

(72)

-		
- 31400		17
-		
- 33600		11
-		
- 31520	-	11
-		
- 34070		136
-		
- 01700		70
-		
- 69009		9
-		
- 43220		

(74)

:

(54) /

, / , / 가 / 가 ; , ,
 / , / 가 가 , 가,
 .

, / 가 (dendrimer)
 / / 가 , ,
 .

/ / , EP - 869
 712, FR - 2 733 502, EP - 854 676, EP - 851 729, EP - 823 212 .

, , XP - 002123803, WO - 88/01179, FR - 2 734 268, FR - 2 761 601,
 EP - 765 357, EP - 736 059, EP 726 502 가 .

, / / , /
 가 ,

가 , / 가 가 ,

, / 가 ,

/ 가 가 ,

/ 가 가 , :

- / 가 가 ;

- ;

- , , / 가 , /

(dendrio) 가 ,

가

가

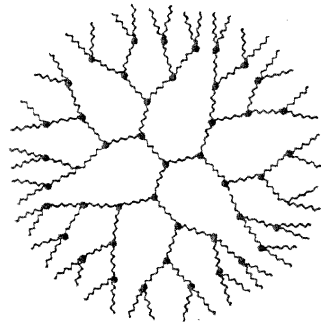
| :

- 가 ;

- , ;

- , ;

[II]

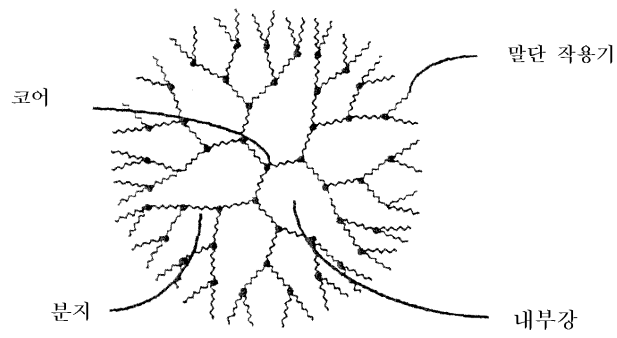


II

I

가

[III]



가

, 가

가

가

가

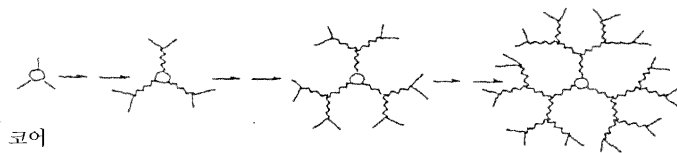
, 2 가

III :

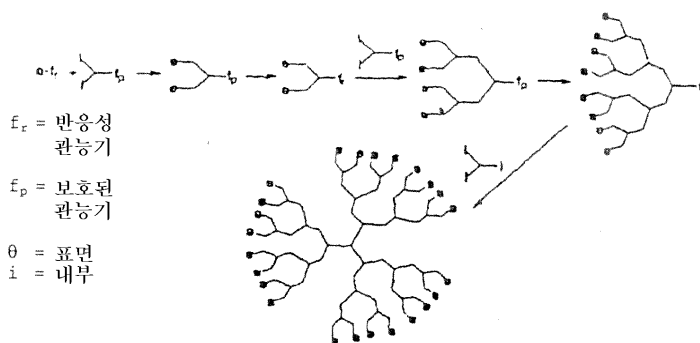
가

IV

[III]



[IV]



가

[Les dendrimères, ECRIN association, SACER

가 1

998. 6.]

가

가 / 가 가
 가 0 50 %
 / / / / / / / / / /

[L'Index Phytosanitaire (Association de Coordination Technique Agricole A.C.T.A. Technical Directorate 가)] [The Pesticide Manual (Clive Tomlin , British Crop Protection Council)] [The Electronic Pesticide Manual version 1.1 (Clive Tomlin , British Crop Protection Council)]

, 2 - ; 8 - ; AC 382042; (Ampelomyces quisqualis); (Azaconazole); (Azoxytrobilin); (Bacillus subtilis); (Benalaxyl); (Benomyl); (Biphenyl); (Bitertanol); - S (Blasiticidin - S); (Bordeaux); (Borax); (Bromuconazol); (Bupirimate); (Calboxin); (Captafol); (Captan); (Carbendazim); (Carpropanmid) (KTU 3616); CGA 279202; (Chinomethionat); (Chlorothalonil); (Chlozolate); ; ; (I); ; (Cymoxanil); (Cyproconazole); (Cyprodinil); (Dazomet), (Debacarb); (Dichlofluand); (Dichlomezine); (Dichlorophen); (Diclocymet); (Dicloran); (Diethofencarb); (Difenoconazole); (Difenzoquat); ; (Diflumetorim); (Dimethirimol); (Dimethomorph); (Diniconazole); - M; (Dinobuton); (Dinocap); ; (Dithianon); (Dodemorph); ; (Dodine); ; (Edifenphos); (Epoconazole) (BAS 480F); (Ethasulfocarb); (Ethririmol); (Etridiazole); (Famoxadone); (Fenamidon); (Fenarimol); ; (Fenbuconazole); (Fenfin); (Fenfuram); (Fenhexamid); (Fenpiclonil); (Fenpropidin); (Fenpropimorph); (Fentin acetate); (Fentin hydroxide); (Ferbam); (Ferimzone); (Fluazinam); (Fludioxonil); (Fluoroimide); (Fluquinconazole); (Flusilazole); (Flusulfamide); (Flutolanil); (Flutriafol); (Folpet); ; (Fosetyl); - ; (Fuberidazole); (Furalaxyl); (Fusarium oxysporum); (Gliocladium virens); (Guazatine); ; GY - 81; ; (Hexaconazole); (Hymexazol); ICIA0858; IKF - 916; (Imazalil); ; (Imibenconazole); (Iminoctadine); ; [] (Iminoctadine tris[Albesilate]); (Ipconazole); (Iprobenfos); ; (Iprodione); (Iprovalicarb); 가 (Kasugamycin); 가 ; ; - (Kresoxim - methyl); (Mancopper); (Mancozeb); (Maneb); (Mepanipyrim); (Mepronil); (II); (II); (I); (Metalaxyl); - M; (Metam); - ; (Metconazole); (Methasulfocarb); ; (Metiram); (Metominostrobin) (SSF - 126); MON65500;

(Myclobutanil); (Nabam); ; (Natamycin); (Nitrothal - isopropyl); (Nuarimol); (Octhilinone); (O
furace); (); (Oxadixyl); - (Oxine - copper); (Oxycarboxin);
(Penconazole); (Pencycuron); (Pentachlorophenol);
(Perfurazoate); ; (Phlebiopsis gigantea);
(Phthalide); (Piperalin); B; ; (Polyoxorim);
(Probenazole); (Prochloraz); (Procymidone); (Propamo
carb); ; (Propiconazole); (Propineb); (Pyrazop
hos); (Pyributicarb); (Pyrifenox); (Pyrimethanil); (Pyroquilon);
(Quinoxifen); (Quintozene); RH - 7281; sec - ; 2 - ;
(Spiroxamine) (KWG 4168); (Streptomyces
griseoviridis); ; (Tebuconazole); (Tecnazene); (Tetraconazole)
(Thiabendazole); (Thifluzamide); - (Thiophanate - methyl);
(Thiram); - (Tolclofos - methyl); (Tolyfluanid); (Triadimefon)
(Triadimenol); (Triazoxide); (Trichoderma harzianum)
(Tricyclazole); (Tridemorph); (Triflumizole); (Triforine)
(Triticonzole); (Validamycin); (vinclozolin); ; (Zineb); (Ziram); (E,E) - 2 - (2 - (1 - (1 - (2 -)) - 1 -
) - 3 - 3 - (3,5 -) - 4 -

(Abamectin); (Acephate); (Acetamiprid); ;
(Acrinathrin); (Aldicarb); (Alanycarb); (Allethrin) [(IR)];
(Cypermethrin); (Amitraz); (Avermectin) B1 ; (A
zadirachtin); (Azamethiphos); (Azinphosethyl); (Azinphosmethyl);
(Bacillus thurigiensi); (Bendiocarb); (Benfuracarb); (Bensulta
p); - (- cyfluthrin); - (- cypermethrin); (Bifenazate);
(Bifenthrin); (Bioallathrin); (Bioallethrin) (S -);
(Bioresmethrin); (Borax); (Buprofezin); (Butocarboxim);
(Butoxycarboxim); ; (Cadusafos); (Carbaryl); (Carb
ofuran); (Carbosulfan); (Cartap); ; (Chordane);
(Chlorethoxyfos); (Chlorfenapyr); (Chlorfenvinphos);
(Chlorfluazuron); (Chlormephos); (Chloropicrin); (Chlorpyrifos);
- ; (I); (Coumaphos); (Cryolite); (Cryomazi
ne); (Cyanophos); ; ; (Cycloprothrin); (Cyfluth
rin); (Cyhalothrin); ; [(1R)]; (Dazomet); DDT;
(Deltamethrin); - S - (Demeton - S - methyl); (Diafenthiuron); (Diazin
on); ; ; (Dichlorvos); (Dicofol); (Di
crotophos); (Diflubenzuron); (Dimethoate); (Dimethylvinphos);
(Diofenolan); (Disulfoton); DNOC; DPX - JWO62 DP; (Empenthrin) [(EZ) - (IR
)]; (Endosulfan); ENT 8184; EPN; (Esfenvalerate); (Ethiofenc
arb); (Ethion); 5 - - 3 - - 1 - (2,6 - - 4 -) - 4 -
(Ethiprole); (Ethopropos); (Ethofenprox); (Etoxazo
le); (Etrimfos); (Famphur); (Fenamiphos); (Fenitrothion);
(Fenobucarb); (Fenoxycarb); (Fenpropathrin); (Fenthion); (Fenv
alerate); (Fipronil) ; (Flucyclozuron); (F
lucythrinate); (Flufenoxuron); (Flufenprox); (Flumethrin);
(Fluofenprox); ; ; (Fonofos); (Formetan

ate); (Formothion); (Furathiocarb); - HCH (Gamma - HCH); GY - 81; (Halofenozide); (Heptachlor); (Heptenophos); (Hexaflumuron); (Hydroprene); (Imidacloprid); (Imiprothrin); (Indoxacarb); (Isazofos); (Isofenphos); (Isoprocab); (Methyl isothiocyanal); (Isoxathion); - (Iambda - Cyhalothrin); (Lufenuron); (Malathion); MB - 599; (Mecarbam); (Methacrifos); (Methamidophos); (Methidathion); (Methiocarb); (Methomyl); (Methoprene); (Methoxychlor); (Metolcarb); (Mevinphos); (Milbemectin); (Monocrotophos); (Naled); (Nitenpyram); (Nithiazine); (Novaluron); (Omethoate); (Oxamyl); (Oxydemeton - methyl); (Paecilomyces fumosoroseus); (Parathion); (Phenthoate); (Phorate); (Phosalone); (Phosmet); (Phosphamidon); (phosphine); (Phoxim); (Pirimicarb); - (Pirimiphos - ethyl); (Prallethrin); (Profenfos); (Propaphos); (Propetamphos); (Propoxur); (Prothiofos); (Pyraclofos); (pyrethrins) (chrysanthemates), (pyrethrate), (Pyretrozine); (Pyridaben); (Pyridaphenthion); (Pyrimidifen); (Pyriproxyfen); (Quinalphos); (Resmethrin); RH - 2485; (Rotenone); RU 15525; (Silaflofen); (Sulcofuron - sodium); (Sulfotep); (Sulprofos); Ta - (Ta - fluvalinate); (Tebufenozide); (Tebupirimfos); (Teflubenzuron); (Tefluthrin); (Temephos); (Terbufos); (Tetrachlorvinphos); (Tetramethrin); [(IR)]; - (- cypermethrin); (Thiametoxam); (Thiocyclam); (Thiodicarb); (Thiofanox); (Thiometon); (Tralomethrin); (Transfluthrin); (Triazamate); (Triazophos); (Trichlorfon); (Triflumuron); (Trimethacarb); (Vamidothion); XDE - - 105; XMC; (Xyllylcarb); - (Zeta - cypermethrin); ZXI 8901; 3 - - 5 - - 1 - [2,6 - - 4 - ()] - 2 - .

2,3,6 - TBA; 2,4 - D; 2,4 - D - 2 - ; 2,4 - DB; 2,4 - DB - ; 2,4 - DB - ; 2,4 - DB - ; 2,4 - DB - ; 2,4 - DB - ; 2,4 - D - (2,4 - D - (2,4 - D)); 2,4 - D - ; 2,4 - D - ; 2,4 - D - ; 2,4 - D - ; 2,4 - D - ; 2,4 - D - ; (Acetochlor); (Acifluorfen); - ; (Aclonifen); (Acrolein); AKH - 7088; (Alachlor); (Alloxydim); - ; (Ametryn); (Amidosulfuron); (Amitrole); ; (Anilofos); (Asulam); - ; (Atrazine); (Azafenidin); (Azimsulfuron); (Benazolin); - ; (Benfluralin); (Benfuresate); (Benoxacor); (Bensulfuron); - ; (Bensulide); (Bentazone); - ; (Benofenap); (Bifenox); (Bilanofos); - ; (Bispyribac - sodium); (Borax); (Bromacil); (Bromobutide); (Bromofenoxim); (Bromoxynil); - ; - ; (Butachlor); (Butamifos); (Butralin); (Butroxydim); ; (Cafenstrole); (Carbetamide); - (Carfentrazone - ethyl); (Chlormethoxyfen); (Chloramben); (Chlorbromuron); (Chloridazon);

(Chlorimuron); - ; (Chloroacetic acid); (Chlorotoluron);
 (Chlorpropham); (Chlorsulfuron); (Chlorthal); - ;
 (Chlorthiamid); (Cinmethylin); (Cinosulfuron); (Clethodim); (Clod
 inafop); - ; (Clomazone); (Clomeprop); (Clopyralid);
 - (Clopyralid - Olamine); (Cloquintocet); - (Cloquintocet - Mexyl)
 ; - (Chloransulam - methyl); CPA; CPA - ; CPA - ; CPA - ;
 (Cyanamide); (Cyanazine); (Cycloate); (Cyclosulfamuron);
 (Cycloxydim); - (Cyhalofop - butyl); (Daimuron); (Dalapon); - (D
 alapon - sodium); (Dazomet); (Desmeduipham); (Desmetryn); (Dicam
 ba); - ; - ; - ; - (Dicamba - trolamine); (D
 Dichlobenil); (Dichlormid); (Dichlorprop); - (D
 ()) (Dichlorprop - butotyl (Dichlorprop - butotyl (Dichlorpropbutoxyeth
 yl ester)); - ; - ; - P; - ; (D
 ichlofop); - ; (Difenzoquat); ; (Diflufenican);
 (Diflufenzopyr) (BAS 654 00 H); (Dimefuron); (Dimepiperate);
 (Dimethachlor); (Dimethametryn); (Dimethenamid); (Dimethipin)
 ; ; (Dinitramine); (Dinoterb); ; -
 ; - ; (Diphenamid); (Diquat); ; (Dithiopy
 r); (Diuron); DNOC; DSMA; (Endothal); EPTC; (Esprocarb); (Ethalf
 uralin); (Ethametsulfuron) - ; (Ethofumesate); (Ethoxysulfuro
 n); (Etobenzanid); (Fenchlorazole) - ; (Fenclorim); (Fenox
 aprop) - P; - P - ; (Fenuron); - TCA; 1 ; (Flamprop) - M;
 - M - ; - M - ; (Flazasulfuron); (Fluazifop); -
 ; - P; - P - ; ; (Fluchloralin); (Flufenacet) (B
 AS FOE 5043); (Flumetsulam); (Flumiclorac); - ; (Fl
 umioxazin); (Fluometuron); ; - ; (Flupaxam);
 (Flupoxam); (Flupropanate); - ; (Flupyralsulfur
 on) - - ; (Flurazole); (Flurenol); - ; (Fluridone);
 (Flurochloridone); (Fluroxypry); - 2 - - 1 - ; -
 ; (Flurtamone); (Fluthioacet) - ; (Fluxofenim); (Fomesafen)
 ; - ; (Fosamine); - ; (Furilazole); ; (G
 lufosinate); - ; - ; - ; -
 ; - ; (Halosulfuron); - ; (Haloxyfop); - P -
 ; - (etotyl); - ; (Hexazinone); (Hilanafos);
 (Imazacluin); (Imazamethabenz); (Imazamox); (Imazapyr);
 - ; (Imazaquin); - ; - ; (Imazethapyr)
 ; - ; (Imazosulfuron); (Imizapic) (AC 263,222); (Indanofa
 n); (Ioxynil); ; - ; (Isoproturon); (Isouro
 n); (Isoxaben); (Isoxaflutole); (Lactofen); (Laxynel) ;
 (Laxynil) - ; (Lenacil); (Linuron); MCPA; MCPA - ; MCPA - ; MCPA
 - ; MCPA - ; MCPA - ; MCPA - ; MCPB; MCPB - ; MCPB - ; (Mecop
 rop); - P; (Mefenacet); (Mefenpyr) - ; (Mefluidide);
 (Mesulfuron) - ; (Metam); (Metamitron); - ; (Metezachlor);
 (Methabenzthiazuron); ; ; (Methyldymron);
 ; (Metobromuron); (Metolachlor); (Metosulam); (Meto
 xuron); (Metribuzin); (Metsulfuron); (Molinate); (Monolinuron)
 ; MPB - ; MSMA; (Napropamide); (Naptalam); - ; (Neburo
 n); (Nicosulfuron); ; (Norflurazon); (); (Orbencarb);
 (Oryzalin); (Oxabetrinil); (Oxadiargyl); (Oxasulfuron);
 (Oxodiazon); (Oxyfluorfen); (Paraquat); ; (Pebu

late); (Pendimethalin); ; ; (Pentanochlor);
(Pentoxazone); ; (Phenmedipham); (Picloram); - ; (P
iperophos); (Pretilachlor); (Primisulfuron); - ; (Pro
diamine); (Prometon); (Prometryn); (Propachlor); ;
(Propaquizafop); (Propazine); (Propham); (Propisochlor); (Pro
pyzamide); (Prosulfocarb); (Prosulfuron); (Pyraflufen) - ;
(Pyrazasulfuron); (Pyrazolynate); - ; (Pyrazoxyfen);
(Pyribenzoxim); (Pyributicarb); (Pyridate); (Pyriminobac) - ;
(Pyriothiobac) - ; (Quinclorac); (Quinmerac); (Quinofolamine);
(Quizalofop); - ; - P; - P - ; - P - (Tefuryl); (Rimsu
lfuron); (Sethoxydim); (Siduron); (Simazine); (Simetryn);
; ; ; - ; ; (Sulcotrione)
; (Sulfentrazone); (Sulfometuron); - ; ; ; TCA -
; (Tebutam); (Tebuthiuron); (Tepraluxydim) (BAS 620H); (Ter
bacil); (Terbumeton); (Terbuthylazine); (Terbutryn); (Then
ychlor); (Thiazopyr); (Thifensulfuron); - ; (Thiobencarb);
(Tiocarbazil); (Tralkoxydim); (triallate); (Triasulfuron);
(Triaziflam); (Tribenuron); - ; - ; ;
(Triclopyr); - ; - ; (Triethazine);
(Trifluralin); (Triflusulfuron); - ; (Vernolate); YRC

2388

() ,
() 0.5 99.99 %, 5 70 %

가 , 65 ,
1.5/98.5 ; 48 ,
가 , 1/1 ; 2 ,
가 :
40 65 , 1.8/98.2 ,
, 60~65 4 가

가

가

가

10%,

20%가

9/10,

4/5 가

, N -

, N,N -

, N,N -

, N -

, N,N -

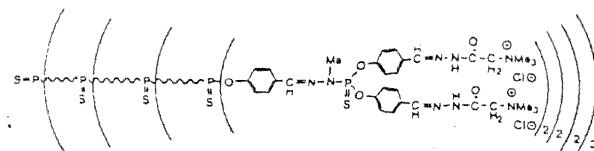
- N -

- N -

가

VIII

[VIII]

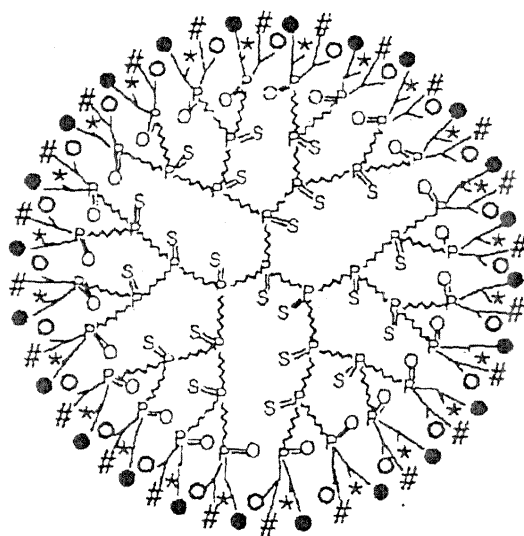


(multiplurifunctionalized)

가 , (' '), (' ')

IX , 4 , * # 가 ,

[IX]



2 가

- ;

- 가 3

(interstitial space).

,

가 0.001 30 nm³, 1 nm (0.01 10 nm³) 가

0.001 20 μm³ 가 0.0005 50 μm³, 1 μm () 가

5 %, 0.1 60 % 0.01 99.

/ 가 가 , 가 ,

가 , 가
 , , 가
 , , / / 가
 , ,
 , ,
 , ,
 / , / 가 / , / 가 , /
 / , / 가 , 가
 , 가
 , 가
 , /
 , pH ,
 , , 가 ,
 , N -
 , 0 99 %
 95/5 50/50 /
 , 가 / 가
 , / 가
 가 50% , 80% , 가

가

; ,

%

가 () 0.01 99.5%, 0.1 / () ()
 가 () 0.5 99.99%, 5 70% 가 ; 가
 가 50% 80 , 30 70 ,가 0

가 : / 가
 35 - 40 가 가 , 0.25 45 60 - 65 ,

/ 가

, / 가 가 ,

, () , / / 가
 , / 가

가 , / 가
 가 가

5 % () 2 99.99 %, 5 9

가 ,

9.5 %, 0.5 50 % () , 0.01 9

()

가 ,

()

()

()

() /

() / 가 150 , () 110 ;

가

() /

가 , pH ,

가

가

가 , N-

가 가 ,

가
 가
 10%, 20% 가
 9/10, 4/5 가

가

, N- , N,N-
 , N- , N,N-
 , N- , N,N-
 - N- - N-

가

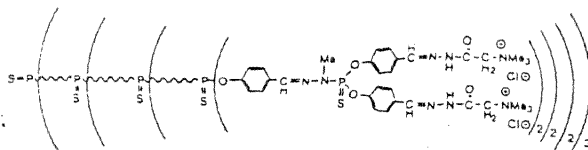
가

가 2 50 , 4 20 / /

, N- , N,N- , N-
 N,N- -

VIII

[VIII]



, 2 가

- ;
- 가 3

0.001 30 nm³, 0.01 10 nm³

0.001 20 μm³ 가 0.0005 50 μm³,

/ 가

가

가

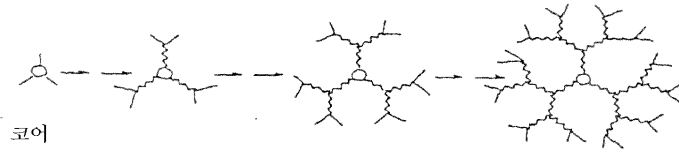
, 2 가

III :

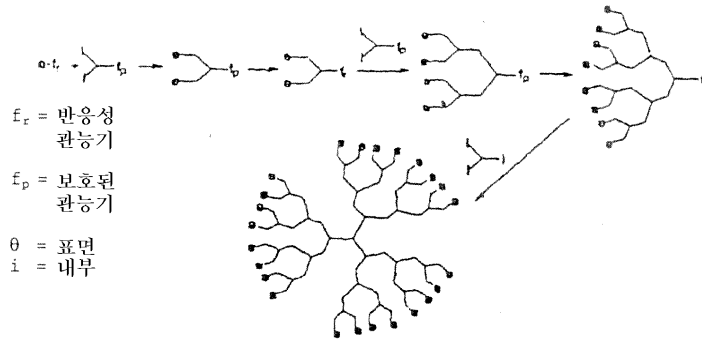
가

IV

[III]



[IV]



가

가

(n-)

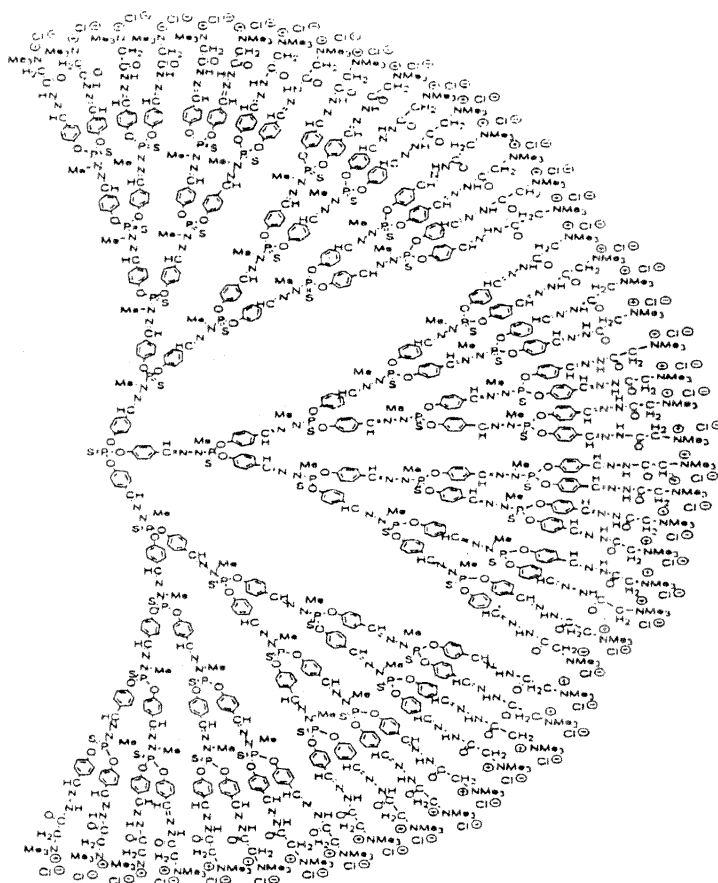
PR

P

T

X

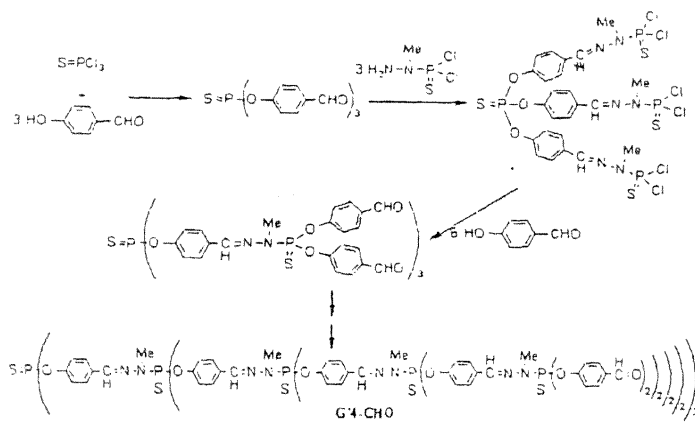
[X]



, X , 가 T
G'4-T .

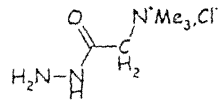
G'4-CHO ; G'4-T , 가 , 가
G'4-CHO , Les dendrimeres
G'4-CHO , XI .

[XI]



, T G'4-CHO , , 가 V

[V]



G'4-T , G'4-P , 가 P

, / 가

, /

/ / , / /

() , / ()

가 , 1 g/ha 5 kg/ha .

/

가

가

가

, / .01 200 g/m² ,

(chopped), (truncated), / (crushed), (flattened), (ground), (minced),
(compressed), (pr
essed), (pounded), (laminated), (pulverized), (milled), (comminuted),
(disintegrated), (fragmented), (dispersed), (cut), (divided), (s
ectioned), (sliced) (fractionated)

가

가

1 2

3

1:

200 g (4-S) - 4 - 50 g, - 2 - 5 g : G'4 - T X 35 g,
54 14 - 4 - - 1 - - 2 - - 5 - 6 g 724 g 가 .

2:

200 g , 5 - - 3 - - 1 - (2,6 - - 4 -) - 4 -
가 P 200 g , G'4 - T 35 g G'4 -
P 35 g , 1 100 m² 0.1 g
(Germanica blatella)

3:

45 , G4 - P 1.8 % , 200 g/l
(200 g/l, 400 g/l, 50 g/l, Sponto - Ak31
53 13 g/l, Soprophor 3D33 25 g/l, Sapogenat T 080 5 g/l, Atlox 4991 8 g/l, antifoam FD 5 g/l,
344 g/l) 가 .

60 - 65
 2 가
 4:

X
 g 100 ml G'4 - T 15
 가 300 ml G'4 - T
 190 ml G'4 - CHO 10 g T 5.23
 가 4 35

(57)

1.

가 / 가 :
 - 가 ;
 - ;
 -

2.

1 / , / / / / /
 / , / / , /

3.

1 2 가 / / / / /
 / / / / , 0 50 %

4.

1 3 , () 0.5 99.99 % , 5 70 %

5.

1 4 , 65 1.5/98.5
 48

; , 1/1
1.8/98.2² ; , 40 65
60 - 65 4 가

6.

1 5 가 , (Brookfield)
가 400 10000 , 800 5 000

7.

1 6 가 /
/ , / /
/ , 가 / /
/ / , / /
N - - N,N,N - N - - N,
N,N - - N,N,N - N - - N,N,N - - N,
- (n -) N -

8.

1 7 가
/ 2 50 , 4 20 /
/ , , , ,

9.

1 8 가 , 15 ,
가 2 80000, 20 20000

10.

1 9 가 / ; 가
0 가, 2 20, 3 10 가 / ; 가 1 3
/ / , / ; 가 /
/ / ; 가 ,

가 , 100% / ; 가

11.

1 10 , / , , , , , / ; , 10%, 20% 가 , .

12.

1 11 , 가 2 가 , :

- 가 0.001 30 nm³ , 0.01 10 nm³ , ;
- 가 0.0005 50 μm³ , 0.001 20 μm³ , 3

13.

1 12 , 0.001 99.5 % , 0.1 60 %

14.

1 13 , () 3

15.

1 14 , 가 /

16.

1 15 , 0 99 %

17.

1 16 , / 가 , 가 , 50% , 80%

18.

, 1 17 :

28.

26 / N - N - N - N - , / , / / , / , - N, N, N - N - (n -) - N, N, N - N - N - N - .

29.

26 28 , 가 2 80000, , 15 , 20 20000 .

30.

26 29 , .

31.

26 30 , , .

32.

26 31 : , 2 가
 - 가 0.001 30 nm³, 0.01 10 nm³ , ;
 - 가 0.0005 50 μm³, 0.001 20 μm³ , 3 .

33.

/ , 1 17 가 19 26 ,
 / 1 g/ha 5 kg/ha .

34.

1 17 19 26 ,
 0.1 200 g/ / 가 m² / , .

35.

33 34 , (ground), (minced), (chopped), (truncated),
 (crushed), (flattened), (compressed), (pressed), (pounded), (l
 aminated), (pulverized), (milled), (comminuted), (disintegrated), (fr
 agmented), (dispersed), (cut), (divided), (sectioned), (sliced)
 (fractionated) / .