Wako Product Update

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Wako

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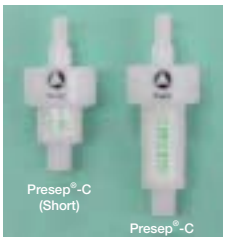
Column for Sample Pretreatment Relating to the Japanese Positive List System

Solid-phase extraction, which is used as a sample pretreatment prior to HPLC and GC analysis, has such advantages as easy operation and less solvent usage, and is widely used in many areas. Presep® series are categorized by their shapes; one is "Presep®-C type" which has a cartridge shape with closed both ends, the other is "Presep® syringe type" with one open and one closed ends.

In the Japanese positive list system which came into effect in 2006, pretreatment methods using various mini-columns for solid-phase extraction have been adopted. We introduce the Presep® series, which correspond to the fillers described in "Analytical methods of residual pesticides, feed additives, and veterinary drugs in foods *".



Presep® Series <Filler described in the analytical methods>

Designation described in the analytical methods: *	Description	Particle size (μm)	Weight of Filler	Wako Cat. No. (Pkg. Size)	Main purpose, characteristics
Octadecylsilylated silica gel mini-column	Presep® -C C18 (ODS)(Short)	63 ~ 212	470mg	297-47451 (5 × 10ea.)	Reversed-phase partition: Separation of hydrophobic substances in aqueous sample solution
	Presep® -C C18 (ODS)		900mg	292-32251 (5 × 10ea.)	
	Presep® -C C18 (ODS) Type M		5g/25mL	291-48554 (2 × 10ea.); 297-48551 (5 × 10ea.)	
Aminopropylsilylated silica gel mini-column	Presep® -C NH_2 (Short)	38 ~ 63	400mg	299-48751 (5 × 10ea.)	Removal of acidic compounds such as organic and fatty acids
	Presep® -C NH_2		820mg	295-48851 (5 × 10ea.)	
Silica gel mini-column	Presep® -C Silica Gel	75 ~ 150	800mg	294-31851 (50ea.)	Normal-phase absorption: Separation of substances with low to middle polarity in non-aqueous solution
Basic alumina column	Presep® -C Alumina	44 ~ 149	1.7g	290-32051 (5 × 10ea.)	Removal of interfering substances in pesticides and environmental samples
Synthetic magnesium silicate mini-column	Presep® -C Florisil	75 ~ 150	800mg	290-31951 (5 × 10ea.)	Removal of lipids, pretreatment of pesticide residue in foods
	Presep® Florisil		1g/6mL	291-44051 (5 × 10ea.)	
Porous diatomaceous earth column	Presep® Diatomaceous Earth, Granular	500 ~ 1400	1g/6mL	292-35051 (100ea.)	Desolvation
			2g/15mL	298-35151 (100ea.)	
			4.5g/25mL	294-35251 (100ea.)	
Carboxymethylated weakly acidic cation-exchange resin mini-column	Presep® CM	45 ~ 90	250mg/6mL	298-61801 (5 × 10ea.)	Polymer based weakly acidic cation-exchange

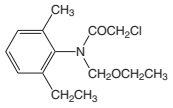
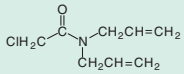
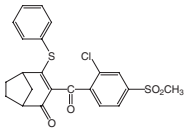
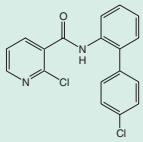
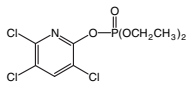
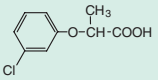
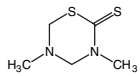
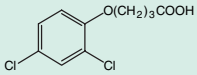
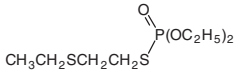
Presep® Series <Others>

Filler	Description	Particle size (μm)	Weight of Filler	Wako Cat. No. (Pkg. Size)	Main purpose, characteristics
Agri [Styrene divinylbenzene - Methacrylate based polymer]	Presep®-C Agri (Short)	50	220 mg	296-32651 (5 × 10ea.)	Collection of high polarity substances, which cannot normally be absorbed on ODS. Pretreatment for residual pesticide analysis.
	Presep® Agri		500 mg	291-26851 (50ea.)	
RPP [Hydrophilic Reversed Phase Polymer] [Styrene divinylbenzene - Polymethacrylate]	Presep®-C RPP (Short)	30, 60	190 mg	297-41851 (5 × 10ea.)	Collection of high polarity substances, which cannot normally be absorbed on ODS. Pretreatment of biological samples.
	Presep®-C RPP (Long)		360 mg	293-41951 (3 × 10ea.)	
	Presep® RPP		60 mg/3mL	294-36851 (5 × 10ea.)	
			200 mg/6mL	290-36951 (5 × 10ea.)	
			500 mg/6mL	290-37051 (5 × 10ea.)	
Glauber's salt, anhydrous (Na_2SO_4)	Presep®-C Na_2SO_4	45 ~ 90	2.3 g	296-32151 (5 × 10ea.)	Dehydration
DEA [Diethylaminoethyl Cl type]	Presep® DEA	45 ~ 90	250 mg/6mL	292-61701 (5 × 10ea.)	Polymer based weakly basic anion-exchange
QA [Trimethylaminoethyl Cl type]	Presep® QA	45 ~ 90	250 mg/6mL	296-61601 (5 × 10ea.)	Polymer based strongly basic anion-exchange
S (Sulfonylpropyl Na type]	Presep® S	45 ~ 90	250 mg/6mL	294-61901 (5 × 10ea.)	Polymer based strongly acidic cation-exchange
Silica gel	Presep® Silica Gel Type 3L	20 ~ 40	110 g	292-62801 (5ea.); 298-62803 (30ea.)	Preparative column packed with high quality silica gel and used for flash chromatography
	Presep® Silica Gel Type M		11 g	297-44151 (2 × 10ea.); 293-44153 (10 × 10ea.)	
	Presep® Silica Gel Type L		30 g	293-44251 (2 × 10ea.); 299-44253 (10 × 10ea.)	
Polyamide resin	Presep® Polyamide C-200 Type M		2 g/25mL	296-64901 (5 × 10ea.)	Preptreatment of determination of Paeoniflorin, which is component of kakkonto Extract
Silica Gel coated with 2,4-dinitrophenyl hydrazine	Presep®-C DNPH (Short)	75 ~ 150	400 mg	291-43951 (20ea.)	Collection of carbonyl compounds in aerial environment and Derivatization with 2,4-dinitrophenyl hydrazone (DNPH)
	Presep®-C DNPH		0.7 ~ 1 g	290-34251 (20ea.)	
Activated Alumina	Presep® Alumina, Activated DX		10 g	293-42551 (5ea.)	Dioxins Analysis
Active Carbon impregnated Silica Gel	Presep® Active Carbon-impregnated Silica Gel (Reverse Column)		1 g	297-43051 (5ea.)	
Active Carbon blended Silica Gel	Presep® Active Carbon-blended Silica Gel		1 g	299-41551 (10ea.)	
Active Carbon impregnated Silica Gel	Presep® Active Carbon-impregnated Silica Gel		1 g	293-41451 (10ea.)	
multilayer conformed to JIS K0311 and 0312	Presep® Multilayer Silica Gel		-	295-41651 (5ea.)	
dual structure column of polypropylene and hydrophobic teflon membrane-filter	Presep® Dehydration (30mL)	-	-	293-59901 (50ea.)	Separation of water and solvent, which specific gravity is light such as ethyl acetate for Organic Synthesis
	Presep® Dehydration (48well (3mL))			294-44351 (10ea.)	
	Presep® Dehydration			299-40451 (100ea.)	

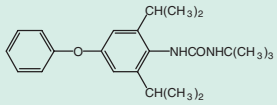
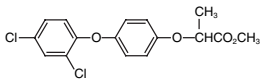
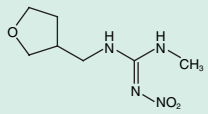
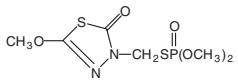
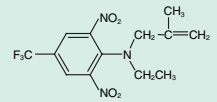
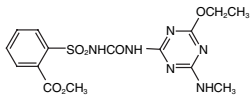
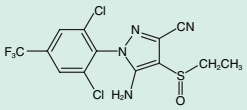
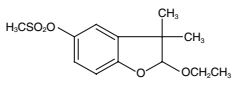
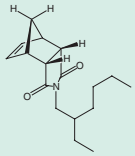
Positive List-Related Reference Standards

A positive list system related to residual pesticides, feed additives, veterinary drugs in foods, *etc*. has been introduced pursuant to the Law to Partially Revise the Food Sanitation Law (Law No. 55, 2003).
Wako has continued to launch reference standards for residual pesticide analysis and HPLC analysis of veterinary drugs. Other items are expected to be added in the future.

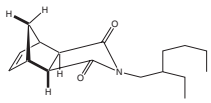
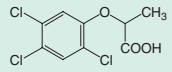
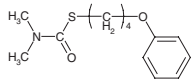
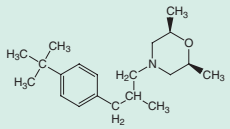
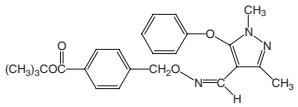
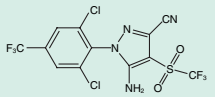
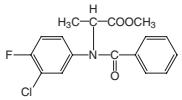
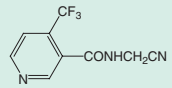
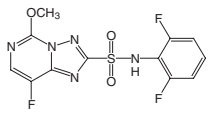
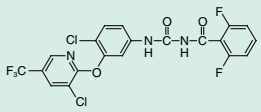
Standards for Pesticide Residue Analysis

Wako Cat. No. (Package Size)	Description	Chemical Structure/Chemical Formula/CAS No.
013-20511 (100mg)	**Acetochlor Standard**, 98.0+%(cGC) **Chemical Name:** 2-Chloro-*N*-ethoxymethyl-6'-ethylaceto-*o*-toluidide **Solubility:** Water 223(mg/L, 25˚C) Soluble in diethylether, acetone, benzene, chloroform, ethanol, ethylacetate, toluene **<Chloroacetanilide Herbicide>**	 CAS No. 34256-82-1 $C_{14}H_{20}ClNO_2$ = 269.77
019-20611 (100mg)	**Allidochlor Standard**, 98.0+%(cGC) **Chemical Name:** *N,N*-Diallyl-2-chloroacetamide **Another Name:** Randox **<Herbicide>**	 CAS No. 93-71-0 $C_8H_{12}ClNO$ = 173.64
023-15781 (100mg)	**Benzobicyclon Standard**, 98.0+%(HPLC) **Chemical Name:** 3-(2-Chloro-4-mesylbenzoyl)-2- phenylthiobicyclo[3.2.1]oct-2- en-4-one **Solubility:** Water 0.052 (mg/L, 20˚C) **<Herbicide>**	 CAS No. 156963-66-5 $C_{22}H_{19}ClO_4S_2$ = 446.97
027-15821 (100mg)	**Boscalid Standard**, 98.0+%(cGC) **Chemical Name:** 2-Chloro-*N*-(4'-chlorobiphenyl-2-yl)nicotinamide **Solubility:** Water 4.6 (mg/L, 20˚C) *n*-heptane < 10, methanol 40 ~ 50, acetone 160 ~ 200 (g/L, 20˚C) **<Bactericide>**	 CAS No. 188425-85-6 $C_{18}H_{12}Cl_2N_2O$ = 343.21
037-20131 (100mg)	**Chlorpyrifos Oxon Standard**, 98.0+%(cGC) **Chemical Name:** Diethyl 3, 5, 6-Trichloro-2-pyridyl Phosphate **<Organophosphorus insecticides>**	 CAS No. 5598-15-2 $C_9H_{11}Cl_3NO_4P$ = 334.52
033-19861 (200mg)	**Cloprop Standard**, 98.0+%(HPLC) **Chemical Name:** (±)-2-(3-Chlorophenoxy)propionic Acid **Another Name:** 3-CPA **Solubility:** Water 1.2, acetone 790.9, dimethylsulfoxide 2.685, ethanol 710.8, methanol 716.5, *iso*-octanol 247.3 (g/L, 22˚C) Benzene 24.2, chlorobenzene 17.1, toluene 17.6 (g/L, 24˚C) Diethyleneglycol 390.6, dimethylformamide 2,354.5, dioxane 789.2 (g/L, 24.5˚C) **<Aryloxyalkanoic acid Plant growth regulator>**	 CAS No. 101-10-0 $C_9H_9ClO_3$ = 200.62
045-29631 (200mg)	**Dazomet Standard**, 98.0+%(cGC) **Chemical Name:** Tetrahydro-3, 5-dimethyl-1, 3, 5-thiadiazine-2-thione **Solubility:** Water 3 g/kg (20˚C), cyclohexane 400, chloroform 391, a cetone 173, benzene 51, ethanol 15, diethylether 6 (g/kg, 20˚C) **<Nematicide Fungicide Herbicide Insecticide>**	 CAS No. 533-74-4 $C_5H_{10}N_2S_2$ = 162.28
048-29741 (200mg)	**2,4-DB Standard**, 98.0+%(HPLC) **Chemical Name:** 4-(2, 4-Dichlorophenoxy)butyric Acid **Solubility:** Water 46 mg/L (25˚C), Soluble in acetone, ethanol and diethylether, sparingly soluble in benzene, toluene and kerocene. **<Herbicide>**	 CAS No. 94-82-6 $C_{10}H_{10}Cl_2O_3$ = 249.09
046-30391 (100mg)	**Demeton-S Standard**, 98.0+%(cGC) **Chemical Name:** *O,O*-Diethyl *S*-2-Ethylthioethyl Phosphorothioate **Another Name:** Oxone compound of ethylthiometone **<Insecticide>**	 CAS No. 126-75-0 $C_8H_{19}O_3PS_2$ = 258.34

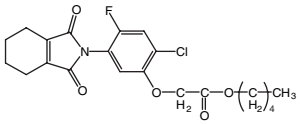
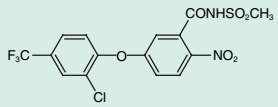
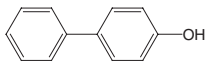
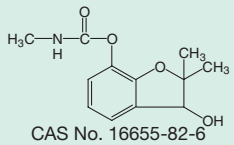
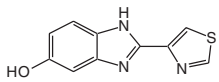
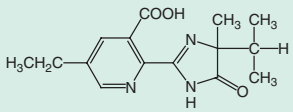
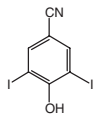
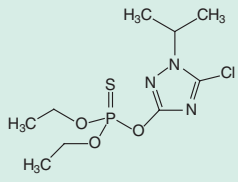
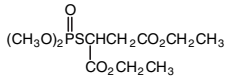
Standards for Pesticide Residue Analysis

Wako Cat. No. (Package Size)	Description	Chemical Structure/Chemical Formula/CAS No.
044-30451 (100mg)	**Diafenthiuron-urea Standard**, 98.0+%(HPLC) <Diafenthiouron metabolite>	 CAS No. 136337-67-2 $C_{23}H_{32}N_2O_2$ = 368.51
040-29681 (200mg)	**Diclofop-methyl Standard**, 98.0+%(cGC) **Chemical Name:** Methyl(*RS*)-2-[4-(2, 4-Dichlorophenoxy)phenoxy]propionate **Solubility:** Water 0.8 mg/L (pH 5.7, 20˚C) Acetone, dichloromethane, dimethylsulfoxide, ethyl acetate, toluene: > 500 (g/L) Polyethylene glycol 148, methanol 120, isopropanol 51, *n*-hexane 50 (g/L, 20˚C) <Acid 2-(4-aryloxyphenoxy)propionic Herbicide>	 CAS No. 51338-27-3 $C_{16}H_{14}Cl_2O_4$ = 341.19
041-29731 (100mg)	**Dinotefuran Standard**, 99.0+%(HPLC) **Chemical Name:** 1-Methyl-2-nitro-3-(tetrahydro-3-furylmethyl)guanidine <Insecticide>	 CAS No. 165252-70-0 $C_7H_{14}N_4O_3$ = 202.21
049-30381 (50mg)	**DMTP Oxon Standard**, 98.0+%(cGC) <Oxone compound of DMTP (methidathion)>	 CAS No. 39856-16-1 $C_6H_{11}N_2O_5PS_2$ = 286.27
052-07461 (200mg)	**Ethalfluralin Standard**, 98.0+%(cGC) **Chemical Name:** *N*-Ethyl-*α*,*α*,*α*-trifluoro-*N*-(2-methylallyl)-2, 6-dinitro-*p*-toluidine **Solubility:** Water 0.3 mg/L (pH 7, 25˚C) Acetone, acetonitrile, benzene, chloroform, dichloromethane, xylene: > 500 (g/L, 25˚C) <2,6-Dinitroaniline Herbicide>	 CAS No. 55283-68-6 $C_{13}H_{14}F_3N_3O_4$ = 333.26
059-07591 (200mg)	**Ethametsulfuron-methyl Standard**, 98.0+%(HPLC) **Chemical Name:** Methyl 2-[(4-Ethoxy-6-methylamino -1, 3, 5-triazin-2-yl)carbamoylsulfamoyl] benzoate **Solubility:** Water 1.7 (pH 5), 50 (pH 7), 410 (pH 9) (all in mg/L, 25˚C) Acetone 1.6, acetonitrile 0.83, ethanol 0.17, methanol 0.35, dichloromethane 3.9, ethylacetate 0.68 (g/L) <Sulfonylurea Herbicide>	 CAS No. 97780-06-8 $C_{15}H_{18}N_6O_6S$ = 410.41
055-07571 (200mg)	**Ethiprole Standard**, 98.0+%(HPLC) **Chemical Name:** 5-Amino-1-(2, 6-dichloro-*α*,*α*,*α*-trifluoro-*p*-tolyl)-4-ethylsulfinylpyrazole-3-carbonitrile <Insecticide>	 CAS No. 181587-01-9 $C_{13}H_9Cl_2F_3N_4OS$ = 397.20
055-07451 (200mg)	**Ethofumesate Standard**, 98.0+%(cGC) **Chemical Name:** (±)-2-Ethoxy-2, 3-dihydro-3, 3- dimethylbenzofuran-5-yl Methanesulfonate **Solubility:** Water 50mg/L (25˚C) Acetone, dichloromethane, dimethylsulfoxide, ethyl acetate: > 600 (g/L, 25˚C) Toluene, *p*-xylene 300 ~ 600, methanol 120 ~ 150, ethanol 60 ~ 75, isopropanol 25 ~ 30, hexane 4.67 (g/L, 25˚C) <Benzofuranyl Alkanesulfonate Herbicide>	 CAS No. 26225-79-6 $C_{13}H_{18}O_5S$ = 286.34
051-07431 (100mg)	***cis-N*-(2-Ethylhexyl)-8,9,10-trinorborn-5-ene-2,3-dicarboximide Standard**, 98.0+%(cGC) **Anothre Name:** *Endo*-MGK 264 <Synergist of insecticide>	 $C_{17}H_{25}NO_2$ = 275.39

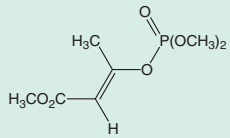
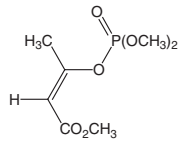
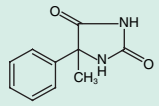
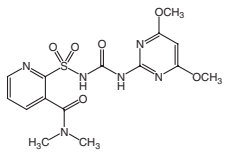
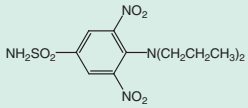
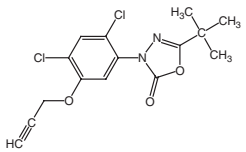
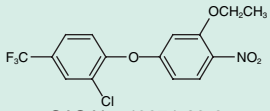
Standards for Pesticide Residue Analysis

Wako Cat. No. (Package Size)	Description	Chemical Structure/Chemical Formula/CAS No.
055-07711 (100mg)	***trans-N*-(2-Ethylhexyl)-8,9,10-trinorborn-5-ene-2,3-dicarboximide Standard**, 98.0+%(cGC) **Another Name:** *exo*-MGK 264 <Synergist of insecticide>	 $C_{17}H_{25}NO_2$ = 275.39
066-04861 (50mg)	**Fenoprop Standard**, 98.0+%(HPLC) **Chemical Name:** (±)-2-(2,4,5-Trichlorophenoxy)propionic Acid <Herbicide>	 CAS No.93-72-1 $C_9H_7Cl_3O_3$ = 269.51
067-04891 (200mg)	**Fenothiocarb Standard**, 98.0+%(cGC) **Chemical Name:** *S*-4-Phenoxybutyl Dimethylthiocarbamate **Solubility:** Water 30 (mg/L, 20˚C) Cyclohexane 3,800, acetonitrile 3,120, acetone 2,530, xylene 2,464, methanol 1,426, kerosene 80, hexane 66 (g/L, 20˚C) <Acaricide>	 CAS No. 62850-32-2 $C_{13}H_{19}NO_2S$ = 253.36
066-04981 (200mg)	**Fenpropimorph Standard**, 95.0+%(HPLC) **Chemical Name:** (±)-*cis*-4-[3-(4-*t*-Butylphenyl)-2-methylpropyl]-2,6-dimethylmorpholine **Solubility:** Water (4.3 (mg/L, pH 7, 20˚C)) acetone, chloroform, Ethylacetate, Cycrohexane, toluene, diethylether, ethanol > 1 (kg/kg, 20˚C) <Bactericide>	 CAS No. 67564-91-4 $C_{20}H_{33}NO$ = 303.48
067-05011 (20mg)	**(*Z*)-Fenpyroximate Standard**, 98.0+%(HPLC) **Chemical Name:** *t*-Butyl(*Z*)-α-(1,3-Dimethyl-5-phenoxypyrazol-4-ylmethyleneamino-oxy)-*p*-toluate <Insecticide Acaricide>	 CAS No.149054-53-5 $C_{24}H_{27}N_3O_4$ = 421.49
062-04961 (50mg)	**Fipronil Sulfone Standard**, 98.0+%(cGC) **Chemical Name:** 5-Amino-1-[2, 6-dichloro-4-(trifluoromethyl)phenyl]-4-(trifluoromethylsulfonyl)pyrazole-3-carbonitrile <Phenyl Pyrazole Insecticide and Acaricide>	 CAS No. 120068-36-2 $C_{12}H_4Cl_2F_6N_4O_2S$ = 453.15
063-04991 (100mg)	**Flamprop-methyl Standard**, 95.0%+%(cGC) **Chemical Name:** Methyl *N*-Benzoyl-*N*-(3-chloro-4-fluorophenyl)-DL-alaninate <Herbicide><Note: Used as the methyl and isopropyl estesrs.>	 CAS No. 52756-25-9 $C_{17}H_{15}ClFNO_3$ = 335.76
060-04881 (200mg)	**Flonicamid Standard**, 98.0+%(HPLC) **Chemical Name:** *N*-Cyanomethyl-4-(trifluoromethyl)nicotinamide **Solubility:** Water 5.2 (g/L, 20˚C) <Insecticide>	 CAS No. 158062-67-0 $C_9H_6F_3N_3O$ = 229.16
064-05021 (100mg)	**Florasulam Standard**, 98.0+%(HPLC) **Chemical Name:** 2',6',8-Trifluoro-5-methoxy[1,2,4]triazolo[1,5-c]pyrimidine-2-sulfonanilide **Solubility:** Water 6.36 (g/L, pH 7.0, 20˚C) <Herbicide>	 CAS No. 145701-23-1 $C_{12}H_8F_3N_5O_3S$ = 359.28
063-04871 (200mg)	**Fluazuron Standard**, 98.0+%(HPLC) **Chemical Name:** 1-[4-Chloro-3-(3-chloro-5-trifluoromethyl-2-pyridyloxy)phenyl]-3-(2,6-difluorobenzoyl)urea <Benzoylurea Acaricide>	 CAS No. 86811-58-7 $C_{20}H_{10}Cl_2F_5N_3O_3$ = 506.21

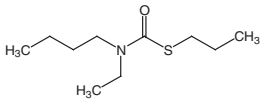
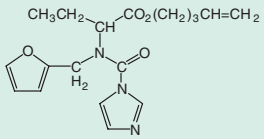
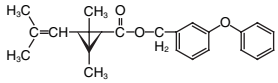
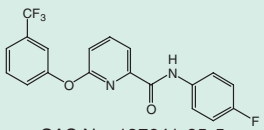
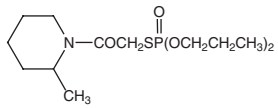
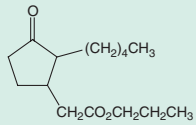
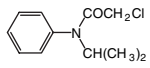
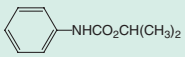
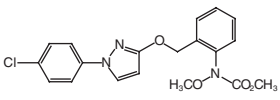
Standards for Pesticide Residue Analysis

Wako Cat. No. (Package Size)	Description	Chemical Structure/Chemical Formula/CAS No.
067-04771 (100mg)	**Flumiclorac-pentyl Standard**, 98.0+%(HPLC) **Chemical Name:** Pentyl[2-Chloro-5-(cyclohex-1-ene-1, 2-dicarboximido)-4-fluorophenoxy]acetate **Solubility:** Water 0.189 mg/L (25˚C) Methanol 48.7, hexane 3.28, *n*-octanol 16.0, acetone 590 (g/L) <Herbicide>	 CAS No. 87546-18-7 $C_{21}H_{23}ClFNO_5$= 423.86
060-04761 (100mg)	**Fomesafen Standard**, 98.0+%(HPLC) **Chemical Name:** 5-(2-Chloro-*α,α,α*-trifluoro-*p*-tolyloxy)-*N*-methylsulfonyl-2-nitrobenzamide **Solubility:** deionized water < 10 (pH 1 ~ 2), 10,000 (pH 9) (mg/L, 20˚C) <Herbicide>	 CAS No. 72178-02-0 $C_{15}H_{10}ClF_3N_2O_6S$ = 438.76
086-08501 (200mg)	**4-Hydroxybiphenyl Standard**, 98.0+%(HPLC) **Chemical Name:** *p*-Phenylphenol <Metabolite of Bifenazate (Insecticide)>	 CAS No. 92-69-3 $C_{12}H_{10}O$ = 170.21
085-08571 (50mg)	**3-Hydroxycarbofuran Standard**, 99.0+%(HPLC) **Chemical Name:** 2,3-Dihydro-2,2-dimethyl-3-hydroxy-7-benzofuranyl Methylcarbamate <Carbamate pesticide metabolite>	 CAS No. 16655-82-6 $C_{12}H_{15}NO_4$ = 237.25
080-08521 (20mg)	**5-Hydroxythiabendazole Standard**, 98.0+%(HPLC) **Chemical Name:** 2-(4-Thiazolyl)-1*H*-benzimidazol-5-ol <TBZ (thiabendazole) metabolite>	 CAS No. 948-71-0 $C_{10}H_7N_3OS$ = 217.25
093-05511 (200mg)	**Imazethapyr Standard**, 98.0+%(HPLC) **Chemical Name:** (*RS*)-5-Ethyl-2-(4-isopropyl-4-methyl-5-oxo-2-imidazolin-2-yl)nicotinic Acid **Solubility:** Water 1.4 (g/L, 25˚C), acetone 48.2, methanol 105, toluene 5, dichloromethane 185, dimethylsulfoxide 422, isopropanol 17, heptane 0.9 (g/L, 25˚C) <Herbicide>	 CAS No. 81335-77-5 $C_{15}H_{19}N_3O_3$ = 289.33
098-05561 (100mg)	**Ioxynil Standard**, 98.0+%(HPLC) **Chemical Name:** 4-Hydroxy-3,5-diiodobenzonitrile **Another Name:** Toxynil **Solubility:** Water 50 (mg/L, 20˚C) Acetone 73.5, ethanol, methanol 22, cyclohexanone 140, tetrahydrofuran 340, dimethylformamide 740, chloroform 10, carbon tetrachloride < 1 (g/L, 25˚C) <Hydroxybenzonitrile Herbicide>	 CAS No. 1689-83-4 $C_7H_3I_2NO$ = 370.91
095-05451 (200mg)	**Isazofos Standard**, 98.0+%(cGC) **Chemical Name:** *O*-5-Chloro-1-isopropyl-1*H*-1,2,4-triazol-3-yl *O,O*-Diethyl Phosphorothioate <Organophosphorus Nematicide Insecticide>	 CAS No. 42509-80-8 $C_9H_{17}ClN_3O_3PS$ = 313.74
137-15211 (200mg)	**Malaoxon Standard**, 98.0+%(cGC) **Chemical Name:** Diethyl[(Dimethoxyphosphino)thio]butanedioate <Oxon compound of Malathion (Insecticide, Acaricide)>	 CAS No. 1634-78-2 $C_{10}H_{19}O_7PS$ = 314.29

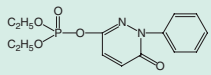
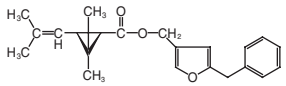
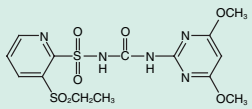
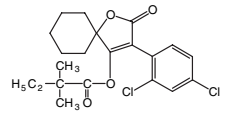
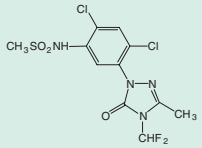
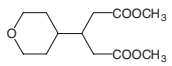
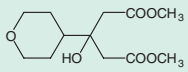
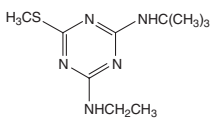
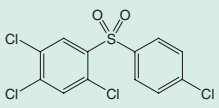
Standards for Pesticide Residue Analysis

Wako Cat. No. (Package Size)	Description	Chemical Structure/Chemical Formula/CAS No.
132-15521 (100mg)	**(*E*)-Mevinphos Standard**, 98.0+%(cGC) **Chemical Name:** (*E*)-2-Methoxycarbonyl-1-methylvinyl Dimethyl Phosphate **<Organophosphorus Insecticide and Acaricide>**	 CAS No. 298-01-1 $C_7H_{13}O_6P$ = 224.15
139-15531 (100mg)	**(*Z*)-Mevinphos Standard**, 98.0+%(cGC) **Chemical Name:** (*Z*)-2-Methoxycarbonyl-1- methylvinyl Dimethyl Phosphate **<Organophosphorus Insecticide and Acaricide>**	 CAS No. 338-45-5 $C_7H_{13}O_6P$ = 224.15
135-15371 (200mg)	**MPID Standard**, 98.0+%(cGC) **Chemical Name:** 5-Methyl-5-phenylimidazolidine-2, 4-dione **<Fenamidone metabolite>**	 CAS No. 6843-49-8 $C_{10}H_{10}N_2O_2$ = 190.20
143-08401 (200mg)	**Nicosulfuron Standard**, 98.0+%(HPLC) **Chemical Name:** 2-(4,6-Dimethoxypyrimidin-2-ylcarbamoylsulfamoyl)-*N*,*N*- dimethylnicotinamide **Solubility:** Water 0.07 (g/L) acetone 18, ethanol 4.5, chloroform 64, dimethylformamide 64, acetonitrile 23, toluene 0.370, hexane < 0.02, dichloromethane 160 (g/kg, 25˚C) **<Sulfonylurea Herbicide>**	 CAS No. 111991-09-4 $C_{15}H_{18}N_6O_6S$ = 410.41
158-02651 (200mg)	**Oryzalin Standard**, 98.0+%(HPLC) **Chemical Name:** 3,5-Dinitro-N^4,N^4-dipropylsulfanilamide **Solubility:** Water 2.6 (mg/L, 25˚C) acetone > 500, acetonitrile > 150, methanol 50, dichloromethane > 30, benzene 4, xylene 2 (g/L, 25˚C) **<2,6-Dinitroaniline Herbicide>**	 CAS No. 19044-88-3 $C_{12}H_{18}N_4O_6S$ = 346.36
155-02661 (100mg)	**Oxadiargyl Standard**, 98.0+%(HPLC) **Chemical Name:** 5-*t*-Butyl-3-[2,4-dichloro-5-(prop-2-ynyloxy)phenyl]-1,3,4-oxadiazol-2(3*H*)-one **Solubility:** Water 0.37 (mg/L, 20˚C) **<Herbicide>**	 CAS No. 39807-15-3 $C_{15}H_{14}Cl_2N_2O_3$ = 341.19
150-02591 (200mg)	**Oxyfluorfen Standard**, 98.0+%(cGC) **Chemical Name:** 2-Chloro-*α*,*α*,*α*-trifluoro-*p*-tolyl 3-Ethoxy-4-nitrophenyl Ether **Solubility:** Water 0.116 mg/L (25˚C) Acetone 72.5, cyclohexanone 61.5, dimethylformamide > 50, chloroform 50 ~ 55 (g/100g, 25˚C) **<Diphenyl ether Herbicide>**	 CAS No. 42874-03-3 $C_{15}H_{11}ClF_3NO_4$ = 361.70

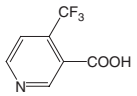
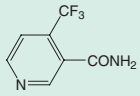
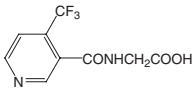
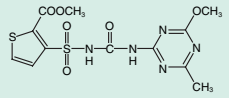
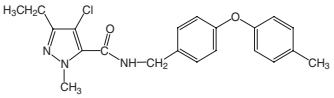
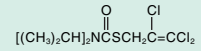
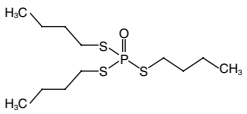
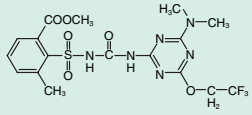
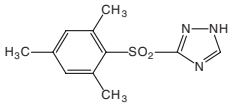
Standards for Pesticide Residue Analysis

Wako Cat. No. (Package Size)	Description	Chemical Structure/Chemical Formula/CAS No.
160-22051 (50mg)	**Pebulate Standard**, 98.0+%(cGC) **Chemical Name:** *S*-Propyl Butyl(ethyl)thiocarbamate **Solubility:** Water 60 (mg/L, 20˚C) Immingle with many kinds of organic solvent such as acetone, benzene, toluene, xylene, methanol, isopropanol <Thiocarbamate Herbicide>	 CAS No. 1114-71-2 $C_{10}H_{21}NOS$ = 203.34
168-23071 (50mg)	**Pefurazoate Standard**, 98.0+%(cGC) **Chemical Name:** Pent-4-enyl *N*-Furfuryl-*N*-imidazol-1-ylcarbonyl-DL-homoalaninate **Another Name:** Healthied **Solubility:** Water 443 (mg/L, 25˚C) Hexane 12.0, cyclohexane 36.9 dimethylsulfoxide, ethanol, acetone, acetonitrile, chloroform, ethyl acetate, toluene > 1,000 (g/L, 25˚C) <Bactericide>	 CAS No. 101903-30-4 $C_{18}H_{23}N_3O_4$ = 345.39
163-22661 (200mg)	**Phenothrin Standard (mixture of isomers)**, 98.0+%(cGC) **Chemical Name:** 3-Phenoxybenzyl(1*RS*, 3*RS* ; 1*RS*, 3*SR*)-2,2-Dimethyl-3-(methylprop-1-enyl) cyclopropanecarboxylate **Solubility:** Water <9.7 μg/L (25˚C) Methanol >5.0, hexane >4.96 (g/mL, 25˚C) <Pyrethroid Insecticide>	 CAS No. 26002-80-2 $C_{23}H_{26}O_3$ = 350.45
169-22901 (200mg)	**Picolinafen Standard**, 98.0+%(cGC) **Chemical Name:** 4-Fluoro-6-(α,α,α-trifluoro-*m*-tolyloxy)pyridine-2-carboxanilide **Another Name:** Pico **Solubility:** Water 4.7 × 10^{-5} (g/L, pH 7, 20˚C) Acetone 55.7, dichloromethane 76.4, ethylacetate 46.4, methanol 3.04 (g/100mL) <Herbicide>	 CAS No. 137641-05-5 $C_{19}H_{12}F_4N_2O_2$ = 376.30
168-22851 (50mg)	**Piperophos Oxon Standard**, 98.0+%(cGC) **Chemical Name:** *S*-2-Methylpiperidinocarbonyl-methyl *O*,*O*-Dipropyl Phosphorothioate <Organophorphorus Herbicide>	 CAS No. 62987-99-9 $C_{14}H_{28}NO_4PS$ = 337.42
166-22891 (200mg)	**Prohydrojasmon Standard (mixture of isomers)**, 98.0+%(cGC) **Chemical Name:** Propyl(3-Oxo-2-pentylcyclopentyl)acetate **Solubility:** Water 60.2 (mg/L) hexane, acetone, methanol, acetonitrile, chloroform, DMSO, toluene > 100 (g/L, 25˚C) <Plant Growht Regulator>	 CAS No. 158474-72-7 $C_{15}H_{26}O_3$ = 254.37
164-22191 (200mg)	**Propachlor Standard**, 98.0+%(cGC) **Chemical Name:** 2-Chloro-*N*-isopropylacetanilide **Solubility:** Water 580 mg/L (25˚C) Acetone 448, benzene 737, toluene 342, ethanol 408, xylene 239, chloroform 602, carbon tetrachloride 174, diethyl ether 219 (g/kg, 25˚C) <Chloroacetanilide Herbicide>	 CAS No. 1918-16-7 $C_{11}H_{14}ClNO$ = 211.69
164-22071 (200mg)	**Propham Standard**, 98.0+%(cGC) **Chemical Name:** Isopropyl Carbanilate **Solubility:** Water 250 (mg/L, 20˚C) Soluble in esters, alcohols, acetone, benzene, cyclohexane, xylene <Carbamate Herbicide and Plant growth regulator>	 CAS No. 122-42-9 $C_{10}H_{13}NO_2$ = 179.22
163-22921 (200mg)	**Pyraclostrobin Standard**, 98.0+%(HPLC) **Chemical Name:** Methyl *N*-{2-[1-(4-Chlorophenyl)-1*H*-pyrazol-3-yloxymethyl]phenyl}-(*N*-methoxy)carbamate **Solubility:** Water 1.9 (mg/L, 20˚C) <Fungicide>	 CAS No. 175013-18-0 $C_{19}H_{18}ClN_3O_4$ = 387.82

Standards for Pesticide Residue Analysis

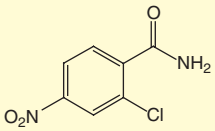
Wako Cat. No. (Package Size)	Description	Chemical Structure/Chemical Formula/CAS No.
165-22861 (50mg)	**Pyridaphenoxon Standard**, 98.0+%(cGC) **Chemical Name:** *O*-(1,6-Dihydro-6-oxo-1-phenyl-3-pyridazinyl)*O*,*O*-Diethyl Phosphate <Oxon compound of Pyridaphenthion (Organophosphorus Insecticide Acaricide)>	 CAS No. 63135-29-5 $C_{14}H_{17}N_2O_5P$ = 324.27
182-02071 (200mg)	**Resmethrin Standard**, 98.0+%(cGC) **Chemical Name:** 5-Benzyl-3-furylmethyl (1*RS*,3*RS*; 1*RS*,3*SR*)-2,2-Dimethyl-3-(2-methylprop-1-enyl) cyclopropanecarboxylate <Pyrethroid Insecticide>	 CAS No. 10453-86-8 $C_{22}H_{26}O_3$ = 338.44
186-02091 (200mg)	**Rimsulfuron Standard**, 98.0+%(HPLC) **Chemical Name:** 1-(4, 6-Dimethoxypyrimidin-2-yl)-3-(3-ethylsulfonyl-2-pyridylsulfonyl)urea <Sulfonylurea Herbicide>	 CAS No.122931-48-0 $C_{14}H_{17}N_5O_7S_2$ = 431.44
199-14231 (200mg)	**Spirodiclofen Standard**, 98.0+%(cGC) **Chemical Name:** 3-(2, 4-Dichlorophenyl)-2-oxo-1-oxaspiro[4.5]dec-3-en-4-yl 2, 2-Dimethylbutyrate <Acaricide>	 CAS No. 148477-71-8 $C_{21}H_{24}Cl_2O_4$ = 411.32
193-14751 (100mg)	**Sulfentrazone Standard**, 98.0+%(HPLC) **Chemical Name:** 2′,4′-Dichloro-5′-(4-difluoromethyl-4,5-dihydro-3-methyl-5-oxo-1*H*-1,2,4-triazol-1-yl)methanesulfonanilide **Another Name:** Authority **Solubility:** Water 0.11 (mg/g, 25˚C, pH 6), 0.78 (mg/g, 25˚C, pH 7), 16 (mg/g, 25˚C, pH 7.5) <Herbicide>	 CAS No. 122836-35-5 $C_{11}H_{10}Cl_2F_2N_4O_3S$ = 387.19
206-16691 (200mg)	**Tepraloxydim Metabolite (DMP) Standard**, 98.0+%(cGC) **Chemical Name:** Dimethyl 3-(3,4,5,6-Tetrahydro-2*H*-pyran-4-yl)glutarate	 $C_{12}H_{20}O_5$ = 244.28
209-16701 (200mg)	**Tepraloxydim Metabolite (OH-DMP) Standard**, 98.0+%(cGC) **Chemical Name:** Dimethyl 3-Hydroxy-3-(3,4,5,6-tetrahydro-2*H*-pyran-4-yl)glutarate	 $C_{12}H_{20}O_6$ = 260.28
201-16641 (200mg)	**Terbutryn Standard**, 98.0+%(cGC) **Chemical Name:** *N*-(1,1-Dimethylethyl)-*N*′-ethyl-6-(methylthio)-1,3,5-triazine-2,4-diamine **Solubility:** Water 22 (mg/L, 22˚C) acetone 220, hexane 9, *n*-octanol 130, methanol 220, toluene 45 (g/L, 20˚C) <1,3,5-Triazine Herbicide>	 CAS No. 886-50-0 $C_{10}H_{19}N_5S$ = 241.36
208-16651 (200mg)	**Tetradifon Standard**, 98.0+%(cGC) **Chemical Name:** 4-Chlorophenyl 2,4,5- Trichlorophenyl Sulfone **Solubility:** Water 0.078 (mg/L, 20˚C) Acetone 82, benzene 148, chloroform 255, cyclohexanone 200, dioxane 223, kerosene 10, methanol 10, toluene 135, xylene 115 (g/L, 10˚C) <Acaricide>	 CAS No. 116-29-0 $C_{12}H_6Cl_4O_2S$ = 356.05

Standards for Pesticide Residue Analysis

Wako Cat. No. (Package Size)	Description	Chemical Structure/Chemical Formula/CAS No.
205-16781 (50mg)	**TFNA Standard**, 98.0+%(HPLC) **Chemical Name:** 4-Trifluoromethylnicotinic Acid <Metabolite of Flonicamid>	 CAS No. 158063-66-2 $C_7H_4F_3NO_2$ = 191.11
202-16791 (50mg)	**TFNA-AM Standard**, 98.0+%(HPLC) **Chemical Name:** 4-Trifluoromethylnicotinamide <Metabolite of Flonicamid>	 CAS No. 158062-71-6 $C_7H_5F_3N_2O$ = 190.12
208-16771 (50mg)	**TFNG Standard**, 98.0+%(HPLC) **Chemical Name:** *N*-(4-Trifluoromethylnicotinoyl)glycine <Metabolite of Flonicamid>	 CAS No. 207502-65-6 $C_9H_7F_3N_2O_3$ = 248.16
207-16741 (200mg)	**Thifensulfuron-methyl Standard**, 98.0+%(HPLC) **Chemical Name:** Methyl 3-(4-Methoxy-6-methyl-1, 3, 5-triazin-2-ylcarbamoylsulfamoyl)thiophen-2-carboxylate **Solubility:** Water 223 (pH 5), 2,240 (pH 7), 8,830 (pH 9) (mg/L, 25˚C) Hexane <0.1, *o*-xylene 0.012, ethylacetate 3.3, methanol 2.8, acetonitrile 7.7, acetone 10.3, dichloromethane 23.8 (g/L, 25˚C) <Sulfonylurea Herbicide>	 CAS No. 79277-27-3 $C_{12}H_{13}N_5O_6S_2$ = 387.39
203-16841 (100mg)	**Tolfenpyrad Standard**, 98.0+%(cGC) **Chemical Name:** 4-Chloro-3-ethyl-1-methyl-*N*-[4-(*p*-tolyloxy)benzyl]pyrazole-5-carboxamide <Insecticide>	 CAS No. 129558-76-5 $C_{21}H_{22}ClN_3O_2$ = 383.87
208-16531 (200mg)	**Tri-allate Standard**, 98.0+%(cGC) **Chemical Name:** *S*-2,3,3-Trichloroallyl Diisopropylthiocarbamate **Solubility:** Water 4 mg/L (25˚C) Soluble in acetone, diethylether, ethyl acetate, ethanol, benzene, heptane. <Thiocarbamate Herbicide>	 CAS No. 2303-17-5 $C_{10}H_{16}Cl_3NOS$ = 304.66
201-16521 (200mg)	**Tribufos Standard**, 97.0+%(cGC) **Chemical Name:** *S*, *S*, *S*-Tributyl Phosphorotrithioate <Plant growth regulator>	 CAS No. 78-48-8 $C_{12}H_{27}OPS_3$ = 314.51
204-16751 (200mg)	**Triflusulfuron-methyl Standard**, 98.0+%(HPLC) **Chemical Name:** Methyl 2-[4-Dimethylamino-6-(2,2, 2-trifluoroethoxy)-1,3,5-triazin-2-ylcarbamoylsulfamoyl]-*m*-toluate <Sulfonylurea Herbicide>	 CAS No. 126535-15-7 $C_{17}H_{19}F_3N_6O_6S$ = 492.43
206-16951 (50mg)	**3-(2,4,6-Trimethylphenylsulfonyl)-1,2,4-triazole Standard**, 98.0+%(HPLC) <Decarbamoyl compound of cafenstrole>	 CAS No. 149591-20-8 $C_{11}H_{13}N_3O_2S$ = 251.30

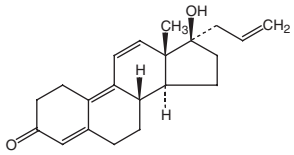
Veterinary Drug Standard for HPLC Analysis

Aklomide Standard,
98.0+% (HPLC)
<Parasiticide>



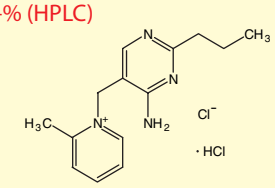
CAS No. 3011-89-0
$C_7H_5ClN_2O_3$ = 200.58
Wako Cat. #011-21411 (200mg)

Altrenogest Standard,
98.0+% (HPLC)
<Hormone drug>



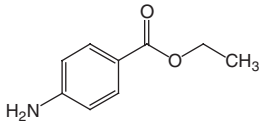
CAS No. 850-52-2
$C_{21}H_{26}O_2$ = 310.43
Wako Cat. #013-21231 (100mg)

Amprolium Hydrochloride Standard,
98.0+% (HPLC)



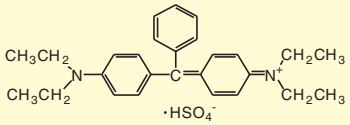
CAS No. 137-88-2
$C_{14}H_{19}ClN_4 \cdot HCl$ = 315.24
Wako Cat. #017-20651 (200mg)

Benzocaine Standard,
98.0+% (HPLC)



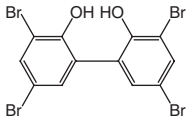
CAS No. 94-09-7
$C_9H_{11}NO_2$ = 165.19
Wako Cat. #020-15791 (200mg)

Brilliant Green Standard,
98.0+% (HPLC)



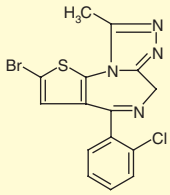
CAS No. 633-03-4
$C_{27}H_{34}N_2O_4S$ = 482.63
Wako Cat. #023-16021 (100mg)

Bromophene Standard,
98.0+% (HPLC)



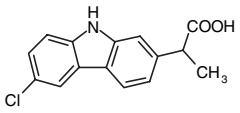
CAS No. 21987-62-6
$C_{12}H_6Br_4O_2$ = 501.79
Wako Cat. #028-15971 (100mg)

Brotizolam Standard



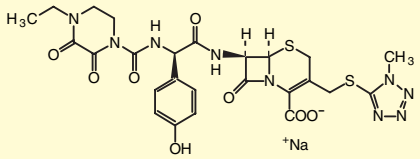
$C_{15}H_{10}BrClN_4S$ = 393.69
Wako Cat. #021-15341 (200mg)

Carprofen Standard,
98.0+% (HPLC)



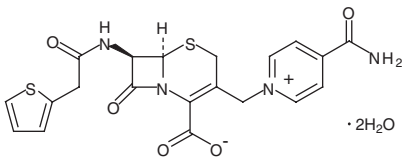
CAS No. 53716-49-7
$C_{15}H_{12}ClNO_2$ = 273.71
Wako Cat. #037-19761 (200mg)

Cefoperazone Sodium Salt Standard,
95.0+% (HPLC)



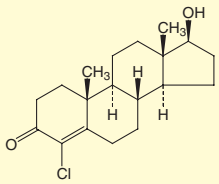
CAS No. 62893-20-3
$C_{25}H_{26}N_9NaO_8S_2$ = 667.65
Wako Cat. #035-19941 (200mg)

Cephalonium Dihydrate Standard



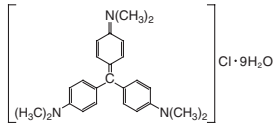
$C_{20}H_{18}N_4O_5S_2 \cdot 2H_2O$ = 494.54
Wako Cat. #032-19691 (200mg)

Clostebol Standard, 98.0+% (HPLC)



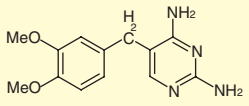
CAS No. 1093-58-9
$C_{19}H_{27}ClO_2$ = 322.87
Wako Cat. #034-20141 (200mg)

Crystal Violet Standard,
94.0+% (HPLC)



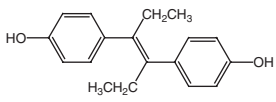
CAS No. 548-62-9 (anhydride)
$C_{25}H_{30}ClN_3 \cdot 9H_2O$ = 570.12
Wako Cat. #032-20201 (200mg)

Diaveridine Standard



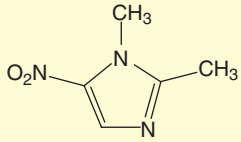
$C_{13}H_{16}N_4O_2$ = 260.29
Wako Cat. #048-29621 (200mg)

Diethylstilbestrol Standard,
98.0+% (HPLC)



CAS No. 56-53-1
$C_{18}H_{20}O_2$ = 268.35
Wako Cat. #048-30111 (200mg)

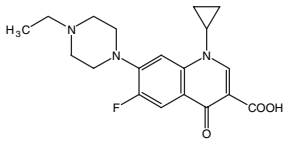
Dimetridazole Standard,
98.0+% (HPLC)



CAS No. 551-92-8
$C_5H_7N_3O_2$ = 141.13
Wako Cat. #047-30181 (200mg)

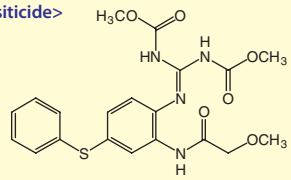
Veterinary Drug Standard for HPLC Analysis

Enrofloxacin Standard,
98.0+% (HPLC)



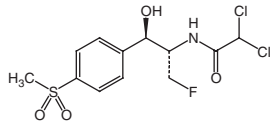
CAS No. 93106-60-6
$C_{19}H_{22}FN_3O_3$ = 359.39
Wako Cat. #059-07471 (200mg)

Febantel Standard, 98.0+% (HPLC)
<Parasiticide>



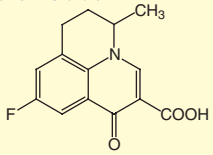
CAS No. 58306-30-2
$C_{20}H_{22}N_4O_6S$ = 446.48
Wako Cat. #066-05081 (100mg)

Florfenicol Standard,
98.0+% (HPLC)



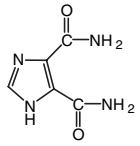
CAS No. 73231-34-2
$C_{12}H_{14}Cl_2FNO_4S$ = 358.21
Wako Cat. #060-05001 (200mg)

Flumequine Standard, 98.0+% (HPLC)
<Synthetic antimicro bial>



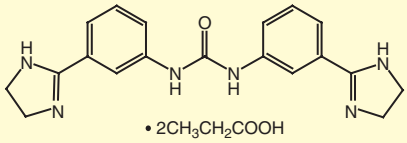
CAS No. 42835-25-6
$C_{14}H_{12}FNO_3$ = 261.25
Wako Cat. #069-04971 (200mg)

Glycarbylamide Standard, 98.0+% (HPLC)



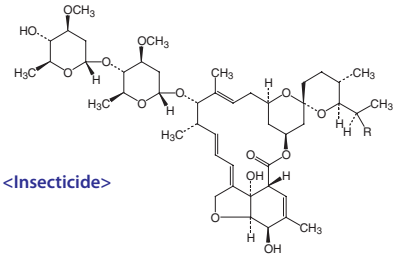
CAS No. 83-39-6
$C_5H_6N_4O_2$ = 154.13
Wako Cat. #077-05171 (200mg)

Imidocarb Dipropionate Standard,
98.0+% (HPLC)



• $2CH_3CH_2COOH$
CAS No. 55750-06-6
$C_{25}H_{32}N_6O_5$ = 496.56
Wako Cat. #092-05461 (200mg)

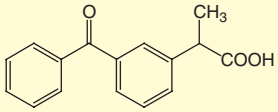
Ivermectin Standard, 95.0+% (HPLC)



<Insecticide>

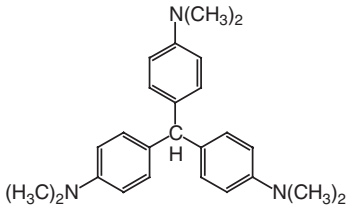
CAS No. 70288-86-7
22,23-Dihydroavermectin B_{1a} : $C_{48}H_{74}O_{14}$ = 875.09 (R=CH_2CH_3)
22,23-Dihydroavermectin B_{1b} : $C_{47}H_{72}O_{14}$ = 861.07 (R=CH_3)
Wako Cat. #090-05521 (200mg)

Ketoprofen Standard,
98.0+% (HPLC)



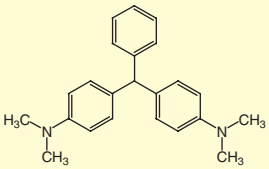
CAS No. 22071-15-4
$C_{16}H_{14}O_3$ = 254.28
Wako Cat. #111-00741 (200mg)

Leucocrystal Violet Standard,
98.0+% (HPLC)



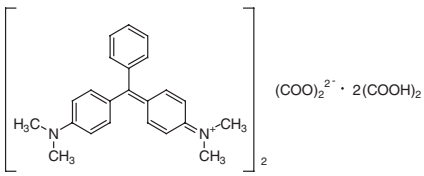
CAS No. 603-48-5
$C_{25}H_{31}N_3$ = 373.53
Wako Cat. #120-05371 (200mg)

Leucomalachite Green Standard,
98.0+% (HPLC)



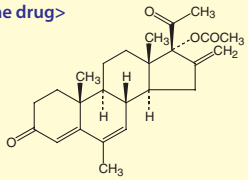
CAS No. 129-73-7
$C_{23}H_{26}N_2$ = 330.47
Wako Cat. #121-05301 (200mg)

Malachite Green Oxalate Standard



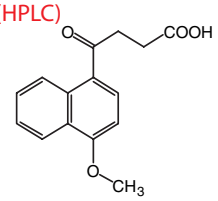
$C_{52}H_{54}N_4O_{12}$ = 927.00
Wako Cat. #132-15141 (200mg)

Melengestrol Acetate Standard,
98.0+% (HPLC)
<Hormone drug>



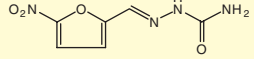
CAS No. 2919-66-6
$C_{25}H_{32}O_4$ = 396.52
Wako Cat. #132-15401 (50mg)

Menbutone Standard,
98.0+% (HPLC)



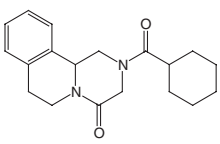
CAS No. 3562-99-0
$C_{15}H_{14}O_4$ = 258.27
Wako Cat. #135-15011 (200mg)

Nitrofurazone Standard,
98.0+% (HPLC)
<Synthetic antimicrobial>



CAS No. 59-87-0
$C_6H_6N_4O_4$ = 198.14
Wako Cat. #146-08511 (200mg)

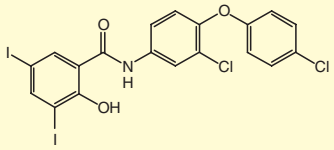
Praziquantel Standard,
98.0+% (HPLC)
<Parasiticide>



CAS No. 55268-74-1
$C_{19}H_{24}N_2O_2$ = 312.41
Wako Cat. #160-22931 (200mg)

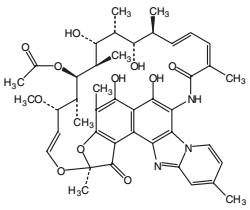
Veterinary Drug Standard for HPLC Analysis

Rafoxanide Standard, 97.0+% (HPLC)
<Parasiticide>



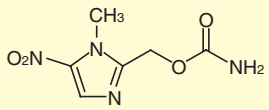
CAS No. 22662-39-1
$C_{19}H_{11}Cl_2I_2NO_3$ = 626.01
Wako Cat. #185-01961 (200mg)

Rifaximin Standard, 98.0+% (HPLC)



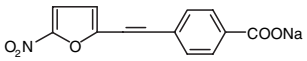
CAS No. 80621-81-4
$C_{43}H_{51}N_3O_{11}$ = 785.88
Wako Cat. #181-02041 (200mg)

Ronidazole Standard



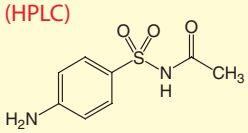
$C_6H_8N_4O_4$ = 200.15
Wako Cat. #180-02011 (200mg)

Sodium Nifurstyrenate Standard, 98.0+% (HPLC)



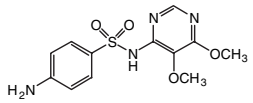
CAS No. 54992-23-3
$C_{13}H_8NNaO_5$ = 281.20
Wako Cat. #146-08251 (200mg)

Sulfacetamide Standard, 98.0+% (HPLC)



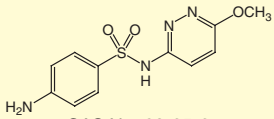
CAS No. 144-80-9
$C_8H_{10}N_2O_3S$ = 214.24
Wako Cat. #192-14581 (200mg)

Sulfadoxine Standard, 98.0+% (HPLC)



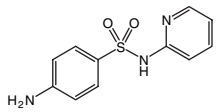
CAS No. 2447-57-6
$C_{12}H_{14}N_4O_4S$ = 310.33
Wako Cat. #192-14221 (200mg)

Sulfamethoxypyridazine Standard, 98.0+% (HPLC)
<Synthetic antimicrobial>



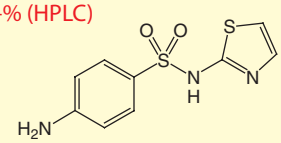
CAS No. 80-35-3
$C_{11}H_{12}N_4O_3S$ = 280.30
Wako Cat. #190-14641 (200mg)

Sulfapyridine Standard, 98.0+% (HPLC)



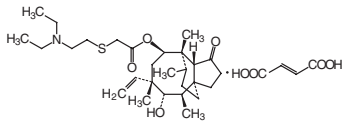
CAS No. 144-83-2
$C_{11}H_{11}N_3O_2S$ = 249.29
Wako Cat. #199-14471 (200mg)

Sulfathiazole Standard, 98.0+% (HPLC)



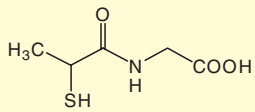
CAS No. 72-14-0
$C_9H_9N_3O_2S_2$ = 255.32
Wako Cat. #197-14651 (200mg)

Tiamulin Fumarate Standard, 98.0+% (HPLC)



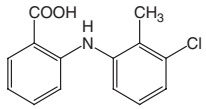
CAS No. 55297-96-6
$C_{32}H_{51}NO_8S$ = 609.81
Wako Cat. #201-16881 (200mg)

Tiopronin Standard, 98.0+% (HPLC)
<Hepatic stimulant>



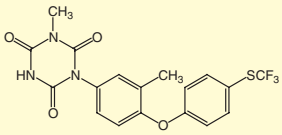
CAS No. 1953-02-2
$C_5H_9NO_3S$ = 163.19
Wako Cat. #204-16871 (200mg)

Tolfenamic Acid Standard, 98.0+% (HPLC)
<Nonsteroidal antiphlogistic>



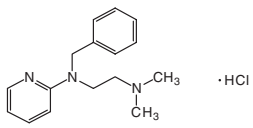
CAS No. 13710-19-5
$C_{14}H_{12}ClNO_2$ = 261.70
Wako Cat. #208-16911 (200mg)

Toltrazuril Standard, 98.0+% (HPLC)
<Parasiticide>



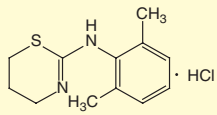
CAS No. 69004-03-1
$C_{18}H_{14}F_3N_3O_4S$ = 425.38
Wako Cat. #205-16921 (200mg)

Tripelennamine Hydrochloride Standard, 98.0+% (HPLC)
<Antihistamine>



CAS No. 154-69-8
$C_{16}H_{21}N_3$ • HCl = 291.82
Wako Cat. #208-17011 (200mg)

Xylazine Hydrochloride Standard, 98.0+% (HPLC)
<Sedative>

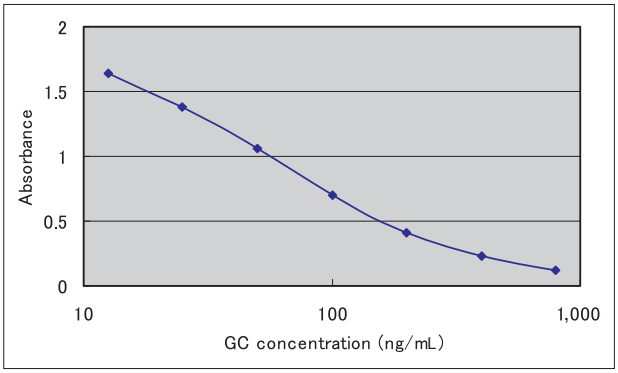


CAS No. 23076-35-9
$C_{12}H_{16}N_2S$·HCl = 256.79
Wako Cat. #240-00821 (200mg)

Analysis by immunoassay of Glycyrrhizin

Glycyrrhizin (GC) is an active ingredient contained in Glycyrrhiza, which is used for medicinal products and also used as a sweetener in foods. Glycyrrhizin ELISA Kit *Wako* is a competitive immunoassay kit with glycyrrhizin-specific monoclonal antibody, which was developed under the supervision of Professor Yukihiro Shoyama, Faculty of Pharmaceutical Sciences, Nagasaki International University. This kit does not require expensive instruments or organic solvents like the HPLC, which is widely used for the glycyrrhizin analyses, does. This kit can be used for analyses of glycyrrhiza in Glycyrrhiza, Glycyrrhiza-containing Chinese medicines, and foods.

Standard Curve



Protocol

Add 50 µL of sample/standard solution to a well of GC-Alb solid phase plate
↓
Add 50 µL of anti-glycyrrhizin antibody
↓ Allow to stand for 1 hour at room temperature
↓ Wash (4 times)
Add 100 µL of enzyme-labeled secondary antibody
↓ Allow to stand for 30 minutes at room temperature
↓ Wash (4 times)
Add 100 µL of enzyme substrate solution
↓ Allow to react for 10 minutes at room temperature
Add 100 µL of quenching solution
↓
Measure absorbance (450 nm)

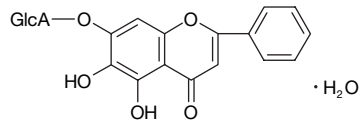
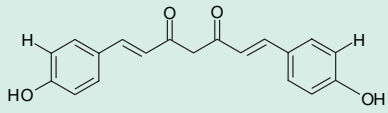
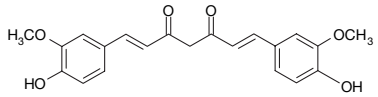
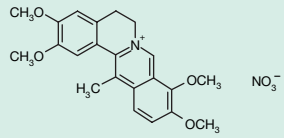
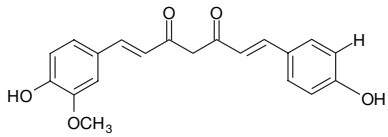
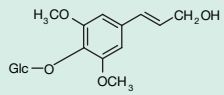
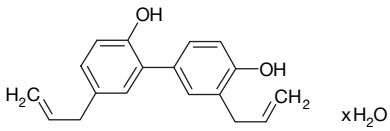
Measuring Range

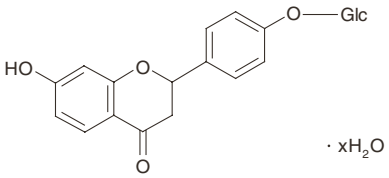
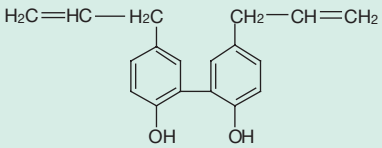
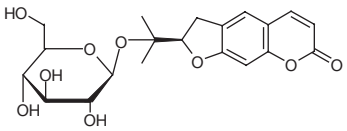
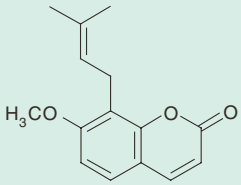
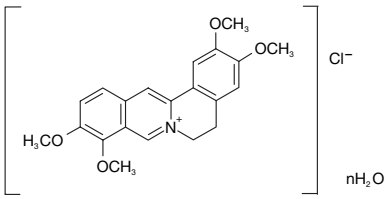
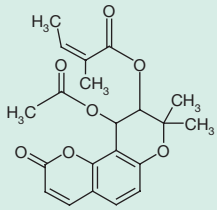
15.6 ~ 1,000 ng/mL

Description	Wako Cat. No. (Pkg. Size)	Storage	Shelf Life
Glycyrrhizin ELISA Kit *Wako*	298-65201 (96 tests)	Keep at 2 ~ 10 ˚C	12 months after production
[Kit Contents] 1) GC-Alb Coated Plate 2) GC Standard Stock Solution 3) Anti GC Monoclonal Antibody 4) Enzyme Labeled Secondary Antibody 5) Reaction Buffer 6) Wash Stock Solution 7) Substrate Solution 8) Stop Solution 9) Plate Seal	 1 plate 200 µL 100 µL 200 µL 100 mL 50 mL 15 mL 15 mL 2 sheets		

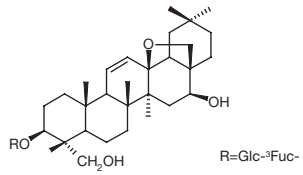
Related Products

Description	Wako Cat. No. (Pkg. Size)	Grade	Note
Glycyrrhizin, 90.0+% (HPLC)	074-03481 (100 mg)	for Biochemistry	An active component of licorice.
Glycyrrhizic Acid, 99.0+% (HPLC)	070-05161 (20 mg)	for the Japanese Pharmacopoeia Crude Drugs Test (for Thin-Layer Chromatography)	An active component of licorice. Used as the reference std for "TLC" in the Crude Drugs Test of the JP, 14th Edition.
Glycyrrhizic Acid Standard, 99.0+% (HPLC)	071-02271 (20 mg)	for Crude Drugs Determination	
Glycyrrhizic Acid Dipotassium Salt, 96.0 ~ 102.0% (Absorptiometry)	072-03862 (25 g)	for Biochemistry	
Glycyrrhizic Acid Monoammonium Salt n-Hydrate, 90.0+% (as anhydrous)(Titration)	075-02171 (10 g)	for Food Additives Test	
D-Glucuronyl-beta-1,2-D-glucuronic Acid Dipotassium Salt, 98.0+% (HPLC)	070-03101 (100 mg)	for Biochemistry	Hydrolysis of glycyrrhizin produces glycyrrhetinic acid and this product.
Glycyrrhetinic Acid, 98.0+% (Titration)	072-02181 (10 g)	for Food Additives Test	An aglycon of glycyrrhizin, which is also called enoxolone.

Wako Cat.#(Pkg. Size)	Description
024-15691 (20mg)	**Baicalin**, 98.0+% (HPLC) for Crude Drugs Test listed in the JP (for thin-layer chromatography) Source: *Scutellaria baicalensis* Georgi (*Labiatae*) It is used as a marker compound in the identification of Scutellaria Root. Scutellaria Root is the root of Scutellaria baicalensis Georgi, from which the periderm has been removed. In Chinese medicines, it is used for preparations that have antiphlogistic, diuretic and antipyretic actions, and is used for the inhibition of congestive inflammation.  CAS No. 21967-41-9 $C_{21}H_{18}O_{11} \cdot H_2O$ = 464.38
028-15591 (10mg)	**Bisdemethoxycurcumin Standard** for Crude Drugs Test Source: *Curcuma longa* Linné (*Zingiberaceae*) It is also known as Curcumin III and is a curcumin-related diarylheptanoid as well as demethoxycurcumin. Bisdemethoxycurcumin is a marker compound isolated from the Turmeric, the rhizome of Curcuma, Zingiberaceae.  CAS No. 33171-05-0 $C_{19}H_{16}O_4$ = 308.33
034-20021 (10mg)	**Curcumin Standard**, 99.0+% (HPLC) for Crude Drugs Test Source: *Curcuma longa* Linné (*Zingiberaceae*). This standard contains Curcumin I and no related diarylheptanoids such as demethoxycurcumin and bisdemethoxycurcumin. Curcumin is a marker compound isolated from the Turmeric, the rhizome of Curcuma, Zingiberaceae. Antidementia and antiinflammatory effects have been reported.  CAS No. 458-37-7 $C_{21}H_{20}O_6$ = 368.38
046-29541 (10mg)	**Dehydrocorydaline Nitrate** for Crude Drugs Test listed in the JP (for component determination) Source: *Corydalis turtschaninovii* Besser forma *yanhusuo* Y. H. Chou et C. C. Hsu*(Papaveraceae)* Dehydrocorydaline nitrate for component determination is listed in the revised JP, 15th edition under Corydalis Tuber. It is said that the active ingredient extracted from Corydalis Tuber has depuration, antispastic and analgesic actions. Corydaline is one of more than 10 alkaloids contained in Corydalis Tuber.  CAS No. 13005-09-9 $C_{22}H_{24}N_2O_7$ = 428.44
044-29841 (10mg)	**Demethoxycurcumin Standard** for Crude Drugs Test Source: *Curcuma longa* Linné (*Zingiberaceae*) It is also known as Curcumin II and is a curcumin-related diarylheptanoid. Demethoxycurcumin is a marker compound isolated from the Turmeric, the rhizome of Curcuma, Zingiberaceae.  CAS No. 22608-11-3 $C_{20}H_{18}O_5$ = 338.35
051-07551 (20mg)	**Eleutheroside B** for Crude Drugs Test listed in the JP (for liquid chromatography) Source: *Eleutherococcus senticosus* (Ruprechtet et Maximowicz) Maximowicz (*Acanthopanax senticosus* (Ruprecht et Maximowicz) Harms) (*Araliaceae*) Eleutheroside B for liquid chromatography is listed in the revised JP, 15th edition used for the identification under Eleutherococcus Senticosus Rhizome. Eleutherococcus Senticosus Rhizome is found in China, the Kuril Islands and Hokkaido, and is traditionally used as a crude drug.  CAS No. 118-34-3 $C_{17}H_{24}O_9 \cdot xH_2O$ ($C_{17}H_{24}O_9$ = 372.37)
083-08511 (20mg)	**Honokiol** for General Tests listed in the JP Source: *Magnolia obovata* Thunberg, *Magnolia officinalis* Rehder et Wilson *Magnolia officinalis* Rehder et Wilson var. *biloba* Rehder et Wilson (*Magnoliaceae*) Honokiol is used for the component determination of "Magnolia Bark" listed in the JP. Magnolia Bark is used in many Chinese medicines including digestive, antitussive and expectorant drugs. It is used as a standard in the selection of column. In the test, 1 mg each of magnolol and honokiol are dissolved in 10 mL of diluted methanol (7 in 10) and used as a sample.  CAS No. 35354-74-6 $C_{18}H_{18}O_2 \cdot xH_2O$($C_{18}H_{18}O_2$=266.33)

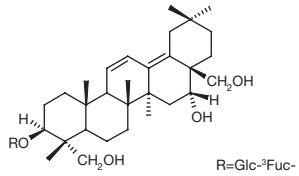
Wako Cat.#(Pkg. Size)	Description
129-05341 (20 mg)	**Liquiritin** for Crude Drugs Test in the JP (for thin-layer chromatography) Source: *Glycyrrhiza urelensis* Fischer, Glycyrrhiza glabra iLinne (*Leguminosae*) It is used as a marker compound in the identification of *Glycyrrhiza urelensis* Fischer, which is use for sweetener, antitussive and antidote.  CAS No. 551-15-5 $C_{21}H_{22}O_9$ = 418.39
135-14911 (20mg)	**Magnolol** for Crude Drugs Test listed in the JP (for component determination) Magnolol for component determination is listed in the revised JP, 15th edition.  CAS No. 528-43-8 $C_{18}H_{18}O_2$ = 266.33
148-08331 (5mg)	**Nodakenin Standard**, 98.0+% (HPLC) for Crude Drugs Test Source: *Angelica decursiva* Franch. et Savat. It is a standard for the identification of "Angelica decursiva Franchet et Savatier". It was first isolated by Junzo Arima. It is an active ingredient of Peucedani Radix. Peucedanum praeruptorum Dunn and Angelica decursiva Franchet et Savatier are umbelliferae that are found throughout China and Japan, and their dried roots have traditionally been combined in Chinese medicines and used as antipyretic, expectorant and antitussive drugs.  CAS No. 495-31-8 $C_{20}H_{24}O_9$ = 408.40
151-02641 (20 mg)	**Osthole** for Crude Drugs Test in the JP (for thin-layer chromatography) Source: *Cnidium monnieri* Cusson (*Umbelliferae*) A marker compound in the identification of the fruit of *Cnidium monnieri* Cusson (*Umbelliferae*), which is used for astringent antiphlogistic drug is listed in the revised JP, 15th edition used for TLC test.  CAS No. 484-12-8 $C_{15}H_{16}O_3$ = 244.29
165-22481 (20mg)	**Palmatine Chloride**, 99.0+% (HPLC) for Crude Drugs Test listed in the JP (for general test) Source: *Phellodendron amurense* Ruprecht, *Phellodendron chinense* Schneider (*Rutaceae*) In the JP 15th edition, it is used when selecting a column for the Phellodendron Bark assay. In the test, 1 mg each of berberine chloride and palmatine chloride are dissolved in methanol and used.  CAS No. 10605-02-4 $C_{21}H_{22}ClNO_4 \cdot nH_2O$($C_{21}H_{22}ClNO_4$ = 387.86)
168-22231 (10mg)	**Praeruptorin A Standard**, 98.0+% (HPLC) for Crude Drugs Test Source: *Peucedanum praeruptorum* Dunn. It is a standard for the identification of "Peucedanum praeruptorum Dunn". It was reported by Chen, Z. X. et al. in 1979. It is an active ingredient of Peucedani Radix. Peucedanum praeruptorum Dunn and Angelica decursiva Franchet et Savatier are umbelliferae that are found throughout China and Japan, and their dried roots have traditionally been combined in Chinese medicines and used as antipyretic, expectorant and antitussive drugs.  CAS No. 73069-25-7 $C_{21}H_{22}O_7$ = 386.40

Wako Cat.#(Pkg. Size)	Description
190-14521 (10mg)	**Saikosaponin a** for Crude Drugs Test listed in the JP (for component determination, for thin-layer chromatography) Source: *Bupleurum falcatum* Linné (*Umbelliferae*) Saikosaponin a is a marker compound isolated from the root of Bupleurum falcatum. With the publication of the revised Japanese Pharmacopoeia (JP), 15th edition, a new product where the grade for component determination has been added to the existing grade for thin-layer chromatography, is now available.
190-13541 (10mg)	**Saikosaponin a**, 99.0+% (HPLC) for Crude Drugs Test listed in the JP (for thin-layer chromatography)



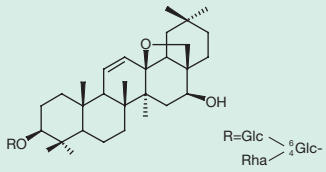
CAS No. 20736-09-8
$C_{42}H_{68}O_{13}$ = 780.98

196-14481 (20mg)	**Saikosaponin b_2** for Crude Drugs Test listed in the JP (for component determination, for thin-layer chromatography) Source: *Bupleurum falcatum* Linné (*Umbelliferae*) Saikosaponin b_2 is a marker compound isolated from the root of Bupleurum falcatum. This is used for identification and assay of the Saireito Extract listed in the JP.



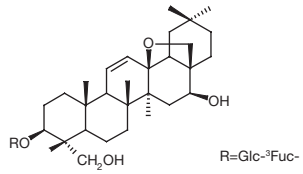
CAS No. 58316-41-9
$C_{42}H_{68}O_{13}$ = 780.98

197-08421 (10mg)	**Saikosaponin c Standard**, 99.0+% (HPLC) for Crude Drugs Test Source: *Bupleurum falcatum* Linné (*Umbelliferae*)



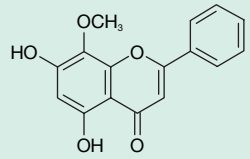
CAS No. 20736-08-7
$C_{48}H_{78}O_{17}$ = 927.12

197-14531 (10mg)	**Saikosaponin d** for Crude Drugs Test listed in the JP (for component determination) Source: *Bupleurum falcatum* Linné (*Umbelliferae*) Saikosaponin d is a marker compound for component determination of Bupleurum Root listed in the revised JP, 15th edition under General Tests.



CAS No. 20874-52-6
$C_{42}H_{68}O_{13}$ = 780.98

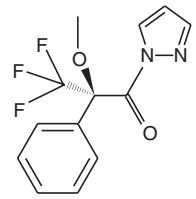
236-02321 (10mg)	**Wogonin**, 98.0+% (HPLC) for Crude Drugs Test listed in the JP (for thin-layer chromatography) Source: *Scutellaria baicalensis* Georgi (*Labiatae*) As with baicalin, it is used as a marker compound in the identification of Scutellaria Root.



CAS No. 632-85-9
$C_{16}H_{12}O_5$ = 284.26

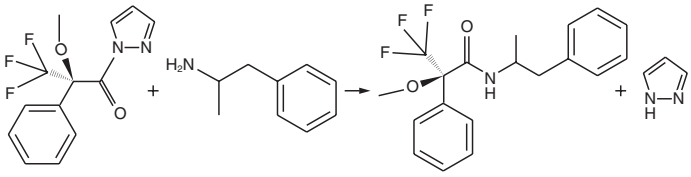
On-Column Chiral Derivatization Reagent for GC Separation of Optical Isomeric Amphetamine & Methamphetamine

MTPA-Pyrazole is a reagent for on-column chiral derivatization designed to separate and analyze the enantiomers of stimulants with a primary or secondary amine using a normal gas chromatography column. In the past, separation and analysis of enantiomers required either the use of a chiral stationary phase column for analysis without pretreatment, or a pretreatment consisting of a reaction with a chiral derivatization reagent to form a diastereomer for analyses using a normal column.
MTPA-Pyrazole allows for derivatization reactions with stimulants with a primary or secondary amine by on-column injection, enantiomers can be quickly separated and analyzed without any pretreatment.

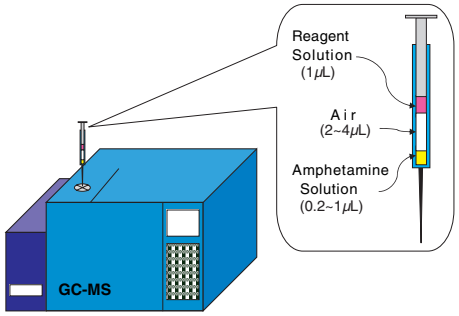


$C_{13}H_{11}F_3N_2O_2$ = 284.23
MTPA-Pyrazol

Chiral Derivatization Reaction of Amphetamine using MTPA-Pyrazole



MTPA-Pyrazole　Amphetamine　Amphetamine-MTPA



Usage

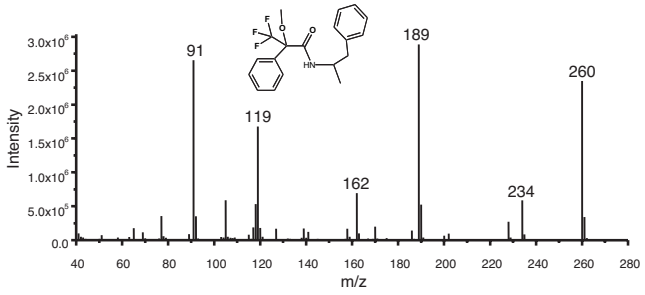
Preparation of MTPA-Pyrazole Solution: Dissolve MTPA-Pyrazole Reagent in ethyl acetate (*Special Grade*) to obtain a concentration of about 10 % (w/v).
Device (Example):

Gas Chromatography (GC) equipped with a DB1 or DB5 capillary column (30m × 0.25mm, 0.25 μm film thickness)
Oven Temperature: 70 ℃ (1 min.) to 280 ℃ at 20 ℃ per min.,
Injection Port Temperature: 200 ~ 250 ℃
Injection Technique: split/splitless

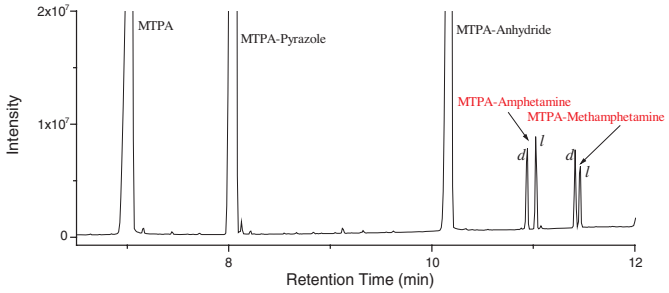
Usage:

① Draw 1.0 μL of MTPA-Pyrazole Solution into the microsyringe for GC injection, then draw 2.0~4.0 μL of air, and finally 0.2~1.0 μL of the stimulant extract *1.
② By Injection this into GC, the stimulant is derivatized with MTPA within the injection port or column, allowing for the enantiomers to be separated and detected.

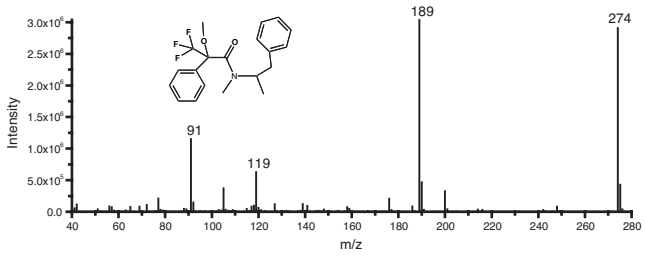
★1 : Free base form of a stimulant by dissolved in hexane.



Mass spectra of MTPA derivative of *d,l*-amphetamine



Total Ion Chromatogram of *d,l*-amphetamine and *d,l*-methamphetamine, on-column chiral derivatized with MTPA-Pyrazole



Mass spectra of MTPA derivative of *d,l*-methamphetamine

Description	Wako Cat. No. (Pkg. Size)	Storage	Shelf Life
MTPA-Pyrazole Reagent, 98% (HPLC), for Medicolegal Investigation	134-15221 (100 mg) 130-15223 (1 g)	Keep at -20℃ in a dark place. Filled with an inert gas.	5 years after production

Wakogel® Series

It is the most typical irregular support with high physical strength, and is widely used as a filler for column chromatography.
Silica gel itself is mostly used in adsorption chromatography for neutral and acidic samples.
ODS filler that contains chemically-bound silica gel and hydrophobic silylation agents, *etc*. has also been used widely in the field of column chromatography in recent years due to its extensive applications for reverse phase chromatography.

Wako Catalog No. (Package Size)	Description	same physical data as Wakogel C
		<Wakogel® C Series>
<Wakogel® C Series>		
#230-00065 (500g); #238-00061 (2kg); #236-00067 (10kg)	**Wakogel® C-100** (150 ~ 425μm: 75+%)	○
#237-00075 (500g); #233-00071 (2kg); #233-00077 (10kg)	**Wakogel® C-200** (75 ~ 150μm: 75+%)	
#234-00085 (500g); #232-00081 (2kg); #230-00087 (10kg)	**Wakogel® C-300** (45 ~ 75μm: 75+%)	
<Wakogel® C Series E Type E: economic>		
#236-01427 (10kg)	**Wakogel® C-100E** (150 ~ 425μm: 75+%)	○
#233-01437 (10kg)	**Wakogel® C-200E** (75 ~ 150μm: 75+%)	
#230-01447 (10kg)	**Wakogel® C-300E** (45 ~ 75μm: 75+%)	
<Wakogel® C series High Grade>		
#238-01465 (500g); #236-01461 (2kg); #234-01467 (10kg)	**Wakogel® C-300HG** (40 ~ 60μm: 70+%)	○
#235-01475 (500g); #233-01471 (2kg); #231-01477 (10kg)	**Wakogel® C-400HG** (20 ~ 40μm: 70+%)	
#232-01485 (500g)	**Wakogel® C-500HG** (5 ~ 20μm: 70+%)	
<Wakogel® LP Series>		
#232-00905 (500g)	**Wakogel® LP-60** (40 ~ 60μm: 70+%)	○
#239-00915 (500g)	**Wakogel® LP-40** (20 ~ 40μm: 70+%)	
#232-00925 (500g)	**Wakogel® LP-20** (10 ~ 20μm: 70+%)	
<Wakogel® FC Series: for Flash Chromatography>		
#239-00895 (500g); #235-00897 (10kg)	**Wakogel® FC-40** (20 ~ 40μm: 70+%)	○
#232-00885 (500g)	**Wakogel® FC-40FM** (20 ~ 40μm: 70+%)	
<Wakogel® C18 Series>		
#232-01561 (100g); #234-01565 (500g)	**Wakogel® 50C18** (38 ~ 63μm: 70+%)	
#235-01551 (100g); #237-01555 (500g)	**Wakogel® 100C18** (63 ~ 212μm: 70+%)	
<Wakogel® Q Series: Davison Grade equivalent>		
#234-00105 (500g)	**Wakogel® Q-12** (75 ~ 600μm: 90+%)	
#235-00135 (500g)	**Wakogel® Q-50** (75 ~ 250μm: 90+%)	
#238-00125 (500g)	**Wakogel® Q-23** (75 ~ 150μm: 75+%)	
#231-00115 (500g)	**Wakogel® Q-22** (~ 75μm: 75+%)	
#232-00145 (500g)	**Wakogel® Q-63** (~ 45μm: 80+%)	
<Wakogel® 50NH_2>		
NEW #239-02311 (100g); #231-02315 (500g)	**Wakogel® 50NH_2** (38 ~ 63μm: 70+%)	

	Separation Mode	Surface Shape	Pore Diameter	Pore Volume	Specific Surface Area	Loss on drying	pH	Precipitation volume	Flow Rate	Applicability
The product has the same property values as Wakogel® LP Series, Wakogel® FC Series, Silica Gel 70 for TLC, and Wakogel® B Series. Utilizing the difference of the particle sizes, it is easy to change the method to another chromatography method. 1. Total porous fractured silica gel for mass preparative isolation and purification 2. Higher adsorbed amount of silica gels enables higher loading amount of samples 3. This product has a wide range of applications including open column, low-pressure, and flash chromatography.										
	Normal Phase/ Adsorption	Irregular	70 Å	0.8mL/g	450m^2/g	~ 5.0%	5.5 ~ 7.0	1.8 ~ 2.4 mL/g	3.5 + mL/min.	open column
								1.8 ~ 2.7 mL/g	1.6 ~ 2.8 mL/min.	
							5.5 ~ 7.5	2.0 ~ 3.0 mL/g	0.5 ~ 1.4 mL/min.	open column/low pressure/flash
Wakogel® C Series E Type is a type of C series but has not been acid-treated, and is best suited for large-scale rough purification. Its physical properties are similar to the C Series. E: economy										
	Normal Phase/ Adsorption	Irregular	70 Å	0.8mL/g	450m^2/g	~ 6.0%	5.5 ~ 7.5	1.8 ~ 2.4 mL/g	3.5 + mL/min.	open column
								1.8 ~ 2.7 mL/g	1.6 ~ 2.8 mL/min.	
								2.0 ~ 3.0 mL/g	0.5 ~ 1.4 mL/min.	open column/low pressure/flash
Applicable to flash chromatography and midium and low pressure chromatography. This is a high grade type product of the Wakogel® C Series. A sharper particle size distribution, higher separability, and stable eluate flow have been achieved.										
	Normal Phase/ Adsorption	Irregular	70 Å	0.8mL/g	450m^2/g	~ 6.0%				open column/low pressure/flash
										low-medium pressure/flash
							nearly neutral			
The Wakogel® LP Series has the same property values as the Wakogel® C Series, but contains smaller particles. Due to a classification method improvement, fine powder is now rarely included, and thus a high-speed flow can be achieved. Since silica gel of Wakogel® LP Series has the same properties as Wakogel® FC Series, Wakogel® C Series, Wakogel® B Series, and TLC Plate Silicagel 70 Plate wako, it is easy to change to another chromatography method. LP: low pressure										
	Normal Phase/ Adsorption	Irregular	70 Å	0.8mL/g	450m^2/g	~ 5.0%				open column/low pressure/flash
										low-medium pressure/flash
Wakogel® FC Series is a support for flash chromatography, containing silica gel with small particles and a narrow particle size distribution. Since silica gel of Wakogel® FC Series has the same properties as Wakogel® LP Series, Wakogel® C Series, Wakogel® B Series, and TLC Plate Silicagel 70 Plate *Wako*, it is easy to change to another chromatography method. FM: contains fluorescence mixture										
	Normal Phase/ Adsorption	Irregular	70 Å	0.8mL/g	450m^2/g	~ 5.0%				flash chromatography
When samples are neutral and have 1 or 2 functions, an activated thin layer is used to develop in single or multiple solvent systems. When samples are organic base, a small amount of ammonia or diethylamine is added to a developing solvent. When it is used to separate acidic compounds, a small amount of acetic acid is added. When developing solvents containing water, there is no need to mix Wakogel with water and to thermally activate after thin layer preparation.										
	Reversed Phase	Irregular	120 Å	0.8mL/g	270m^2/g	~ 5.0%	C(%): 13 ~ 18%			
Wakogel® Q Series is silica gel to be widely used for the analysis, separation and purification of petrochemical products.										
	Normal Phase/ Adsorption	Irregular	30 Å			~ 10.0%	4.0 ~ 6.0	1.2 ~ 1.8mL/g		Increased absorption capacity of aromatic hydrocarbons and Reduced degradation of olefins. Used for separation of aromatic hydrocarbons in the petrochemical and coal-tar industries.
						~ 5.0%		1.2 ~ 1.7mL/g		Analysis of liquid saturated hydrocarbons, olefin and aromatic hydrocarbons by FIA
						~ 10.0%		1.4 ~ 1.7mL/g		Analysis of liquid saturated hydrocarbons and aromatic hydrocarbons by FIA.
								1.4 ~ 1.9mL/g		Separation by type, of aromatic hydrocarbons and olefins
								1.5 ~ 2.5mL/g		Davison Grade 63 equivalent
Irregular Aminopropyl Silica Gel A new product has been added to the well-received column filler Wakogel® series: Wakogel® 50NH$_2$, which is modified with aminopropyl groups. It is used for the column filler for medium-pressure, flash and open chromatography and solid-phase extraction.										
	Normal Phase/ Adsorption	Irregular				~ 7.0%	8.5 ~ 11.5			medium-pressure/ Flash/ Open / solid phase extraction

Wako Catalog No. (Package Size)	Description	same physical data as Wakogel C	
for environmental analysis			
<Wakogel® S-1>			
#230-00261 (250g)	**Wakogel® S-1** (45 ~ 355μm: 70+%)		
<Wakogel® DX, for Dioxin Analysis>			
#238-01781 (100g)	**Wakogel® DX** (75 ~ 150μm: 75+%)		
<5% Water-impregnated Silica Gel>			
#239-01711 (100g)	**5% Water-impregnated Silica Gel**	○	
for GC			
<Wakogel® G>			
#231-00095 (500g)	**Wakogel® G** (300 ~ 600μm: 80+%)		
for TLC			
Wako Catalog No. (Package Size)	**Description**	**same physical data as Wakogel C**	
<Chromato Sheet: Paper Fiber-made TLC Sheet>			
#036-17151 (20×20cm; 25ea)	**Chromato Sheet**	○	
<Wakogel® FM Plate>			
#233-00533 (20×20 cm; 20ea)	**Wakogel® FM Plate** (~ 45μm: 80+%, contains 5% binder & mixed white phosphor)	○	
<Silicagel 70 Plate Series>			
#193-09381 (5×10cm; 10 ea.); #197-08384 (5×20cm; 100ea.); #199-08383 (20×20cm; 25ea)	**Silicagel 70 Plate *Wako*** (5 ~ 15μm; contains no fluorescence indicator)	○	
#190-08391 (5×10cm; 10ea); #194-08394 (5×20cm; 100ea); #196-08393 (20×20cm; 25ea)	**Silicagel 70 FM Plate *Wako*** (5 ~ 15μm; FM: mixed Fluorescence substance)		
#193-08401 (5×10cm; 10ea); #193-08406 (5×10cm; 200ea); #197-08404 (5×20cm; 100ea); #199-08403 (20×20cm; 25ea)	**Silicagel 70 F_{254} Plate *Wako*** (5 ~ 15μm; F_{254}: green fluorescent (254nm))		
#195-12871 (20×20cm; 10ea)	**Silicagel 70 PF_{254} Plate *Wako*** (5 ~ 40μm; P: preparative; F_{254}: fluorescent (254nm))		
<Wakogel® B Series>			
#235-00015 (500g)	**Wakogel® B-0** (~ 45μm: 80+%)	○	
#237-00651 (250g)	**Wakogel® B-0F** (~ 45μm: 80+%)		
#232-00025 (500g)	**Wakogel® B-5** (~ 45μm: 80+%)		
#234-00041 (250g); 230-00043 (5kg)	**Wakogel® B-5F** (~ 45μm: 80+%)		
#230-00521 (250g)	**Wakogel® B-5FM** (~ 45μm: 80+%)		
#239-00035 (500g)	**Wakogel® B-10** (~ 45μm: 80+%)		

	Separation Mode	Surface Shape	Pore Diameter	Pore Volume	Specific Surface Area	Loss on drying	pH	Precipitation volume	Flow Rate	Applicability
Wakogel® S-1 is applicable as a silica gel of the column chromatograph tube to removal interfering substances at JIS K0093 "Testing method for polychlorobiphenyl (PCB) in industrial water and wastewater." Wakogel® S-1 is silica gel with special activities to separate PCB and organochlorine pesticide such as DDE and DDT which used to be difficult to separate and analyze due to their similar properties.										for Environmental Analysis
	Normal Phase/ Adsorption	Irregular								
Manuals and guidelines for the analysis of dioxins, JIS K0311, and K0312 specify methods for sample cleanup using multilayer silica gel column chromatography and sulfuric acid treatment: silica gel chromatography. We are also offering chemically modified silica gel for multilayer column chromatography. Wakogel® DX is suitable for multilayer column chromatography as well as silica gel chromatography pretreated with sulfuric acid treatment.										
It is a test solution for pretreatment for the analysis of environmental hormones (PCB, PBB, alkylphenols, and styrenes). Wakogel® C-200 has water adjusted to 5%. It can be readily and conveniently used for the analysis.										
	Normal Phase/ Adsorption	Irregular	70 Å	0.8 mL/g	450 m^2/g	-	5.5 ~ 7.0	1.8 ~ 2.7 mL/g	1.6 ~ 2.8 mL/min	

	Separation Mode	Surface Shape	Pore Diameter	Pore Volume	Specific Surface Area	Loss on drying	pH	Precipitation volume	Flow Rate	Applicability
A column absorbents for gas chromatography. It is suitable for the analysis of inorganic or organic gas and low-boiling hydrocarbons.										GC
	Normal Phase/ Adsorption	Irregular	70 Å			~ 5.0%	4.0 ~ 7.0	1.2 ~ 1.7mL/g		

	Separation Mode	Surface Shape	Pore Diameter	Pore Volume	Specific Surface Area	Phosphor	pH	Layer Thickness	Binder	Applicability
An environment-friendly product, making full use of advantages of "paper." It is light, easy to use and disposable with no damage to environment. Unlike a conventional thin-layer chromatoplate (TLC plate), this is made from paper fiber which is coated with Wakogel® C-500HG silica gel and fluorescent F_{254}. This product provides usability of paper and separabiltiy of silica gel.										TLC
	Adsorption/ Partition	Irregular	70 Å	0.8 mL/g	450 m^2/g	~ 6.0%	nearly neutral			
Wakogel® B-5FM has been applied evenly on a glass plate. To the FM plate, red, green and blue phosphors corresponding to the three primary colors of light have been added. When irradiated with a wide range of UV light (250 to 400 nm), spots exhibit UV absorption peculiar to the substance and may be observed as colored spots. Binder: Gypsum starch										
		Irregular						180 ~ 250μm		
Porous silica gel is adopted and the amount of adhesive agent is reduced to the minimum, thereby enabling easy sampling. Binder: Polymer										
		Irregular	70 Å	0.8mL/g	450m^2/g			190 ~ 250μm		
								0.7 ~ 0.9mm		
This is silica gel to create a plate for thin layer chromatography (TLC). Through given procedures, a plate for TLC can be made on a glass plate. The filler is end-capped after chemical bonding of ODS (octadecyl) group to the surface of silica gel. It is a suitable reversed-phase silica gel for middle to large scale purification/preparative isolation. It has narrow particle size distribution and can be used to separate and isolate at high flow rate.										
		Irregular					6.5 ~ 7.5	no phosphor	no binder	
								green phosphor	no binder	
								no phosphor	$CaSO_4 \cdot 0.5H_2O$: 5%	
								green phosphor		
								mixed white phosphor		
								no phosphor	$CaSO_4 \cdot 0.5H_2O$: 10%	

NMR Test Tubes

Wako offers glass test tubes for NMR analysis. High grade glass tubes are available at reasonable prices. We provide two types of tubes having different outside diameters; S-Type (Standard), and HG-Type (High Grade). While the S-Type has a relatively wider OD, the HG-Type has a narrower OD allowing for better accuracy of the analysis. In a high frequency range, it is advisable to use the HG-Type with less noise. Two different lengths of tube, 7- and 8-inch, are also available, allowing you to choose a suitable length to fit your NMR system. Samples are available on request.

Description	OD (mm)	Wall Thickness (mm)	Target Frequency (MHz)	Tube Material	Cap Material	Wako Cat. No. (Pkg. Size)
7 inch** (178 mm) **length						
NMR Test Tube S-Type (Standard)	4.932 ~ 4.970	0.4	100 ~ 800	Borosilicate glass	Polyethylene	291-47851 (10 ea.) 297-47853 (100 ea.)
NMR Test Tube HG-Type (High Grade)	4.951 ~ 4.965					297-47951 (10 ea.) 293-47953 (100 ea.)
8 inch** (203 mm) **length						
NMR Test Tube S-Type (Standard)	4.932 ~ 4.970	0.4	100 ~ 800	Borosilicate glass	Polyethylene	293-48151 (10 ea.) 299-48153 (100 ea.)
NMR Test Tube HG-Type (High Grade)	4.951 ~ 4.965					295-48351 (10 ea.) 291-48353 (100 ea.)

Caps for NMR Test Tube

In addition to the red and green caps currently attached to 7-inch and 8-inch tubes respectively, white, blue and yellow caps are also available, offering, a total of five colors. They are made from polyethylene. Due to easy labeling, these colored caps are extremely useful when conducting numerous measurements at once.

Please use these caps together with the test tubes.

Description	Wako Cat. No. (Pkg. Size)	Material of Cap
Polyethylene Cap for NMR Test Tube		
Red	297-49151 (100 ea.)	Polyethylene
Green	293-49251 (100 ea.)	
White	299-49351 (100 ea.)	
Blue	290-49401 (100 ea.)	
Yellow	291-49551 (100 ea.)	

Related Products

Description	Wako Cat. No. (Pkg. Size)	Grade	Storage
Tetramethylsilane	201-08451 (10 mL) 209-08452 (25 mL)	for NMR	Keep at 2 ~ 10°C in a dark place.
(*S*)-(-)-2-Methoxy-2-(trifluoromethyl) phenylacetic Acid	131-09121 (1 g)		
(*R*)-(+)-2-Methoxy-2-(trifluoromethyl) phenylacetic Acid	138-09131 (1 g)		

- Listed products are intended for laboratory research use only, and not to be used for drug, food or human use.
- Please visit our online catalog to search for other products from Wako ; **http://www.e-reagent.com**
- This brochure may contain products that cannot be exported to your country due to regulations.
- Bulk quote requests for some products are welcomed. Please contact us.

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