.0) (1.0) , C₁₂-C₁₈ (2.25) , C₁₂-C₁₈
) C₁₂-C₁₈ (4.0) (, M

["Surface Active Agents and Detergents"(Vol. I and II by Schwartz, Pe rry and Berch)]
 3,929,678 , 23, 58 29, 23] [1975 12 30 Laughlin
 가 (Dianionics) 가 [60/020,
 503 (6160P), 60/020,772 (6161P), 60/020,928 (60/020,
) (6158P), 60/020,832 (6159P) 60/020,773 (6162P
)(1996 6 28), 60/023,539 (6192P), 60/023493 (6
 6194P) 60/023,540 (6193P) 60/023,527 (6

195P)(1996 8 8),] .

가 0.1 30 %, 가 0.25 20 % 0.01 40 %, 가 (cloud point) () 가 2 " 가 " [: Kirk Othmer, pp. 360-362,] , " " 30 , 20 , 가 10 (가) , - (가) () 1 , / / (PO/EO/PO) 가 (, Olin Corporation Poly -Tergent ® SLF18) - () (, Olin Corporation 1994 10 13 WO 94/22800 , Olin Corporation Pol y-Tergent ® SLF18B) . 15 % [1980 9 16 Builloty 4,223,163] 가

Corp., Wyandotte, Michigan) PLURONIC ® , REVERSED PLURONIC ® TETRONIC ® (BASF-Wyandotte C ® 25R2 TETRONIC ® 702 가 ADD REVERSED PLURONI " " 40 , 50 , 60 가 8 20 1 6 15 , Tergitol 15S9(: Union Carbide), Rhodasurf TMD 8.5(: Rh one Poulenc) Neodol 91-8(: Shell) 9 15, 11 15 9(: Union Carbide), Rhodasurf TMD 8.5(: Rhone Poulenc) Neodol 91-8(: Shell) 가 ("HLB", Kirk Othmer) 가 , Tergitol 15S 2 1 , 6 20 2 (C6-C20) , 6 12 9/11 가 C11/15 6 9 , 2 , 6 12 C 10:1 1:10

LFNI I - () .



R₁ 4 18 , , R₂ 2 26 , ,

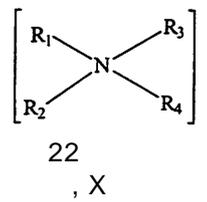
[1959 2 18 Thomas Hedley Co., Ltd. 809,060 , 1960 12 2
 E. R. Wilson 2,965,576 , 1955 3 8 Anthony M. Schwartz
 2,703,798 , 1934 12 25 Piggott 1,985,424 ,

$R^2 O(C_n H_{2n} O)_t ()_x (, R^2 , - ,$
 10 18, 12, 14 , n 2 3, 2 , t 0 10,
 0 , x 1.3 10, 1.3 3, 가 1.3 2.7
)
) 가 1- 2-, 3-, 4- / 6-

[Kirk Othmer's Encyclopedia of Chemical Technology, 3rd Ed., Vol. 22, pp. 360-379, "Surfactants and Detergent Systems",
 Laughlin 3,929,678 , 13, 14 16, 6 , [1975 12 30

$OR^3)_y][R^4(OR^3)_y]_2 R^5 N + X - [, R^2 8 18$
 $-CH_2 CH_2 -, -CH_2 CH(CH_3) -, -CH_2 CH(CH_2 OH) -, -CH_2 CH_2 CH_2 -$
 $R^4 C_1 - C_4 , C_1 - C_4 ,$
 $-CH_2 CHOH-CHOHCOR^6 CHOHCH_2 OH(, R^6 100$
 $) , y가 0$
 $, R^5 R^4 , R^2 R^5 18$
 $, y 0 10 y 0 15 , X]$

[M. C. Publishing Co., McCutcheon's, Detergents Emulsifiers, (North American edition 1997); Schwartz, et al., Surface Active Agents, Their Chemistry and Technology, New York; Interscience Publishers, 1949; 3,155,591 , 3,929,678 , 3,959,461 , 4,387,090 4,228,044]



1 22 , 22 , X
)
 . R₁ , R₂ , R₃ R₄ 가 C1 , C22
 22 가 , 12 22, 16
 1 3, 1 2
 15% , , 30% : (, -)

0.1 20 %
 5 %
 $RR'R''N O(, R 6 24, 10 18$
 1 , R' R'' 1 6)
 ; 10 18 10 18 1 3
 2 1 3 2 ; 10

18 2 1 3
 $R^3(OR^4)_xN(R^5)_2$ (, R³ 8 22 ,
 , x 0 3 , R⁴ 1 3 3) . R⁵ ,
 , C₁₀-C₁₈ C₈-C₁₂
 0.1 20 % , 0.1 15 % , 0.5 10 %

pH 가
 [2,082,275 , 2,702,279 2,2
 $R^1-N(R^2)-CH_2-R^4-Y$
 | | |
 R³ X (, R¹
 , R⁴ 1 3)
 R¹, R² R³ 14 24 , Y)
 가 , 4

pH
 (pH,) 가

M., (PCMX) , TRICOSAN.T
 TRICOSAN.TM.,
 0.1 8.0 % , 0.5 2 0.01 10.0 % ,

[Kirk Othmer's Encyclopedia of Chemical Technology, 4th Ed(1992, John Wiley Sons), Vol. 4, pp. 271-300 "Bleaching Agents (Survey)"]

가 가 (가)
 , 0.1 70
 % , 0.5 30 % .
 가 (- -) ,
 (, OXONE, : DuPont)
 % 1,250 10 % 500 200 1,000 10
 FMC, Solvay Tokai Denka 가
 ("NaDCC")

[Kirk Othmer, Encyclopedia of Chemical Technology, Vol. 17, John Wiley and Sons, 1982, pp. 27-90, pp. 63-72,] 가

(PhBz), (TAED), (BzCL), 4-, (NOBS), (C₁₀-OBS), (BZVL), (C₈-OBS), 가 OBS VL

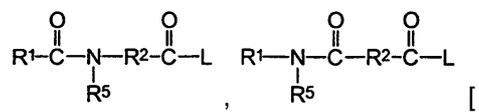
[Mitchell 5,130,045, Chung 4,412,934, 08/064,624, 08/064,623, 08/064,621, 08/064,562, 08/064,564, 08/082,270 "Bleaching Compounds Comprising Peroxyacid Activators Used With Enzymes" M. Burns, A.D. Willey, R.T. Hartshorn, C.K. Ghosh 08/133,691 (PG Case 489 OR),]

(AvO) 1:1, 20:1, 10:1, 3:1, 가 (QSP), 가 (QSBA) QSBA [1994 8 31 08/298,903, 08/298,650, 08/298,906 08/298,904,]

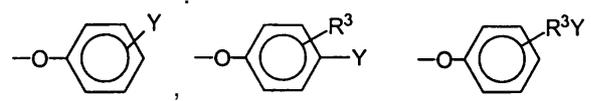
0.01 90%, 0.1 30%, 0.1 20%, 0.5 10%, 1 8%

N,N,N',N'-(TAED) TAED

()가, NAPAA, [1991 10 29 5,061,807] (SBOBS), -1- -2- (SPCC), (STHOBS) 20% 0.1 10% 가, 40% 가



, R¹ (R¹)₆, (R¹)₈, (R¹)₁₂, R², R³, R⁵, H, 1, 10, 1, 14, L, Y, -SO₃-M, -CO₂-M, ()]



(6-) (6-) (6-) 1,2- -C(O)OC(R¹)=N-가 [4,966,723]

C₁-C₄ (MOX) C₁-C₄ [WO 94/03003]

1991 EP 446,981 A EP 446 982 A [R¹R²C=NSO₂R³] [1991 R¹R²C-NSO₂R³]

[5,576,282] [5,360,568, 5,360,569] 5,370,826] 가 가

pH 12.5, 2, 13 pH 가 , pH 9, 11.5 .7 pH 7 0.1 0.4 % pKa (pKa 7) pH 10) pH 0.5 1.0pH 가 pH

(-2- N,N'-) (-1,3-) (HOCH₂)₃CNH₃() , 2- -2- -1,3- , 2- , 1,3- () N- ()

가 [McCutcheon's EMULSIFIERS AND DETERGENTS, North American Edition, 1997, McCutcheon Division, MC Publishing Company Kirk and WO 95/07971]

0.1 15 %, 1 10 %, 가 2 8 %

95% , , 97%, 99%, " " 99.5% 2- -1,3-

" 가 가 (headspace) 가 가 , /

가 pK1 pK2가 8.0 11.5, 8.4 11, 1,3- ()- (Dytek EP 1) 8.6 , 1,3 (pK1=10.5, pK2=8.9), 2- /C4 C8 (pK1=10.5, pK2=8.8), 1,6 (Dytek A)(pK1=11.2, pK2=10.0) , 1 2 3

3,915,903]

C₁-C₄

C₁-C₄
C₂-C₄

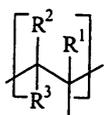
C₆-C₁₂

5 8 %

.05 5 %

0.1 0.01 10 %
2 %

가 가



A-(Z)₂-L [, R¹, R² R³

가
, C₁-C₆

, L

, O, NR⁶, SR⁷R⁸

, O, NR⁶ (, R⁶

, C₁-C₈

, R⁷ R⁸, C₁-C₃

, O, C₁-C₈

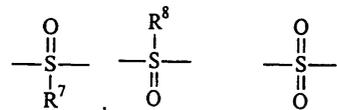
, C₁-C₃
]

"O"

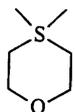
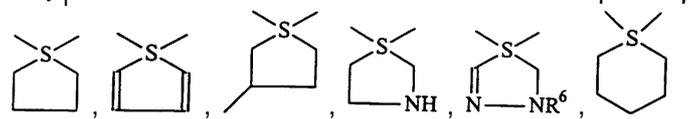
가 . 가 , R⁷R⁸

, SR⁷R⁸

가 "O" , SR⁷R⁸

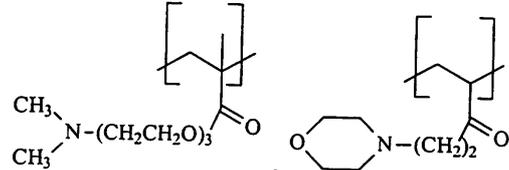


, SR⁷R⁸



SR⁷R⁸

L , Z(z 0)

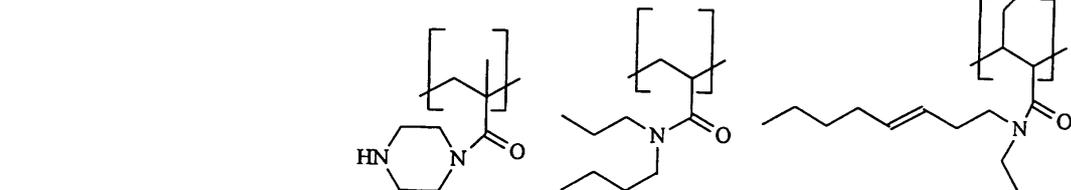


. L

z가 0

L

A



Z -(CH₂)-, (CH₂-CH=CH)-, -(CH₂-CHOH)-, (CH₂-CHNR⁶)-, (CH₂-CHR¹⁴-O)-
, -(CH₂)- , R¹⁴ , C₁-C₆

, z 0 12,

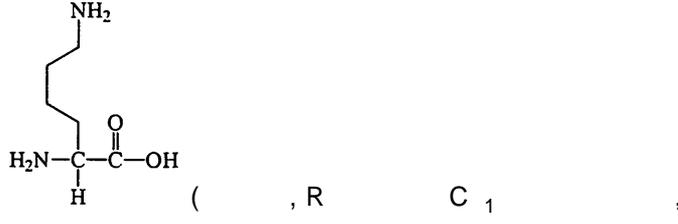
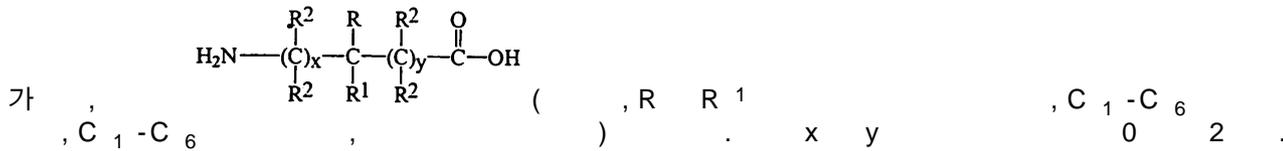
A NR⁴R⁵ , R⁴ R⁵
R¹¹ (, R¹⁰ C₂-C₄

, C₁-C₈

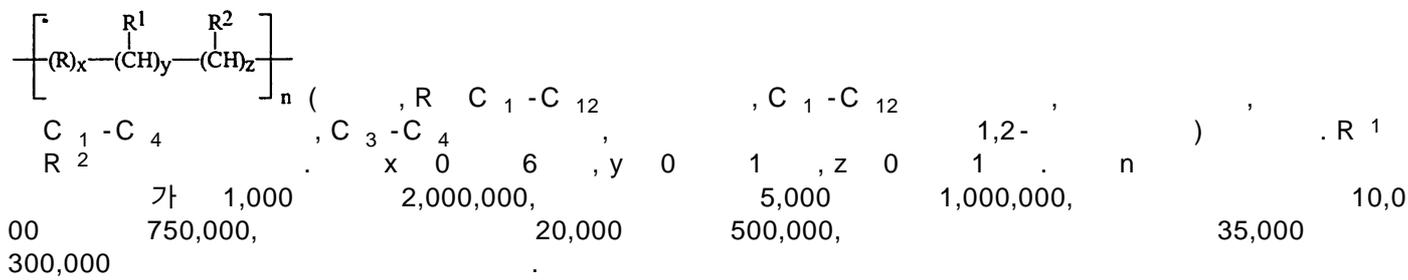
, R¹¹

, C₁-C₄

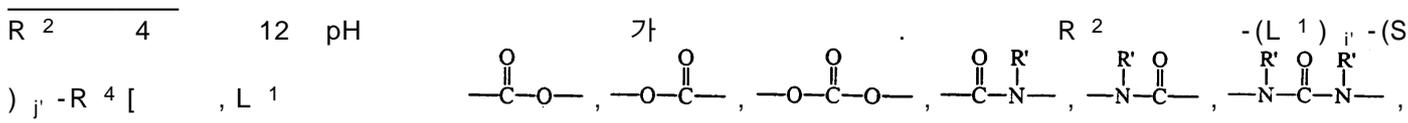
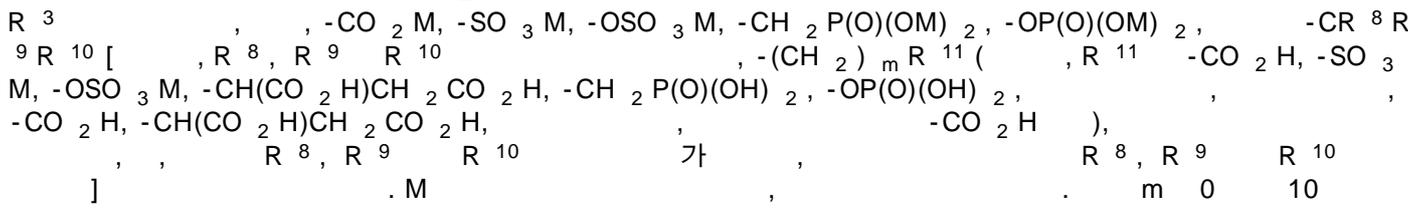
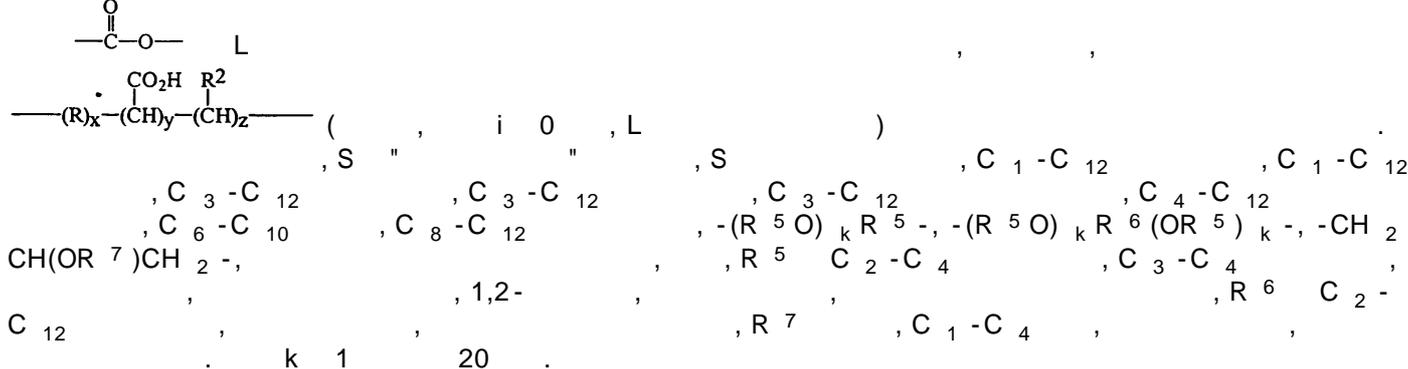
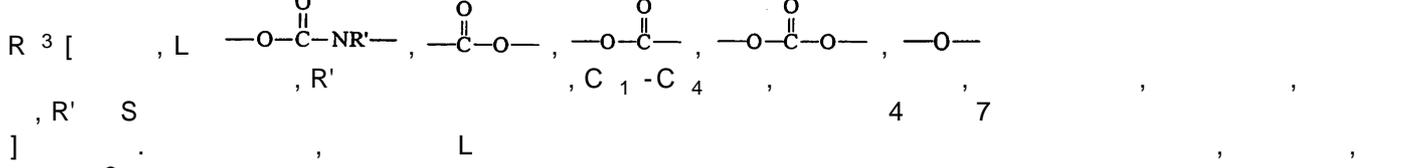
-(R¹⁰O)_y



4-) 가 . 7 11.5 가 1500 . 가 4 12 pH - ,



R¹ 4 12 pH 가 가 R¹ -(L)_i-(S)_j-



-(3 -)

6,7,8- -1,1,6,7- , 2- -3-(-3 -)- , 7- -1,2,3,4,5,

-3 - , 7- -1,1,3,4,4,6-

[2,1b] , 2- -2-(- -)- -3a,6,6,9a-

utmeg), (cassia) , (Olibanum) (benzoin) , (coriander) (styrax), (labdanum) , (n

, , , , , , 2-(1,1-)-

0.5 10 % 0.1 20 %

Rohm Haas) 가 (BASF Corp.

%, 0.2 3 % 0.01 10 % 0.1 5

[1997 11

25 Grosselink 5,691,298 , 1997 2 4 Pan

5,599,782 , 1995 5 16 Grosselink 5,415,807 , 1993 1 26

Morrall 5,182,043 , 1990 9 11 Grosselink

4,956,447 , 1990 12 11 Maldonado 4,976,879 , 1990 11 6 S

cheibel 4,968,451 , 1990 5 15 Borchner, Sr 4,861,512 , 1989 10 31 Maldo

925,577 , 1989 8 29 Grosselink 4,877,896 , 1987 10 27 Grosselink 4,777,730 , 1988 1 26 Grosse

nado 1,730 , 1987 12 8 Grosselink 4,711,730 , 1988 1 26 Grosse

link 4,721,580 , 1976 12 28 Nicol 4,000,093 ,

1976 5 25 Hayes 3,959,230 , 1975 7 8 Basadur

3,893,929 , 1987 4 22 Kud 0 219 048].

가 [Voilland 4,201,824 , Lagasse 4,240,918

, Tung 4,525,524 , Ruppert 4,579,681 , 4,220,918 ,

4,787,989 , Rhone-Poulenc Chemie 1988 279,134 A , BASF(1991) 4

57,205 A , Unilever N.V. 2,335,044 ,]

.05 1.2 % 가 0

-5,5- , 5- 6

["The Production and Application of Fluorescent Brightening Agents", M. Zahradnik, Published by John Wiley Sons, New York (1982)]

[1988 12 13 Wixon 4,790,8

56] PHORWHITE (: Verona)

White CC Artic White CWD(: Hilton-Davis, Italy); 2-(4-

4'- -(1,2,3- -2-)- - , 4,4'- ()

4- -7- - , 1,2- (- -2-) , 1,3- - , 2,5-

(-2-) , 2- - -[1,2-d] 2-(-4-)-2H- -[1,2-d]

[1972 2 29 Hamilton 3,646,015].

- (i) ADW : , 44 (5) , 7gpg
- (ii) (): Branson 2210
2
- (iii) 1.5ppm TTW 0.005%
- (iv) 50 70

가 LDL3

	(1 10 ;)			
	2		5	
LDL3, 3% pc	2	4.8	3	5
ADW (3000ppm TTW)	5	9	7.5	n/a
(i) : 46 , 400rpm, 7gpg, 250Mℓ (ii) : 46 , 7gpg, Branson 2210, 250Mℓ (iii) 0.004% (0.24ppm TTW)				

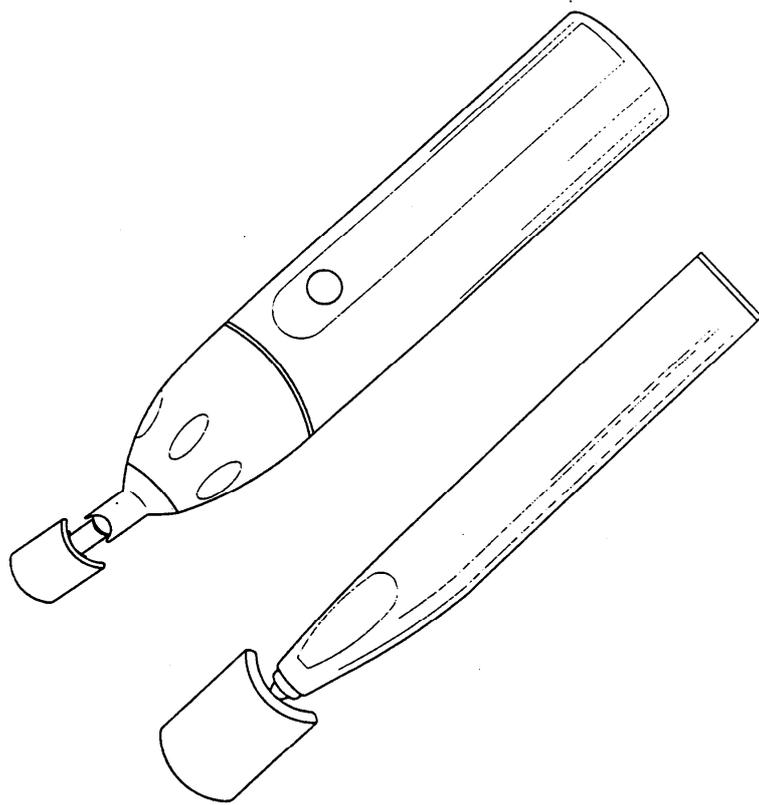
	(%)(0.4% 2S)
+ ADW	22
	45
	66
Branson 2210 , 46 , 7gpg	

Scotch-Brite 7 . 0

(1 + 0.005% , 40)	(%)
Scotch-Brite 7 (0)	30
7 (+)	86
7 (-)	48
2	

	1	2
10% pH	7.8	10.0
AE0.6S	26.28	29.0
	1.73	7.5
ADM	1.73	---
C11E9	---	4.88

2



3

