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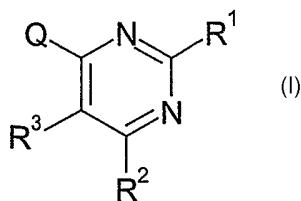
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(54) Title: FUNGICIDAL PYRIMIDINE DERIVATIVES



(57) Abstract: Fungicidal pyrimidine derivatives and the use as a fungicide of the compounds of formula (1): wherein R¹ is H, C₁-C₆ alkyl, C₂-C₆ alkenyl, C₂-C₆ alkynyl, C₃-C₆cycloalkyl, C₁-C₆ alkoxy, C₃-C₆ cycloalkoxy, C₁-C₆alkylthio, C₁-C₆ alkylsulfinyl, C₁-C₆alkylsulfonyl, phenyl, pyridinyl or azolyl groups, (being optionally substituted by one or more substituents); or N(R⁴)C(O)R⁵, R² is polyfluoroalkyl, R³ is fluorine, chlorine, bromine or iodine; ethenyl or ethynyl (being optionally substituted by one or more of halogen), R⁴ and R⁵ are, independently, H, C₁-C₆ alkyl, C₂-C₆alkenyl or C₂-C₆ alkynyl groups, (being optionally substituted by one or more of halogen or cyano); or R⁴ and R⁵ can join together to form a 5 or 6-membered ring, Q

is a heteroaromatic ring selected from the following ring system; imidazol-1-yl, pyrazol-1-yl, 1,2,3-triazol-1-yl, 1,2,3-triazol-2-yl, 1,2,4-triazol-1-yl, 1,2,4-triazol-4-yl, benzimidazol-1-yl or tetrazol-5-yl groups, (being optionally substituted by one or more of substituents).



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Fungicidal Pyrimidine derivatives

Background of the Invention

1. Field of the invention.

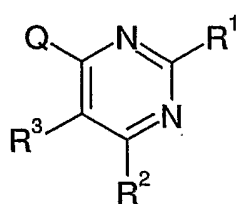
The present invention relates to novel pyrimidine derivatives, which have fungicidal activity. The preparation and use, in agriculture and horticulture, of agrochemical compositions containing these novel fungicidal pyrimidines are also disclosed.

2. Description of the related art.

It is known in the art that certain pyrimidine derivatives such as those disclosed in PCT application WO 2003-000659 have fungicidal and insecticidal properties, WO 2002-067684 have pesticidal properties, EP 337943 have herbicidal and plant growth regulatory properties, US 4474599 have herbicidal properties and in the art that PCT application WO 94-08975 have herbicidal and fungicidal properties. In the arts that WO 2002-047690, WO 99-02503, WO 96-33972 and US 3149109 also have description about heteroaromatic substituted pyrimidine derivatives.

Summary of the Invention

In accordance with the present invention, pyrimidine derivatives are provided having the formula (1):



(1)

Wherein

R¹ is H, C₁-C₆alkyl (being optionally substituted by one or more of halogen), C₂-C₆alkenyl (being optionally substituted by one or more of halogen), C₂-C₆alkynyl (being optionally substituted by one or more of halogen or trialkylsilyl), C₁-C₆alkoxy (being optionally substituted by one or more of halogen), C₂-C₆alkenyloxy (being optionally substituted by one or more of halogen), C₂-C₆alkynyloxy (being optionally substituted by one or more of halogen), C₁-C₆alkylthio (being optionally substituted by one or more of

halogen), C₁-C₆alkylsulfinyl (being optionally substituted by one or more of halogen), C₁-C₆alkylsulfonyl (being optionally substituted by one or more of halogen), phenyl (being optionally substituted by one or more of halogen, alkyl, haloalkyl or alkoxy), pyridin-2-yl (being optionally substituted by one or more of halogen, alkyl, haloalkyl or phenyl), pyridin-3-yl (being optionally substituted by one or more of halogen, alkyl, haloalkyl or phenyl), pyridin-4-yl (being optionally substituted by one or more of halogen, alkyl, haloalkyl or phenyl), imidazol-1-yl (being optionally substituted by one or more of halogen, alkyl or alkoxy), pyrazol-1-yl (being optionally substituted by one or more of halogen, alkyl or alkoxy) or N(R⁴)C(O)R⁵,

R² is haloC₁-C₆alkyl,

R³ is halogen, C₂-C₆alkenyl or C₂-C₆alkynyl groups, (being optionally substituted by one or more of halogen),

R⁴ and R⁵ are, independently, H, C₁-C₆alkyl (being optionally substituted by one or more of halogen or cyano); or R⁴ and R⁵ can join together to form a 5 or 6-membered ring,

Q is a heteroaromatic ring selected from the following ring system; imidazol-1-yl, pyrazol-1-yl, 1,2,3-triazol-1-yl, 1,2,3-triazol-2-yl, 1,2,4-triazol-1-yl, 1,2,4-triazol-4-yl, benzimidazol-1-yl or tetrazol-5-yl groups (being optionally substituted by one or more of halogen, cyano, hydroxy, mercapto, alkyl, haloalkyl, alkoxy, alkoxycarbonyl, amino, alkylamino, haloalkoxy, alkylthio or aralkylthio).

The present invention is directed to agrochemical compositions comprising as an active ingredient at least one of the novel pyrimidine derivatives of the present invention, as well as to the use of these active ingredients or compositions for plant disease control, and in particular as fungicides useful in agriculture and horticulture.

For a better understanding of the present invention, reference is made to the following description and its scope will be pointed out in the appended claims.

Detailed description of the invention

For purposes of the present invention the general terms used hereinabove and hereinbelow have the following meanings, unless otherwise defined:

Alkyl groups are, in accordance with the number of carbon atoms, straight-chain or branched and will typically be methyl, ethyl, n-propyl, isopropyl, n-butyl, sec-butyl, isobutyl, tert-butyl, n-amyl, tert-amyl, 1-hexyl or 3-hexyl.

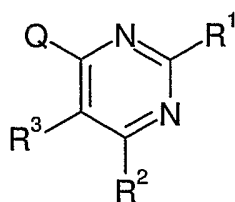
Halogen and halo substituents will be understood generally as meaning fluoro, chloro, bromo, iodo.

Haloalkyl can contain identical or different halogenatoms, typically fluoromethyl, difluoromethyl, difluorochloromethyl, trifluoromethyl, chloromethyl, trichloromethyl.

Alkoxy is typically methoxy, ethoxy, propyloxy, isopropyloxy, n-butyloxy, isobutyloxy, sec-butyloxy and tert-butyloxy.

Alkenyl and alkynyl groups preferably contain from 2 to 6, more preferably from 2 to 4, carbon atoms. They can be in the form of straight or branched chains, and, where appropriate, the alkenyl groups can be of either (E)- or (Z)- configuration. Examples are vinyl, ethynyl, propynyl.

The present invention provides the use as fungicides of pyrimidine derivatives having the following formula (1):



(1)

Wherein R¹ is H, C₁-C₆alkyl (being optionally substituted by one or more of halogen), C₂-C₆alkenyl (being optionally substituted by one or more of halogen), C₂-C₆alkynyl (being optionally substituted by one or more of halogen or trialkylsilyl), C₁-C₆alkoxy (being optionally substituted by one or more of halogen), C₂-C₆alkenyloxy (being optionally substituted by one or more of halogen), C₂-C₆alkynyloxy (being optionally substituted by one or more of halogen), C₁-C₆alkylthio (being optionally substituted by one or more of halogen), C₁-C₆alkylsulfinyl (being optionally substituted by one or more of halogen), C₁-C₆alkylsulfonyl (being optionally substituted by one or more of halogen), phenyl (being optionally substituted by one or more of halogen, alkyl, haloalkyl or alkoxy), pyridin-2-yl (being optionally substituted by one or more of halogen, alkyl, haloalkyl or phenyl), pyridin-3-yl (being optionally substituted by one or more of halogen, alkyl, haloalkyl or phenyl), pyridin-4-yl (being optionally substituted by one or more of halogen, alkyl, haloalkyl or phenyl), imidazol-1-yl (being optionally substituted by one or more of halogen, alkyl or alkoxy), pyrazol-1-yl (being optionally substituted by one or more of halogen, alkyl or alkoxy) or N(R⁴)C(O)R⁵,

R² is haloC₁-C₆alkyl, R³ is halogen, C₂-C₆alkenyl or C₂-C₆alkynyl groups, (being optionally substituted by one or more of halogen), R⁴ and R⁵ are, independently, H, C₁-C₆alkyl (being optionally substituted by one or more of halogen or cyano); or R⁴ and R⁵ can join together to form a 5 or 6-membered ring,

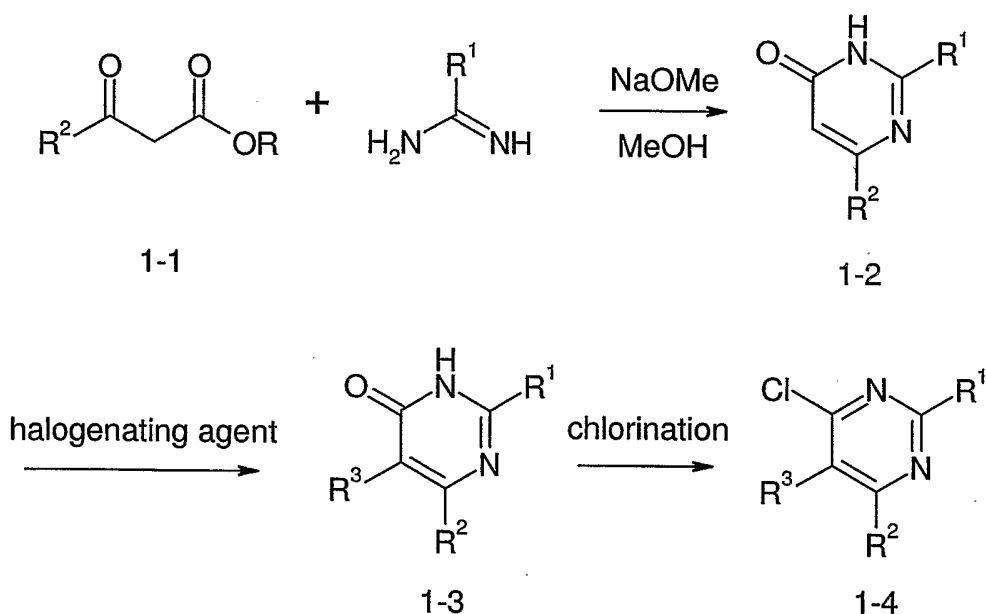
Q is a heteroaromatic ring selected from the following ring system; imidazol-1-yl, pyrazol-1-yl, 1,2,3-triazol-1-yl, 1,2,3-triazol-2-yl, 1,2,4-triazol-1-yl, 1,2,4-triazol-4-yl,

benzimidazol-1-yl or tetrazol-5-yl groups (being optionally substituted by one or more of halogen, cyano, hydroxy, mercapto, alkyl, haloalkyl, alkoxy, alkoxycarbonyl, amino, alkylamino, haloalkoxy, alkylthio or aralkylthio).

Examples of specific compounds of formula (1) which are of use as fungicides include the compounds listed in Table 1.

The pyrimidine derivative represented by the formula (1) in the invention can be prepared by the following process.

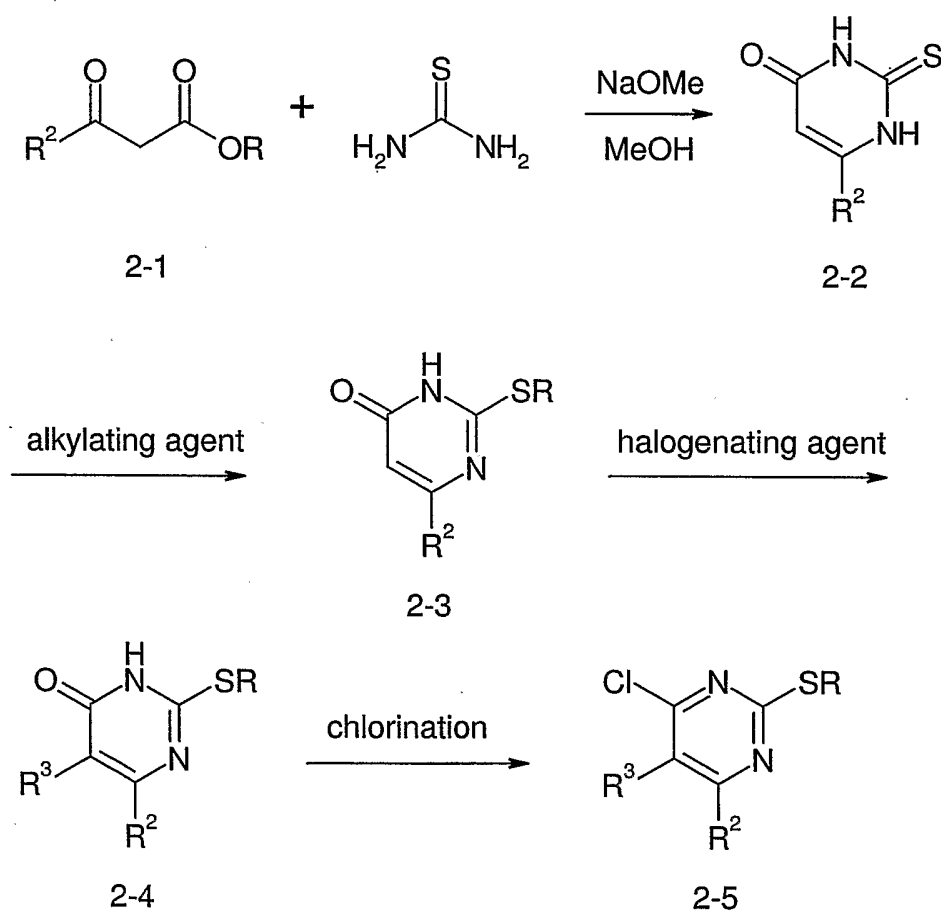
SCHEME 1



The preparation of 5-halogenated 4-chloropyrimidines (wherein R¹=H, alkyl, phenyl, pyridine-2-yl, pyridine-3-yl or pyridine-4-yl) such as 1-4 as intermediates that can be used for the synthesis of compounds within the scope of the present invention is detailed in Scheme 1. Pyrimidinones of structure 1-2 can be synthesized by condensation of a β -keto-ester with amidine (or amidine salt) in a suitable solvent such as methanol, ethanol, isopropanol or the like in the presence of a base such as sodium or potassium alkoxide. The pyrimidinones 1-2 thus obtained can be halogenated by treatment with a suitable halogenating agent such as bromine, chlorine, iodine monochloride, N-bromosuccinimide, N-chlorosuccinimide or N-iodosuccinimide in a

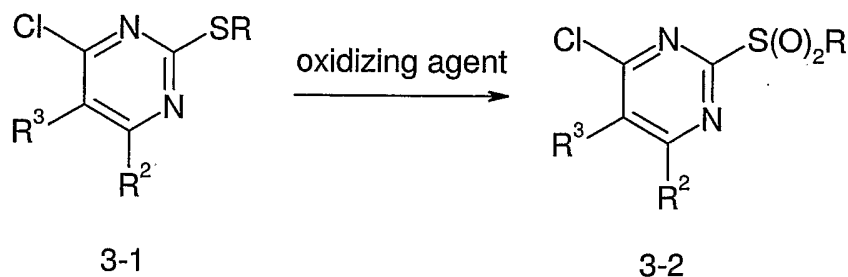
suitable solvent such as dichloromethane, chloroform, carbon tetrachloride, acetonitrile or N,N-dimethylformamide to give a halogenated pyrimidinone at 5-position of structure 1-3 (wherein $R^3 = \text{Cl, Br, I}$). The pyrimidinone can be chlorinated by treatment with phosphoryl chloride, phosphorous pentachloride, phosphorous trichloride or mixtures thereof, or with chloromethylenedimethylammonium chloride added separately or prepared in situ by treatment of N,N-dimethylformamide with thionyl chloride, phosgene or the like in dichloromethane, chloroform, tetrahydrofuran, dioxane, ether or other suitable solvent to give a 4-chloropyrimidine of structure 1-4.

SCHEME 2



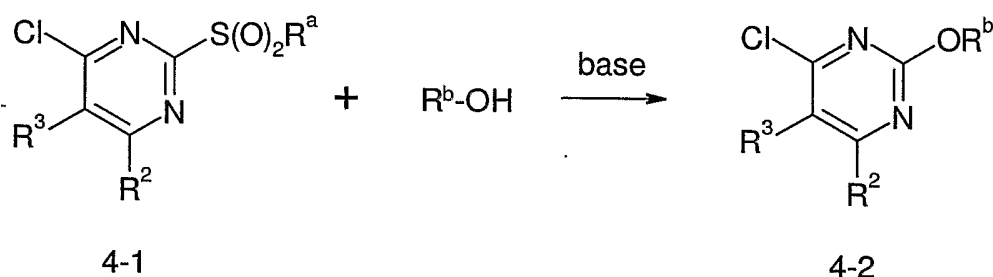
The 4-chloropyrimidines (wherein R=alkyl) such as 2-5 as intermediates, that can be used for the synthesis of compounds within the scope of the present invention, can be prepared according to *Journal of Heterocyclic Chemistry*, Vol. 20, 219 (1983). The method for the preparation is detailed in Scheme 2.

SCHEME 3



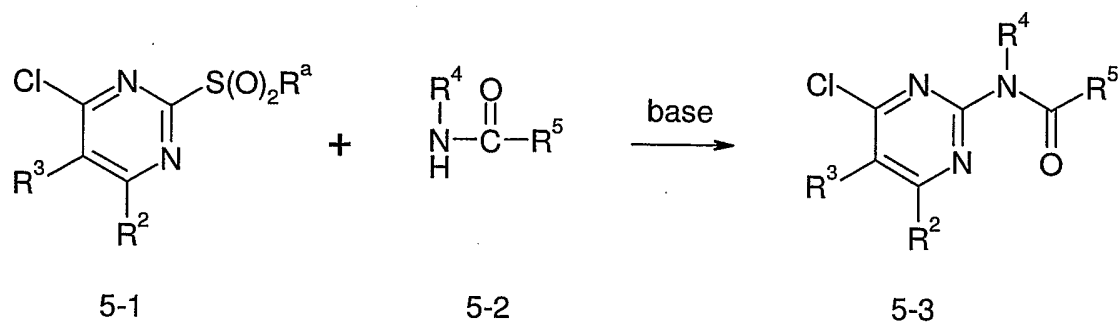
The preparation of 2-alkylsulfonyl-4-chloropyrimidines such as 3-2 as intermediates that can be used for the synthesis of compounds within the scope of the present invention is detailed in Scheme 3. A 2-alkylthio-4-chloropyrimidine 3-1 is treated with oxidizing agent such as hydrogen peroxide or m-chloroperbenzoic acid in a suitable solvent such as dichloromethane, chloroform, acetic acid or the like to give a 2-alkylsulfonyl-4-chloropyrimidine of structure 3-2.

SCHEME 4



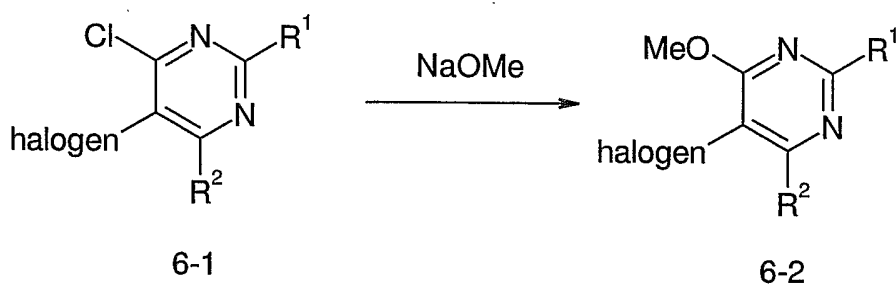
The preparation of 2-alkoxy-4-chloropyrimidines such as 4-2 as intermediates that can be used for the synthesis of compounds within the scope of the present invention is detailed in Scheme 4. A 2-alkylsulfonyl-4-chloropyrimidine 4-1 is treated with an alcohol in the presence of a base such as sodium hydride, sodium bis(trimethylsilyl)amide, potassium tert-butoxide or the like to give a 2-alkoxy-4-chloropyrimidine of structure 4-2.

SCHEME 5



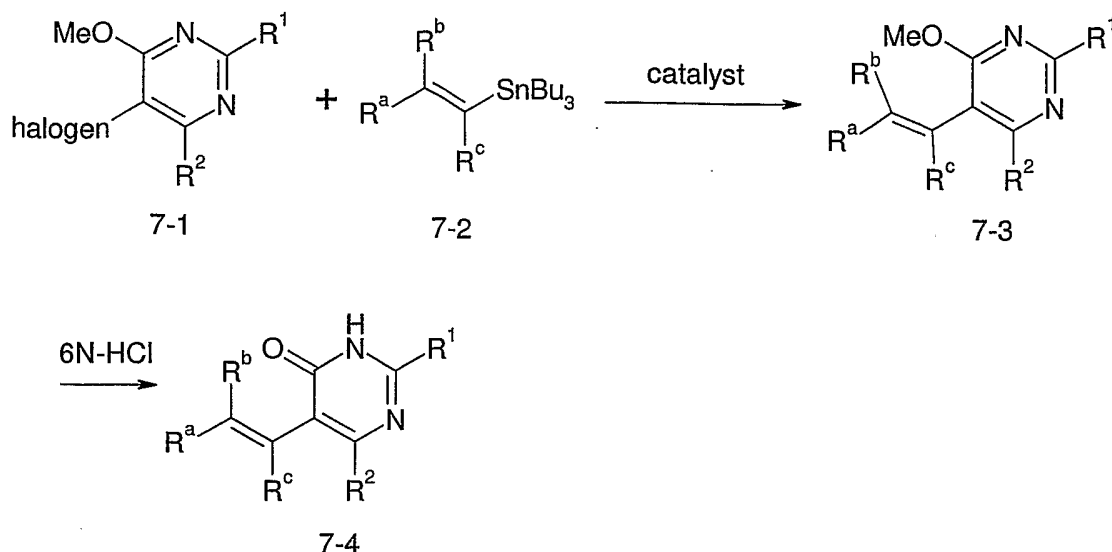
The preparation of 2-alkylcarbonylamino-4-chloropyrimidines such as 5-3 as intermediates that can be used for the synthesis of compounds within the scope of the present invention is detailed in Scheme 5. A 2-alkylsulfonyl-4-chloropyrimidine 5-1 is treated with a carboxylic amide 5-2 in the presence of a base such as sodium hydride, sodium bis(trimethylsilyl)amide, potassium tert-butoxide or the like to give a 2-alkoxycarbonylamino-4-chloropyrimidine of structure 5-3.

SCHEME 6



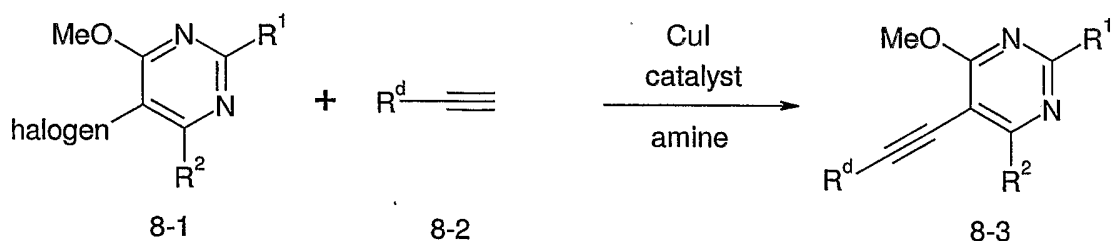
The preparation of 5-halogeno-4-methoxypyrimidines such as 6-2 as intermediates that can be used for the synthesis of compounds within the scope of the present invention is detailed in Scheme 6. A 4-chloropyrimidine of structure 6-1 is treated with sodium methoxide in a suitable solvent such as methanol, tetrahydrofuran or the like to give a 4-methoxypyrimidine of structure 6-2.

SCHEME 7



The preparation of 5-alkenylpyrimidinones such as 7-4 as intermediates that can be used for the synthesis of compounds within the scope of the present invention is detailed in Scheme 7. A 5-halogeno-4-methoxypyrimidine 7-1 (halogen=Br or I) is treated with alkenyltributyltin 7-2 in the presence of a catalyst such as tetrakis(triphenylphosphine)palladium(0), dichlorobis(triphenylphosphine)palladium(II), triphenylarsinepalladium(0) or the like in a suitable solvent such as N,N-dimethylformamide, acetonitrile, dioxane, tetrahydrofuran, toluene or other suitable solvent to give a 5-alkenyl-4-methoxypyrimidine of structure 7-3. The 5-alkenyl-4-methoxypyrimidine thus obtained is treated with 6N-HCl under reflux to give a 5-alkenylpyrimidinone of structure 7-4.

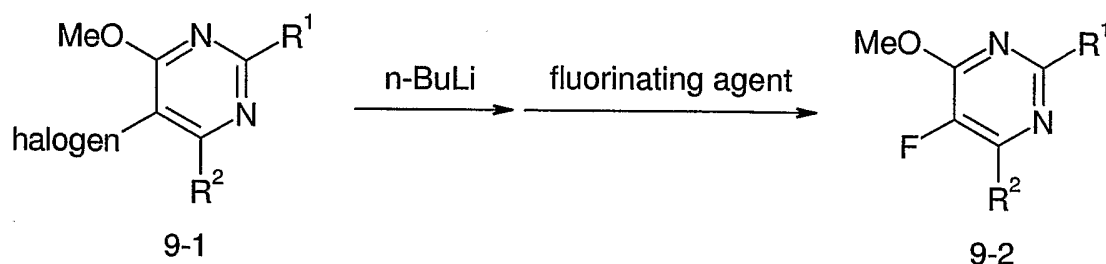
SCHEME 8



The preparation of 5-alkynyl-4-methoxypyrimidines such as 8-3 as intermediates that can be used for the synthesis of compounds within the scope of the present invention is detailed in Scheme 8. A 5-halogeno-4-methoxypyrimidine 8-1 (halogen=Br or I) is treated with alkyne 8-2 in the presence of amine such as

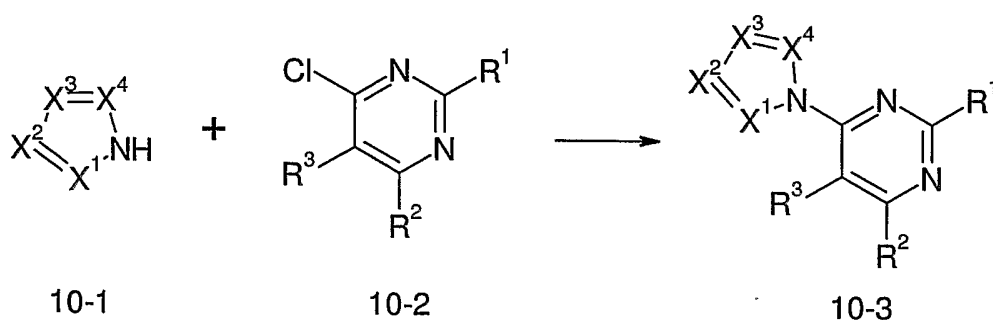
triethylamine, n-propylamine, N,N-diisopropylethylamine or the like, copper(I) iodide and catalyst such as tetrakis(triphenylphosphine)palladium(0), dichlorobis(triphenylphosphine)palladium(II) or the like in a suitable solvent such as N,N-dimethylformamide, acetonitrile, dioxane, tetrahydrofuran, toluene or other suitable solvent to give a 5-alkynyl-4-methoxypyrimidine of structure 8-3.

SCHEME 9



The preparation of 5-fluoro-4-methoxypyrimidines such as 9-2 as intermediates that can be used for the synthesis of compounds within the scope of the present invention is detailed in Scheme 9. A 5-halogeno-4-methoxypyrimidine 9-1 (halogen=Br or I) is treated with n-butyl lithium under dry ice cooling, then with fluorinating agent such as N-fluorobenzenesulfonimide, 1-fluoropyridinium tetrafluoroborate or the like in a suitable solvent such as tetrahydrofuran, ether or other suitable solvent to give a 5-fluoro-4-methoxypyrimidine of structure 9-2.

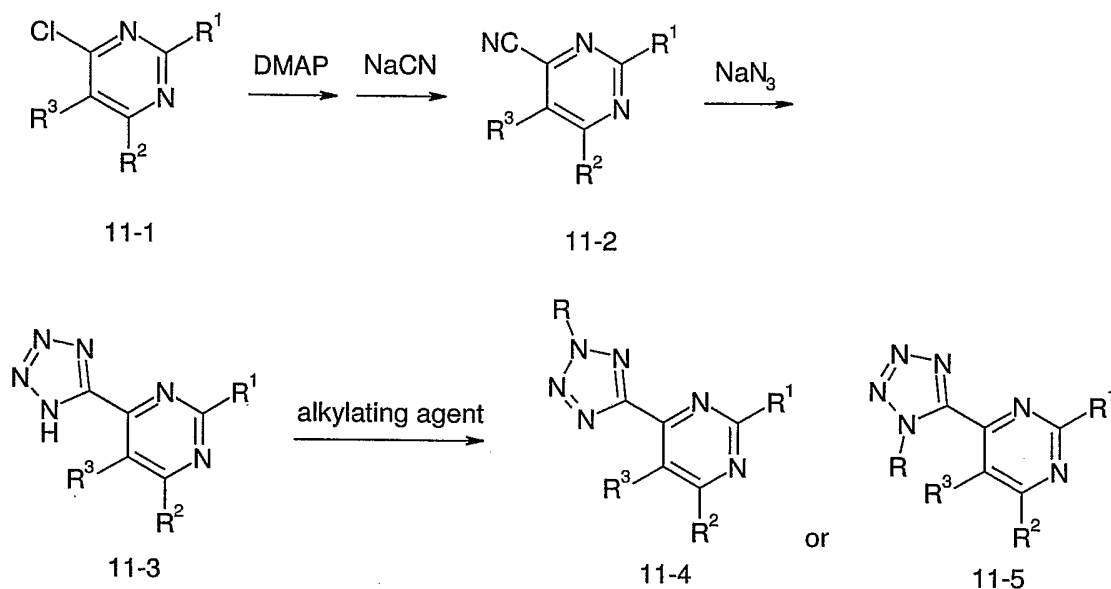
SCHEME 10



The preparation of some 4-azolypyrimidines such as 10-3 within the scope of the present invention is detailed in Scheme 10. An azole 10-1 is condensed with a 4-chloropyrimidine 10-2 in a suitable solvent such as dimethylsulfoxide, acetonitrile, tetrahydrofuran, toluene, isopropanol or the like in the presence or absence of a base such as sodium hydride, sodium hydroxide, potassium carbonate, 1,8-diazabicyclo-

[5,4,0]-undec-7-ene, N,N-diisopropylethylamine or the like at or above room temperature to give a 4-azolylpyrimidine of structure 10-3.

SCHEME 11



The preparation of some 4-tetrazolyl pyrimidines such as 11-3, 11-4 and 11-5 within the scope of the present invention is detailed in Scheme 11. A 4-chloropyrimidine 11-1 is treated with cyanating agent such as sodium or potassium cyanide in a suitable solvent such as water, isopropanol, acetonitrile, propionitrile, tetrahydrofuran, N,N-dimethylformamide, dimethylsulfoxide or mixture thereof, or other suitable solvent to give a 4-cyanopyrimidine of structure 11-2. The 4-chloropyrimidine 11-1 can first be activated by addition of 4-(dimethylamino)-pyridine prior to be added cyanating agent. The 4-cyanopyrimidine thus obtained is treated with sodium azide in a suitable solvent such as water, isopropanol, acetonitrile, propionitrile, tetrahydrofuran, N,N-dimethylformamide, dimethylsulfoxide or mixture thereof, or other suitable solvent to give 4-tetrazolylpyrimidine of structure 11-3. This reaction can be accelerated by adding zinc bromide or other zinc halides. The 4-tetrazolylpyrimidine thus obtained can be methylated by treatment with trimethylsilyldiazomethane or alkylated by treatment with a suitable alkylating agent such as dimethyl sulfate, diethyl sulfate, methyl iodide, isopropyl iodide or the like in the presence or absence of an inorganic base such as sodium hydroxide, potassium hydroxide, sodium hydride and potassium carbonate or organic base such as triethylamine and pyridine to give a alkylated tetrazolylpyrimidine of structure 11-4 or 11-5.

The compounds of the present invention can show excellent fungicidal activity against wide varieties of fungi, and therefore, the compounds can be useful for plant disease control in the farming of agricultural and horticultural crops including ornamental flowers, turf and forage crops.

The examples for the plant diseases might to be controlled with the compounds of the present invention are given in the following.

Paddy rice

Blast	(<i>Pyricularia oryzae</i>)
Sheath blight	(<i>Rhizoctonia solani</i>)
Bakanae disease	(<i>Gibberella fujikuroi</i>)
Helminthosporium leaf spot	(<i>Cochliobolus miyabeanus</i>)

Barley

Loose smut	(<i>Ustilago nuda</i>)
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Wheat

Scab	(<i>Gibberella zeae</i>)
Leaf rust	(<i>Puccinia recondita</i>)
Eye spot	(<i>Pseudocercospora herpotrichoides</i>)
Glume blotch	(<i>Leptosphaeria nodorum</i>)
Powdery mildew	(<i>Erysiphe graminis f sp. tritici</i>)
Fusarium snow blight	(<i>Micronectriella nivalis</i>)

Potato

Late blight	(<i>Phytophthora infestans</i>)
Gray mold	(<i>Botrytis cinerea</i>)

Ground nut

Leaf spot	(<i>Mycosphaerella aradii</i>)
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Sugar beat

Cercospora leaf spot	(<i>Cercospora beticola</i>)
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Soybean

Gray mold	(<i>Botrytis cinerea</i>)
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Kidney beans

Gray mold	(<i>Botrytis cinerea</i>)
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Cucumber

	Powdery mildew (<i>Sphaerotheca fuliginea</i>)
	Sclerotinia rot (<i>Sclerotinia sclerotiorum</i>)
	Gray mold (<i>Botrytis cinerea</i>)
	Downy mildew (<i>Pseudoperonospora cubensis</i>)
Tomato	
	Leaf mold (<i>Cladosporium fulvum</i>)
	Late blight (<i>Phytophthora infestans</i>)
	Gray mold (<i>Botrytis cinerea</i>)
Egg plant	
	Black rot (<i>Corynespora melongenae</i>)
Onion	
	Gray mold neck rot (<i>Botrytis allii</i>)
Strawberry	
	Powdery mildew (<i>Sphaerotheca humuli</i>)
	Gray mold (<i>Botrytis cinerea</i>)
Apple	
	Powdery mildew (<i>Podosphaera leucotricha</i>)
	Scab (<i>Venturia inaequalis</i>)
	Blossow blight (<i>Monilinia mali</i>)
Persimmon	
	Anthrachnose (<i>Gloeosporium kaki</i>)
Peach	
	Brown rot (<i>Monilinia fructicola</i>)
Grape	
	Powdery mildew (<i>Uncinula necator</i>)
	Downy mildew (<i>Plasmopara viticola</i>)
	Gray mold (<i>Botrytis cinerea</i>)
Pear	
	Rust (<i>Gymnosporangium asiaticum</i>)
	Black spot (<i>Alternaria kikuchiana</i>)
Tea-plant	
	Leaf spot (<i>Pestalotia theae</i>)
	Anthrachnose (<i>Colletotrichum theae-sinensis</i>)
Orange	
	Scab (<i>Elsinoe fawcetti</i>)
	Blue mlold (<i>Penicillium italicum</i>)

Turf

Sclerotinia snow blight (*Sclerotinia borealis*)

In recent years, it is known that various pathogenic fungi have developed their resistance to benzimidazole fungicides and ergosterol biosynthesis inhibitors and that such fungicides have been insufficient in their fungicidal effectiveness. Therefore, it is required to provide new compounds useful as a fungicide which are effective to the resistant-strain of such pathogenic fungi as well. The compounds of the present invention are the ones which can be a fungicide having excellent fungicidal effectiveness not only to the susceptible-strains of pathogenic fungi but also to the resistant-strains of pathogenic fungi to benzimidazole fungicides and ergosterol biosynthesis inhibitors.

The compounds of the present invention can be utilized as an antifouling agent for preventing the adhesion of aqueous organisms to structures, such as the bottom of a ship and fishing nets, in water and sea.

Also, the compounds of the present invention can be contained in paints and fibers and thereby used as an antimicrobial agent for walls, bathtubs, shoes and clothes.

Furthermore, some of the compounds of the present invention can show insecticidal, acaricidal and herbicidal activities.

In the practical application of the compounds of the present invention obtained as described above, the compounds can be used in the state as it is without formulation, or, for the use as agricultural plant protection chemicals, the compounds can be applied in forms of general formulations for agricultural plant protection chemicals, such as wettable powders, granules, powders, emulsifiable concentrates, aqueous solutions, suspensions and flowables. For the additives and carriers to be used in the formulations described above, vegetable powders, such as soybean powder and wheat powder, mineral fine powders, such as diatomaceous earth, apatite, gypsum, talc, bentonite, pyrophyllite and clay, and organic and inorganic compounds, such as sodium benzoate, urea and Glauber's salt, can be used, when the compounds are formulated into solid formulations. Whereas, when the compounds are formulated into liquid formulations, petroleum fractions, such as kerosine, xylene and solvent naphtha, cyclohexane, cyclohexanone, dimethylformamide, dimethyl sulfoxide, alcohols, acetone, trichloro ethylene, methylisobutyl ketone, mineral oils, vegetable oils and water, can be used as

the solvent. In these formulations, surface active agents may be added to the formulations in order to make the formulations homogeneous and stable, if appropriate.

The content of the compound of the present invention as the active principle in the formulations is preferably in a range of from 5 to 70%.

The wettable powders, the emulsifiable concentrates and the flowable formulation comprising the compound of the present invention prepared as described above can be applied in a form prepared by diluting the formulations with water to the suspension or the emulsion at a desired concentrations, while the powders and the granules of the said compound can be directly applied to plants without dilution.

The compounds of the present invention can demonstrate sufficient effectiveness on plant diseases independently; however, it is also possible to use the said compound in admixing with 1 or more of other fungicides, insecticides, acaricides or synergists.

The followings are the examples for the fungicides, insecticides, acaricides, nematocides and plant growth regulators, those which are usable in admixing with the compounds of the present invention.

Fungicides

Copper-Based Fungicides

Basic copper chloride, basic copper sulfate, etc.

Sulphur-based Fungicides

Thiram, maneb, mancozeb, polycarbamate, propineb, ziram, zineb, etc.

Polyhaloalkylthio Fungicides

Captan, dichlofluanid, folpet, etc.

Organochlorine Fungicides

Chlorothalonil, fthalide, etc.

Organophosphorous Fungicides

IBP, EDDP, tolclofos-methyl, pyrazophos, fosetyl-Al, etc.

Benzimidazole Fungicides

Thiophanate-methyl, benomyl, carbendazim, thiabendazole, etc.

Dicarboxyimide Fungicides

Oxycarboxine, mepronil, flutolanil, techlofthalam, trichlamide, pencycuron, etc.

Acyl Alanine Fungicides

Metalaxyl, oxadixyl, furalaxyl etc.

EBI Fungicides

Triadimefon, triadomenol, bitertanol, microbutanil, hexaconazol, propiconazole, triflumizole, procloraz, peflazoate, fenarimol, pyrifenox, trifolin, flusilazole, etaconazole, diclobutrazol, fluotrimazole, flutriafen, penconazole, diniconazole, cyproconazole, imazalil, tridemorph, fenpropimorph, buthiobate, etc.

Antibiotics

Polyoxin, blasticidin-S, kasugamycin, validamycin, streptomycin sulfate, etc.

Others

Propamocarb hydrochloride salt, quintozone, hydroxyisoxazole, metasulfocarb, anilazine, isoprothiolane, probenazole, quinomethionate, dithianone, dinocap, dichlomezine, mepaniprim, ferimzone, fluazinam, pyroquilon, tricyclazole, oxolinic acid, dithianone, iminoctazine acetate salt, cymoxanil, pyrrolenitrine, metasulfocarb, diethofencarb, binapacryl, lecithin, sodium hydrogencarbonate, fenaminosulf, dodine, dimethomorph, fenazine oxide, etc.

Insecticides and Acaricides

Organophosphorous and Carbamate Insecticides

Fenthion, fenitrothion, diazinon, chlorpyrifos, ESP, vamidothion, fenthoate, dimethoate, formothion, malathion, trichlorfon, thiometon, phosmet, dichlorvos, acephate, EPBP, methyl parathion, oxydimeton methyl, ethion, salithion, cyanophos, isoxathion, pyridafenthion, phosalon, methydathion, sulprofos, chlorfenvinphos, tetrachlorvinphos, dimethylvinphos, propaphos, isofenphos, ethylthiometon, profenofos, pyraclophos, monocrotophos, azinphos methyl, aldicarb, methomyl, thiodicarb, carbofuran, carbosulfan, benfuracarb, furathiocarb, propoxur, BPMC, MTMC, MIPC, carbaryl, pirimicarb, ethiofencarb, fenoxycarb, cartap, thiocyclam, bensultap, etc.

Pyrethroid Insecticides

Permethrin, cypermethrin, deltamethrin, fenvalerate, fenpropathrin, pyrethrin, allethrin, tetramethrin, resmethrin, dimethrin, propathrin, fenothrin, prothrin, fluvalinate, cyfluthrin, cyhalothrin, flucythrinate, ethofenprox, cycloprothrin, tralomethrin, silafluophen, brofenprox, acrinathrin, etc.

Benzoyl Urea-Based Insecticides and Others:

Diflubenzuron, chlorfluazuron, hexaflumuron, triflumuron, tetrabenzuron, flufenoxuron, flucycloxuron, buprofezin, pyriproxyfen, methoprene, benzoepin, diaphenthiuron, imidacloprid, fipronil, nicotine sulfate, rotenone, meta-aldehyde, machine oil, *Bacillus thuringiensis*, microbial insecticides such as insect-pathogenic viruses, etc.

Nematocides

Fenamiphos, phosthiazate, etc.

Acaricides

Chlorbenzilate, phenisobromolate, dicofol, amitraz, BPPS, benzomate, hexythiazox, fenbutatin oxide, polynactin, quinomethionate, CPCBS, tetradifon, avermectin, milbemectin, chlofentezin, cyhexatin, pyridaben, fenpyroximate, tebufenpyrad, pyrimidifen, fenothiocarb, dienochlor, etc.

Plant Growth Regulators

Gibberellines (Gibberelline A₃, Gibberelline A₄, Gibberelline A₇, etc.), IAA, and NAA.

Examples

The following examples serve to provide further appreciation of the invention but are not meant in any way to restrict the effective scope of the invention. The structures of isolated novel compounds were confirmed by NMR, Mass, and/or other appropriate analysis.

Example 1: 5-Bromo-2-methylthio-6-trifluoromethyl-3H-pyrimidin-4-one:

2-Methylthio-6-trifluoromethyl-3H-pyrimidin-4-one (20.0g) was dissolved in acetonitrile (100ml) and N-bromosuccinimide (18.7g) was added at room temperature with stirring. The mixture was refluxed for 5 hr and the solvent was removed under reduced pressure. The precipitates were mixed with water, filtered off and dried. The solid thus obtained was mixed with hot hexane and filtered off to give 5-bromo-2-methylthio-6-trifluoromethyl-3H-pyrimidin-4-one (25.3g) as colorless needles, mp 215-216°C.

Example 2: 5-Iodo-2-isopropylthio-6-trifluoromethyl-3H-pyrimidin-4-one:

2-Isopropylthio-6-trifluoromethyl-3H-pyrimidin-4-one (23.3g) was dissolved in acetonitrile (230ml) and N-iodosuccinimide (24.2g) was added at room temperature with stirring. The mixture was refluxed for 2.5 hr and the solvent was removed under reduced pressure. The precipitates were dissolved in ethyl acetate, and then washed

with aqueous sodium thiosulfate, water and brine, respectively. The ethyl acetate layer was dried over magnesium sulfate and the solvent was removed under reduced pressure to give 5-iodo-2-isopropylthio-6-trifluoromethyl-3H-pyrimidin-4-one (34.8g) as pale yellow needles, mp 212-215°C.

Example 3: 5-Iodo-2-(pyridin-2-yl)-6-trifluoromethyl-3H-pyrimidin-4-one:

2-(Pyridin-2-yl)-6-trifluoromethyl-3H-pyrimidin-4-one (15.0g) was dissolved in DMF (150ml) and N-iodosuccinimide (33.6g) was added at room temperature with stirring. The mixture was stirred under heating (130-135°C) for 6 hr, and then cooled to room temperature. The reaction mixture was added ethyl acetate (150ml), and then washed with aqueous sodium thiosulfate, water and brine, respectively. The ethyl acetate layer was dried over magnesium sulfate and the solvent was removed under reduced pressure to give crude 5-iodo-2-(pyridine-2-yl)-6-trifluoromethyl-3H-pyrimidin-4-one. It was recrystallized from toluene as pale brown needles (10.2g), mp 186-187°C.

Example 4: 4-Chloro-5-iodo-2-methylthio-6-trifluoromethylpyrimidine:

5-Iodo-2-methylthio-6-trifluoromethyl-3H-pyrimidin-4-one (11.8g) was dissolved in phosphoryl chloride (40ml) and phosphorous pentachloride (7.9g) was added at room temperature with stirring. The mixture was refluxed for 3 hr and the phosphoryl chloride was removed under reduced pressure. The residue was poured onto icy water and extracted with chloroform. The chloroform layer was washed with water and brine, respectively and dried over magnesium sulfate. The solvent was removed under reduced pressure to give 4-chloro-5-iodo-2-methylthio-6-trifluoromethylpyrimidine (12.2g) as pale brown crystalline solid, mp 55-56°C

Example 5: 4-Chloro-5-iodo-2-isopropylsulfonyl-6-trifluoromethylpyrimidine:

4-Chloro-5-iodo-2-isopropylthio-6-trifluoromethylpyrimidine (15.0g) was dissolved in dichloromethane (150ml) and m-chloroperbenzoic acid (75%, 27.1g) was added portionwise under ice cooling with stirring. After stirring over night at room temperature, precipitated solid (m-chlorobenzoic acid) was removed by filtration. The reaction mixture was added aqueous sodium thiosulfate dropwise under ice cooling, then precipitated solid (m-chlorobenzoic acid) was removed by filtration again. The water layer was separated, and the dichloromethane layer was washed with aqueous sodium bicarbonate and brine, respectively and dried over magnesium sulfate. The solvent was removed under reduced pressure to give 4-chloro-5-iodo-2-isopropylsulfonyl-6-trifluoromethylpyrimidine (14.3g) as pale yellow crystalline solid, mp 67-69°C.

Example 6: 5-Iodo-4-methoxy-2-methyl-6-trifluoromethylpyrimidine:

4-Chloro-5-iodo-2-methyl-6-trifluoromethylpyrimidine (23.0g) was dissolved in

methanol (150ml) and sodium methoxide (30% methanol solution, 12.8g) was added under ice cooling with stirring. After stirring over night at room temperature, the solvent was removed under reduced pressure. The residue was mixed with water and extracted with benzene, and then benzene layer was washed with water and brine, respectively and dried over magnesium sulfate. The solvent was removed under reduced pressure, and the residue was purified by silica gel column chromatography (hexane-ethyl acetate). The crude fraction was concentrated, and then washed with cold hexane to give 5-iodo-4-methoxy-2-methyl-6-trifluoromethylpyrimidine (13.0g) as colorless crystalline solid, mp 44-45°C.

Example 7: 5-Ethynyl-4-methoxy-2-methyl-6-trifluoromethylpyrimidine:

5-Iodo-4-methoxy-2-methyl-6-trifluoromethylpyrimidine (5.0g) was dissolved in DMF (50ml) and N,N-diisopropylethylamine (6.5g), copper(I) iodide (0.3g), dichlorobis(triphenylphosphine)palladium(II) (1.12g) and trimethylsilylacetylene (15.4g) was added at room temperature with stirring. The mixture was heated (50°C) in nitrogen atmosphere for 7 hr and cool to room temperature. The reaction mixture was added methyl tert-butyl ether (MTBE) (200ml). The insoluble matter was removed by filtration through Celite and the filtrate was washed with water and brine, respectively. The MTBE solution was dried over magnesium sulfate and the solvent was removed under reduced pressure. The residue was purified by silica gel column chromatography (hexane-ethyl acetate) to give crude 4-methoxy-2-methyl-6-trifluoromethyl-5-trimethylsilylethynylpyrimidine (5.3g) as pale yellow oil. This crude 4-methoxy-2-methyl-6-trifluoromethyl-5-trimethylsilylethynylpyrimidine (5.2g) was dissolved in THF (100ml) and tetrabutylammonium fluoride (1M THF solution, 18ml) was added under ice cooling with stirring. After stirring 30 min at this temperature, the reaction mixture was added water in one portion under ice cooling and extracted with ethyl acetate. The ethyl acetate layer was washed with water and brine, respectively and dried over magnesium sulfate. The solvent was removed under reduced pressure. The residue was purified by silica gel column chromatography (hexane-ethyl acetate) to give 5-ethynyl-4-methoxy-2-methyl-6-trifluoromethylpyrimidine (1.92g) as colorless crystalline solid, mp 77°C.

Example 8: 5-(1-Chlorovinyl)-2-methyl-6-trifluoromethyl-3H-pyrimidin-4-one:

5-ethynyl-4-methoxy-2-methyl-6-trifluoromethylpyrimidine (1.92g) was added 6N-HCl (20ml) with stirring and refluxed for 2 hr. After cooling to room temperature, the reaction mixture was extracted with ethyl acetate. The ethyl acetate layer was washed with brine and dried over magnesium sulfate. The solvent was removed under reduced pressure. The residue was purified by silica gel column chromatography (hexane-ethyl

acetate). The crude fraction was concentrated, and then washed with hexane to give 5-(1-chlorovinyl)-2-methyl-6-trifluoromethyl-3H-pyrimidin-4-one (1.62g) as colorless crystalline solid, mp 164-166°C.

Example 9: 5-Fluoro-2,4-dimethoxy-6-trifluoromethylpyrimidine:

5-Bromo-2,4-dimethoxy-6-trifluoromethylpyrimidine (0.50g) was dissolved in dry THF (5ml) at room temperature under nitrogen atmosphere. The mixture was cooled to -70°C, and then added n-butyllithium (1.6M in hexane, 1.2ml) dropwise below -50°C, and then added N-fluoro-bisphenylsulfonimide (0.61g) THF (5ml) solution at once and the temperature was raised up to room temperature and then added water. The reaction mixture was extracted with benzene. The benzene layer was washed with water and brine, respectively and dried over magnesium sulfate. The solvent was removed under reduced pressure to give 5-fluoro-2,4-dimethoxy-6-trifluoromethylpyrimidine (0.30g) as pale yellow oil, ESI-MS 227 [M+H]⁺.

Example 10: 4-Cyano-5-iodo-2-methylthio-6-trifluoromethylpyrimidine:

4-Chloro-5-iodo-2-methylthio-6-trifluoromethylpyrimidine (5.00g) was dissolved in propionitrile (125ml) and 4-(dimethylamino)-pyridine (1.81g) was added at room temperature with stirring. After several minutes, precipitates appeared, however, it was stirred over night at room temperature. The slurry was cooled to ice bath temperature, and then added sodium cyanide (1.04g) water (10ml) solution. The mixture was warmed to room temperature and stirred 3 hr. The reaction mixture was added water and extracted with ethyl acetate. The ethyl acetate layer was washed with water and brine, respectively and dried over magnesium sulfate. The solvent was removed under reduced pressure. The residue was purified by silica gel column chromatography (hexane-ethyl acetate) to give 4-cyano-5-iodo-2-methylthio-6-trifluoromethylpyrimidine (2.56g) as yellow solid, mp 68-69°C.

Example 11: 4-Imidazol-1-yl-5-iodo-2-isopropylthio-6-trifluoromethylpyrimidine:

4-Chloro-5-iodo-2-isopropylthio-6-trifluoromethylpyrimidine (3.0g) was dissolved in acetonitrile (30ml) and imidazole (1.6g) was added at room temperature with stirring. The mixture was refluxed for 3 hr and then the solvent was removed under reduced pressure. The residue was added water and precipitates was filtered off to give crude 4-imidazol-1-yl-5-iodo-2-isopropylthio-6-trifluoromethylpyrimidine. It was recrystallized from methanol-water mixture as colorless needles (2.61g), mp 118-120°C.

Example 12: Ethyl 1-(5-iodo-2-isopropylthio-6-trifluoromethylpyrimidin-4-yl)-3-trifluoromethyl-1H-pyrazole-4-carboxylate:

4-Chloro-5-iodo-2-isopropylthio-6-trifluoromethylpyrimidine (0.30g) was dissolved in

dimethylsulfoxide (3.0ml) and ethyl 3-trifluoromethyl-1H-pyrazole-4-carboxylate (0.16g) and 1,8-diazabicyclo-[5,4,0]-undec-7-ene (0.12g) was added at room temperature with stirring. The mixture was heated to 80°C and stirred for 2hr. After cooling to room temperature, the mixture was added water and extracted with benzene. The benzene layer was washed with water and brine, respectively and dried over magnesium sulfate. The solvent was removed under reduced pressure. The residue was purified by silica gel column chromatography (hexane-ethyl acetate) to give ethyl 1-(5-iodo-2-isopropylthio-6-trifluoromethylpyrimidin-4-yl)-3-trifluoromethyl-1H-pyrazole-4-carboxylate (0.30g) as colorless crystalline solid, mp 107-108°C.

Example 13: 4-Imidazol-1-yl-5-iodo-2-prop-2-ynyloxy-6-trifluoromethylpyrimidine:

4-Chloro-5-iodo-2-isopropylsulfonyl-6-trifluoromethylpyrimidine (0.79g) was dissolved in tetrahydrofuran (5.0ml) and added propargyl alcohol (0.11g). The mixture was cooled to ice bath temperature and added sodium hydride (oily 80%, 57mg). The mixture was stirred at that temperature for 10 minutes, and then added imidazole (0.39g) at the same temperature. The mixture was stirred at that temperature for 30 minutes, and then it warmed to room temperature. After stirring over night, the mixture was added water and extracted with ethyl acetate. The ethyl acetate layer was washed with water and brine, respectively and dried over magnesium sulfate. The solvent was removed under reduced pressure. The residue was purified by silica gel column chromatography (chloroform-THF). The fraction was triturated by hexane to give 4-imidazol-1-yl-5-iodo-2-prop-2-ynyloxy-6-trifluoromethylpyrimidine (0.20g) as colorless crystalline solid, mp 128-129°C.

Example 14: 1-(4-Imidazol-1-yl-5-iodo-6-trifluoromethylpyrimidin-2-yl)-pyrrolidin-2-one:

4-Chloro-5-iodo-2-isopropylsulfonyl-6-trifluoromethylpyrimidine (0.50g) was dissolved in tetrahydrofuran (5.0ml) and added 2-pyrrolidinone (0.10g). The mixture was cooled to ice bath temperature and added sodium hydride (oily 80%, 36mg). The mixture was stirred at that temperature for 10 minutes, and then added imidazole (0.25g) at the same temperature. The mixture was stirred at that temperature for 30 minutes, and then it warmed to room temperature. After stirring over night, the mixture was added water and extracted with ethyl acetate. The ethyl acetate layer was washed with water and brine, respectively and dried over magnesium sulfate. The solvent was removed under reduced pressure. The residue was purified by silica gel column chromatography (chloroform-THF) to give 1-(4-imidazol-1-yl-5-iodo-6-trifluoromethylpyrimidin-2-yl)-pyrrolidin-2-one (0.20g) as colorless crystalline solid, mp 195-197°C.

Example 15: 5-Iodo-2-methylthio-4-(2H-tetrazol-5-yl)-6-trifluoromethyl-pyrimidine

4-Cyano-5-iodo-2-methylthio-6-trifluoromethylpyrimidine (0.50g) was dissolved in isopropanol (5ml) and added water (10ml), sodium azide (0.19g) and zinc bromide (0.16g) with stirring in room temperature. The mixture was refluxed for 3 hr and then cooled to room temperature and then added 3N-HCl to acidify. The mixture was extracted with ethyl acetate. The ethyl acetate layer was washed with water and brine, respectively and dried over magnesium sulfate. The solvent was removed under reduced pressure to give 5-iodo-2-methylthio-4-(2H-tetrazol-5-yl)-6-trifluoromethyl-pyrimidine (0.5g) as colorless crystalline solid, mp 196-200°C.

Example 16: 5-Iodo-2-methylthio-4-(2-methyl-2H-tetrazol-5-yl)-6-trifluoromethyl-pyrimidine

5-Iodo-2-methylthio-4-(2H-tetrazol-5-yl)-6-trifluoromethyl-pyrimidine (0.25g) was added benzene (4ml) and methanol (1ml). The mixture was added trimethylsilyldiazomethane (2M in hexane, 1ml) at room temperature dropwise and stirred over night. The solvent was removed under reduced pressure to give crude 5-iodo-2-methylthio-4-(2-methyl-2H-tetrazol-5-yl)-6-trifluoromethyl-pyrimidine. It was recrystallized from hexane-benzene as colorless crystalline solid, mp 113-118°C.

Example 17: 5-(1-Chlorovinyl)-4-imidazol-1-yl-2-methyl-6-trifluoromethyl-pyrimidine:

4-Chloro-5-(1-chlorovinyl)-2-methyl-6-trifluoromethylpyrimidine (1.83g) was dissolved in acetonitrile (20ml) under stirring in room temperature. The mixture was added imidazole (1.45g) and refluxed 3 hr and then cooled to room temperature and added water. The mixture was extracted with chloroform. The chloroform layer was washed with water and brine, respectively and dried over magnesium sulfate. The solvent was removed under reduced pressure. The residue was purified by silica gel column chromatography (chloroform-THF) to give 5-(1-chlorovinyl)-4-imidazol-1-yl-2-methyl-6-trifluoromethyl-pyrimidine (1.34g) as pale brown oil. ¹H-NMR (δ, ppm); 2.82 (s, 3H), 5.78 (d, 1H), 6.03 (d, 1H), 7.21 (br, 1H), 7.87 (br, 1H), 8.55 (br, 1H).

Example 18: 5-Ethynyl-4-imidazol-1-yl-2-methyl-6-trifluoromethylpyrimidine:
5-(1-Chlorovinyl)-4-imidazol-1-yl-2-methyl-6-trifluoromethyl-pyrimidine (0.20g) was dissolved in dimethylsulfoxide (2ml) and 1,8-diazabicyclo[5,4,0]-undec-7-ene (0.11g) was added at room temperature with stirring. The mixture was stirred for 2 hr in room temperature and then added water. The mixture was extracted with ethyl acetate. The ethyl acetate layer was washed water and brine, respectively and dried over magnesium sulfate. The solvent was removed under reduced pressure. The residue was purified by

silica gel column chromatography (chloroform-THF) to give 5-Ethynyl-4-imidazol-1-yl-2-methyl-6-trifluoromethylpyrimidine (0.11g) as colorless crystalline solid, mp 121-122°C.

Example 19: 5-Fluoro-2,4-diimidazol-1-yl-6-trifluoromethylpyrimidine:

2,4-Dichloro-5-fluoro-6-trifluoromethylpyrimidine (2.74g) was dissolved in acetonitrile (30ml) and imidazole (3.97g) was added at room temperature with stirring. The mixture was stirred over night and then the solvent was removed under reduced pressure. The residue was added water and extracted with ethyl acetate. The ethyl acetate layer was washed with water and brine, respectively and dried over magnesium sulfate. The solvent was removed under reduced pressure. The residue was triturated with carbon tetrachloride to give crude 5-fluoro-2,4-diimidazol-1-yl-6-trifluoromethylpyrimidine. It was recrystallized from isopropanol as colorless crystalline solid, mp 142-150°C (decomposed).

Test Example 1: Test on Apple Scab Control (Preventive Application)

The emulsifiable concentrate prepared for the compound according to the present invention was diluted so as to prepared the solution at a concentration of 100 ppm, and the diluted solution was the sprayed to apple young trees (variety; Kokko, at 3-4 leaf stage) grown in an unglazed pot. The sprayed solution was naturally dried, then conidia of apple scab fungus (*Venturia inaequalis*) were inoculated onto the test apples. The inoculated apple trees were placed in a room being maintained at 20°C and high humidity with repeated lighting of 12 hours intervals, and the apple trees are allowed to stand in the room for two weeks. After that period, assessment was made to determine the control efficacy by checking the infestation degree by the fungus on the leaves in comparison with the control apple trees. As a result, the compounds having the following compound numbers showed to have excellent control performance value higher than 75% on the disease. Note that the compound numbers in the following correspond to the same compound numbers in the Table 1.

Compound Nos.; 23, 25, 39, 47, 48, 54, 68, 78, 86, 90, 128, 145, 238, 256, 274, 292, 328, 346, 377, 379, 393, 399, 401, 474, 531, 568, 586, 700, 722, 724, 1026, 1028, 1032

Test Example 2: Test on Kidney Bean Gray Mold Control

Flowers of Kidney bean (variety; Nagauzura) grown in a flat vessel for culturing seedlings were cut, and the cut flowers were dipped into a solution prepared by diluting the emulsifiable concentrate prepared for the compound of the present invention at a

concentration of 100 ppm based on the active ingredient. After the dipping, the flowers were dried at a room temperature. Then, spore solution of snap bean gray mold fungus (*Botrytis cinerea*) was sprayed to the flowers. The flowers sprayed with spores of the gray mold fungus were placed on the leaves which were detached from healthy Kidney bean plants, and those leaves were placed in a room being maintained at 20°C and high humidity with repeated lighting of 12 hours intervals, and the Kidney bean leaves were incubated in the room for 7 days. Then, the infestation degree by the fungus on the leaves was checked in comparison to the control healthy leaves to determine the control efficacy. As a result, the compounds of the following compound numbers showed to have excellent control performance value higher than 75% on the disease. Note that the compound numbers in the following correspond to the same compound numbers in the Table 1.

Compound Nos.; 23, 25, 39, 47, 48, 54, 68, 90, 184, 238, 256, 274, 292, 355, 356, 359, 377, 379, 393, 399, 402, 432, 485, 489, 523, 531, 568, 599, 600, 681, 702, 704, 722, 724, 1010, 1026, 1028, 1030, 1032, 1070, 1072, 1076

Test Example 3: Test on *Pythium aphanidermatum* "in vitro" control of growth.

The compound was prepared according to the present invention was diluted to achieve a final concentration of 100 ppm, and the diluted solution was used to saturate ½ inch-diameter, cellulose discs (Schleicher & Schuell catalog # 740-E). The treated cellulose discs were then air dried for 90 minutes in a class II biosafety cabinet to eliminate external free moisture. Replicated treated discs and untreated discs were placed onto Difco Corn meal agar in 80 mm plastic petri plates. The discs (2 treated and one untreated in each of two petri plates) were each inoculated with a 4 mm square block of agar containing an actively growing culture of *Pythium aphanidermatum*. The inoculated plates were incubated at 23° C with diurnal lighting with 12 hour intervals. Radial growth of *Pythium aphanidermatum* on the treated and untreated discs was measured at 24 and 48 hours after inoculation. Percent of growth inhibition was determined by comparing radial growth on the untreated check discs to the growth on the treated discs. As a result, the compounds listed below had an excellent suppression performance value compared to the untreated check. Note that the compound numbers listed below correspond to the same compound numbers in Table 1.

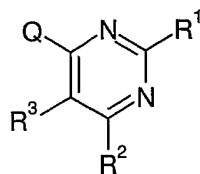
Compound Nos.; 1, 47, 256, 346, 355, 393, 399, 401, 402, 474, 531, 586

Test Example 4: Test on *Sclerotinia sclerotiorum* "in vitro" control of growth.

The compound prepared according to the present invention was diluted to achieve a final concentration of 100 ppm, and the diluted solution was used to saturate ½ inch-diameter, cellulose discs (Schleicher & Schuell catalog # 740-E). The treated cellulose discs were then air dried for 90 minutes in a class II biosafety cabinet to eliminate external free moisture. Replicated treated discs and untreated discs were placed onto acidified Difco Potato Dextrose agar in 80 mm plastic petri plates. The discs (2 treated and one untreated in each of two petri plates) were each inoculated with a 4 mm square block of agar containing an actively growing culture of *Sclerotinia sclerotiorum*. The inoculated plates were incubated at 23° C with diurnal lighting with 12 hour intervals. Radial growth of *Sclerotinia sclerotiorum* on the treated and untreated discs was measured at 48 and 96 hours after inoculation. Percent of growth inhibition was determined by comparing radial growth on the untreated check discs to the growth on the treated discs. As a result, the compounds listed below had an excellent suppression performance value compared to the untreated check. Note that the compound numbers listed below correspond to the same compound numbers in Table 1.

Compound Nos. 1, 39, 47, 48, 128, 145, 256, 355, 393, 399, 401, 402, 474, 485, 523, 531, 568, 586

Table-1



No.	R ¹	R ²	R ³	Q	mp (°C)
1	SCH ₃	CF ₃	I	1,2,4-triazol-1-yl	93-94
2	SCH ₃	CF ₂ CF ₃	I	1,2,4-triazol-1-yl	
3	SCH ₃	CF ₃	I	2H-tetrazol-5-yl	196-200 dec
4	SCH ₃	CF ₂ CF ₃	I	2H-tetrazol-5-yl	
5	SCH ₃	CF ₃	I	2-methyl-2H-tetrazol-5-yl	113-118
6	SCH ₃	CF ₂ CF ₃	I	2-methyl-2H-tetrazol-5-yl	
7	SCH ₃	CF ₃	I	3-(p-acetoxybenzylthio)-1,2,4-triazol-1-yl	
8	SCH ₃	CF ₃	I	3-amino-1,2,4-triazol-1-yl	
9	SCH ₃	CF ₃	I	3-bromo-1,2,4-triazol-1-yl	
10	SCH ₃	CF ₃	I	3-chloro-1,2,4-triazol-1-yl	
11	SCH ₃	CF ₃	I	3-cyano-1,2,4-triazol-1-yl	
12	SCH ₃	CF ₃	I	3-fluoro-1,2,4-triazol-1-yl	
13	SCH ₃	CF ₃	I	3-hydroxy-1,2,4-triazol-1-yl	
14	SCH ₃	CF ₃	I	3-mercapto-1,2,4-triazol-1-yl	
15	SCH ₃	CF ₃	I	3-methoxy-1,2,4-triazol-1-yl	
16	SCH ₃	CF ₃	I	3-methylamino-1,2,4-triazol-1-yl	
17	SCH ₃	CF ₃	I	3-methylthio-1,2,4-triazol-1-yl	
18	SCH ₃	CF ₃	I	3-trifluoromethyl-1,2,4-triazol-1-yl	
19	SCH ₃	CF ₃	I	5-(p-acetoxybenzylthio)imidazol-1-yl	
20	SCH ₃	CF ₃	I	5-(p-acetoxybenzylthio)-1,2,4-triazol-1-yl	141-143
21	SCH ₃	CF ₃	I	4-aminoimidazol-1-yl	
22	SCH ₃	CF ₃	I	5-amino-1,2,4-triazol-1-yl	
23	SCH ₃	CF ₃	I	4-bromoimidazol-1-yl	115-117
24	SCH ₃	CF ₃	I	5-bromo-1,2,4-triazol-1-yl	
25	SCH ₃	CF ₃	I	4-chloroimidazol-1-yl	103-104
26	SCH ₃	CF ₃	I	5-chloro-1,2,4-triazol-1-yl	
27	SCH ₃	CF ₃	I	4-cyanoimidazol-1-yl	
28	SCH ₃	CF ₃	I	5-cyano-1,2,4-triazol-1-yl	
29	SCH ₃	CF ₃	I	4-fluoroimidazol-1-yl	
30	SCH ₃	CF ₃	I	5-fluoro-1,2,4-triazol-1-yl	
31	SCH ₃	CF ₃	I	4-hydroxyimidazol-1-yl	
32	SCH ₃	CF ₃	I	5-hydroxy-1,2,4-triazol-1-yl	
33	SCH ₃	CF ₃	I	4-mercaptoimidazol-1-yl	
34	SCH ₃	CF ₃	I	5-mercapto-1,2,4-triazol-1-yl	
35	SCH ₃	CF ₃	I	4-methoxyimidazol-1-yl	
36	SCH ₃	CF ₃	I	5-methoxy-1,2,4-triazol-1-yl	
37	SCH ₃	CF ₃	I	4-methylaminoimidazol-1-yl	
38	SCH ₃	CF ₃	I	5-methylamino-1,2,4-triazol-1-yl	
39	SCH ₃	CF ₃	I	4-methylimidazol-1-yl	147-148
40	SCH ₃	CF ₂ CF ₃	I	4-methylimidazol-1-yl	
41	SCH ₃	CF ₃	I	4-methylthioimidazol-1-yl	

42	SCH ₃	CF ₃	I	5-methylthio-1,2,4-triazol-1-yl	
43	SCH ₃	CF ₃	I	4-trifluoromethylimidazol-1-yl	
44	SCH ₃	CF ₃	I	5-trifluoromethyl-1,2,4-triazol-1-yl	
45	SCH ₃	CF ₃	I	benzimidazol-1-yl	128
46	SCH ₃	CF ₂ CF ₃	I	benzimidazol-1-yl	
47	SCH ₃	CF ₃	I	imidazol-1-yl	137-139
48	SCH ₃	CF ₂ CF ₃	I	imidazol-1-yl	112-114
49	SCH ₃	CF ₃	I	pyrazol-1-yl	115-116
50	SCH ₃	CF ₃	F	2H-tetrazol-5-yl	
51	SCH ₃	CF ₃	F	2-methyl-2H-tetrazol-5-yl	
52	SCH ₃	CF ₃	Cl	2H-tetrazol-5-yl	177-178
53	SCH ₃	CF ₃	Cl	2-methyl-2H-tetrazol-5-yl	128-130
54	SCH ₃	CF ₃	Br	1,2,4-triazol-1-yl	85-87
55	SCH ₃	CF ₃	Br	2H-tetrazol-5-yl	192-193
56	SCH ₃	CF ₃	Br	2-methyl-2H-tetrazol-5-yl	102-105
57	SCH ₃	CF ₃	Br	imidazol-1-yl	89-90
58	SCH ₂ CH ₃	CF ₃	I	1,2,4-triazol-1-yl	
59	SCH ₂ CH ₃	CF ₂ CF ₃	I	1,2,4-triazol-1-yl	
60	SCH ₂ CH ₃	CF ₃	I	2H-tetrazol-5-yl	
61	SCH ₂ CH ₃	CF ₂ CF ₃	I	2H-tetrazol-5-yl	
62	SCH ₂ CH ₃	CF ₃	I	2-methyl-2H-tetrazol-5-yl	
63	SCH ₂ CH ₃	CF ₂ CF ₃	I	2-methyl-2H-tetrazol-5-yl	
64	SCH ₂ CH ₃	CF ₃	I	4-methylimidazol-1-yl	
65	SCH ₂ CH ₃	CF ₂ CF ₃	I	4-methylimidazol-1-yl	
66	SCH ₂ CH ₃	CF ₃	I	benzimidazol-1-yl	
67	SCH ₂ CH ₃	CF ₂ CF ₃	I	benzimidazol-1-yl	
68	SCH ₂ CH ₃	CF ₃	I	imidazol-1-yl	106-109
69	SCH ₂ CH ₃	CF ₂ CF ₃	I	imidazol-1-yl	
70	SCH ₂ CH ₃	CF ₃	F	2H-tetrazol-5-yl	
71	SCH ₂ CH ₃	CF ₃	F	2-methyl-2H-tetrazol-5-yl	
72	SCH ₂ CH ₃	CF ₃	Cl	2H-tetrazol-5-yl	
73	SCH ₂ CH ₃	CF ₃	Cl	2-methyl-2H-tetrazol-5-yl	
74	SCH ₂ CH ₃	CF ₃	Br	2H-tetrazol-5-yl	
75	SCH ₂ CH ₃	CF ₃	Br	2-methyl-2H-tetrazol-5-yl	
76	SCH(CH ₃) ₂	CF ₃	I	1,2,3-triazol-1-yl	157-159
77	SCH(CH ₃) ₂	CF ₃	I	1,2,3-triazol-2-yl	167-169
78	SCH(CH ₃) ₂	CF ₃	I	1,2,4-triazol-1-yl	70-71
79	SCH(CH ₃) ₂	CF ₂ CF ₃	I	1,2,4-triazol-1-yl	
80	SCH(CH ₃) ₂	CF ₃	I	2H-tetrazol-5-yl	
81	SCH(CH ₃) ₂	CF ₂ CF ₃	I	2H-tetrazol-5-yl	
82	SCH(CH ₃) ₂	CF ₃	I	2-methyl-2H-tetrazol-5-yl	
83	SCH(CH ₃) ₂	CF ₂ CF ₃	I	2-methyl-2H-tetrazol-5-yl	
84	SCH(CH ₃) ₂	CF ₃	I	2-methylimidazol-1-yl	133-135
85	SCH(CH ₃) ₂	CF ₃	I	4-ethoxycarbonyl-3-trifluoromethylpyrazol-1-yl	107-108
86	SCH(CH ₃) ₂	CF ₃	I	4-methylimidazol-1-yl	138-140
87	SCH(CH ₃) ₂	CF ₂ CF ₃	I	4-methylimidazol-1-yl	
88	SCH(CH ₃) ₂	CF ₃	I	benzimidazol-1-yl	

89	SCH(CH ₃) ₂	CF ₂ CF ₃	I	benzimidazol-1-yl	
90	SCH(CH ₃) ₂	CF ₃	I	imidazol-1-yl	118-120
91	SCH(CH ₃) ₂	CF ₂ CF ₃	I	imidazol-1-yl	
92	SCH(CH ₃) ₂	CF ₃	F	2H-tetrazol-5-yl	
93	SCH(CH ₃) ₂	CF ₃	F	2-methyl-2H-tetrazol-5-yl	
94	SCH(CH ₃) ₂	CF ₃	Cl	2H-tetrazol-5-yl	
95	SCH(CH ₃) ₂	CF ₃	Cl	2-methyl-2H-tetrazol-5-yl	
96	SCH(CH ₃) ₂	CF ₃	Br	2H-tetrazol-5-yl	
97	SCH(CH ₃) ₂	CF ₃	Br	2-methyl-2H-tetrazol-5-yl	
98	S(O) ₂ CH ₃	CF ₃	I	1,2,4-triazol-1-yl	
99	S(O) ₂ CH ₃	CF ₂ CF ₃	I	1,2,4-triazol-1-yl	
100	S(O) ₂ CH ₃	CF ₃	I	2H-tetrazol-5-yl	
101	S(O) ₂ CH ₃	CF ₂ CF ₃	I	2H-tetrazol-5-yl	
102	S(O) ₂ CH ₃	CF ₃	I	2-methyl-2H-tetrazol-5-yl	
103	S(O) ₂ CH ₃	CF ₂ CF ₃	I	2-methyl-2H-tetrazol-5-yl	
104	S(O) ₂ CH ₃	CF ₃	I	4-methylimidazol-1-yl	
105	S(O) ₂ CH ₃	CF ₂ CF ₃	I	4-methylimidazol-1-yl	
106	S(O) ₂ CH ₃	CF ₃	I	benzimidazol-1-yl	
107	S(O) ₂ CH ₃	CF ₂ CF ₃	I	benzimidazol-1-yl	
108	S(O) ₂ CH ₃	CF ₃	I	imidazol-1-yl	
109	S(O) ₂ CH ₃	CF ₂ CF ₃	I	imidazol-1-yl	
110	S(O) ₂ CH ₃	CF ₃	F	2H-tetrazol-5-yl	
111	S(O) ₂ CH ₃	CF ₃	F	2-methyl-2H-tetrazol-5-yl	
112	S(O) ₂ CH ₃	CF ₃	Cl	2H-tetrazol-5-yl	
113	S(O) ₂ CH ₃	CF ₃	Cl	2-methyl-2H-tetrazol-5-yl	
114	S(O) ₂ CH ₃	CF ₃	Br	1,2,4-triazol-1-yl	158-159
115	S(O) ₂ CH ₃	CF ₃	Br	2H-tetrazol-5-yl	
116	S(O) ₂ CH ₃	CF ₃	Br	2-methyl-2H-tetrazol-5-yl	
117	pyridin-4-yl	CF ₃	I	1,2,4-triazol-1-yl	
118	pyridin-4-yl	CF ₂ CF ₃	I	1,2,4-triazol-1-yl	
119	pyridin-4-yl	CF ₃	I	2H-tetrazol-5-yl	
120	pyridin-4-yl	CF ₂ CF ₃	I	2H-tetrazol-5-yl	
121	pyridin-4-yl	CF ₃	I	2-methyl-2H-tetrazol-5-yl	
122	pyridin-4-yl	CF ₂ CF ₃	I	2-methyl-2H-tetrazol-5-yl	
123	pyridin-4-yl	CF ₃	I	4-methylimidazol-1-yl	
124	pyridin-4-yl	CF ₂ CF ₃	I	4-methylimidazol-1-yl	
125	pyridin-4-yl	CF ₃	I	benzimidazol-1-yl	
126	pyridin-4-yl	CF ₂ CF ₃	I	benzimidazol-1-yl	
127	pyridin-4-yl	CF ₂ CF ₃	I	imidazol-1-yl	
128	pyridin-4-yl	CF ₃	I	imidazol-1-yl	230 dec
129	pyridin-4-yl	CF ₃	F	2H-tetrazol-5-yl	
130	pyridin-4-yl	CF ₃	F	2-methyl-2H-tetrazol-5-yl	
131	pyridin-4-yl	CF ₃	Cl	2H-tetrazol-5-yl	
132	pyridin-4-yl	CF ₃	Cl	2-methyl-2H-tetrazol-5-yl	
133	pyridin-4-yl	CF ₃	Br	2H-tetrazol-5-yl	
134	pyridin-4-yl	CF ₃	Br	2-methyl-2H-tetrazol-5-yl	
135	pyridin-2-yl	CF ₃	I	1,2,4-triazol-1-yl	169-171

136	pyridin-2-yl	CF ₂ CF ₃	I	1,2,4-triazol-1-yl	
137	pyridin-2-yl	CF ₃	I	2H-tetrazol-5-yl	
138	pyridin-2-yl	CF ₂ CF ₃	I	2H-tetrazol-5-yl	
139	pyridin-2-yl	CF ₃	I	2-methyl-2H-tetrazol-5-yl	
140	pyridin-2-yl	CF ₂ CF ₃	I	2-methyl-2H-tetrazol-5-yl	
141	pyridin-2-yl	CF ₃	I	4-methylimidazol-1-yl	
142	pyridin-2-yl	CF ₂ CF ₃	I	4-methylimidazol-1-yl	
143	pyridin-2-yl	CF ₃	I	benzimidazol-1-yl	
144	pyridin-2-yl	CF ₂ CF ₃	I	benzimidazol-1-yl	
145	pyridin-2-yl	CF ₃	I	imidazol-1-yl	243-245
146	pyridin-2-yl	CF ₂ CF ₃	I	imidazol-1-yl	
147	pyridin-2-yl	CF ₃	I	pyrazol-1-yl	145-146
148	pyridin-2-yl	CF ₃	F	2H-tetrazol-5-yl	
149	pyridin-2-yl	CF ₃	F	2-methyl-2H-tetrazol-5-yl	
150	pyridin-2-yl	CF ₃	Cl	2H-tetrazol-5-yl	201-204
151	pyridin-2-yl	CF ₃	Cl	2-methyl-2H-tetrazol-5-yl	
152	pyridin-2-yl	CF ₃	Cl	imidazol-1-yl	129-130
153	pyridin-2-yl	CF ₃	Br	2H-tetrazol-5-yl	
154	pyridin-2-yl	CF ₃	Br	2-methyl-2H-tetrazol-5-yl	
155	pyridin-2-yl	CF ₃	Br	imidazol-1-yl	140
156	pyrazol-1-yl	CF ₃	I	1,2,4-triazol-1-yl	
157	pyrazol-1-yl	CF ₂ CF ₃	I	1,2,4-triazol-1-yl	
158	pyrazol-1-yl	CF ₃	I	2H-tetrazol-5-yl	
159	pyrazol-1-yl	CF ₂ CF ₃	I	2H-tetrazol-5-yl	
160	pyrazol-1-yl	CF ₃	I	2-methyl-2H-tetrazol-5-yl	
161	pyrazol-1-yl	CF ₂ CF ₃	I	2-methyl-2H-tetrazol-5-yl	
162	pyrazol-1-yl	CF ₃	I	4-methylimidazol-1-yl	
163	pyrazol-1-yl	CF ₂ CF ₃	I	4-methylimidazol-1-yl	
164	pyrazol-1-yl	CF ₃	I	benzimidazol-1-yl	
165	pyrazol-1-yl	CF ₂ CF ₃	I	benzimidazol-1-yl	
166	pyrazol-1-yl	CF ₃	I	imidazol-1-yl	175-180 dec
167	pyrazol-1-yl	CF ₂ CF ₃	I	imidazol-1-yl	
168	pyrazol-1-yl	CF ₃	F	2H-tetrazol-5-yl	
169	pyrazol-1-yl	CF ₃	F	2-methyl-2H-tetrazol-5-yl	
170	pyrazol-1-yl	CF ₃	Cl	2H-tetrazol-5-yl	
171	pyrazol-1-yl	CF ₃	Cl	2-methyl-2H-tetrazol-5-yl	
172	pyrazol-1-yl	CF ₃	Br	2H-tetrazol-5-yl	
173	pyrazol-1-yl	CF ₃	Br	2-methyl-2H-tetrazol-5-yl	
174	phenyl	CF ₃	I	1,2,4-triazol-1-yl	
175	phenyl	CF ₂ CF ₃	I	1,2,4-triazol-1-yl	
176	phenyl	CF ₃	I	2H-tetrazol-5-yl	
177	phenyl	CF ₂ CF ₃	I	2H-tetrazol-5-yl	
178	phenyl	CF ₃	I	2-methyl-2H-tetrazol-5-yl	
179	phenyl	CF ₂ CF ₃	I	2-methyl-2H-tetrazol-5-yl	
180	phenyl	CF ₃	I	4-methylimidazol-1-yl	
181	phenyl	CF ₂ CF ₃	I	4-methylimidazol-1-yl	
182	phenyl	CF ₃	I	benzimidazol-1-yl	

183	phenyl	CF ₂ CF ₃	I	benzimidazol-1-yl	179-180
184	phenyl	CF ₃	I	imidazol-1-yl	
185	phenyl	CF ₂ CF ₃	I	imidazol-1-yl	
186	phenyl	CF ₃	F	2H-tetrazol-5-yl	
187	phenyl	CF ₃	F	2-methyl-2H-tetrazol-5-yl	
188	phenyl	CF ₃	Cl	2H-tetrazol-5-yl	
189	phenyl	CF ₃	Cl	2-methyl-2H-tetrazol-5-yl	
190	phenyl	CF ₃	Br	2H-tetrazol-5-yl	
191	phenyl	CF ₃	Br	2-methyl-2H-tetrazol-5-yl	
192	OCH ₃	CF ₃	I	1,2,4-triazol-1-yl	
193	OCH ₃	CF ₂ CF ₃	I	1,2,4-triazol-1-yl	
194	OCH ₃	CF ₃	I	2H-tetrazol-5-yl	
195	OCH ₃	CF ₂ CF ₃	I	2H-tetrazol-5-yl	
196	OCH ₃	CF ₃	I	2-methyl-2H-tetrazol-5-yl	
197	OCH ₃	CF ₂ CF ₃	I	2-methyl-2H-tetrazol-5-yl	
198	OCH ₃	CF ₃	I	3-(p-acetoxybenzylthio)-1,2,4-triazol-1-yl	
199	OCH ₃	CF ₃	I	3-amino-1,2,4-triazol-1-yl	
200	OCH ₃	CF ₃	I	3-bromo-1,2,4-triazol-1-yl	
201	OCH ₃	CF ₃	I	3-chloro-1,2,4-triazol-1-yl	
202	OCH ₃	CF ₃	I	3-cyano-1,2,4-triazol-1-yl	
203	OCH ₃	CF ₃	I	3-fluoro-1,2,4-triazol-1-yl	
204	OCH ₃	CF ₃	I	3-hydroxy-1,2,4-triazol-1-yl	
205	OCH ₃	CF ₃	I	3-mercapto-1,2,4-triazol-1-yl	
206	OCH ₃	CF ₃	I	3-methoxy-1,2,4-triazol-1-yl	
207	OCH ₃	CF ₃	I	3-methylamino-1,2,4-triazol-1-yl	
208	OCH ₃	CF ₃	I	3-methylthio-1,2,4-triazol-1-yl	
209	OCH ₃	CF ₃	I	3-trifluoromethyl-1,2,4-triazol-1-yl	
210	OCH ₃	CF ₃	I	5-(p-acetoxybenzylthio)imidazol-1-yl	
211	OCH ₃	CF ₃	I	5-(p-acetoxybenzylthio)-1,2,4-triazol-1-yl	
212	OCH ₃	CF ₃	I	4-aminoimidazol-1-yl	
213	OCH ₃	CF ₃	I	5-amino-1,2,4-triazol-1-yl	
214	OCH ₃	CF ₃	I	4-bromoimidazol-1-yl	
215	OCH ₃	CF ₃	I	5-bromo-1,2,4-triazol-1-yl	
216	OCH ₃	CF ₃	I	4-chloroimidazol-1-yl	
217	OCH ₃	CF ₃	I	5-chloro-1,2,4-triazol-1-yl	
218	OCH ₃	CF ₃	I	4-cyanoimidazol-1-yl	
219	OCH ₃	CF ₃	I	5-cyano-1,2,4-triazol-1-yl	
220	OCH ₃	CF ₃	I	4-fluoroimidazol-1-yl	
221	OCH ₃	CF ₃	I	5-fluoro-1,2,4-triazol-1-yl	
222	OCH ₃	CF ₃	I	4-hydroxyimidazol-1-yl	
223	OCH ₃	CF ₃	I	5-hydroxy-1,2,4-triazol-1-yl	
224	OCH ₃	CF ₃	I	4-mercaptoimidazol-1-yl	
225	OCH ₃	CF ₃	I	5-mercapto-1,2,4-triazol-1-yl	
226	OCH ₃	CF ₃	I	4-methoxyimidazol-1-yl	
227	OCH ₃	CF ₃	I	5-methoxy-1,2,4-triazol-1-yl	
228	OCH ₃	CF ₃	I	4-methylaminoimidazol-1-yl	
229	OCH ₃	CF ₃	I	5-methylamino-1,2,4-triazol-1-yl	

230	OCH ₃	CF ₃	I	4-methylimidazol-1-yl	
231	OCH ₃	CF ₂ CF ₃	I	4-methylimidazol-1-yl	
232	OCH ₃	CF ₃	I	4-methylthioimidazol-1-yl	
233	OCH ₃	CF ₃	I	5-methylthio-1,2,4-triazol-1-yl	
234	OCH ₃	CF ₃	I	4-trifluoromethylimidazol-1-yl	
235	OCH ₃	CF ₃	I	5-trifluoromethyl-1,2,4-triazol-1-yl	
236	OCH ₃	CF ₃	I	benzimidazol-1-yl	
237	OCH ₃	CF ₂ CF ₃	I	benzimidazol-1-yl	
238	OCH ₃	CF ₃	I	imidazol-1-yl	111-113
239	OCH ₃	CF ₂ CF ₃	I	imidazol-1-yl	
240	OCH ₃	CF ₃	F	2H-tetrazol-5-yl	
241	OCH ₃	CF ₃	F	2-methyl-2H-tetrazol-5-yl	
242	OCH ₃	CF ₃	Cl	2H-tetrazol-5-yl	
243	OCH ₃	CF ₃	Cl	2-methyl-2H-tetrazol-5-yl	
244	OCH ₃	CF ₃	Br	2H-tetrazol-5-yl	
245	OCH ₃	CF ₃	Br	2-methyl-2H-tetrazol-5-yl	
246	OCH ₂ C≡CH	CF ₃	I	1,2,4-triazol-1-yl	
247	OCH ₂ C≡CH	CF ₂ CF ₃	I	1,2,4-triazol-1-yl	
248	OCH ₂ C≡CH	CF ₃	I	2H-tetrazol-5-yl	
249	OCH ₂ C≡CH	CF ₂ CF ₃	I	2H-tetrazol-5-yl	
250	OCH ₂ C≡CH	CF ₃	I	2-methyl-2H-tetrazol-5-yl	
251	OCH ₂ C≡CH	CF ₂ CF ₃	I	2-methyl-2H-tetrazol-5-yl	
252	OCH ₂ C≡CH	CF ₃	I	4-methylimidazol-1-yl	
253	OCH ₂ C≡CH	CF ₂ CF ₃	I	4-methylimidazol-1-yl	
254	OCH ₂ C≡CH	CF ₃	I	benzimidazol-1-yl	
255	OCH ₂ C≡CH	CF ₂ CF ₃	I	benzimidazol-1-yl	
256	OCH ₂ C≡CH	CF ₃	I	imidazol-1-yl	128-129
257	OCH ₂ C≡CH	CF ₂ CF ₃	I	imidazol-1-yl	
258	OCH ₂ C≡CH	CF ₃	F	2H-tetrazol-5-yl	
259	OCH ₂ C≡CH	CF ₃	F	2-methyl-2H-tetrazol-5-yl	
260	OCH ₂ C≡CH	CF ₃	Cl	2H-tetrazol-5-yl	
261	OCH ₂ C≡CH	CF ₃	Cl	2-methyl-2H-tetrazol-5-yl	
262	OCH ₂ C≡CH	CF ₃	Br	2H-tetrazol-5-yl	
263	OCH ₂ C≡CH	CF ₃	Br	2-methyl-2H-tetrazol-5-yl	
264	OCH ₂ CH ₃	CF ₃	I	1,2,4-triazol-1-yl	
265	OCH ₂ CH ₃	CF ₂ CF ₃	I	1,2,4-triazol-1-yl	
266	OCH ₂ CH ₃	CF ₃	I	2H-tetrazol-5-yl	
267	OCH ₂ CH ₃	CF ₂ CF ₃	I	2H-tetrazol-5-yl	
268	OCH ₂ CH ₃	CF ₃	I	2-methyl-2H-tetrazol-5-yl	
269	OCH ₂ CH ₃	CF ₂ CF ₃	I	2-methyl-2H-tetrazol-5-yl	
270	OCH ₂ CH ₃	CF ₃	I	4-methylimidazol-1-yl	
271	OCH ₂ CH ₃	CF ₂ CF ₃	I	4-methylimidazol-1-yl	
272	OCH ₂ CH ₃	CF ₃	I	benzimidazol-1-yl	
273	OCH ₂ CH ₃	CF ₂ CF ₃	I	benzimidazol-1-yl	
274	OCH ₂ CH ₃	CF ₃	I	imidazol-1-yl	103-105
275	OCH ₂ CH ₃	CF ₂ CF ₃	I	imidazol-1-yl	
276	OCH ₂ CH ₃	CF ₃	F	2H-tetrazol-5-yl	

277	OCH ₂ CH ₃	CF ₃	F	2-methyl-2H-tetrazol-5-yl	
278	OCH ₂ CH ₃	CF ₃	Cl	2H-tetrazol-5-yl	
279	OCH ₂ CH ₃	CF ₃	Cl	2-methyl-2H-tetrazol-5-yl	
280	OCH ₂ CH ₃	CF ₃	Br	2H-tetrazol-5-yl	
281	OCH ₂ CH ₃	CF ₃	Br	2-methyl-2H-tetrazol-5-yl	
282	OCH ₂ CH ₂ CH ₃	CF ₃	I	1,2,4-triazol-1-yl	
283	OCH ₂ CH ₂ CH ₃	CF ₂ CF ₃	I	1,2,4-triazol-1-yl	
284	OCH ₂ CH ₂ CH ₃	CF ₃	I	2H-tetrazol-5-yl	
285	OCH ₂ CH ₂ CH ₃	CF ₂ CF ₃	I	2H-tetrazol-5-yl	
286	OCH ₂ CH ₂ CH ₃	CF ₃	I	2-methyl-2H-tetrazol-5-yl	
287	OCH ₂ CH ₂ CH ₃	CF ₂ CF ₃	I	2-methyl-2H-tetrazol-5-yl	
288	OCH ₂ CH ₂ CH ₃	CF ₃	I	4-methylimidazol-1-yl	
289	OCH ₂ CH ₂ CH ₃	CF ₂ CF ₃	I	4-methylimidazol-1-yl	
290	OCH ₂ CH ₂ CH ₃	CF ₃	I	benzimidazol-1-yl	
291	OCH ₂ CH ₂ CH ₃	CF ₂ CF ₃	I	benzimidazol-1-yl	
292	OCH ₂ CH ₂ CH ₃	CF ₃	I	imidazol-1-yl	84-86
293	OCH ₂ CH ₂ CH ₃	CF ₂ CF ₃	I	imidazol-1-yl	
294	OCH ₂ CH ₂ CH ₃	CF ₃	F	2H-tetrazol-5-yl	
295	OCH ₂ CH ₂ CH ₃	CF ₃	F	2-methyl-2H-tetrazol-5-yl	
296	OCH ₂ CH ₂ CH ₃	CF ₃	Cl	2H-tetrazol-5-yl	
297	OCH ₂ CH ₂ CH ₃	CF ₃	Cl	2-methyl-2H-tetrazol-5-yl	
298	OCH ₂ CH ₂ CH ₃	CF ₃	Br	2H-tetrazol-5-yl	
299	OCH ₂ CH ₂ CH ₃	CF ₃	Br	2-methyl-2H-tetrazol-5-yl	
300	OCH ₂ CF ₂ H	CF ₃	I	1,2,4-triazol-1-yl	
301	OCH ₂ CF ₂ H	CF ₂ CF ₃	I	1,2,4-triazol-1-yl	
302	OCH ₂ CF ₂ H	CF ₃	I	2H-tetrazol-5-yl	
303	OCH ₂ CF ₂ H	CF ₂ CF ₃	I	2H-tetrazol-5-yl	
304	OCH ₂ CF ₂ H	CF ₃	I	2-methyl-2H-tetrazol-5-yl	
305	OCH ₂ CF ₂ H	CF ₂ CF ₃	I	2-methyl-2H-tetrazol-5-yl	
306	OCH ₂ CF ₂ H	CF ₃	I	4-methylimidazol-1-yl	
307	OCH ₂ CF ₂ H	CF ₂ CF ₃	I	4-methylimidazol-1-yl	
308	OCH ₂ CF ₂ H	CF ₃	I	benzimidazol-1-yl	
309	OCH ₂ CF ₂ H	CF ₂ CF ₃	I	benzimidazol-1-yl	
310	OCH ₂ CF ₂ H	CF ₃	I	imidazol-1-yl	97-98
311	OCH ₂ CF ₂ H	CF ₂ CF ₃	I	imidazol-1-yl	
312	OCH ₂ CF ₂ H	CF ₃	F	2H-tetrazol-5-yl	
313	OCH ₂ CF ₂ H	CF ₃	F	2-methyl-2H-tetrazol-5-yl	
314	OCH ₂ CF ₂ H	CF ₃	Cl	2H-tetrazol-5-yl	
315	OCH ₂ CF ₂ H	CF ₃	Cl	2-methyl-2H-tetrazol-5-yl	
316	OCH ₂ CF ₂ H	CF ₃	Br	2H-tetrazol-5-yl	
317	OCH ₂ CF ₂ H	CF ₃	Br	2-methyl-2H-tetrazol-5-yl	
318	OCH(CH ₃) ₂	CF ₃	I	1,2,4-triazol-1-yl	
319	OCH(CH ₃) ₂	CF ₂ CF ₃	I	1,2,4-triazol-1-yl	
320	OCH(CH ₃) ₂	CF ₃	I	2H-tetrazol-5-yl	
321	OCH(CH ₃) ₂	CF ₂ CF ₃	I	2H-tetrazol-5-yl	
322	OCH(CH ₃) ₂	CF ₃	I	2-methyl-2H-tetrazol-5-yl	
323	OCH(CH ₃) ₂	CF ₂ CF ₃	I	2-methyl-2H-tetrazol-5-yl	

324	OCH(CH ₃) ₂	CF ₃	I	4-methylimidazol-1-yl	
325	OCH(CH ₃) ₂	CF ₂ CF ₃	I	4-methylimidazol-1-yl	
326	OCH(CH ₃) ₂	CF ₃	I	benzimidazol-1-yl	
327	OCH(CH ₃) ₂	CF ₂ CF ₃	I	benzimidazol-1-yl	
328	OCH(CH ₃) ₂	CF ₃	I	imidazol-1-yl	97-98
329	OCH(CH ₃) ₂	CF ₂ CF ₃	I	imidazol-1-yl	
330	OCH(CH ₃) ₂	CF ₃	F	2H-tetrazol-5-yl	
331	OCH(CH ₃) ₂	CF ₃	F	2-methyl-2H-tetrazol-5-yl	
332	OCH(CH ₃) ₂	CF ₃	Cl	2H-tetrazol-5-yl	
333	OCH(CH ₃) ₂	CF ₃	Cl	2-methyl-2H-tetrazol-5-yl	
334	OCH(CH ₃) ₂	CF ₃	Br	2H-tetrazol-5-yl	
335	OCH(CH ₃) ₂	CF ₃	Br	2-methyl-2H-tetrazol-5-yl	
336	imidazol-1-yl	CF ₃	I	1,2,4-triazol-1-yl	
337	imidazol-1-yl	CF ₂ CF ₃	I	1,2,4-triazol-1-yl	
338	imidazol-1-yl	CF ₃	I	2H-tetrazol-5-yl	
339	imidazol-1-yl	CF ₂ CF ₃	I	2H-tetrazol-5-yl	
340	imidazol-1-yl	CF ₃	I	2-methyl-2H-tetrazol-5-yl	
341	imidazol-1-yl	CF ₂ CF ₃	I	2-methyl-2H-tetrazol-5-yl	
342	imidazol-1-yl	CF ₃	I	4-methylimidazol-1-yl	
343	imidazol-1-yl	CF ₂ CF ₃	I	4-methylimidazol-1-yl	
344	imidazol-1-yl	CF ₃	I	benzimidazol-1-yl	
345	imidazol-1-yl	CF ₂ CF ₃	I	benzimidazol-1-yl	
346	imidazol-1-yl	CF ₃	I	imidazol-1-yl	> 160 dec
347	imidazol-1-yl	CF ₂ CF ₃	I	imidazol-1-yl	
348	imidazol-1-yl	CF ₃	F	2H-tetrazol-5-yl	
349	imidazol-1-yl	CF ₃	F	2-methyl-2H-tetrazol-5-yl	
350	imidazol-1-yl	CF ₃	F	imidazol-1-yl	142-150 dec
351	imidazol-1-yl	CF ₃	Cl	2H-tetrazol-5-yl	
352	imidazol-1-yl	CF ₃	Cl	2-methyl-2H-tetrazol-5-yl	
353	imidazol-1-yl	CF ₃	Br	2H-tetrazol-5-yl	
354	imidazol-1-yl	CF ₃	Br	2-methyl-2H-tetrazol-5-yl	
355	H	CF ₃	I	1,2,4-triazol-1-yl	115-116
356	H	CF ₂ CF ₃	I	1,2,4-triazol-1-yl	83-84
357	H	CF ₃	I	2H-tetrazol-5-yl	191-194
358	H	CF ₂ CF ₃	I	2H-tetrazol-5-yl	
359	H	CF ₃	I	2-methyl-2H-tetrazol-5-yl	122-125
360	H	CF ₂ CF ₃	I	2-methyl-2H-tetrazol-5-yl	
361	H	CF ₃	I	3-(p-acetoxybenzylthio)-1,2,4-triazol-1-yl	
362	H	CF ₃	I	3-amino-1,2,4-triazol-1-yl	
363	H	CF ₃	I	3-bromo-1,2,4-triazol-1-yl	
364	H	CF ₃	I	3-chloro-1,2,4-triazol-1-yl	
365	H	CF ₃	I	3-cyano-1,2,4-triazol-1-yl	
366	H	CF ₃	I	3-fluoro-1,2,4-triazol-1-yl	
367	H	CF ₃	I	3-hydroxy-1,2,4-triazol-1-yl	
368	H	CF ₃	I	3-mercapto-1,2,4-triazol-1-yl	
369	H	CF ₃	I	3-methoxy-1,2,4-triazol-1-yl	
370	H	CF ₃	I	3-methylamino-1,2,4-triazol-1-yl	

371	H	CF ₃	I	3-methylthio-1,2,4-triazol-1-yl	
372	H	CF ₃	I	3-trifluoromethyl-1,2,4-triazol-1-yl	
373	H	CF ₃	I	5-(p-acetoxybenzylthio)imidazol-1-yl	
374	H	CF ₃	I	5-(p-acetoxybenzylthio)-1,2,4-triazol-1-yl	
375	H	CF ₃	I	4-aminoimidazol-1-yl	
376	H	CF ₃	I	5-amino-1,2,4-triazol-1-yl	
377	H	CF ₃	I	4-bromoimidazol-1-yl	138-140
378	H	CF ₃	I	5-bromo-1,2,4-triazol-1-yl	
379	H	CF ₃	I	4-chloroimidazol-1-yl	123-124
380	H	CF ₃	I	5-chloro-1,2,4-triazol-1-yl	
381	H	CF ₃	I	4-cyanoimidazol-1-yl	
382	H	CF ₃	I	5-cyano-1,2,4-triazol-1-yl	
383	H	CF ₃	I	4-fluoroimidazol-1-yl	
384	H	CF ₃	I	5-fluoro-1,2,4-triazol-1-yl	
385	H	CF ₃	I	4-hydroxyimidazol-1-yl	
386	H	CF ₃	I	5-hydroxy-1,2,4-triazol-1-yl	
387	H	CF ₃	I	4-mercaptoimidazol-1-yl	
388	H	CF ₃	I	5-mercapto-1,2,4-triazol-1-yl	
389	H	CF ₃	I	4-methoxyimidazol-1-yl	
390	H	CF ₃	I	5-methoxy-1,2,4-triazol-1-yl	
391	H	CF ₃	I	4-methylaminoimidazol-1-yl	
392	H	CF ₃	I	5-methylamino-1,2,4-triazol-1-yl	
393	H	CF ₃	I	4-methylimidazol-1-yl	173-175
394	H	CF ₂ CF ₃	I	4-methylimidazol-1-yl	
395	H	CF ₃	I	4-methylthioimidazol-1-yl	
396	H	CF ₃	I	5-methylthio-1,2,4-triazol-1-yl	
397	H	CF ₃	I	4-trifluoromethylimidazol-1-yl	
398	H	CF ₃	I	5-trifluoromethyl-1,2,4-triazol-1-yl	
399	H	CF ₃	I	benzimidazol-1-yl	119-120
400	H	CF ₂ CF ₃	I	benzimidazol-1-yl	
401	H	CF ₃	I	imidazol-1-yl	108-109
402	H	CF ₂ CF ₃	I	imidazol-1-yl	115-116
403	H	CF ₃	F	2H-tetrazol-5-yl	
404	H	CF ₃	F	2-methyl-2H-tetrazol-5-yl	
405	H	CF ₃	Cl	2H-tetrazol-5-yl	
406	H	CF ₃	Cl	2-methyl-2H-tetrazol-5-yl	
407	H	CF ₃	Br	2H-tetrazol-5-yl	
408	H	CF ₃	Br	2-methyl-2H-tetrazol-5-yl	
409	C≡CSi(CH ₃) ₃	CF ₃	I	1,2,4-triazol-1-yl	
410	C≡CSi(CH ₃) ₃	CF ₂ CF ₃	I	1,2,4-triazol-1-yl	
411	C≡CSi(CH ₃) ₃	CF ₃	I	2H-tetrazol-5-yl	
412	C≡CSi(CH ₃) ₃	CF ₂ CF ₃	I	2H-tetrazol-5-yl	
413	C≡CSi(CH ₃) ₃	CF ₃	I	2-methyl-2H-tetrazol-5-yl	
414	C≡CSi(CH ₃) ₃	CF ₂ CF ₃	I	2-methyl-2H-tetrazol-5-yl	
415	C≡CSi(CH ₃) ₃	CF ₃	I	4-methylimidazol-1-yl	
416	C≡CSi(CH ₃) ₃	CF ₂ CF ₃	I	4-methylimidazol-1-yl	
417	C≡CSi(CH ₃) ₃	CF ₃	I	benzimidazol-1-yl	

418	$\text{C}\equiv\text{CSi}(\text{CH}_3)_3$	CF_2CF_3	I	benzimidazol-1-yl	
419	$\text{C}\equiv\text{CSi}(\text{CH}_3)_3$	CF_3	I	imidazol-1-yl	oil
420	$\text{C}\equiv\text{CSi}(\text{CH}_3)_3$	CF_2CF_3	I	imidazol-1-yl	
421	$\text{C}\equiv\text{CSi}(\text{CH}_3)_3$	CF_3	F	2H-tetrazol-5-yl	
422	$\text{C}\equiv\text{CSi}(\text{CH}_3)_3$	CF_3	F	2-methyl-2H-tetrazol-5-yl	
423	$\text{C}\equiv\text{CSi}(\text{CH}_3)_3$	CF_3	Cl	2H-tetrazol-5-yl	
424	$\text{C}\equiv\text{CSi}(\text{CH}_3)_3$	CF_3	Cl	2-methyl-2H-tetrazol-5-yl	
425	$\text{C}\equiv\text{CSi}(\text{CH}_3)_3$	CF_3	Br	2H-tetrazol-5-yl	
426	$\text{C}\equiv\text{CSi}(\text{CH}_3)_3$	CF_3	Br	2-methyl-2H-tetrazol-5-yl	
427	CH_3	CF_3	vinyl	imidazol-1-yl	oil
428	CH_3	CF_3	I	1,2,4-triazol-1-yl	119-121
429	CH_3	CF_2CF_3	I	1,2,4-triazol-1-yl	
430	CH_3	CF_3	I	2H-tetrazol-5-yl	180-182
431	CH_3	CF_2CF_3	I	2H-tetrazol-5-yl	
432	CH_3	CF_3	I	2-methyl-2H-tetrazol-5-yl	131-133
433	CH_3	CF_2CF_3	I	2-methyl-2H-tetrazol-5-yl	
434	CH_3	CF_3	I	3-(p-acetoxybenzylthio)-1,2,4-triazol-1-yl	
435	CH_3	CF_3	I	3-amino-1,2,4-triazol-1-yl	
436	CH_3	CF_3	I	3-bromo-1,2,4-triazol-1-yl	
437	CH_3	CF_3	I	3-chloro-1,2,4-triazol-1-yl	
438	CH_3	CF_3	I	3-cyano-1,2,4-triazol-1-yl	
439	CH_3	CF_3	I	3-fluoro-1,2,4-triazol-1-yl	
440	CH_3	CF_3	I	3-hydroxy-1,2,4-triazol-1-yl	
441	CH_3	CF_3	I	3-mercapto-1,2,4-triazol-1-yl	
442	CH_3	CF_3	I	3-methoxy-1,2,4-triazol-1-yl	
443	CH_3	CF_3	I	3-methylamino-1,2,4-triazol-1-yl	
444	CH_3	CF_3	I	3-methylthio-1,2,4-triazol-1-yl	
445	CH_3	CF_3	I	3-trifluoromethyl-1,2,4-triazol-1-yl	
446	CH_3	CF_3	I	5-(p-acetoxybenzylthio)imidazol-1-yl	
447	CH_3	CF_3	I	5-(p-acetoxybenzylthio)-1,2,4-triazol-1-yl	
448	CH_3	CF_3	I	4-aminoimidazol-1-yl	
449	CH_3	CF_3	I	5-amino-1,2,4-triazol-1-yl	
450	CH_3	CF_3	I	4-bromoimidazol-1-yl	80-85
451	CH_3	CF_3	I	5-bromo-1,2,4-triazol-1-yl	
452	CH_3	CF_3	I	4-chloroimidazol-1-yl	
453	CH_3	CF_3	I	5-chloro-1,2,4-triazol-1-yl	
454	CH_3	CF_3	I	4-cyanoimidazol-1-yl	
455	CH_3	CF_3	I	5-cyano-1,2,4-triazol-1-yl	
456	CH_3	CF_3	I	4-fluoroimidazol-1-yl	
457	CH_3	CF_3	I	5-fluoro-1,2,4-triazol-1-yl	
458	CH_3	CF_3	I	4-hydroxyimidazol-1-yl	
459	CH_3	CF_3	I	5-hydroxy-1,2,4-triazol-1-yl	
460	CH_3	CF_3	I	4-mercaptoimidazol-1-yl	
461	CH_3	CF_3	I	5-mercapto-1,2,4-triazol-1-yl	
462	CH_3	CF_3	I	4-methoxyimidazol-1-yl	
463	CH_3	CF_3	I	5-methoxy-1,2,4-triazol-1-yl	
464	CH_3	CF_3	I	4-methylaminoimidazol-1-yl	

465	CH ₃	CF ₃	I	5-methylamino-1,2,4-triazol-1-yl	
466	CH ₃	CF ₃	I	4-methylimidazol-1-yl	155-156
467	CH ₃	CF ₂ CF ₃	I	4-methylimidazol-1-yl	
468	CH ₃	CF ₃	I	4-methylthioimidazol-1-yl	
469	CH ₃	CF ₃	I	5-methylthio-1,2,4-triazol-1-yl	
470	CH ₃	CF ₃	I	4-trifluoromethylimidazol-1-yl	
471	CH ₃	CF ₃	I	5-trifluoromethyl-1,2,4-triazol-1-yl	
472	CH ₃	CF ₃	I	benzimidazol-1-yl	
473	CH ₃	CF ₂ CF ₃	I	benzimidazol-1-yl	
474	CH ₃	CF ₃	I	imidazol-1-yl	145-148
475	CH ₃	CF ₂ CF ₃	I	imidazol-1-yl	
476	CH ₃	CF ₃	F	2H-tetrazol-5-yl	
477	CH ₃	CF ₃	F	2-methyl-2H-tetrazol-5-yl	
478	CH ₃	CF ₃	ethynyl	imidazol-1-yl	121-122
479	CH ₃	CF ₃	Cl	2H-tetrazol-5-yl	
480	CH ₃	CF ₃	Cl	2-methyl-2H-tetrazol-5-yl	
481	CH ₃	CF ₃	Br	2H-tetrazol-5-yl	
482	CH ₃	CF ₃	Br	2-methyl-2H-tetrazol-5-yl	
483	CH ₃	CF ₃	Br	imidazol-1-yl	72-73
484	CH ₃	CF ₃	1-chlorovinyl	imidazol-1-yl	oil
485	CH ₂ CH ₃	CF ₃	I	1,2,4-triazol-1-yl	50-51
486	CH ₂ CH ₃	CF ₂ CF ₃	I	1,2,4-triazol-1-yl	
487	CH ₂ CH ₃	CF ₃	I	2H-tetrazol-5-yl	165-167
488	CH ₂ CH ₃	CF ₂ CF ₃	I	2H-tetrazol-5-yl	
489	CH ₂ CH ₃	CF ₃	I	2-methyl-2H-tetrazol-5-yl	112-113
490	CH ₂ CH ₃	CF ₂ CF ₃	I	2-methyl-2H-tetrazol-5-yl	
491	CH ₂ CH ₃	CF ₃	I	3-(p-acetoxybenzylthio)-1,2,4-triazol-1-yl	
492	CH ₂ CH ₃	CF ₃	I	3-amino-1,2,4-triazol-1-yl	
493	CH ₂ CH ₃	CF ₃	I	3-bromo-1,2,4-triazol-1-yl	
494	CH ₂ CH ₃	CF ₃	I	3-chloro-1,2,4-triazol-1-yl	
495	CH ₂ CH ₃	CF ₃	I	3-cyano-1,2,4-triazol-1-yl	
496	CH ₂ CH ₃	CF ₃	I	3-fluoro-1,2,4-triazol-1-yl	
497	CH ₂ CH ₃	CF ₃	I	3-hydroxy-1,2,4-triazol-1-yl	
498	CH ₂ CH ₃	CF ₃	I	3-mercapto-1,2,4-triazol-1-yl	
499	CH ₂ CH ₃	CF ₃	I	3-methoxy-1,2,4-triazol-1-yl	
500	CH ₂ CH ₃	CF ₃	I	3-methylamino-1,2,4-triazol-1-yl	
501	CH ₂ CH ₃	CF ₃	I	3-methylthio-1,2,4-triazol-1-yl	
502	CH ₂ CH ₃	CF ₃	I	3-trifluoromethyl-1,2,4-triazol-1-yl	
503	CH ₂ CH ₃	CF ₃	I	5-(p-acetoxybenzylthio)imidazol-1-yl	
504	CH ₂ CH ₃	CF ₃	I	5-(p-acetoxybenzylthio)-1,2,4-triazol-1-yl	
505	CH ₂ CH ₃	CF ₃	I	4-aminoimidazol-1-yl	
506	CH ₂ CH ₃	CF ₃	I	5-amino-1,2,4-triazol-1-yl	
507	CH ₂ CH ₃	CF ₃	I	4-bromoimidazol-1-yl	
508	CH ₂ CH ₃	CF ₃	I	5-bromo-1,2,4-triazol-1-yl	
509	CH ₂ CH ₃	CF ₃	I	4-chloroimidazol-1-yl	
510	CH ₂ CH ₃	CF ₃	I	5-chloro-1,2,4-triazol-1-yl	
511	CH ₂ CH ₃	CF ₃	I	4-cyanoimidazol-1-yl	

512	CH ₂ CH ₃	CF ₃	I	5-cyano-1,2,4-triazol-1-yl	
513	CH ₂ CH ₃	CF ₃	I	4-fluoroimidazol-1-yl	
514	CH ₂ CH ₃	CF ₃	I	5-fluoro-1,2,4-triazol-1-yl	
515	CH ₂ CH ₃	CF ₃	I	4-hydroxyimidazol-1-yl	
516	CH ₂ CH ₃	CF ₃	I	5-hydroxy-1,2,4-triazol-1-yl	
517	CH ₂ CH ₃	CF ₃	I	4-mercaptoimidazol-1-yl	
518	CH ₂ CH ₃	CF ₃	I	5-mercapto-1,2,4-triazol-1-yl	
519	CH ₂ CH ₃	CF ₃	I	4-methoxyimidazol-1-yl	
520	CH ₂ CH ₃	CF ₃	I	5-methoxy-1,2,4-triazol-1-yl	
521	CH ₂ CH ₃	CF ₃	I	4-methylaminoimidazol-1-yl	
522	CH ₂ CH ₃	CF ₃	I	5-methylamino-1,2,4-triazol-1-yl	
523	CH ₂ CH ₃	CF ₃	I	4-methylimidazol-1-yl	110-111
524	CH ₂ CH ₃	CF ₂ CF ₃	I	4-methylimidazol-1-yl	
525	CH ₂ CH ₃	CF ₃	I	4-methylthioimidazol-1-yl	
526	CH ₂ CH ₃	CF ₃	I	5-methylthio-1,2,4-triazol-1-yl	
527	CH ₂ CH ₃	CF ₃	I	4-trifluoromethylimidazol-1-yl	
528	CH ₂ CH ₃	CF ₃	I	5-trifluoromethyl-1,2,4-triazol-1-yl	
529	CH ₂ CH ₃	CF ₃	I	benzimidazol-1-yl	
530	CH ₂ CH ₃	CF ₂ CF ₃	I	benzimidazol-1-yl	
531	CH ₂ CH ₃	CF ₃	I	imidazol-1-yl	124
532	CH ₂ CH ₃	CF ₂ CF ₃	I	imidazol-1-yl	
533	CH ₂ CH ₃	CF ₃	F	2H-tetrazol-5-yl	
534	CH ₂ CH ₃	CF ₃	F	2-methyl-2H-tetrazol-5-yl	
535	CH ₂ CH ₃	CF ₃	Cl	2H-tetrazol-5-yl	
536	CH ₂ CH ₃	CF ₃	Cl	2-methyl-2H-tetrazol-5-yl	
537	CH ₂ CH ₃	CF ₃	Br	2H-tetrazol-5-yl	
538	CH ₂ CH ₃	CF ₃	Br	2-methyl-2H-tetrazol-5-yl	
539	6-phenylpyridin-2-yl	CF ₃	I	1,2,4-triazol-1-yl	
540	6-phenylpyridin-2-yl	CF ₂ CF ₃	I	1,2,4-triazol-1-yl	
541	6-phenylpyridin-2-yl	CF ₃	I	2H-tetrazol-5-yl	
542	6-phenylpyridin-2-yl	CF ₂ CF ₃	I	2H-tetrazol-5-yl	
543	6-phenylpyridin-2-yl	CF ₃	I	2-methyl-2H-tetrazol-5-yl	
544	6-phenylpyridin-2-yl	CF ₂ CF ₃	I	2-methyl-2H-tetrazol-5-yl	
545	6-phenylpyridin-2-yl	CF ₃	I	4-methylimidazol-1-yl	
546	6-phenylpyridin-2-yl	CF ₂ CF ₃	I	4-methylimidazol-1-yl	
547	6-phenylpyridin-2-yl	CF ₃	I	benzimidazol-1-yl	
548	6-phenylpyridin-2-yl	CF ₂ CF ₃	I	benzimidazol-1-yl	
549	6-phenylpyridin-2-yl	CF ₃	I	imidazol-1-yl	
550	6-phenylpyridin-2-yl	CF ₂ CF ₃	I	imidazol-1-yl	
551	6-phenylpyridin-2-yl	CF ₃	F	2H-tetrazol-5-yl	
552	6-phenylpyridin-2-yl	CF ₃	F	2-methyl-2H-tetrazol-5-yl	
553	6-phenylpyridin-2-yl	CF ₃	Cl	2H-tetrazol-5-yl	
554	6-phenylpyridin-2-yl	CF ₃	Cl	2-methyl-2H-tetrazol-5-yl	
555	6-phenylpyridin-2-yl	CF ₃	Br	2H-tetrazol-5-yl	
556	6-phenylpyridin-2-yl	CF ₃	Br	2-methyl-2H-tetrazol-5-yl	
557	6-phenylpyridin-2-yl	CF ₃	Br	imidazol-1-yl	136-138
558	6-methylpyridin-2-yl	CF ₃	I	1,2,4-triazol-1-yl	

559	6-methylpyridin-2-yl	CF ₂ CF ₃	I	1,2,4-triazol-1-yl	
560	6-methylpyridin-2-yl	CF ₃	I	2H-tetrazol-5-yl	
561	6-methylpyridin-2-yl	CF ₂ CF ₃	I	2H-tetrazol-5-yl	
562	6-methylpyridin-2-yl	CF ₃	I	2-methyl-2H-tetrazol-5-yl	
563	6-methylpyridin-2-yl	CF ₂ CF ₃	I	2-methyl-2H-tetrazol-5-yl	
564	6-methylpyridin-2-yl	CF ₃	I	4-methylimidazol-1-yl	
565	6-methylpyridin-2-yl	CF ₂ CF ₃	I	4-methylimidazol-1-yl	
566	6-methylpyridin-2-yl	CF ₃	I	benzimidazol-1-yl	
567	6-methylpyridin-2-yl	CF ₂ CF ₃	I	benzimidazol-1-yl	
568	6-methylpyridin-2-yl	CF ₃	I	imidazol-1-yl	141-143
569	6-methylpyridin-2-yl	CF ₂ CF ₃	I	imidazol-1-yl	
570	6-methylpyridin-2-yl	CF ₃	F	2H-tetrazol-5-yl	
571	6-methylpyridin-2-yl	CF ₃	F	2-methyl-2H-tetrazol-5-yl	
572	6-methylpyridin-2-yl	CF ₃	Cl	2H-tetrazol-5-yl	
573	6-methylpyridin-2-yl	CF ₃	Cl	2-methyl-2H-tetrazol-5-yl	
574	6-methylpyridin-2-yl	CF ₃	Br	2H-tetrazol-5-yl	
575	6-methylpyridin-2-yl	CF ₃	Br	2-methyl-2H-tetrazol-5-yl	
576	2-oxopyrrolidin-1-yl	CF ₃	I	1,2,4-triazol-1-yl	
577	2-oxopyrrolidin-1-yl	CF ₂ CF ₃	I	1,2,4-triazol-1-yl	
578	2-oxopyrrolidin-1-yl	CF ₃	I	2H-tetrazol-5-yl	
579	2-oxopyrrolidin-1-yl	CF ₂ CF ₃	I	2H-tetrazol-5-yl	
580	2-oxopyrrolidin-1-yl	CF ₃	I	2-methyl-2H-tetrazol-5-yl	
581	2-oxopyrrolidin-1-yl	CF ₂ CF ₃	I	2-methyl-2H-tetrazol-5-yl	
582	2-oxopyrrolidin-1-yl	CF ₃	I	4-methylimidazol-1-yl	
583	2-oxopyrrolidin-1-yl	CF ₂ CF ₃	I	4-methylimidazol-1-yl	
584	2-oxopyrrolidin-1-yl	CF ₃	I	benzimidazol-1-yl	
585	2-oxopyrrolidin-1-yl	CF ₂ CF ₃	I	benzimidazol-1-yl	
586	2-oxopyrrolidin-1-yl	CF ₃	I	imidazol-1-yl	195-197
587	2-oxopyrrolidin-1-yl	CF ₂ CF ₃	I	imidazol-1-yl	
588	2-oxopyrrolidin-1-yl	CF ₃	F	2H-tetrazol-5-yl	
589	2-oxopyrrolidin-1-yl	CF ₃	F	2-methyl-2H-tetrazol-5-yl	
590	2-oxopyrrolidin-1-yl	CF ₃	Cl	2H-tetrazol-5-yl	
591	2-oxopyrrolidin-1-yl	CF ₃	Cl	2-methyl-2H-tetrazol-5-yl	
592	2-oxopyrrolidin-1-yl	CF ₃	Br	2H-tetrazol-5-yl	
593	2-oxopyrrolidin-1-yl	CF ₃	Br	2-methyl-2H-tetrazol-5-yl	
594	CH ₃	CF ₃	I	1-methyl-1H-tetrazol-5-yl	110-112
595	SCH ₃	CF ₃	I	1-methyl-1H-tetrazol-5-yl	
596	SCH ₂ CH ₃	CF ₃	I	1-methyl-1H-tetrazol-5-yl	
597	OCH ₃	CF ₃	I	1-methyl-1H-tetrazol-5-yl	
598	OCH ₂ CH ₃	CF ₃	I	1-methyl-1H-tetrazol-5-yl	
599	H	CF ₃	I	1-methyl-1H-tetrazol-5-yl	117-119
600	CH ₂ CH ₃	CF ₃	I	1-methyl-1H-tetrazol-5-yl	96-97
601	phenyl	CF ₃	I	1-methyl-1H-tetrazol-5-yl	
602	imidazol-1-yl	CF ₃	I	1-methyl-1H-tetrazol-5-yl	
603	pyridin-2-yl	CF ₃	I	1-methyl-1H-tetrazol-5-yl	
604	pyridin-3-yl	CF ₃	I	1-methyl-1H-tetrazol-5-yl	
605	pyridin-4-yl	CF ₃	I	1-methyl-1H-tetrazol-5-yl	

606	CH ₃	CF ₃	Br	1-methyl-1H-tetrazol-5-yl
607	SCH ₃	CF ₃	Br	1-methyl-1H-tetrazol-5-yl
608	SCH ₂ CH ₃	CF ₃	Br	1-methyl-1H-tetrazol-5-yl
609	OCH ₃	CF ₃	Br	1-methyl-1H-tetrazol-5-yl
610	OCH ₂ CH ₃	CF ₃	Br	1-methyl-1H-tetrazol-5-yl
611	H	CF ₃	Br	1-methyl-1H-tetrazol-5-yl
612	CH ₂ CH ₃	CF ₃	Br	1-methyl-1H-tetrazol-5-yl
613	phenyl	CF ₃	Br	1-methyl-1H-tetrazol-5-yl
614	imidazol-1-yl	CF ₃	Br	1-methyl-1H-tetrazol-5-yl
615	pyridin-2-yl	CF ₃	Br	1-methyl-1H-tetrazol-5-yl
616	pyridin-3-yl	CF ₃	Br	1-methyl-1H-tetrazol-5-yl
617	pyridin-4-yl	CF ₃	Br	1-methyl-1H-tetrazol-5-yl
618	CH ₃	CF ₃	Cl	1-methyl-1H-tetrazol-5-yl
619	SCH ₃	CF ₃	Cl	1-methyl-1H-tetrazol-5-yl
620	SCH ₂ CH ₃	CF ₃	Cl	1-methyl-1H-tetrazol-5-yl
621	OCH ₃	CF ₃	Cl	1-methyl-1H-tetrazol-5-yl
622	OCH ₂ CH ₃	CF ₃	Cl	1-methyl-1H-tetrazol-5-yl
623	H	CF ₃	Cl	1-methyl-1H-tetrazol-5-yl
624	CH ₂ CH ₃	CF ₃	Cl	1-methyl-1H-tetrazol-5-yl
625	phenyl	CF ₃	Cl	1-methyl-1H-tetrazol-5-yl
626	imidazol-1-yl	CF ₃	Cl	1-methyl-1H-tetrazol-5-yl
627	pyridin-2-yl	CF ₃	Cl	1-methyl-1H-tetrazol-5-yl
628	pyridin-3-yl	CF ₃	Cl	1-methyl-1H-tetrazol-5-yl
629	pyridin-4-yl	CF ₃	Cl	1-methyl-1H-tetrazol-5-yl
630	CH ₃	CF ₃	F	1-methyl-1H-tetrazol-5-yl
631	SCH ₃	CF ₃	F	1-methyl-1H-tetrazol-5-yl
632	SCH ₂ CH ₃	CF ₃	F	1-methyl-1H-tetrazol-5-yl
633	OCH ₃	CF ₃	F	1-methyl-1H-tetrazol-5-yl
634	OCH ₂ CH ₃	CF ₃	F	1-methyl-1H-tetrazol-5-yl
635	H	CF ₃	F	1-methyl-1H-tetrazol-5-yl
636	CH ₂ CH ₃	CF ₃	F	1-methyl-1H-tetrazol-5-yl
637	phenyl	CF ₃	F	1-methyl-1H-tetrazol-5-yl
638	imidazol-1-yl	CF ₃	F	1-methyl-1H-tetrazol-5-yl
639	pyridin-2-yl	CF ₃	F	1-methyl-1H-tetrazol-5-yl
640	pyridin-3-yl	CF ₃	F	1-methyl-1H-tetrazol-5-yl
641	pyridin-4-yl	CF ₃	F	1-methyl-1H-tetrazol-5-yl
642	SCH ₂ F	CF ₃	I	imidazol-1-yl
643	SCH ₂ Cl	CF ₃	I	imidazol-1-yl
644	SCF ₃	CF ₃	I	imidazol-1-yl
645	S(O)CH ₃	CF ₃	I	imidazol-1-yl
646	S(O)CF ₃	CF ₃	I	imidazol-1-yl
647	S(O) ₂ CF ₃	CF ₃	I	imidazol-1-yl
648	6-phenylpyridin-4-yl	CF ₃	I	imidazol-1-yl
649	6-methylpyridin-4-yl	CF ₃	I	imidazol-1-yl
650	6-chloropyridin-4-yl	CF ₃	I	imidazol-1-yl
651	3-trifluoromethylpyridin-4-yl	CF ₃	I	imidazol-1-yl
652	6-phenylpyridin-3-yl	CF ₃	I	imidazol-1-yl

653	6-methylpyridin-3-yl	CF ₃	I	imidazol-1-yl	
654	6-chloropyridin-3-yl	CF ₃	I	imidazol-1-yl	
655	3-trifluoromethylpyridin-3-y	CF ₃	I	imidazol-1-yl	
656	pyridin-3-yl	CF ₃	I	imidazol-1-yl	
657	6-chloropyridin-2-yl	CF ₃	I	imidazol-1-yl	
658	3-trifluoromethylpyridin-2-y	CF ₃	I	imidazol-1-yl	
659	3-methylpyrazol-1-yl	CF ₃	I	imidazol-1-yl	
660	3-methoxypyrazol-1-yl	CF ₃	I	imidazol-1-yl	
661	3-chloropyrazol-1-yl	CF ₃	I	imidazol-1-yl	
662	2-tolyl	CF ₃	I	imidazol-1-yl	
663	3-tolyl	CF ₃	I	imidazol-1-yl	
664	4-tolyl	CF ₃	I	imidazol-1-yl	
665	2-chlorophenyl	CF ₃	I	imidazol-1-yl	
666	3-chlorophenyl	CF ₃	I	imidazol-1-yl	
667	4-chlorophenyl	CF ₃	I	imidazol-1-yl	
668	2-methoxyphenyl	CF ₃	I	imidazol-1-yl	
669	3-methoxyphenyl	CF ₃	I	imidazol-1-yl	
670	4-methoxyphenyl	CF ₃	I	imidazol-1-yl	
671	2-(trifluoromethyl)phenyl	CF ₃	I	imidazol-1-yl	
672	3-(trifluoromethyl)phenyl	CF ₃	I	imidazol-1-yl	
673	4-(trifluoromethyl)phenyl	CF ₃	I	imidazol-1-yl	
674	OCH ₂ CF ₃	CF ₃	I	imidazol-1-yl	
675	OCH ₂ C≡CCH ₂ Cl	CF ₃	I	imidazol-1-yl	
676	OCH=CHCF ₃	CF ₃	I	imidazol-1-yl	
677	4-methylimidazol-1-yl	CF ₃	I	imidazol-1-yl	
678	4-methoxyimidazol-1-yl	CF ₃	I	imidazol-1-yl	
679	4-chloroimidazol-1-yl	CF ₃	I	imidazol-1-yl	
680	C≡CCH ₂ Cl	CF ₃	I	imidazol-1-yl	
681	CF ₃	CF ₃	I	1,2,4-triazol-1-yl	137-138
682	CF ₃	CF ₂ CF ₃	I	1,2,4-triazol-1-yl	
683	CF ₃	CF ₃	I	2H-tetrazol-5-yl	
684	CF ₃	CF ₂ CF ₃	I	2H-tetrazol-5-yl	
685	CF ₃	CF ₃	I	2-methyl-2H-tetrazol-5-yl	
686	CF ₃	CF ₂ CF ₃	I	2-methyl-2H-tetrazol-5-yl	
687	CF ₃	CF ₃	I	4-methylimidazol-1-yl	
688	CF ₃	CF ₂ CF ₃	I	4-methylimidazol-1-yl	
689	CF ₃	CF ₃	I	benzimidazol-1-yl	
690	CF ₃	CF ₂ CF ₃	I	benzimidazol-1-yl	
691	CF ₃	CF ₂ CF ₃	I	imidazol-1-yl	
692	CF ₃	CF ₃	I	imidazol-1-yl	105-106
693	CF ₃	CF ₃	F	2H-tetrazol-5-yl	
694	CF ₃	CF ₃	F	2-methyl-2H-tetrazol-5-yl	
695	CF ₃	CF ₃	Cl	2H-tetrazol-5-yl	
696	CF ₃	CF ₃	Cl	2-methyl-2H-tetrazol-5-yl	
697	CF ₃	CF ₃	Br	2H-tetrazol-5-yl	
698	CF ₃	CF ₃	Br	2-methyl-2H-tetrazol-5-yl	
699	CH=CHCH ₂ Cl	CF ₃	I	imidazol-1-yl	

700	SCH ₃	CF ₃	I	4,5-dichloroimidazol-1-yl	114-115
701	SCH ₃	CF ₂ CF ₃	I	4,5-dichloroimidazol-1-yl	
702	SCH ₃	CF ₃	I	3-methyl-1,2,4-triazol-1-yl	84-85
703	SCH ₃	CF ₂ CF ₃	I	3-methyl-1,2,4-triazol-1-yl	
704	SCH ₃	CF ₃	I	3-methyl-1,2,4-triazol-2-yl	150-151
705	SCH ₃	CF ₂ CF ₃	I	3-methyl-1,2,4-triazol-2-yl	
706	SCH ₃	CF ₃	I	2-ethyl-2H-tetrazol-5-yl	
707	SCH ₃	CF ₂ CF ₃	I	2-ethyl-2H-tetrazol-5-yl	
708	SCH ₃	CF ₃	I	1-ethyl-1H-tetrazol-5-yl	
709	SCH ₃	CF ₂ CF ₃	I	1-ethyl-1H-tetrazol-5-yl	
710	SCH ₃	CF ₃	I	2-isopropyl-2H-tetrazol-5-yl	
711	SCH ₃	CF ₂ CF ₃	I	2-isopropyl-2H-tetrazol-5-yl	
712	SCH ₃	CF ₃	I	1-isopropyl-1H-tetrazol-5-yl	
713	SCH ₃	CF ₂ CF ₃	I	1-isopropyl-1H-tetrazol-5-yl	
714	SCH ₃	CF ₃	I	2-propargyl-2H-tetrazol-5-yl	
715	SCH ₃	CF ₂ CF ₃	I	2-propargyl-2H-tetrazol-5-yl	
716	SCH ₃	CF ₃	I	1-propargyl-1H-tetrazol-5-yl	
717	SCH ₃	CF ₂ CF ₃	I	1-propargyl-1H-tetrazol-5-yl	
718	SCH ₃	CF ₃	I	4,5-dimethylimidazol-1-yl	168-170
719	SCH ₃	CF ₂ CF ₃	I	4,5-dimethylimidazol-1-yl	
720	SCH ₃	CF ₃	I	4,5-dibromoimidazol-1-yl	118-120
721	SCH ₃	CF ₂ CF ₃	I	4,5-dibromoimidazol-1-yl	
722	SCH ₃	CF ₃	I	4-trifluoromethylimidazol-1-yl	90-92
723	SCH ₃	CF ₂ CF ₃	I	4-trifluoromethylimidazol-1-yl	
724	SCH ₃	CF ₃	I	4-cyanoimidazol-1-yl	147-149
725	SCH ₃	CF ₂ CF ₃	I	4-cyanoimidazol-1-yl	
726	SCH ₃	CF ₃	I	4,5-diiodoimidazol-1-yl	157-160
727	SCH ₃	CF ₂ CF ₃	I	4,5-diiodoimidazol-1-yl	
728	SCH ₂ CH ₃	CF ₃	I	4,5-dichloroimidazol-1-yl	
729	SCH ₂ CH ₃	CF ₂ CF ₃	I	4,5-dichloroimidazol-1-yl	
730	SCH ₂ CH ₃	CF ₃	I	3-methyl-1,2,4-triazol-1-yl	
731	SCH ₂ CH ₃	CF ₂ CF ₃	I	3-methyl-1,2,4-triazol-1-yl	
732	SCH ₂ CH ₃	CF ₃	I	3-methyl-1,2,4-triazol-2-yl	
733	SCH ₂ CH ₃	CF ₂ CF ₃	I	3-methyl-1,2,4-triazol-2-yl	
734	SCH ₂ CH ₃	CF ₃	I	2-ethyl-2H-tetrazol-5-yl	
735	SCH ₂ CH ₃	CF ₂ CF ₃	I	2-ethyl-2H-tetrazol-5-yl	
736	SCH ₂ CH ₃	CF ₃	I	1-ethyl-1H-tetrazol-5-yl	
737	SCH ₂ CH ₃	CF ₂ CF ₃	I	1-ethyl-1H-tetrazol-5-yl	
738	SCH ₂ CH ₃	CF ₃	I	2-isopropyl-2H-tetrazol-5-yl	
739	SCH ₂ CH ₃	CF ₂ CF ₃	I	2-isopropyl-2H-tetrazol-5-yl	
740	SCH ₂ CH ₃	CF ₃	I	1-isopropyl-1H-tetrazol-5-yl	
741	SCH ₂ CH ₃	CF ₂ CF ₃	I	1-isopropyl-1H-tetrazol-5-yl	
742	SCH ₂ CH ₃	CF ₃	I	2-propargyl-2H-tetrazol-5-yl	
743	SCH ₂ CH ₃	CF ₂ CF ₃	I	2-propargyl-2H-tetrazol-5-yl	
744	SCH ₂ CH ₃	CF ₃	I	1-propargyl-1H-tetrazol-5-yl	
745	SCH ₂ CH ₃	CF ₂ CF ₃	I	1-propargyl-1H-tetrazol-5-yl	
746	SCH ₂ CH ₃	CF ₃	I	4,5-dimethylimidazol-1-yl	

747	SCH ₂ CH ₃	CF ₂ CF ₃	I	4,5-dimethylimidazol-1-yl
748	SCH ₂ CH ₃	CF ₃	I	4,5-dibromoimidazol-1-yl
749	SCH ₂ CH ₃	CF ₂ CF ₃	I	4,5-dibromoimidazol-1-yl
750	SCH ₂ CH ₃	CF ₃	I	4-trifluoromethylimidazol-1-yl
751	SCH ₂ CH ₃	CF ₂ CF ₃	I	4-trifluoromethylimidazol-1-yl
752	SCH ₂ CH ₃	CF ₃	I	4-cyanoimidazol-1-yl
753	SCH ₂ CH ₃	CF ₂ CF ₃	I	4-cyanoimidazol-1-yl
754	SCH ₂ CH ₃	CF ₃	I	4,5-diiodoimidazol-1-yl
755	SCH ₂ CH ₃	CF ₂ CF ₃	I	4,5-diiodoimidazol-1-yl
756	SCH(CH ₃) ₂	CF ₃	I	4,5-dichloroimidazol-1-yl
757	SCH(CH ₃) ₂	CF ₂ CF ₃	I	4,5-dichloroimidazol-1-yl
758	SCH(CH ₃) ₂	CF ₃	I	3-methyl-1,2,4-triazol-1-yl
759	SCH(CH ₃) ₂	CF ₂ CF ₃	I	3-methyl-1,2,4-triazol-1-yl
760	SCH(CH ₃) ₂	CF ₃	I	3-methyl-1,2,4-triazol-2-yl
761	SCH(CH ₃) ₂	CF ₂ CF ₃	I	3-methyl-1,2,4-triazol-2-yl
762	SCH(CH ₃) ₂	CF ₃	I	2-ethyl-2H-tetrazol-5-yl
763	SCH(CH ₃) ₂	CF ₂ CF ₃	I	2-ethyl-2H-tetrazol-5-yl
764	SCH(CH ₃) ₂	CF ₃	I	1-ethyl-1H-tetrazol-5-yl
765	SCH(CH ₃) ₂	CF ₂ CF ₃	I	1-ethyl-1H-tetrazol-5-yl
766	SCH(CH ₃) ₂	CF ₃	I	2-isopropyl-2H-tetrazol-5-yl
767	SCH(CH ₃) ₂	CF ₂ CF ₃	I	2-isopropyl-2H-tetrazol-5-yl
768	SCH(CH ₃) ₂	CF ₃	I	1-isopropyl-1H-tetrazol-5-yl
769	SCH(CH ₃) ₂	CF ₂ CF ₃	I	1-isopropyl-1H-tetrazol-5-yl
770	SCH(CH ₃) ₂	CF ₃	I	2-propargyl-2H-tetrazol-5-yl
771	SCH(CH ₃) ₂	CF ₂ CF ₃	I	2-propargyl-2H-tetrazol-5-yl
772	SCH(CH ₃) ₂	CF ₃	I	1-propargyl-1H-tetrazol-5-yl
773	SCH(CH ₃) ₂	CF ₂ CF ₃	I	1-propargyl-1H-tetrazol-5-yl
774	SCH(CH ₃) ₂	CF ₃	I	4,5-dimethylimidazol-1-yl
775	SCH(CH ₃) ₂	CF ₂ CF ₃	I	4,5-dimethylimidazol-1-yl
776	SCH(CH ₃) ₂	CF ₃	I	4,5-dibromoimidazol-1-yl
777	SCH(CH ₃) ₂	CF ₂ CF ₃	I	4,5-dibromoimidazol-1-yl
778	SCH(CH ₃) ₂	CF ₃	I	4-trifluoromethylimidazol-1-yl
779	SCH(CH ₃) ₂	CF ₂ CF ₃	I	4-trifluoromethylimidazol-1-yl
780	SCH(CH ₃) ₂	CF ₃	I	4-cyanoimidazol-1-yl
781	SCH(CH ₃) ₂	CF ₂ CF ₃	I	4-cyanoimidazol-1-yl
782	SCH(CH ₃) ₂	CF ₃	I	4,5-diiodoimidazol-1-yl
783	SCH(CH ₃) ₂	CF ₂ CF ₃	I	4,5-diiodoimidazol-1-yl
784	pyridin-2-yl	CF ₃	I	4,5-dichloroimidazol-1-yl
785	pyridin-2-yl	CF ₂ CF ₃	I	4,5-dichloroimidazol-1-yl
786	pyridin-2-yl	CF ₃	I	3-methyl-1,2,4-triazol-1-yl
787	pyridin-2-yl	CF ₂ CF ₃	I	3-methyl-1,2,4-triazol-1-yl
788	pyridin-2-yl	CF ₃	I	3-methyl-1,2,4-triazol-2-yl
789	pyridin-2-yl	CF ₂ CF ₃	I	3-methyl-1,2,4-triazol-2-yl
790	pyridin-2-yl	CF ₃	I	2-ethyl-2H-tetrazol-5-yl
791	pyridin-2-yl	CF ₂ CF ₃	I	2-ethyl-2H-tetrazol-5-yl
792	pyridin-2-yl	CF ₃	I	1-ethyl-1H-tetrazol-5-yl
793	pyridin-2-yl	CF ₂ CF ₃	I	1-ethyl-1H-tetrazol-5-yl

794	pyridin-2-yl	CF ₃	I	2-isopropyl-2H-tetrazol-5-yl
795	pyridin-2-yl	CF ₂ CF ₃	I	2-isopropyl-2H-tetrazol-5-yl
796	pyridin-2-yl	CF ₃	I	1-isopropyl-1H-tetrazol-5-yl
797	pyridin-2-yl	CF ₂ CF ₃	I	1-isopropyl-1H-tetrazol-5-yl
798	pyridin-2-yl	CF ₃	I	2-propargyl-2H-tetrazol-5-yl
799	pyridin-2-yl	CF ₂ CF ₃	I	2-propargyl-2H-tetrazol-5-yl
800	pyridin-2-yl	CF ₃	I	1-propargyl-1H-tetrazol-5-yl
801	pyridin-2-yl	CF ₂ CF ₃	I	1-propargyl-1H-tetrazol-5-yl
802	pyridin-2-yl	CF ₃	I	4,5-dimethylimidazol-1-yl
803	pyridin-2-yl	CF ₂ CF ₃	I	4,5-dimethylimidazol-1-yl
804	pyridin-2-yl	CF ₃	I	4,5-dibromoimidazol-1-yl
805	pyridin-2-yl	CF ₂ CF ₃	I	4,5-dibromoimidazol-1-yl
806	pyridin-2-yl	CF ₃	I	4-trifluoromethylimidazol-1-yl
807	pyridin-2-yl	CF ₂ CF ₃	I	4-trifluoromethylimidazol-1-yl
808	pyridin-2-yl	CF ₃	I	4-cyanoimidazol-1-yl
809	pyridin-2-yl	CF ₂ CF ₃	I	4-cyanoimidazol-1-yl
810	pyridin-2-yl	CF ₃	I	4,5-diiodoimidazol-1-yl
811	pyridin-2-yl	CF ₂ CF ₃	I	4,5-diiodoimidazol-1-yl
812	phenyl	CF ₃	I	4,5-dichloroimidazol-1-yl
813	phenyl	CF ₂ CF ₃	I	4,5-dichloroimidazol-1-yl
814	phenyl	CF ₃	I	3-methyl-1,2,4-triazol-1-yl
815	phenyl	CF ₂ CF ₃	I	3-methyl-1,2,4-triazol-1-yl
816	phenyl	CF ₃	I	3-methyl-1,2,4-triazol-2-yl
817	phenyl	CF ₂ CF ₃	I	3-methyl-1,2,4-triazol-2-yl
818	phenyl	CF ₃	I	2-ethyl-2H-tetrazol-5-yl
819	phenyl	CF ₂ CF ₃	I	2-ethyl-2H-tetrazol-5-yl
820	phenyl	CF ₃	I	1-ethyl-1H-tetrazol-5-yl
821	phenyl	CF ₂ CF ₃	I	1-ethyl-1H-tetrazol-5-yl
822	phenyl	CF ₃	I	2-isopropyl-2H-tetrazol-5-yl
823	phenyl	CF ₂ CF ₃	I	2-isopropyl-2H-tetrazol-5-yl
824	phenyl	CF ₃	I	1-isopropyl-1H-tetrazol-5-yl
825	phenyl	CF ₂ CF ₃	I	1-isopropyl-1H-tetrazol-5-yl
826	phenyl	CF ₃	I	2-propargyl-2H-tetrazol-5-yl
827	phenyl	CF ₂ CF ₃	I	2-propargyl-2H-tetrazol-5-yl
828	phenyl	CF ₃	I	1-propargyl-1H-tetrazol-5-yl
829	phenyl	CF ₂ CF ₃	I	1-propargyl-1H-tetrazol-5-yl
830	phenyl	CF ₃	I	4,5-dimethylimidazol-1-yl
831	phenyl	CF ₂ CF ₃	I	4,5-dimethylimidazol-1-yl
832	phenyl	CF ₃	I	4,5-dibromoimidazol-1-yl
833	phenyl	CF ₂ CF ₃	I	4,5-dibromoimidazol-1-yl
834	phenyl	CF ₃	I	4-trifluoromethylimidazol-1-yl
835	phenyl	CF ₂ CF ₃	I	4-trifluoromethylimidazol-1-yl
836	phenyl	CF ₃	I	4-cyanoimidazol-1-yl
837	phenyl	CF ₂ CF ₃	I	4-cyanoimidazol-1-yl
838	phenyl	CF ₃	I	4,5-diiodoimidazol-1-yl
839	phenyl	CF ₂ CF ₃	I	4,5-diiodoimidazol-1-yl
840	OCH ₃	CF ₃	I	4,5-dichloroimidazol-1-yl

841	OCH ₃	CF ₂ CF ₃	I	4,5-dichloroimidazol-1-yl
842	OCH ₃	CF ₃	I	3-methyl-1,2,4-triazol-1-yl
843	OCH ₃	CF ₂ CF ₃	I	3-methyl-1,2,4-triazol-1-yl
844	OCH ₃	CF ₃	I	3-methyl-1,2,4-triazol-2-yl
845	OCH ₃	CF ₂ CF ₃	I	3-methyl-1,2,4-triazol-2-yl
846	OCH ₃	CF ₃	I	2-ethyl-2H-tetrazol-5-yl
847	OCH ₃	CF ₂ CF ₃	I	2-ethyl-2H-tetrazol-5-yl
848	OCH ₃	CF ₃	I	1-ethyl-1H-tetrazol-5-yl
849	OCH ₃	CF ₂ CF ₃	I	1-ethyl-1H-tetrazol-5-yl
850	OCH ₃	CF ₃	I	2-isopropyl-2H-tetrazol-5-yl
851	OCH ₃	CF ₂ CF ₃	I	2-isopropyl-2H-tetrazol-5-yl
852	OCH ₃	CF ₃	I	1-isopropyl-1H-tetrazol-5-yl
853	OCH ₃	CF ₂ CF ₃	I	1-isopropyl-1H-tetrazol-5-yl
854	OCH ₃	CF ₃	I	2-propargyl-2H-tetrazol-5-yl
855	OCH ₃	CF ₂ CF ₃	I	2-propargyl-2H-tetrazol-5-yl
856	OCH ₃	CF ₃	I	1-propargyl-1H-tetrazol-5-yl
857	OCH ₃	CF ₂ CF ₃	I	1-propargyl-1H-tetrazol-5-yl
858	OCH ₃	CF ₃	I	4,5-dimethylimidazol-1-yl
859	OCH ₃	CF ₂ CF ₃	I	4,5-dimethylimidazol-1-yl
860	OCH ₃	CF ₃	I	4,5-dibromoimidazol-1-yl
861	OCH ₃	CF ₂ CF ₃	I	4,5-dibromoimidazol-1-yl
862	OCH ₃	CF ₃	I	4-trifluoromethylimidazol-1-yl
863	OCH ₃	CF ₂ CF ₃	I	4-trifluoromethylimidazol-1-yl
864	OCH ₃	CF ₃	I	4-cyanoimidazol-1-yl
865	OCH ₃	CF ₂ CF ₃	I	4-cyanoimidazol-1-yl
866	OCH ₃	CF ₃	I	4,5-diiodoimidazol-1-yl
867	OCH ₃	CF ₂ CF ₃	I	4,5-diiodoimidazol-1-yl
868	OCH ₂ C≡CH	CF ₃	I	4,5-dichloroimidazol-1-yl
869	OCH ₂ C≡CH	CF ₂ CF ₃	I	4,5-dichloroimidazol-1-yl
870	OCH ₂ C≡CH	CF ₃	I	3-methyl-1,2,4-triazol-1-yl
871	OCH ₂ C≡CH	CF ₂ CF ₃	I	3-methyl-1,2,4-triazol-1-yl
872	OCH ₂ C≡CH	CF ₃	I	3-methyl-1,2,4-triazol-2-yl
873	OCH ₂ C≡CH	CF ₂ CF ₃	I	3-methyl-1,2,4-triazol-2-yl
874	OCH ₂ C≡CH	CF ₃	I	2-ethyl-2H-tetrazol-5-yl
875	OCH ₂ C≡CH	CF ₂ CF ₃	I	2-ethyl-2H-tetrazol-5-yl
876	OCH ₂ C≡CH	CF ₃	I	1-ethyl-1H-tetrazol-5-yl
877	OCH ₂ C≡CH	CF ₂ CF ₃	I	1-ethyl-1H-tetrazol-5-yl
878	OCH ₂ C≡CH	CF ₃	I	2-isopropyl-2H-tetrazol-5-yl
879	OCH ₂ C≡CH	CF ₂ CF ₃	I	2-isopropyl-2H-tetrazol-5-yl
880	OCH ₂ C≡CH	CF ₃	I	1-isopropyl-1H-tetrazol-5-yl
881	OCH ₂ C≡CH	CF ₂ CF ₃	I	1-isopropyl-1H-tetrazol-5-yl
882	OCH ₂ C≡CH	CF ₃	I	2-propargyl-2H-tetrazol-5-yl
883	OCH ₂ C≡CH	CF ₂ CF ₃	I	2-propargyl-2H-tetrazol-5-yl
884	OCH ₂ C≡CH	CF ₃	I	1-propargyl-1H-tetrazol-5-yl
885	OCH ₂ C≡CH	CF ₂ CF ₃	I	1-propargyl-1H-tetrazol-5-yl
886	OCH ₂ C≡CH	CF ₃	I	4,5-dimethylimidazol-1-yl
887	OCH ₂ C≡CH	CF ₂ CF ₃	I	4,5-dimethylimidazol-1-yl

888	OCH ₂ C≡CH	CF ₃	I	4,5-dibromoimidazol-1-yl
889	OCH ₂ C≡CH	CF ₂ CF ₃	I	4,5-dibromoimidazol-1-yl
890	OCH ₂ C≡CH	CF ₃	I	4-trifluoromethylimidazol-1-yl
891	OCH ₂ C≡CH	CF ₂ CF ₃	I	4-trifluoromethylimidazol-1-yl
892	OCH ₂ C≡CH	CF ₃	I	4-cyanoimidazol-1-yl
893	OCH ₂ C≡CH	CF ₂ CF ₃	I	4-cyanoimidazol-1-yl
894	OCH ₂ C≡CH	CF ₃	I	4,5-diiodoimidazol-1-yl
895	OCH ₂ C≡CH	CF ₂ CF ₃	I	4,5-diiodoimidazol-1-yl
896	OCH ₂ CH ₃	CF ₃	I	4,5-dichloroimidazol-1-yl
897	OCH ₂ CH ₃	CF ₂ CF ₃	I	4,5-dichloroimidazol-1-yl
898	OCH ₂ CH ₃	CF ₃	I	3-methyl-1,2,4-triazol-1-yl
899	OCH ₂ CH ₃	CF ₂ CF ₃	I	3-methyl-1,2,4-triazol-1-yl
900	OCH ₂ CH ₃	CF ₃	I	3-methyl-1,2,4-triazol-2-yl
901	OCH ₂ CH ₃	CF ₂ CF ₃	I	3-methyl-1,2,4-triazol-2-yl
902	OCH ₂ CH ₃	CF ₃	I	2-ethyl-2H-tetrazol-5-yl
903	OCH ₂ CH ₃	CF ₂ CF ₃	I	2-ethyl-2H-tetrazol-5-yl
904	OCH ₂ CH ₃	CF ₃	I	1-ethyl-1H-tetrazol-5-yl
905	OCH ₂ CH ₃	CF ₂ CF ₃	I	1-ethyl-1H-tetrazol-5-yl
906	OCH ₂ CH ₃	CF ₃	I	2-isopropyl-2H-tetrazol-5-yl
907	OCH ₂ CH ₃	CF ₂ CF ₃	I	2-isopropyl-2H-tetrazol-5-yl
908	OCH ₂ CH ₃	CF ₃	I	1-isopropyl-1H-tetrazol-5-yl
909	OCH ₂ CH ₃	CF ₂ CF ₃	I	1-isopropyl-1H-tetrazol-5-yl
910	OCH ₂ CH ₃	CF ₃	I	2-propargyl-2H-tetrazol-5-yl
911	OCH ₂ CH ₃	CF ₂ CF ₃	I	2-propargyl-2H-tetrazol-5-yl
912	OCH ₂ CH ₃	CF ₃	I	1-propargyl-1H-tetrazol-5-yl
913	OCH ₂ CH ₃	CF ₂ CF ₃	I	1-propargyl-1H-tetrazol-5-yl
914	OCH ₂ CH ₃	CF ₃	I	4,5-dimethylimidazol-1-yl
915	OCH ₂ CH ₃	CF ₂ CF ₃	I	4,5-dimethylimidazol-1-yl
916	OCH ₂ CH ₃	CF ₃	I	4,5-dibromoimidazol-1-yl
917	OCH ₂ CH ₃	CF ₂ CF ₃	I	4,5-dibromoimidazol-1-yl
918	OCH ₂ CH ₃	CF ₃	I	4-trifluoromethylimidazol-1-yl
919	OCH ₂ CH ₃	CF ₂ CF ₃	I	4-trifluoromethylimidazol-1-yl
920	OCH ₂ CH ₃	CF ₃	I	4-cyanoimidazol-1-yl
921	OCH ₂ CH ₃	CF ₂ CF ₃	I	4-cyanoimidazol-1-yl
922	OCH ₂ CH ₃	CF ₃	I	4,5-diiodoimidazol-1-yl
923	OCH ₂ CH ₃	CF ₂ CF ₃	I	4,5-diiodoimidazol-1-yl
924	OCH ₂ CH ₂ CH ₃	CF ₃	I	4,5-dichloroimidazol-1-yl
925	OCH ₂ CH ₂ CH ₃	CF ₂ CF ₃	I	4,5-dichloroimidazol-1-yl
926	OCH ₂ CH ₂ CH ₃	CF ₃	I	3-methyl-1,2,4-triazol-1-yl
927	OCH ₂ CH ₂ CH ₃	CF ₂ CF ₃	I	3-methyl-1,2,4-triazol-1-yl
928	OCH ₂ CH ₂ CH ₃	CF ₃	I	3-methyl-1,2,4-triazol-2-yl
929	OCH ₂ CH ₂ CH ₃	CF ₂ CF ₃	I	3-methyl-1,2,4-triazol-2-yl
930	OCH ₂ CH ₂ CH ₃	CF ₃	I	2-ethyl-2H-tetrazol-5-yl
931	OCH ₂ CH ₂ CH ₃	CF ₂ CF ₃	I	2-ethyl-2H-tetrazol-5-yl
932	OCH ₂ CH ₂ CH ₃	CF ₃	I	1-ethyl-1H-tetrazol-5-yl
933	OCH ₂ CH ₂ CH ₃	CF ₂ CF ₃	I	1-ethyl-1H-tetrazol-5-yl
934	OCH ₂ CH ₂ CH ₃	CF ₃	I	2-isopropyl-2H-tetrazol-5-yl

935	OCH ₂ CH ₂ CH ₃	CF ₂ CF ₃	I	2-isopropyl-2H-tetrazol-5-yl
936	OCH ₂ CH ₂ CH ₃	CF ₃	I	1-isopropyl-1H-tetrazol-5-yl
937	OCH ₂ CH ₂ CH ₃	CF ₂ CF ₃	I	1-isopropyl-1H-tetrazol-5-yl
938	OCH ₂ CH ₂ CH ₃	CF ₃	I	2-propargyl-2H-tetrazol-5-yl
939	OCH ₂ CH ₂ CH ₃	CF ₂ CF ₃	I	2-propargyl-2H-tetrazol-5-yl
940	OCH ₂ CH ₂ CH ₃	CF ₃	I	1-propargyl-1H-tetrazol-5-yl
941	OCH ₂ CH ₂ CH ₃	CF ₂ CF ₃	I	1-propargyl-1H-tetrazol-5-yl
942	OCH ₂ CH ₂ CH ₃	CF ₃	I	4,5-dimethylimidazol-1-yl
943	OCH ₂ CH ₂ CH ₃	CF ₂ CF ₃	I	4,5-dimethylimidazol-1-yl
944	OCH ₂ CH ₂ CH ₃	CF ₃	I	4,5-dibromoimidazol-1-yl
945	OCH ₂ CH ₂ CH ₃	CF ₂ CF ₃	I	4,5-dibromoimidazol-1-yl
946	OCH ₂ CH ₂ CH ₃	CF ₃	I	4-trifluoromethylimidazol-1-yl
947	OCH ₂ CH ₂ CH ₃	CF ₂ CF ₃	I	4-trifluoromethylimidazol-1-yl
948	OCH ₂ CH ₂ CH ₃	CF ₃	I	4-cyanoimidazol-1-yl
949	OCH ₂ CH ₂ CH ₃	CF ₂ CF ₃	I	4-cyanoimidazol-1-yl
950	OCH ₂ CH ₂ CH ₃	CF ₃	I	4,5-diiodoimidazol-1-yl
951	OCH ₂ CH ₂ CH ₃	CF ₂ CF ₃	I	4,5-diiodoimidazol-1-yl
952	OCH ₂ CF ₂ H	CF ₃	I	4,5-dichloroimidazol-1-yl
953	OCH ₂ CF ₂ H	CF ₂ CF ₃	I	4,5-dichloroimidazol-1-yl
954	OCH ₂ CF ₂ H	CF ₃	I	3-methyl-1,2,4-triazol-1-yl
955	OCH ₂ CF ₂ H	CF ₂ CF ₃	I	3-methyl-1,2,4-triazol-1-yl
956	OCH ₂ CF ₂ H	CF ₃	I	3-methyl-1,2,4-triazol-2-yl
957	OCH ₂ CF ₂ H	CF ₂ CF ₃	I	3-methyl-1,2,4-triazol-2-yl
958	OCH ₂ CF ₂ H	CF ₃	I	2-ethyl-2H-tetrazol-5-yl
959	OCH ₂ CF ₂ H	CF ₂ CF ₃	I	2-ethyl-2H-tetrazol-5-yl
960	OCH ₂ CF ₂ H	CF ₃	I	1-ethyl-1H-tetrazol-5-yl
961	OCH ₂ CF ₂ H	CF ₂ CF ₃	I	1-ethyl-1H-tetrazol-5-yl
962	OCH ₂ CF ₂ H	CF ₃	I	2-isopropyl-2H-tetrazol-5-yl
963	OCH ₂ CF ₂ H	CF ₂ CF ₃	I	2-isopropyl-2H-tetrazol-5-yl
964	OCH ₂ CF ₂ H	CF ₃	I	1-isopropyl-1H-tetrazol-5-yl
965	OCH ₂ CF ₂ H	CF ₂ CF ₃	I	1-isopropyl-1H-tetrazol-5-yl
966	OCH ₂ CF ₂ H	CF ₃	I	2-propargyl-2H-tetrazol-5-yl
967	OCH ₂ CF ₂ H	CF ₂ CF ₃	I	2-propargyl-2H-tetrazol-5-yl
968	OCH ₂ CF ₂ H	CF ₃	I	1-propargyl-1H-tetrazol-5-yl
969	OCH ₂ CF ₂ H	CF ₂ CF ₃	I	1-propargyl-1H-tetrazol-5-yl
970	OCH ₂ CF ₂ H	CF ₃	I	4,5-dimethylimidazol-1-yl
971	OCH ₂ CF ₂ H	CF ₂ CF ₃	I	4,5-dimethylimidazol-1-yl
972	OCH ₂ CF ₂ H	CF ₃	I	4,5-dibromoimidazol-1-yl
973	OCH ₂ CF ₂ H	CF ₂ CF ₃	I	4,5-dibromoimidazol-1-yl
974	OCH ₂ CF ₂ H	CF ₃	I	4-trifluoromethylimidazol-1-yl
975	OCH ₂ CF ₂ H	CF ₂ CF ₃	I	4-trifluoromethylimidazol-1-yl
976	OCH ₂ CF ₂ H	CF ₃	I	4-cyanoimidazol-1-yl
977	OCH ₂ CF ₂ H	CF ₂ CF ₃	I	4-cyanoimidazol-1-yl
978	OCH ₂ CF ₂ H	CF ₃	I	4,5-diiodoimidazol-1-yl
979	OCH ₂ CF ₂ H	CF ₂ CF ₃	I	4,5-diiodoimidazol-1-yl
980	OCH(CH ₃) ₂	CF ₃	I	4,5-dichloroimidazol-1-yl
981	OCH(CH ₃) ₂	CF ₂ CF ₃	I	4,5-dichloroimidazol-1-yl

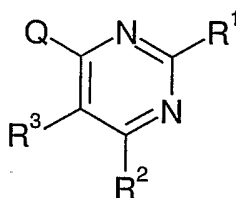
982	OCH(CH ₃) ₂	CF ₃	I	3-methyl-1,2,4-triazol-1-yl	
983	OCH(CH ₃) ₂	CF ₂ CF ₃	I	3-methyl-1,2,4-triazol-1-yl	
984	OCH(CH ₃) ₂	CF ₃	I	3-methyl-1,2,4-triazol-2-yl	
985	OCH(CH ₃) ₂	CF ₂ CF ₃	I	3-methyl-1,2,4-triazol-2-yl	
986	OCH(CH ₃) ₂	CF ₃	I	2-ethyl-2H-tetrazol-5-yl	
987	OCH(CH ₃) ₂	CF ₂ CF ₃	I	2-ethyl-2H-tetrazol-5-yl	
988	OCH(CH ₃) ₂	CF ₃	I	1-ethyl-1H-tetrazol-5-yl	
989	OCH(CH ₃) ₂	CF ₂ CF ₃	I	1-ethyl-1H-tetrazol-5-yl	
990	OCH(CH ₃) ₂	CF ₃	I	2-isopropyl-2H-tetrazol-5-yl	
991	OCH(CH ₃) ₂	CF ₂ CF ₃	I	2-isopropyl-2H-tetrazol-5-yl	
992	OCH(CH ₃) ₂	CF ₃	I	1-isopropyl-1H-tetrazol-5-yl	
993	OCH(CH ₃) ₂	CF ₂ CF ₃	I	1-isopropyl-1H-tetrazol-5-yl	
994	OCH(CH ₃) ₂	CF ₃	I	2-propargyl-2H-tetrazol-5-yl	
995	OCH(CH ₃) ₂	CF ₂ CF ₃	I	2-propargyl-2H-tetrazol-5-yl	
996	OCH(CH ₃) ₂	CF ₃	I	1-propargyl-1H-tetrazol-5-yl	
997	OCH(CH ₃) ₂	CF ₂ CF ₃	I	1-propargyl-1H-tetrazol-5-yl	
998	OCH(CH ₃) ₂	CF ₃	I	4,5-dimethylimidazol-1-yl	
999	OCH(CH ₃) ₂	CF ₂ CF ₃	I	4,5-dimethylimidazol-1-yl	
1000	OCH(CH ₃) ₂	CF ₃	I	4,5-dibromoimidazol-1-yl	
1001	OCH(CH ₃) ₂	CF ₂ CF ₃	I	4,5-dibromoimidazol-1-yl	
1002	OCH(CH ₃) ₂	CF ₃	I	4-trifluoromethylimidazol-1-yl	
1003	OCH(CH ₃) ₂	CF ₂ CF ₃	I	4-trifluoromethylimidazol-1-yl	
1004	OCH(CH ₃) ₂	CF ₃	I	4-cyanoimidazol-1-yl	
1005	OCH(CH ₃) ₂	CF ₂ CF ₃	I	4-cyanoimidazol-1-yl	
1006	OCH(CH ₃) ₂	CF ₃	I	4,5-diiodoimidazol-1-yl	
1007	OCH(CH ₃) ₂	CF ₂ CF ₃	I	4,5-diiodoimidazol-1-yl	
1008	H	CF ₃	I	4,5-dichloroimidazol-1-yl	
1009	H	CF ₂ CF ₃	I	4,5-dichloroimidazol-1-yl	
1010	H	CF ₃	I	3-methyl-1,2,4-triazol-1-yl	109-111
1011	H	CF ₂ CF ₃	I	3-methyl-1,2,4-triazol-1-yl	
1012	H	CF ₃	I	3-methyl-1,2,4-triazol-2-yl	
1013	H	CF ₂ CF ₃	I	3-methyl-1,2,4-triazol-2-yl	
1014	H	CF ₃	I	2-ethyl-2H-tetrazol-5-yl	
1015	H	CF ₂ CF ₃	I	2-ethyl-2H-tetrazol-5-yl	
1016	H	CF ₃	I	1-ethyl-1H-tetrazol-5-yl	
1017	H	CF ₂ CF ₃	I	1-ethyl-1H-tetrazol-5-yl	
1018	H	CF ₃	I	2-isopropyl-2H-tetrazol-5-yl	
1019	H	CF ₂ CF ₃	I	2-isopropyl-2H-tetrazol-5-yl	
1020	H	CF ₃	I	1-isopropyl-1H-tetrazol-5-yl	
1021	H	CF ₂ CF ₃	I	1-isopropyl-1H-tetrazol-5-yl	
1022	H	CF ₃	I	2-propargyl-2H-tetrazol-5-yl	
1023	H	CF ₂ CF ₃	I	2-propargyl-2H-tetrazol-5-yl	
1024	H	CF ₃	I	1-propargyl-1H-tetrazol-5-yl	
1025	H	CF ₂ CF ₃	I	1-propargyl-1H-tetrazol-5-yl	
1026	H	CF ₃	I	4,5-dimethylimidazol-1-yl	145-148
1027	H	CF ₂ CF ₃	I	4,5-dimethylimidazol-1-yl	
1028	H	CF ₃	I	4,5-dibromoimidazol-1-yl	88-90

1029	H	CF ₂ CF ₃	I	4,5-dibromoimidazol-1-yl	
1030	H	CF ₃	I	4-trifluoromethylimidazol-1-yl	109-110
1031	H	CF ₂ CF ₃	I	4-trifluoromethylimidazol-1-yl	
1032	H	CF ₃	I	4-cyanoimidazol-1-yl	117-119
1033	H	CF ₂ CF ₃	I	4-cyanoimidazol-1-yl	
1034	H	CF ₃	I	4,5-diiodoimidazol-1-yl	
1035	H	CF ₂ CF ₃	I	4,5-diiodoimidazol-1-yl	
1036	CH ₃	CF ₃	I	4,5-dichloroimidazol-1-yl	
1037	CH ₃	CF ₂ CF ₃	I	4,5-dichloroimidazol-1-yl	
1038	CH ₃	CF ₃	I	3-methyl-1,2,4-triazol-1-yl	107-110
1039	CH ₃	CF ₂ CF ₃	I	3-methyl-1,2,4-triazol-1-yl	
1040	CH ₃	CF ₃	I	3-methyl-1,2,4-triazol-2-yl	146-148
1041	CH ₃	CF ₂ CF ₃	I	3-methyl-1,2,4-triazol-2-yl	
1042	CH ₃	CF ₃	I	2-ethyl-2H-tetrazol-5-yl	
1043	CH ₃	CF ₂ CF ₃	I	2-ethyl-2H-tetrazol-5-yl	
1044	CH ₃	CF ₃	I	1-ethyl-1H-tetrazol-5-yl	
1045	CH ₃	CF ₂ CF ₃	I	1-ethyl-1H-tetrazol-5-yl	
1046	CH ₃	CF ₃	I	2-isopropyl-2H-tetrazol-5-yl	
1047	CH ₃	CF ₂ CF ₃	I	2-isopropyl-2H-tetrazol-5-yl	
1048	CH ₃	CF ₃	I	1-isopropyl-1H-tetrazol-5-yl	
1049	CH ₃	CF ₂ CF ₃	I	1-isopropyl-1H-tetrazol-5-yl	
1050	CH ₃	CF ₃	I	2-propargyl-2H-tetrazol-5-yl	
1051	CH ₃	CF ₂ CF ₃	I	2-propargyl-2H-tetrazol-5-yl	
1052	CH ₃	CF ₃	I	1-propargyl-1H-tetrazol-5-yl	
1053	CH ₃	CF ₂ CF ₃	I	1-propargyl-1H-tetrazol-5-yl	
1054	CH ₃	CF ₃	I	4,5-dimethylimidazol-1-yl	132-135
1055	CH ₃	CF ₂ CF ₃	I	4,5-dimethylimidazol-1-yl	
1056	CH ₃	CF ₃	I	4,5-dibromoimidazol-1-yl	
1057	CH ₃	CF ₂ CF ₃	I	4,5-dibromoimidazol-1-yl	
1058	CH ₃	CF ₃	I	4-trifluoromethylimidazol-1-yl	103-106
1059	CH ₃	CF ₂ CF ₃	I	4-trifluoromethylimidazol-1-yl	
1060	CH ₃	CF ₃	I	4-cyanoimidazol-1-yl	145-147
1061	CH ₃	CF ₂ CF ₃	I	4-cyanoimidazol-1-yl	
1062	CH ₃	CF ₃	I	4,5-diiodoimidazol-1-yl	200-202
1063	CH ₃	CF ₂ CF ₃	I	4,5-diiodoimidazol-1-yl	
1064	CH ₂ CH ₃	CF ₃	I	4,5-dichloroimidazol-1-yl	
1065	CH ₂ CH ₃	CF ₂ CF ₃	I	4,5-dichloroimidazol-1-yl	
1066	CH ₂ CH ₃	CF ₃	I	3-methyl-1,2,4-triazol-1-yl	
1067	CH ₂ CH ₃	CF ₂ CF ₃	I	3-methyl-1,2,4-triazol-1-yl	
1068	CH ₂ CH ₃	CF ₃	I	3-methyl-1,2,4-triazol-2-yl	
1069	CH ₂ CH ₃	CF ₂ CF ₃	I	3-methyl-1,2,4-triazol-2-yl	
1070	CH ₂ CH ₃	CF ₃	I	2-ethyl-2H-tetrazol-5-yl	60-61
1071	CH ₂ CH ₃	CF ₂ CF ₃	I	2-ethyl-2H-tetrazol-5-yl	
1072	CH ₂ CH ₃	CF ₃	I	1-ethyl-1H-tetrazol-5-yl	99-100
1073	CH ₂ CH ₃	CF ₂ CF ₃	I	1-ethyl-1H-tetrazol-5-yl	
1074	CH ₂ CH ₃	CF ₃	I	2-isopropyl-2H-tetrazol-5-yl	63-64
1075	CH ₂ CH ₃	CF ₂ CF ₃	I	2-isopropyl-2H-tetrazol-5-yl	

1076	CH ₂ CH ₃	CF ₃	I	1-isopropyl-1H-tetrazol-5-yl	98-99
1077	CH ₂ CH ₃	CF ₂ CF ₃	I	1-isopropyl-1H-tetrazol-5-yl	
1078	CH ₂ CH ₃	CF ₃	I	2-propargyl-2H-tetrazol-5-yl	64
1079	CH ₂ CH ₃	CF ₂ CF ₃	I	2-propargyl-2H-tetrazol-5-yl	
1080	CH ₂ CH ₃	CF ₃	I	1-propargyl-1H-tetrazol-5-yl	oil
1081	CH ₂ CH ₃	CF ₂ CF ₃	I	1-propargyl-1H-tetrazol-5-yl	
1082	CH ₂ CH ₃	CF ₃	I	4,5-dimethylimidazol-1-yl	
1083	CH ₂ CH ₃	CF ₂ CF ₃	I	4,5-dimethylimidazol-1-yl	
1084	CH ₂ CH ₃	CF ₃	I	4,5-dibromoimidazol-1-yl	
1085	CH ₂ CH ₃	CF ₂ CF ₃	I	4,5-dibromoimidazol-1-yl	
1086	CH ₂ CH ₃	CF ₃	I	4-trifluoromethylimidazol-1-yl	
1087	CH ₂ CH ₃	CF ₂ CF ₃	I	4-trifluoromethylimidazol-1-yl	
1088	CH ₂ CH ₃	CF ₃	I	4-cyanoimidazol-1-yl	
1089	CH ₂ CH ₃	CF ₂ CF ₃	I	4-cyanoimidazol-1-yl	
1090	CH ₂ CH ₃	CF ₃	I	4,5-diiodoimidazol-1-yl	
1091	CH ₂ CH ₃	CF ₂ CF ₃	I	4,5-diiodoimidazol-1-yl	
1092	CF ₃	CF ₃	I	4,5-dichloroimidazol-1-yl	
1093	CF ₃	CF ₂ CF ₃	I	4,5-dichloroimidazol-1-yl	
1094	CF ₃	CF ₃	I	3-methyl-1,2,4-triazol-1-yl	
1095	CF ₃	CF ₂ CF ₃	I	3-methyl-1,2,4-triazol-1-yl	
1096	CF ₃	CF ₃	I	3-methyl-1,2,4-triazol-2-yl	
1097	CF ₃	CF ₂ CF ₃	I	3-methyl-1,2,4-triazol-2-yl	
1098	CF ₃	CF ₃	I	2-ethyl-2H-tetrazol-5-yl	
1099	CF ₃	CF ₂ CF ₃	I	2-ethyl-2H-tetrazol-5-yl	
1100	CF ₃	CF ₃	I	1-ethyl-1H-tetrazol-5-yl	
1101	CF ₃	CF ₂ CF ₃	I	1-ethyl-1H-tetrazol-5-yl	
1102	CF ₃	CF ₃	I	2-isopropyl-2H-tetrazol-5-yl	
1103	CF ₃	CF ₂ CF ₃	I	2-isopropyl-2H-tetrazol-5-yl	
1104	CF ₃	CF ₃	I	1-isopropyl-1H-tetrazol-5-yl	
1105	CF ₃	CF ₂ CF ₃	I	1-isopropyl-1H-tetrazol-5-yl	
1106	CF ₃	CF ₃	I	2-propargyl-2H-tetrazol-5-yl	
1107	CF ₃	CF ₂ CF ₃	I	2-propargyl-2H-tetrazol-5-yl	
1108	CF ₃	CF ₃	I	1-propargyl-1H-tetrazol-5-yl	
1109	CF ₃	CF ₂ CF ₃	I	1-propargyl-1H-tetrazol-5-yl	
1110	CF ₃	CF ₃	I	4,5-dimethylimidazol-1-yl	
1111	CF ₃	CF ₂ CF ₃	I	4,5-dimethylimidazol-1-yl	
1112	CF ₃	CF ₃	I	4,5-dibromoimidazol-1-yl	
1113	CF ₃	CF ₂ CF ₃	I	4,5-dibromoimidazol-1-yl	
1114	CF ₃	CF ₃	I	4-trifluoromethylimidazol-1-yl	
1115	CF ₃	CF ₂ CF ₃	I	4-trifluoromethylimidazol-1-yl	
1116	CF ₃	CF ₃	I	4-cyanoimidazol-1-yl	
1117	CF ₃	CF ₂ CF ₃	I	4-cyanoimidazol-1-yl	
1118	CF ₃	CF ₃	I	4,5-diiodoimidazol-1-yl	
1119	CF ₃	CF ₂ CF ₃	I	4,5-diiodoimidazol-1-yl	

Claims

1. Pyrimidine derivatives represented by the formula (1),



(1)

wherein R¹ is H, C₁-C₆alkyl (being optionally substituted by one or more of halogen), C₂-C₆alkenyl (being optionally substituted by one or more of halogen), C₂-C₆alkynyl (being optionally substituted by one or more of halogen or trialkylsilyl), C₁-C₆alkoxy (being optionally substituted by one or more of halogen), C₂-C₆alkenyloxy (being optionally substituted by one or more of halogen), C₂-C₆alkynyloxy (being optionally substituted by one or more of halogen), C₁-C₆alkylthio (being optionally substituted by one or more of halogen), C₁-C₆alkylsulfinyl (being optionally substituted by one or more of halogen), C₁-C₆alkylsulfonyl (being optionally substituted by one or more of halogen), phenyl (being optionally substituted by one or more of halogen, alkyl, haloalkyl or alkoxy), pyridin-2-yl (being optionally substituted by one or more of halogen, alkyl, haloalkyl or phenyl), pyridin-3-yl (being optionally substituted by one or more of halogen, alkyl, haloalkyl or phenyl), pyridin-4-yl (being optionally substituted by one or more of halogen, alkyl, haloalkyl or phenyl), imidazol-1-yl (being optionally substituted by one or more of halogen, alkyl or alkoxy), pyrazol-1-yl (being optionally substituted by one or more of halogen, alkyl or alkoxy) or N(R⁴)C(O)R⁵,

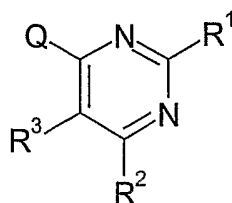
R² is polyfluoroC₁-C₆alkyl,

R³ is fluorine, chlorine, bromine or iodine; ethenyl or ethynyl (being optionally substituted by one or more of halogen),

R⁴ and R⁵ are, independently, H, C₁-C₆alkyl (being optionally substituted by one or more of halogen); or R⁴ and R⁵ can join together to form a 5 or 6-membered ring,

Q is a heteroaromatic ring selected from the following ring system; imidazol-1-yl, pyrazol-1-yl, 1,2,3-triazol-1-yl, 1,2,3-triazol-2-yl, 1,2,4-triazol-1-yl, 1,2,4-triazol-4-yl, benzimidazol-1-yl or tetrazol-5-yl groups (being optionally substituted by one or more of halogen, cyano, hydroxy, mercapto, alkyl, haloalkyl, alkoxy, alkoxycarbonyl, amino, alkylamino, haloalkoxy, alkylthio or aralkylthio).

2. A fungicide for agricultural and horticultural use, comprising one or more of the pyrimidine derivatives represented by a formula (1)



(1)

wherein R¹ is H, C₁-C₆alkyl (being optionally substituted by one or more of halogen), C₂-C₆alkenyl (being optionally substituted by one or more of halogen), C₂-C₆alkynyl (being optionally substituted by one or more of halogen or trialkylsilyl), C₁-C₆alkoxy (being optionally substituted by one or more of halogen), C₂-C₆alkenyloxy (being optionally substituted by one or more of halogen), C₂-C₆alkynyloxy (being optionally substituted by one or more of halogen), C₁-C₆alkylthio (being optionally substituted by one or more of halogen), C₁-C₆alkylsulfinyl (being optionally substituted by one or more of halogen), C₁-C₆alkylsulfonyl (being optionally substituted by one or more of halogen), phenyl (being optionally substituted by one or more of halogen, alkyl, haloalkyl or alkoxy), pyridin-2-yl (being optionally substituted by one or more of halogen, alkyl, haloalkyl or phenyl), pyridin-3-yl (being optionally substituted by one or more of halogen, alkyl, haloalkyl or phenyl), pyridin-4-yl (being optionally substituted by one or more of halogen, alkyl, haloalkyl or phenyl), imidazol-1-yl (being optionally substituted by one or more of halogen, alkyl or alkoxy), pyrazol-1-yl (being optionally substituted by one or more of halogen, alkyl or alkoxy) or N(R⁴)C(O)R⁵,

R² is polyfluoroC₁-C₆alkyl,

R³ is fluorine, chlorine, bromine or iodine; ethenyl or ethynyl (being optionally substituted by one or more of halogen),

R⁴ and R⁵ are, independently, H, C₁-C₆alkyl (being optionally substituted by one or more of halogen); or R⁴ and R⁵ can join together to form a 5 or 6-membered ring,

Q is a heteroaromatic ring selected from the following ring system; imidazol-1-yl, pyrazol-1-yl, 1,2,3-triazol-1-yl, 1,2,3-triazol-2-yl, 1,2,4-triazol-1-yl, 1,2,4-triazol-4-yl, benzimidazol-1-yl or tetrazol-5-yl groups (being optionally substituted by one or more of halogen, cyano, hydroxy, mercapto, alkyl, haloalkyl, alkoxy, alkoxycarbonyl, amino, alkylamino, haloalkoxy, alkylthio or aralkylthio),

as the active principle and carrier.

INTERNATIONAL SEARCH REPORT

International application No.

PCT/US04/20114

A. CLASSIFICATION OF SUBJECT MATTER

IPC(7) : C07D 401/14, 403/04; A01N 43/54
US CL : 514/63, 256, 274; 544/229, 315, 333, 334

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

U.S. : 514/63, 256, 274; 544/229, 315, 333, 334

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)
CAS ONLINE

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	EP 0 407 899 A2 (HOECHST AKTIENGESELLSCHAFT) 06 July 1990 (06.07.1990), see formula (I).	1-2



Further documents are listed in the continuation of Box C.



See patent family annex.

* Special categories of cited documents:

"A" document defining the general state of the art which is not considered to be of particular relevance

"B" earlier application or patent published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T"

later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X"

document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y"

document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art

"&"

document member of the same patent family

Date of the actual completion of the international search

10 December 2004 (10.12.2004)

Date of mailing of the international search report

23 DEC 2004

Name and mailing address of the ISA/US

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