

4<sup>th</sup>

# Analytical Standards and Mixture Standard Solutions for Pesticides / Veterinary Drugs



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Analytical Standards  
and Mixture Standard  
Solutions for Pesticides  
/ Veterinary Drugs

Topics

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### Fujifilm Wako will expand CRMs lineup for pesticide residue analysis!

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Analytical Standards  
and Mixture Standard  
Solutions for Pesticides  
/ Veterinary Drugs

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## Pesticides / Veterinary-drugs Mixture Standard Solutions for the Simultaneous Analysis Method Under the JP Food Sanitation Act “Positive List System,” PL Series

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### Pesticides Mixture Standard Solutions

PL-1-2 / PL-2-1 / PL-3-3 / PL-4-2 / PL-5-1 / PL-6-3 / PL-7-2 / PL-8-1 / PL-9-2 / PL-10-1 / PL-12-1 /  
PL-13-1 / PL-14-2 / PL-15-1 / PL-16-2 / PL-17-2

### Veterinary Drugs Mixture Standard Solutions

PL-1-3 / PL-2-1

Analytical Standards  
and Mixture Standard  
Solutions for Pesticides  
/ Veterinary Drugs

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## Veterinary Drugs Mixture Standard Solutions by Drug Classification

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### Veterinary Drugs Mixture Standard Solutions

Quinolone / Sulfonamide + Antifolate / Macrolide / Hormone

Analytical Standards  
and Mixture Standard  
Solutions for Pesticides  
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## Organic Phosphorus Pesticides Mixture Standard Solutions, FA Series

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### Organic Phosphorus Pesticides Mixture Standard Solutions

FA-1 / FA-2 / FA-3

Analytical Standards  
and Mixture Standard  
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## Neonicotinoid Pesticides Mixture Standard Solution

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### Neonicotinoid Pesticides Mixture Standard Solution

Analytical Standards  
and Mixture Standard  
Solutions for Pesticides  
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## Pesticides Mixture Standard Solutions for the Simultaneous Analysis Method Specified in JP Water Quality Act, WQ Series

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### 3 Internal Standards Mixture Solution

### Pesticides Mixture Standard Solutions

WQ-1-2 / WQ-2 / WQ-3 / WQ-4 / WQ-5 / WQ-6 / WQ-7 / WQ-8 / WQ-9 / WQ-10

Analytical Standards  
and Mixture Standard  
Solutions for Pesticides  
/ Veterinary Drugs

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## Other Pesticides Mixture Standard Solutions

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### Pesticides Mixture Standard Solutions

32 Pesticides Mixture Standard Solution / 13 Pesticides Mixture Standard Solution / 8 Pesticides Mixture Standard Solution

Analytical Standards  
and Mixture Standard  
Solutions for Pesticides  
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## Related Products

➡ P. 67~P. 73

Solvents for Pesticide Residue Analysis / Solvents for HPLC and LC/MS / GalloTect™ / Solid-phase Extraction Columns,  
Presep® Series / HPLC Columns, Wakopak® Series

Analytical Standards  
and Mixture Standard  
Solutions for Pesticides  
/ Veterinary Drugs

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## List of Pesticides and Veterinary Drugs Analytical Standards (Index)

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# Pesticides and Veterinary Drugs Search System for Mixture Standard Solutions

- You can easily find the mixture standard solution you want!
- Our recommended columns are listed in the search results!

Please try it first!

<https://labchem-wako.fujifilm.com/us/product/search/pesticides.html>



## Easily search for mixture standard solutions!

I find it is difficult to prepare a mixture standard solution by myself because there are so many analytes...

I want a mixture standard solution containing A, B, C, and D, but there are so many products.

I couldn't search for a product from the CAS RN®, the search system registered the product with the CAS RN® as a salt...

I cannot search for products with multiple aliases.



Search system solves the problems!

Search by Analyte Search from Analyte List Search by CAS RN®

ECP

Keywords

Register the name or CAS RN® of the analyte in the mixture standard solution you want to find.

Search results




- You can find mixture standard solutions containing the registered analytes in order of the degree of agreement!
- Single analytical standards can also be searched!
- You can also search by analyte alias or salt CAS RN®!

## How to access

You can access the “Search System for Mixture Standard Solutions of Pesticides / Veterinary-drugs” from our website.

Fujifilm Wako analysis 

↓



Click on the search system banner!

## How to search

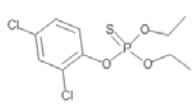
In the “Search System for Mixture Standard Solutions of Pesticides / Veterinary-drugs,” you can register analytes by [1] name or CAS RN<sup>®</sup> and [2] from the analyte list. In addition, in [1], you can search for analytes by their aliases and salt CAS RN<sup>®</sup>.

### [1] Register analytes by name or CAS RN<sup>®</sup>

Analytes with multiple aliases can be searched by any alias!

Search by Analyte  [Search from Analyte List](#)

Keywords



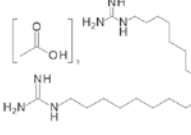
Name 1. Dichlofenthion  
Name 2. ECP  
\*Some aliases are not supported.

You can also search for analytes from the salt CAS RN<sup>®</sup>!

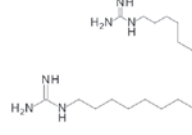
Search by Analyte  [Search from Analyte List](#)

Keywords

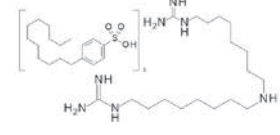
Search by CAS RN<sup>®</sup>



Iminocutadine  
Triacetate  
CAS RN<sup>®</sup> 57520-17-9



Iminocutadine  
CAS RN<sup>®</sup> 13516-27-3



Iminocutadine  
Albesilate  
CAS RN<sup>®</sup> 169202-06-6

\*Some salts are not supported.

### [2] Register analytes from component list

You can register the analytes from an analyte list arranged in alphabetical order!

Search by Analyte  [Search from Analyte List](#)

Keywords

**Analyte List**

A B C D E F G H I J K L M N O P Q R S T U  
V W X Y Z

<input type="checkbox"/> Abemethin	<input type="checkbox"/> Acrylamide	<input type="checkbox"/> Acetylcholinesterase Inhibitors	<input type="checkbox"/> Acetylcholinesterase Inhibitors
<input type="checkbox"/> Acetylcholinesterase Inhibitors	<input type="checkbox"/> Acetylcholinesterase Inhibitors	<input type="checkbox"/> Acetylcholinesterase Inhibitors	<input type="checkbox"/> Acetylcholinesterase Inhibitors
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<input type="checkbox"/> Acetylcholinesterase Inhibitors	<input type="checkbox"/> Acetylcholinesterase Inhibitors	<input type="checkbox"/> Acetylcholinesterase Inhibitors	<input type="checkbox"/> Acetylcholinesterase Inhibitors

## Search results

The search results are displayed in order from the mixture standard solution with the highest degree of match to the registered analytes. Since single analytical standards are also displayed in the search results, you can select products combining mixture standard solutions and single analytical standards from the search results. In addition, links to the product page of Fujifilm Wako's recommended columns for analyzing mixture standard solutions are also provided. This search system provides total support for your analysis of pesticides and veterinary drugs, from product selection to consideration of analysis conditions.

**Example** Register Benfuresate, ECP, and Cadusafos at keywords

The screenshot displays search results for pesticides, ordered by the highest degree of match to registered analytes. The results are as follows:

- 29 Pesticides Mixture Standard Solution WQ-9 (each 20µg/mL Acetonitrile Solution)** **3/29 Analytes hit!**
  - Recommended Column: Wakoal Valco®-B01310 2.0\*150mm
  - Listed columns used product testing!
- 48 Pesticides Mixture Standard Solution WQ-5 (each 20µg/mL Acetone Solution)** **3/50 Analytes hit!**
- Organophosphorus Pesticide Mixture Standard Solution FA-2 (each 20µg/mL)** **1/22 Analytes hit!**
- Pesticide Mixture Standard Solution PL-6-3 (each 20µg/mL Acetone Solution)** **1/30 Analytes hit!**
  - Flamprop-methyl is highlighted in a red box.
  - Click on the component name, to go to the product page of the single analytical standard!
- ECP Standard**
  - Single analytical standard products can also be searched!

↑  
Displayed in order of the highest degree of match to the registered analytes.  
↓

■ Please refer to our website for details.

How to Use

[https://labchem-wako.fujifilm.com/us/user\\_guide/pesticides\\_search/index.html](https://labchem-wako.fujifilm.com/us/user_guide/pesticides_search/index.html)





# Fujifilm Wako will expand its lineup of **CRMs for pesticide residue analysis!**

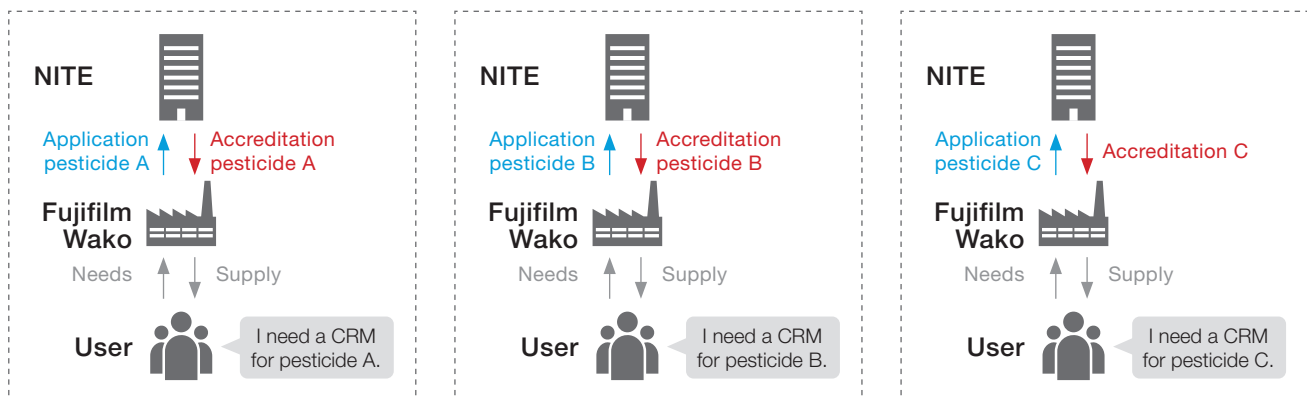
In 2023, Fujifilm Wako became the first company in the world to obtain comprehensive accreditation (flexible scope of accreditation) as a producer of reference materials (RMs), which will enable Fujifilm Wako to quickly and stably produce certified reference materials (CRMs) for pesticide residue analysis. By utilizing the flexible scope this accreditation affords, Fujifilm Wako will sequentially expand the lineup of CRMs.

## What is flexible scope of accreditation?

“Flexible scope of accreditation as a producer of RMs” is a system that allows RMs that are certified using methods accredited by the National Institute of Technology and Evaluation (NITE), a Japanese accreditation organization, to obtain accreditation as CRMs. In the past, to produce CRMs in Japan, it was necessary to obtain accreditation as a producer for each RM, and this was a time-consuming process. To solve this problem, NITE started the flexible scope of accreditation system, and Fujifilm Wako is one of the first companies to obtain this accreditation.

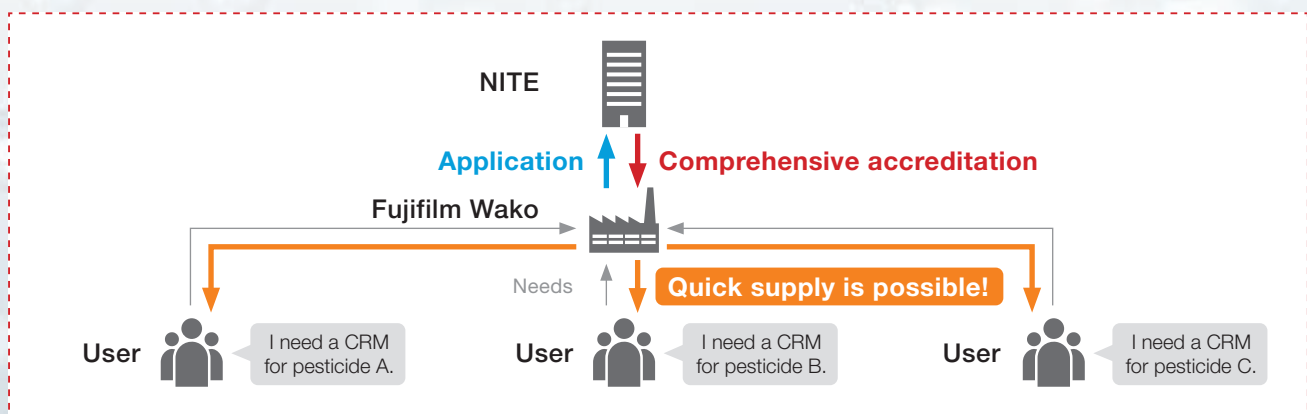
## Conventional system

- Need to get accreditation each time for each product.
- It takes time for CRM accreditation to be provided.



## Flexible scope of accreditation system

- No need to get accreditation each time for each product.
- CRMs can be supplied quickly.

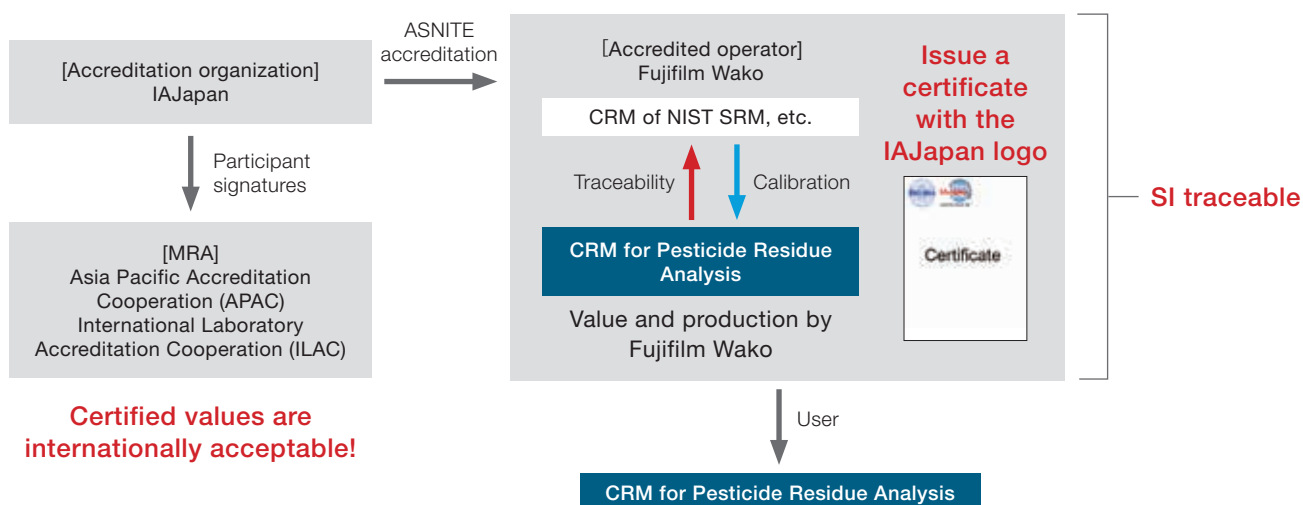


## ■ SI traceability mechanism CRM for pesticide residue analysis

This series “for pesticide residue analysis” are SI-traceable CRMs that use the National Institute of Standards and Technology (NIST SRM), the U. S. metrology standard, as the purity value source.

We use a method accredited by IAJapan, an accreditation body of NITE, for valuing our CRM.

This series is accompanied by a certificate bearing the IAJapan logo. It means that the purity (certified) value is SI traceable. In addition, IAJapan participates in the Mutual Recognition Accreditation Agreement (MRA) between accreditation bodies in different countries, so the certified values of this series are internationally accepted.



## ■ Comparison of grades for CRMs and analytical standards

Fujifilm Wako's Grades	for Pesticide Residue Analysis [CRM] <sup>*1</sup>	TraceSure <sup>®</sup>	Traceable Reference Material (TRM)	for Pesticide Residue Analysis [non-CRM] <sup>*1</sup>
Accreditation system	ASNITE <sup>*2</sup>		—	—
Metrological reference	NIST SRM, etc.	Calibration by NMIJ or CERI		—
MRA compatible	○		—	—
Certificate	IAJapan certificate		—	—
SI traceable	○		—	—

\*1 The “for Pesticide Residue Analysis” grade of CRM is indicated by the product name “XX Reference Material [CRM]”

Example) Imazosulfuron

[CRM]

Product Name: Imazosulfuron **Reference Material [CRM]**

Grade: for Pesticide Residue Analysis

[non-CRM]

Product Name: Imazosulfuron **Standard**

Grade: for Pesticide Residue Analysis

\*2 A program operated by IAJapan to complement areas that cannot be covered by other accreditation programs based on domestic law.

## ■ For the latest lineup of CRMs for Pesticide Residue Analysis, please visit our website.

TOP>Analytical Chemistry> Banner of the “Search System for Mixture Standard Solutions”

<https://labchem-wako.fujifilm.com/us/product/search/pesticides.html>





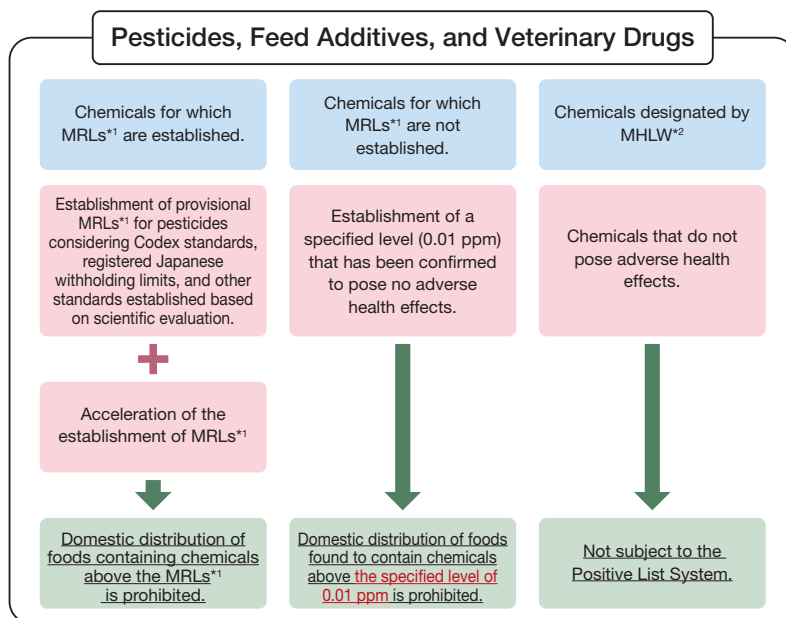


# Pesticides / Veterinary-drugs Mixture Standard Solutions for the Simultaneous Analysis Method Under the JP Food Sanitation Act “Positive List System,” PL Series

## What is the Positive List System?

The “Positive List System” is a system established in 2003 under the JP Food Sanitation Act that prohibits the sale, etc. of foods in which the levels of pesticides, feed additives, and veterinary drugs exceed a specified amount.<sup>1)</sup> We have about 1,200 analytical standards that are compliant with positive list system (P. 74-82).

In addition, the “PL Series” of mixture standard solutions are available for simultaneous analysis (P. 6-30). By combining each of the mixture standard solutions as shown below, the simultaneous analysis method under the JP Food Sanitation Act, can be supported.



Positive List System<sup>1)</sup>

\*1 Maximum residue limits in or on the surface of foods and animal feeds established by the Codex Alimentarius Commission.  
 \*2 The Ministry of Health, Labour and Welfare of Japan.

## Examples of combinations of the simultaneous analysis method under the JP Food Sanitation Act and our mixture standard solution.

Simultaneous analysis method under the JP Food Sanitation Act	Supported products (mark) <sup>*1,2</sup>
Multi-residue Method for Agricultural Chemicals by GC-MS (Agricultural Products)	PPL1 PPL2 PPL3 PPL4 PPL5 PPL6 PPL9 PPL10 PPL12 PPL13
Multi-residue Method for Agricultural Chemicals by GC-MS (Animal and Fishery Products: Muscle, Fat, Liver, Kidney, and Fish / Shellfish)	PPL1 PPL2 PPL3 PPL4 PPL5 PPL6 PPL9 PPL12 PPL13
Multi-residue Method for Agricultural Chemicals by GC-MS (Animal and Fishery Products: Milk, Egg, and Honey)	PPL1 PPL2 PPL3 PPL4 PPL5 PPL6 PPL9 PPL10 PPL12 PPL13
Multi-residue Method I for Agricultural Chemicals by LC-MS (Agricultural Products)	PPL7 PPL14 PPL15 PPL17
Multi-residue Method II for Agricultural Chemicals by LC-MS (Agricultural Products)	PPL8 PPL16
Multi-residue Method I for Agricultural Chemicals by LC-MS (Animal and Fishery Products: Muscle, Fat, Liver, Kidney, Fish / Shellfish)	PPL7 PPL15 PPL17
Multi-residue Method I for Agricultural Chemicals by LC-MS (Animal and Fishery Products: Milk, Egg and Honey)	PPL7 PPL15 PPL17
Multi-residue Method II for Agricultural Chemicals by LC-MS (Animal and Fishery Products)	PPL7 PPL14 PPL15 PPL17
Multi-residue Method III for Agricultural Chemicals by LC-MS (Animal and Fishery Products)	PPL7 PPL17
Multi-residue Method I for Veterinary Drugs by LC-MS (Animal and Fishery Products)	VPL1 VPL2
Multi-residue Method II for Veterinary Drugs by HPLC (Animal and Fishery Products)	VPL1 VPL2
Multi-residue Method III for Veterinary Drugs by HPLC (Animal and Fishery Products)	VPL2

\*1 Some of the components listed in the simultaneous analysis method are not included in the mixture standard solution.  
 \*2 Please refer to P. 7 for marks.

1) Ministry of Health, Labour and Welfare of Japan website

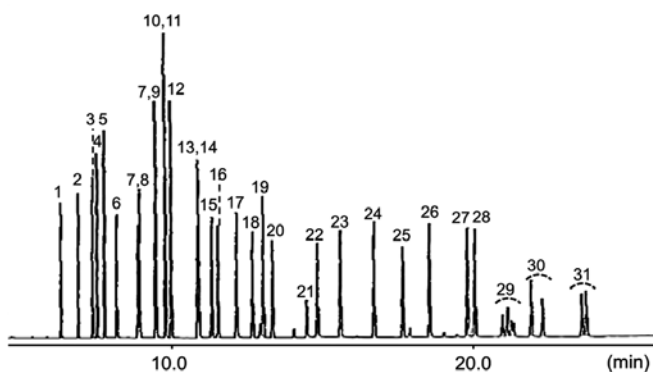


■ Product list of pesticides / veterinary-drugs mixture standard solutions for the simultaneous analysis method under the JP Food Sanitation Act “Positive List System,” PL series

Code No.	Product Name	Volume	Number of Components	Analysis Equipment	Mark	Product Page
165-26641	Pesticides Mixture Standard Solution PL-1-2	1 mL	31	GC/MS	PPL1	P. 8
161-26643	(each 20 µg/mL Acetone Solution)	1 mL×5A				
164-22973	Pesticides Mixture Standard Solution PL-2-1	1 mL	31	GC/MS	PPL2	P. 9
168-22971	(each 20 µg/mL Acetone Solution)	1 mL×5A				
166-26671	Pesticides Mixture Standard Solution PL-3-3	1 mL	27	GC/MS	PPL3	P. 10
162-26673	(each 20 µg/mL Acetone Solution)	1 mL×5A				
162-24593	Pesticides Mixture Standard Solution PL-4-2	1 mL	36	GC/MS	PPL4	P. 12
166-24591	(each 20 µg/mL Acetone Solution)	1 mL×5A				
165-23003	Pesticides Mixture Standard Solution PL-5-1	1 mL	37	GC/MS	PPL5	P. 14
169-23001	(each 20 µg/mL Acetone Solution)	1 mL×5A				
165-24603	Pesticides Mixture Standard Solution PL-6-3	1 mL	35	GC/MS	PPL6	P. 15
169-24601	(each 20 µg/mL Acetone Solution)	1 mL×5A				
169-23023	Pesticides Mixture Standard Solution PL-7-2	1 mL	29	LC/MS	PPL7	P. 16
163-23021	(each 20 µg/mL Acetonitrile Solution)	1 mL×5A				
166-23033	Pesticides Mixture Standard Solution PL-8-1	1 mL	21	LC/MS	PPL8	P. 18
160-23031	(each 20 µg/mL Acetonitrile Solution)	1 mL×5A				
168-25313	Pesticides Mixture Standard Solution PL-9-2	1 mL	17	GC/MS	PPL9	P. 19
162-25311	(each 20 µg/mL Acetone Solution)	1 mL×5A				
160-23053	Pesticides Mixture Standard Solution PL-10-1	1 mL	9	GC/MS	PPL10	P. 20
164-23051	(each 20 µg/mL Acetone Solution)	1 mL×5A				
167-23943	Pesticides Mixture Standard Solution PL-12-1	1 mL	26	GC/MS	PPL12	P. 21
161-23941	(each 20 µg/mL Acetone Solution)	1 mL×5A				
164-23953	Pesticides Mixture Standard Solution PL-13-1	1 mL	15	GC/MS	PPL13	P. 22
168-23951	(each 20 µg/mL Acetone Solution)	1 mL×5A				
161-23963	Pesticides Mixture Standard Solution PL-14-2	1 mL	30	LC/MS	PPL14	P. 23
165-23961	(each 20 µg/mL Acetonitrile Solution)	1 mL×5A				
168-23973	Pesticides Mixture Standard Solution PL-15-1	1 mL	28	LC/MS	PPL15	P. 24
162-23971	(each 20 µg/mL Acetonitrile Solution)	1 mL×5A				
165-23983	Pesticides Mixture Standard Solution PL-16-2	1 mL	30	LC/MS	PPL16	P. 26
169-23981	(each 20 µg/mL Acetonitrile Solution)	1 mL×5A				
164-23693	Pesticides Mixture Standard Solution PL-17-2	1 mL	29	LC/MS	PPL17	P. 28
168-23691	(each 20 µg/mL Acetonitrile Solution)	1 mL×5A				
226-01683	Veterinary Drugs Mixture Standard Solution PL-1-3	1 mL	21	LC/MS	VPL1	P. 29
220-01681	(each 20 µg/mL Methanol Solution)	1 mL×5A				
223-01693	Veterinary Drugs Mixture Standard Solution PL-2-1	1 mL	24	LC/MS	VPL2	P. 30
227-01691	(each 20 µg/mL Methanol Solution)	1 mL×5A				

Code No.	Product Name	Grade	Volume
165-26641	Pesticides Mixture Standard Solution PL-1-2	for Pesticide Residue Analysis	1 mL
161-26643	(each 20 µg/mL Acetone Solution)		1 mL×5A

### GC/MS chromatogram\*



### Analysis conditions

#### [Instrument]

Shimadzu QP-2010 Ultra

#### [GC]

Column: Rtx-5MS 0.25 µm, 0.32 mm×30 m  
 Column temperature: 80°C (1 min.)→20°C/min.→180°C  
 →5°C/min.→300°C (10 min.)

Injection temperature: 260°C

Carrier gas: He 2.2 mL/min.

Splitless: 1 min.

#### [MS]

Ionization: EI

Interface temperature: 280°C

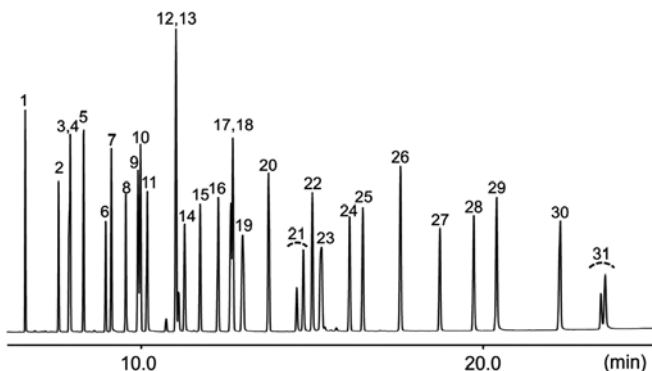
### List of 31 components (each 20 µg/mL acetone solution)

Peak No.	Components	Monitoring Ions (m/z)	Related Products		
			Code No.	Product Name	Volume
1	Omethoate	156 110 141	157-01881	Omethoate Standard	200 mg
2	Trifluralin	306 264	208-06783	Trifluralin Standard	100 mg
3	Dimethoate	87 125	041-15843	Dimethoate Standard	100 mg
4	Atrazine	200 215	016-15633	Atrazine Standard	100 mg
5	Terbufos	231 288 153	200-12691	Terbufos Standard	200 mg
6	Tefluthrin	177 197 383	204-13191	Tefluthrin Standard	200 mg
7	Spiroxamine	100 126 100 101 126	198-16401	Spiroxamine Standard (mixture of isomers)	100 mg
8	Chlorpyrifosmethyl	286 288	031-09673	Chlorpyrifosmethyl Standard	200 mg
9	Terbutryn	226 241	201-16641	Terbutryn Standard	200 mg
10	Thiobencarb (Benthiocarb)	100 257	029-06954	Benthiocarb Standard	100 mg
11	Malathion (Malathon)	173 158	136-05514	Malathon Standard	100 mg
12	Fenpropimorph	128 129 303	066-04981	Fenpropimorph Standard	200 mg
13	Pendimethalin	252 281	168-11903	Pendimethalin Standard	100 mg
14	Penconazole	159 248	168-24551	Penconazole Standard	100 mg
15	Procymidone	283 285	161-11214	Procymidone Standard	100 mg
16	Methidathion (DMTP)	145 85 302	043-17081	DMTP Standard	200 mg
17	Fenamiphos	303 217	066-03521	Fenamiphos Standard	100 mg
18	Oxadiazon	175 302 344	151-01203	Oxadiazon Standard	200 mg
19	Kresoxim-methyl	116 206	118-00533	Kresoxim-methyl Standard	100 mg
20	Chlorfenapyr	364 328	039-22531	Chlorfenapyr Reference Material CRM	100 mg
21	Pyrethrin I, II	123 133 162 107 133 160	161-29161	Pyrethrins Standard Solution (Pyrethrin I+II: 1 mg/mL Acetone Solution)	1 mL×5A
22	Norflurazon	145 303 173	144-08931	Norflurazon Standard	100 mg
23	Diflufenican	266 394	044-28121	Diflufenican Standard	200 mg
24	Bifenthrin	181 166	028-19871	Bifenthrin Reference Material CRM	100 mg
25	Azinphos-methyl	160 132	012-16051	Azinphos-methyl Standard	200 mg
26	Fenarimol	139 330 251	069-05191	Fenarimol Standard	100 mg
27	trans-Permethrin	183 163	168-21033	trans-Permethrin Standard	100 mg
28	cis-Permethrin	183 163	168-16523	cis-Permethrin Standard	100 mg
29	Cyfluthrin	163 226 206	033-14361	Cyfluthrin Standard (mixture of isomers)	200 mg
30	Flucythrinate	199 451	069-02911	Flucythrinate Standard	200 mg
31	Fluvalinate	250 252	061-02471	Fluvalinate Standard	200 mg

\* The measurement conditions, charts and monitoring ions are for reference only and do not constitute a guarantee for the product.

Code No.	Product Name	Grade	Volume
164-22973	Pesticides Mixture Standard Solution PL-2-1	for Pesticide Residue Analysis	1 mL
168-22971	(each 20 µg/mL Acetone Solution)		1 mL×5A

### GC/MS chromatogram\*



### Analysis conditions

#### [Instrument]

Shimadzu QP-2010 Ultra

#### [GC]

Column: Rtx-5MS 0.25 µm, 0.32 mm×30 m  
 Column temperature: 80°C (1 min.)→20°C/min.→180°C  
 →5°C/min.→300°C (10 min.)

Injection temperature: 260°C

Carrier gas: He 2.2 mL/min.

Splitless: 1 min.

#### [MS]

Ionization: EI

Interface temperature: 280°C

### List of 31 components (each 20 µg/mL acetone solution)

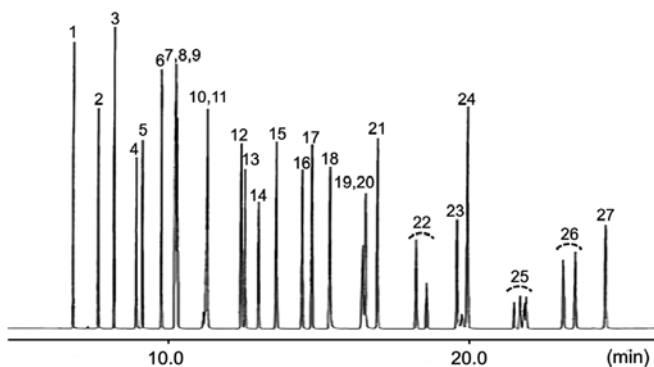
Peak No.	Components	Monitoring Ions (m/z)	Related Products		
			Code No.	Product Name	Volume
1	Propoxur (PHC)	110 152	168-09293	PHC Standard	100 mg
2	Carbofuran	164 149	039-16323	Carbofuran Standard	100 mg
3	Quintozene (PCNB)	237 295	167-09361	PCNB Standard	200 mg
4	Propyzamide	173 255	169-25061	Propyzamide Reference Material CRM	100 mg
5	Tri-allate	268 128	208-16531	Tri-allate Standard	200 mg
6	Vinclozolin	285 212	228-00744	Vinclozolin Standard	100 mg
7	Alachlor	160 188	012-16333	Alachlor Standard	100 mg
8	Fenitrothion (MEP)	277 260	130-05534	MEP Standard	100 mg
9	Metolachlor	162 238	131-17431	Metolachlor Standard	100 mg
10	Fenthion (MPP)	278 169	130-06634	MPP Standard	100 mg
11	Isofenphos Oxon	229 314	098-03981	Isofenphos Oxon Standard	200 mg
12	Chlorfenvinphos (α-CVP, β-CVP)	267 323	033-21691	α-CVP Standard	50 mg
			033-22791	β-CVP Standard	50 mg
13	Isofenphos	213 255	090-03463	Isofenphos Standard	100 mg
14	Triadimenol	112 168	208-08503	Triadimenol Standard (mixture of isomers)	200 mg
15	Tetrachlorvinphos (CVMP)	329 331	033-15081	CVMP Standard	200 mg
16	Isoprothiolane	118 290	098-06281	Isoprothiolane Reference Material CRM	100 mg
17	Myclobutanil	179 150	135-11133	Myclobutanil Standard	100 mg
18	Buprofezin	105 172	022-08264	Buprofezin Standard	100 mg
19	Cyproconazole	222 139	039-23251	Cyproconazole Standard (mixture of isomers)	100 mg
20	Ethion	231 384	051-03173	Ethion Standard	200 mg
21	Propiconazole	173 259	169-16771	Propiconazole Standard (mixture of isomers)	200 mg
22	Hexazinone	171 252 128	081-08311	Hexazinone Standard	200 mg
23	Propargite (BPPS)	173 150	024-06943	BPPS Standard	200 mg
24	Phosmet (PMP)	160 161 133	163-09221	PMP Standard	200 mg
25	Methoxychlor	227 274 228	139-12231	Methoxychlor Standard	200 mg
26	Pyriproxyfen	136 226	163-18751	Pyriproxyfen Standard	200 mg
27	Pyraclufos	360 194	160-17801	Pyraclufos Standard	200 mg
28	Fluquinconazole	340 108	-	-	-
29	Fenbuconazole	129 198	068-05041	Fenbuconazole Standard	100 mg
30	Fluridone	328 329	062-04601	Fluridone Standard	200 mg
31	Difenoconazole	323 265	042-25241	Difenoconazole Standard (mixture of isomers)	200 mg

\* The measurement conditions, charts and monitoring ions are for reference only and do not constitute a guarantee for the product.



Code No.	Product Name	Grade	Volume
166-26671	Pesticides Mixture Standard Solution PL-3-3	for Pesticide Residue Analysis	1 mL
162-26673	(each 20 µg/mL Acetone Solution)		1 mL×5A

#### ■ GC/MS chromatogram\*



#### Analysis conditions

##### [Instrument]

Shimadzu QP-2010 Ultra

##### [GC]

Column: Rtx-5MS 0.25 µm, 0.32 mm×30 m

Column temperature: 80°C (1 min.)→20°C/min.→180°C  
→5°C/min.→300°C (10 min.)

Injection temperature: 260°C

Carrier gas: He 2.2 mL/min.

Splitless: 1 min.

##### [MS]

Ionization: EI

Interface temperature: 280°C

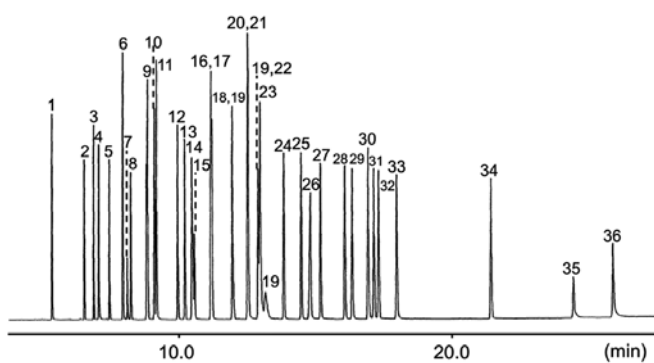
■ List of 27 components (each 20 µg/mL acetone solution)

Peak No.	Components	Monitoring Ions (m/z)			Related Products		
					Code No.	Product Name	Volume
1	Ethoprophos	158	200	139	051-05611	Ethoprophos Standard	200 mg
2	Simazine (CAT)	201	173		030-22561	CAT Reference Material CRM	100 mg
3	Diazinon	137	152	304	040-31891	Diazinon Reference Material CRM	100 mg
4	Propanil (DCPA)	161	217		046-16471	DCPA Standard	200 mg
5	Parathion-methyl (Methylparathion)	125	233	263	131-06061	Methylparathion Standard	200 mg
6	Pirimiphos-methyl	290	276	305	161-13713	Pirimiphos-methyl Standard	100 mg
7	Chlorpyrifos	197	286	314	032-22881	Chlorpyrifos Reference Material	100 mg
8	Parathion	291	235		168-08573	Parathion Standard	200 mg
9	Triadimefon	208	181		203-08494	Triadimefon Standard	100 mg
10	Allethrin	123	136		018-17011	Allethrin Standard	200 mg
11	Fipronil	367	369	351	068-04103	Fipronil Standard	100 mg
12	Flutolanil	173	323		065-05811	Flutolanil Reference Material CRM	100 mg
13	Profenofos	139	337	374	169-17653	Profenofos Standard	100 mg
14	Oxyfluorfen	252	361	300	150-02591	Oxyfluorfen Standard	200 mg
15	Chlorobenzilate	139	251		033-08273	Chlorobenzilate Standard	200 mg
16	Triazophos	161	257		203-13161	Triazophos Standard	100 mg
17	Quinoxifen	237	272	307	175-00701	Quinoxifen Standard	100 mg
18	Tebuconazole	125	250		203-13801	Tebuconazole Standard	200 mg
19	Acetamiprid	166	221		010-16493	Acetamiprid Standard	100 mg
20	Bromopropylate (Phenisobromolate)	341	183		168-10923	Phenisobromolate Standard	200 mg
21	Fenpropathrin	181	265	349	068-03503	Fenpropathrin Standard	100 mg
22	Cyhalothrin	181	197	208	030-22941	Cyhalothrin Standard (mixture of isomers)	100 mg
23	Bitertanol	170	168	112	024-10233	Bitertanol Standard	200 mg
24	Pyridaben	147	309		162-16381	Pyridaben Standard	200 mg
25	Cypermethrin	163	181	165	039-15441	Cypermethrin Standard (mixture of isomers)	200 mg
26	Fenvalerate	125	419	225	060-03281	Fenvalerate Standard (mixture of isomers)	200 mg
27	Deltamethrin	181	253		043-23473	Deltamethrin Standard	100 mg

\* The measurement conditions, charts and monitoring ions are for reference only and do not constitute a guarantee for the product.

Code No.	Product Name	Grade	Volume
162-24593	Pesticides Mixture Standard Solution PL-4-2	for Pesticide Residue Analysis	1 mL
166-24591	(each 20 µg/mL Acetone Solution)		1 mL×5A

#### ■ GC/MS chromatogram\*1



#### Analysis conditions

##### [Instrument]

Shimadzu QP-2010 Ultra

##### [GC]

Column: Rtx-5MS 0.25 µm, 0.32 mm×30 m  
 Column temperature: 80°C (1 min.)→20°C/min.→180°C  
 →5°C/min.→300°C (10 min.)

Injection temperature: 260°C

Carrier gas: He 2.2 mL/min.

Splitless: 1 min.

##### [MS]

Ionization: EI

Interface temperature: 280°C



■ List of 36 components (each 20 µg/mL acetone solution)

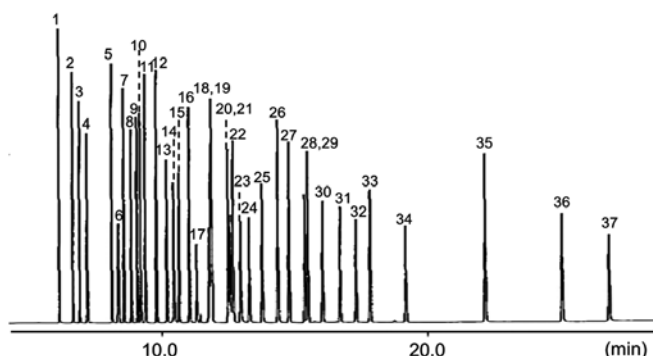
Peak No.	Components	Monitoring Ions (m/z)			Related Products		
					Code No.	Product Name	Volume
1	Mevinphos ( <i>E</i> )-Mevinphos, ( <i>Z</i> )-Mevinphos)	127	109	192	132-15521	( <i>E</i> )-Mevinphos Standard	100 mg
					139-15531	( <i>Z</i> )-Mevinphos Standard	100 mg
2	Tecnazene	203	215	261	209-16441	Tecnazene Standard	200 mg
3	Ethalfuralin	276	316		052-07461	Ethalfuralin Standard	200 mg
4	Monocrotophos	127	192		138-11101	Monocrotophos Standard	200 mg
5	Dicloran (CNA)	206	208	176	036-08621	CNA Standard	200 mg
6	Pyroquilon	173	130	172	164-18041	Pyroquilon Standard	200 mg
7	Phosphamidon	264	193		167-18031	Phosphamidon Standard (mixture of isomers)	100 mg
8	δ-BHC	181	183	219	028-05743	δ-BHC Standard	50 mg
9	Dimethenamid	154	230	203	043-26751	Dimethenamid Standard	200 mg
10	Tolclofos-methyl	265	267	125	207-11383	Tolclofos-methyl Standard	100 mg
11	Ametryn	227	212		015-13643	Ametryn Standard	100 mg
12	Diethofencarb	225	267		045-24131	Diethofencarb Standard	200 mg
13	Chlorthal-dimethyl (TCTP)	301	299	332	202-07901	TCTP Standard	200 mg
14	Fthalide	243	241	272	061-01594	Fthalide Standard	100 mg
15	Fosthiazate	139	166	283	062-05941	Fosthiazate Reference Material (mixture of isomers)	100 mg
16	Dimepiperate	119	145		043-25173	Dimepiperate Standard	100 mg
17	Phenthoate (PAP)	274	246		161-27081	PAP Standard	100 mg
18	Butachlor	176	237		021-12161	Butachlor Standard	200 mg
19	Imazamethabenz Methyl (Imazamethabenz-methyl)	144	245	256	096-05501	Imazamethabenz-methyl Standard (mixture of isomers)	200 mg
20	Uniconazole P	234	236		212-00981	Uniconazole P Standard	200 mg
21	Pretilachlor	162	238	262	168-16361	Pretilachlor Standard	200 mg
22	Azaconazole	217	173	219	013-21611	Azaconazole Standard	100 mg
23	Bupirimate	273	208	316	021-16821	Bupirimate Standard	100 mg
24	( <i>Z</i> )-Pyriminobac-methyl	302	256	303	163-19851	( <i>Z</i> )-Pyriminobac-methyl Standard	50 mg
25	Fluacrypyrim	145	320	189	066-04481	Fluacrypyrim Standard	200 mg
26	Lenacil	153	154	110	123-03801	Lenacil Standard	200 mg
27	( <i>E</i> )-Pyriminobac-methyl	302	256	303	166-19841	( <i>E</i> )-Pyriminobac-methyl Standard	200 mg
28	Mefenpyr-diethyl	253	255	299	137-16551	Mefenpyr-diethyl Standard	100 mg
29	Pyridaphenthion	340	199	188	169-10914	Pyridaphenthion Standard	100 mg
30	Etoxazole	141	359	300	050-06683	Etoxazole Standard	100 mg
31	Anilofos	125	334	184	012-20243	Anilofos Standard	100 mg
32	Tetradifon	159	229	356	208-16651	Tetradifon Standard	200 mg
33	Mefenacet	192	120		133-11673	Mefenacet Standard	100 mg
34	Halfenprox	263	265	183	088-07101	Halfenprox Standard	200 mg
35	Tralomethrin*2	181	253		209-12661	Tralomethrin Standard (mixture of isomers)	100 mg
36	Imibenconazole	253	375		095-04091	Imibenconazole Standard	200 mg

\*1 The measurement conditions, charts and monitoring ions are for reference only and do not constitute a guarantee for the product.

\*2 Peak No. 35 is detected as deltamethrin.

Code No.	Product Name	Grade	Volume
165-23003	Pesticides Mixture Standard Solution PL-5-1	for Pesticide Residue Analysis	1 mL
169-23001	(each 20 µg/mL Acetone Solution)		1 mL×5A

### GC/MS chromatogram\*



### Analysis conditions

#### [Instrument]

Shimadzu QP-2010 Ultra

#### [GC]

Column: Rtx-5MS 0.25 µm, 0.32 mm×30 m  
 Column temperature: 80°C (1 min.)→20°C/min.→180°C  
 →5°C/min.→300°C (10 min.)

Injection temperature: 260°C

Carrier gas: He 2.2 mL/min.

Splitless: 1 min.

#### [MS]

Ionization: EI

Interface temperature: 280°C

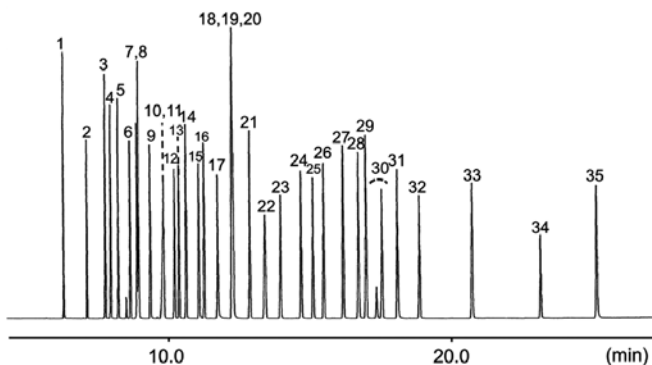
### List of 37 components (each 20 µg/mL acetone solution)

Peak No.	Components	Monitoring Ions (m/z)	Related Products		
			Code No.	Product Name	Volume
1	Isoprocarb (MIPC)	121 136	130-06813	MIPC Standard	100 mg
2	Propachlor	120 176	164-22191	Propachlor Standard	200 mg
3	Chloropropham (Chloro IPC)	127 171 213	034-08323	Chloro IPC Standard	100 mg
4	Cadusafos	159 158 114	036-18871	Cadusafos Standard	100 mg
5	Pyrimethanil	198 199	160-29491	Pyrimethanil Reference Material CRM	100 mg
6	Terbacil	161 160 117	209-15341	Terbacil Standard	200 mg
7	Iprobenfos (IBP)	204 246	093-02233	IBP Standard	200 mg
8	Benfuresate	163 121 256	023-12883	Benfuresate Standard	100 mg
9	Acetochlor	146 162 223	013-20511	Acetochlor Standard	100 mg
10	Simetryne	213 155 170	191-08044	Simetryn Standard	100 mg
11	Prometryn	241 184 226	167-15373	Prometryn Standard	100 mg
12	Esprocarb	222 162	055-05893	Esprocarb Standard	100 mg
13	(Z)-Dimethylvinphos	295 297	045-25231	(Z)-Dimethylvinphos Standard	200 mg
14	Tetraconazole	336 338	205-19101	Tetraconazole Reference Material CRM	100 mg
15	Bromophos	331 329	028-12811	Bromophos Standard	200 mg
16	Dimethametryn	212 255 71	048-28261	Dimethametryn Standard	200 mg
17	Diclocymet	277 221	040-28101	Diclocymet Standard (mixture of isomers)	200 mg
18	(E)-Pyrifenoxy	262 294 264	167-16691	(E)-Pyrifenoxy Standard	200 mg
19	Fenothiocarb	72 160	066-05961	Fenothiocarb Standard	100 mg
20	Prothiofos	309 267	163-26201	Prothiofos Standard	100 mg
21	Tricyclazole	189 118	202-19111	Tricyclazole Reference Material CRM	100 mg
22	Tribufos	169 202	201-16521	Tribufos Standard	200 mg
23	Imibenconazole- debenzyl	235 270 128	098-04081	Imibenconazole-debenzyl Standard	200 mg
24	Isoxathion	177 313	098-02244	Isoxathion Standard	100 mg
25	Fensulfothion	293 308	064-02961	Fensulfothion Standard	200 mg
26	Mepronil	119 269 133	131-07904	Mepronil Standard	100 mg
27	Benalaxyl	148 206 228	028-12791	Benalaxyl Standard	200 mg
28	Pyraflufen-ethyl	412 414 349	169-19831	Pyraflufen-ethyl Standard	200 mg
29	Thenylchlor	127 288 141	203-13421	Thenylchlor Standard	200 mg
30	Zoxamide	187 189 258 187 242	-	-	-
31	EPN	157 169 185	058-02843	EPN Standard	100 mg
32	Bifenox	341 343 310	027-08253	Bifenox Standard	100 mg
33	Phosalone	182 121 367	167-09383	Phosalone Standard	100 mg
34	Acrinathrin	181 289 208	014-16653	Acrinathrin Standard	100 mg
35	Etofenprox	163 135	051-05194	Etofenprox Standard	100 mg
36	Flumiclorac-pentyl	423 353 308	067-04771	Flumiclorac-pentyl Standard	100 mg
37	Fluthiacet-methyl	403 405	062-04461	Fluthiacet-methyl Standard	200 mg

\* The measurement conditions, charts and monitoring ions are for reference only and do not constitute a guarantee for the product.

Code No.	Product Name	Grade	Volume
165-24603	Pesticides Mixture Standard Solution PL-6-3	for Pesticide Residue Analysis	1 mL
169-24601	(each 20 µg/mL Acetone Solution)		1 mL×5A

### GC/MS chromatogram\*



### Analysis conditions

#### [Instrument]

Shimadzu QP-2010

#### [GC]

Column: Rtx-5MS 0.25 µm, 0.32 mm×30 m  
Column temperature: 80°C (1 min.)→20°C/min.→180°C  
→5°C/min.→300°C (10 min.)

Injection temperature: 260°C

Carrier gas: He 2.2 mL/min.

Splitless: 1 min.

#### [MS]

Ionization: EI

Interface temperature: 280°C

### List of 35 components (each 20 µg/mL acetone solution)

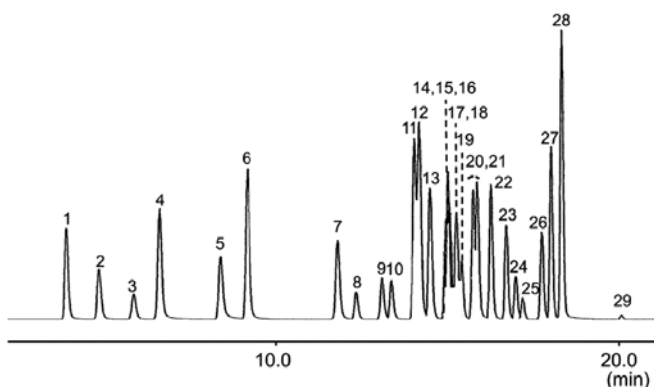
Peak No.	Components	Monitoring Ions (m/z)			Related Products		
					Code No.	Product Name	Volume
1	XMC	122	107	244-00503	XMC Standard	100 mg	
2	Benfluralin (Bethrodine)	292	264	276	026-11533	Bethrodine Standard	100 mg
3	Propazine	214	229	172	167-18271	Propazine Standard	200 mg
4	Cyanophos (CYAP)	109	243	125	039-08493	CYAP Standard	200 mg
5	Prohydrojasmon	153	184		166-22891	Prohydrojasmon Standard (mixture of isomers)	200 mg
6	Benoxacor	120	259	176	028-16831	Benoxacor Standard	100 mg
7	Dichlofenthion (ECP)	279	223	162	056-03503	ECP Standard	200 mg
8	Bromobutide	119	232		026-17591	Bromobutide Standard	100 mg
9	Mefenoxam (Metalaxyl M)	206	249	234	134-15623	Metalaxyl M Standard	100 mg
10	Bromacil	205	190		020-17511	Bromacil Reference Material	100 mg
11	Quinoclamine (ACN)	172	209		013-15741	ACN Standard	200 mg
12	Cyanazine	225	240	198	037-22951	Cyanazine Standard	100 mg
13	Nitrothal-isopropyl	236	194	254	146-08491	Nitrothal-isopropyl Standard	100 mg
14	Diphenamid	167	239	165	041-17021	Diphenamid Standard	200 mg
15	(Z)-Pyrifenox	262	294	264	160-16701	(Z)-Pyrifenox Standard	200 mg
16	Quinalphos	146	157	298	175-00441	Quinalphos Standard	200 mg
17	Paclobutrazol	236	238	138	160-26211	Paclobutrazol Standard	100 mg
18	Napropamide	128	100		144-05893	Napropamide Standard	100 mg
19	Butamifos	286	200		026-10933	Butamifos Standard	100 mg
20	Hexaconazole	214	216	231	083-09731	Hexaconazole Reference Material	100 mg
21	Flamprop-methyl	105	276		063-04991	Flamprop-methyl Standard	100 mg
22	Fenoxanil	189	293	328	064-04301	Fenoxanil Standard	200 mg
23	Oxadixyl	163	132	233	157-01521	Oxadixyl Standard	100 mg
24	Edifenphos (EDDP)	173	201	310	053-03133	EDDP Standard	200 mg
25	Trifloxystrobin	116	131	222	207-15783	Trifloxystrobin Standard	100 mg
26	Diclofop-methyl	340	253	281	040-29681	Diclofop-methyl Standard	200 mg
27	Pyributicarb	165	108	181	163-16213	Pyributicarb Standard	100 mg
28	Piperophos	122	140		160-11223	Piperophos Standard	200 mg
29	Tebufenpyrad	318	276	333	206-13293	Tebufenpyrad Standard	100 mg
30	Phenothrin	123	183		163-22661	Phenothrin Standard (mixture of isomers)	200 mg
31	Cyhalofop-butyl	256	357	229	035-22511	Cyhalofop-butyl Standard	100 mg
32	Pyrazophos	221	232	373	168-25031	Pyrazophos Standard	100 mg
33	Cafenstrole	100	188		035-17001	Cafenstrole Standard	200 mg
34	Flumioxazin	354	287	355	060-04141	Flumioxazin Standard	200 mg
35	Tolfenpyrad	383	385		209-16843	Tolfenpyrad Standard	100 mg

\* The measurement conditions, charts and monitoring ions are for reference only and do not constitute a guarantee for the product.



Code No.	Product Name	Grade	Volume
169-23023	Pesticides Mixture Standard Solution PL-7-2	for Pesticide Residue Analysis	1 mL
163-23021	(each 20 µg/mL Acetonitrile Solution)		1 mL×5A

### ■ LC/MS/MS chromatogram\*1



### Analysis conditions

#### [Instrument]

Shimadzu LCMS-8040

#### [HPLC]

Column:	Product Name	Code No.	Volume*2
	Wakopak® Wakosil®-II	231-50241	1 EA (D)
	3C18HG 2.0×150 mm	237-50243	1 EA (W)

Column temperature: 40°C

Eluent: A) 5 mmol/L CH<sub>3</sub>COONH<sub>4</sub> in H<sub>2</sub>O,

B) 5 mmol/L CH<sub>3</sub>COONH<sub>4</sub> in CH<sub>3</sub>OH

Gradient:	Time (min.)	B conc. (%)
	0-1	15-40
	1-3.5	40
	3.5-6	40-50
	6-8	50-55
	8-17.5	55-95
	17.5-30	95
	30-40	95-15

Flow rate: 0.2 mL/min.

#### [MS]

Ionization: ESI

Mode: MRM

## List of 29 components (each 20 µg/mL acetonitrile solution)

Peak No.	Components	Monitoring Ions (m/z)			Mode	Related Products		
		Precursor	Product			Code No.	Product Name	Volume
1	Thiamethoxam	292.2	210.9	+	201-19061	Thiamethoxam Reference Material CRM	100 mg	
2	Clothianidin	250.2	131.9	+	034-22581	Clothianidin Reference Material CRM	100 mg	
3	Chloridazon (PAC)	222.2	104.0	+	163-18991	PAC Standard	200 mg	
4	Thiacloprid	253.1	126.0	+	203-15763	Thiacloprid Standard	100 mg	
5	Thiabendazole	202.2	175.0	+	200-13213	Thiabendazole Standard	100 mg	
6	Azamethiphos	325.0	182.9	+	013-23311	Azamethiphos Standard	100 mg	
7	Dimethirimol	210.2	71.1	+	040-26901	Dimethirimol Standard	200 mg	
8	Isoxaflutole	360.1	250.9	+	090-07101	Isoxaflutole Standard	100 mg	
9	Azinphos-methyl	318.0	132.1	+	012-16051	Azinphos-methyl Standard	200 mg	
10	Pyrifthalid	319.1	139.0	+	167-23161	Pyrifthalid Standard	100 mg	
11	(E)-Ferimzone	255.2	91.1	+	063-04131	(E)-Ferimzone Standard	200 mg	
12	(Z)-Ferimzone	255.2	91.1	+	066-04121	(Z)-Ferimzone Standard	200 mg	
13	Methoxyfenozide	369.2	149.0	+	135-15491	Methoxyfenozide Standard	100 mg	
14	Iprovalicarb	321.2	119.1	+	095-06551	Iprovalicarb Standard	100 mg	
15	Chromafenozide	395.4	175.0	+	033-18141	Chromafenozide Standard	200 mg	
16	Butafenacil	492.1	330.9	+	028-19631	Butafenacil Standard	100 mg	
17	Simeconazole	294.2	70.0	+	196-12781	Simeconazole Standard	200 mg	
18	Oryzalin	347.1	304.9	+	158-02651	Oryzalin Standard	200 mg	
19	Cyazofamid	325.0	108.0	+	033-18881	Cyazofamid Standard	200 mg	
20	Naproanilide	292.2	171.0	+	148-08211	Naproanilide Standard	100 mg	
21	Fenoxycarb	302.3	116.0	+	068-02981	Fenoxycarb Standard	200 mg	
22	Anilofos	368.2	124.9	+	012-20243	Anilofos Standard	100 mg	
23	Cyflufenamid	413.1	295.0	+	036-19231	Cyflufenamid Standard	200 mg	
24	Pyrazolynate (Pyrazolate)	439.0	172.9	+	165-17091	Pyrazolate Standard	200 mg	
25	Indoxacarb (Indoxacarb-MP)	528.2	150.0	+	095-04993	Indoxacarb-MP Standard	100 mg	
26	Benzofenap	431.1	105.0	+	021-16223	Benzofenap Standard	100 mg	
27	Furathiocarb	383.2	195.0	+	062-03981	Furathiocarb Standard	200 mg	
28	Cloquintocet-mexyl	336.3	237.9	+	039-21671	Cloquintocet-mexyl Standard	100 mg	
29	Abamectin B1a (Abamectin)	890.6	305.2	+	016-20361	Abamectin Standard	200 mg	

\*1 The measurement conditions, charts and monitoring ions are for reference only and do not constitute a guarantee for the product.

\*2 There are two types of column connection: W type and D type. For details, please refer to "HPLC Column Connection Types" below.

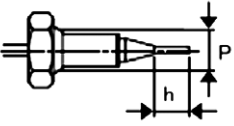
## HPLC column connection types

There are two connection types for the Wakopak<sup>®</sup> series (Wako's HPLC columns): D (DuPont) type and W (Waters) type connectors.

In older HPLC equipment, because the specifications of the connection parts differ among HPLC systems, the piping and connection parts are fixed depending on the column that was used initially. So, when replacing a

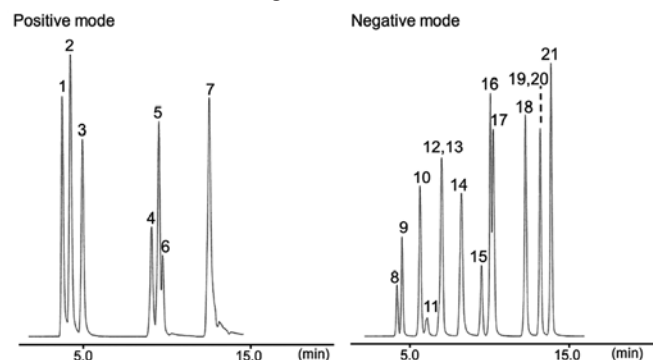
column, it was necessary to select a column with the same types of connection as the column previously used.

Nowadays, the connection types have been standardized, and HPLC equipment with plastic "Handy Connectors" can be used interchangeably without distinguishing between column types D and W. However, for HPLC equipment with stainless steel ferrules instead of plastic connectors, the length (h) of the piping that is inserted into the column at the connection point is fixed, and it is necessary to select a column with a connection type that matches the length of the piping.

Shape P, h (mm)	Grade	Connection Type	h (mm)
	10-32 UNF P: 4.8 mm ferrule type	D	2.3-2.9
		W	3.5

Code No.	Product Name	Grade	Volume
166-23033	Pesticides Mixture Standard Solution PL-8-1	for Pesticide Residue Analysis	1 mL
160-23031	(each 20 µg/mL Acetonitrile Solution)		1 mL×5A

### LC/MS/MS chromatogram\*1



### Analysis conditions

#### [Instrument]

Shimadzu LCMS-8040

#### [HPLC]

Column:

Product Name	Code No.	Volume*2
Wakopak® Wakosil®-II	231-50241	1 EA (D)
3C18HG 2.0×150 mm	237-50243	1 EA (W)

Column temperature: 40°C

Eluent: A) 5 mmol/L CH<sub>3</sub>COONH<sub>4</sub> in H<sub>2</sub>O,

B) 5 mmol/L CH<sub>3</sub>COONH<sub>4</sub> in CH<sub>3</sub>OH

Gradient:

Time (min.)	B conc. (%)
0-1	15-40
1-3.5	40
3.5-6	40-50
6-8	50-55
8-17.5	55-95
17.5-30	95
30-40	95-15

Flow rate: 0.2 mL/min.

#### [MS]

Ionization: ESI

Mode: MRM

### List of 21 components (each 20 µg/mL acetonitrile solution)

Peak No.	Components	Monitoring Ions (m/z)		Mode	Related Products		
		Precursor	Product		Code No.	Product Name	Volume
1	Flumetsulam	326.2	128.9	+	063-04751	Flumetsulam Standard	100 mg
2	Thifensulfuron-methyl	388.2	167.0	+	207-16741	Thifensulfuron-methyl Standard	200 mg
3	Florasulam	360.1	128.9	+	064-05021	Florasulam Standard	100 mg
4	Cloransulam-methyl (Cloransulam methyl)	430.2	397.9	+	-	-	-
5	Diclosulam	406.0	160.9	+	043-31401	Diclosulam Standard	100 mg
6	Thidiazuron	221.1	102.0	+	203-16221	Thidiazuron Standard	200 mg
7	Forchlorfenuron	248.1	128.9	+	066-04621	Forchlorfenuron Standard	200 mg
8	Gibberellin (Gibberellin A <sub>3</sub> )	345.1	143.2	-	078-05081	Gibberellin A <sub>3</sub> Standard	200 mg
9	Fluroxypyr	253.0	195.0	-	069-05071	Fluroxypyr Standard	100 mg
10	4-Chlorophenoxy acetic Acid (4-CPA)	185.2	127.1	-	030-19511	4-CPA Standard	200 mg
11	Bromoxynil	275.9	81.0	-	023-15541	Bromoxynil Standard	200 mg
12	1-Naphthalene acetic Acid	185.2	141.2	-	148-06511	1-Naphthylacetic Acid Standard	200 mg
13	Cloprop	199.2	127.1	-	033-19861	Cloprop Standard	200 mg
14	Ioxynil	369.8	127.0	-	098-05561	Ioxynil Standard	100 mg
15	Triclopyr	253.9	196.1	-	202-12911	Triclopyr Standard	200 mg
16	Mecoprop (MCP)	213.1	141.1	-	132-10423	MCP Standard	100 mg
17	Dichlorprop	233.0	161.1	-	049-29411	Dichlorprop Standard	200 mg
18	MCPB	227.1	141.1	-	133-12491	MCPB Standard	200 mg
19	Acifluorfen	360.2	316.2	-	010-20521	Acifluorfen Standard	200 mg
20	Fomesafen	436.9	195.2	-	060-04761	Fomesafen Standard	100 mg
21	Haloxypop	356.0	288.2	-	089-09191	Haloxypop Standard	100 mg

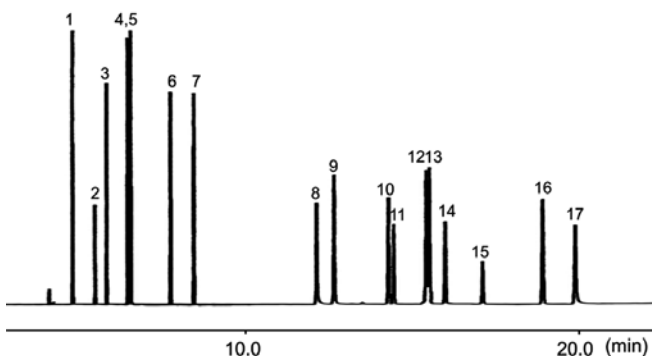
\*1 The measurement conditions, charts and monitoring ions are for reference only and do not constitute a guarantee for the product.

\*2 There are two types of column connection: W type and D type. For details, please refer to "HPLC Column Connection Types" P. 17.



Code No.	Product Name	Grade	Volume
168-25313	Pesticides Mixture Standard Solution PL-9-2	for Pesticide Residue Analysis	1 mL
162-25311	(each 20 µg/mL Acetone Solution)		1 mL×5A

### GC/MS chromatogram\*



### Analysis conditions

#### [Instrument]

Shimadzu QP-2010

#### [GC]

Column: Rtx-5MS 0.25 µm, 0.32 mm×30 m  
 Column temperature: 80°C (1 min.)→20°C/min.→180°C  
 →5°C/min.→300°C (10 min.)

Injection temperature: 260°C

Carrier gas: He 2.2 mL/min.

Splitless: 1 min.

#### [MS]

Ionization: EI

Interface temperature: 280°C

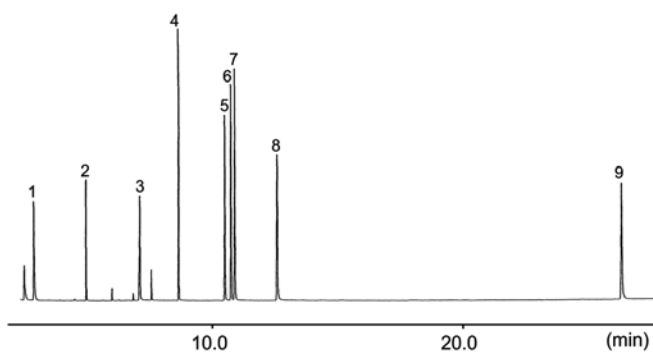
### List of 17 components (each 20 µg/mL acetone solution)

Peak No.	Components	Monitoring Ions (m/z)	Related Products		
			Code No.	Product Name	Volume
1	EPTC	128 132 189	058-06221	EPTC Standard	200 mg
2	Etridiazole(Echlomezol)	211 183 246	051-03494	Echlomezol Standard	100 mg
3	Chloroneb	191 193 206	036-14493	Chloroneb Standard	100 mg
4	Fenobucarb (BPMC)	121 150	021-06774	BPMC Standard	100 mg
5	Diphenylamine	169 168 167	041-25211	Diphenylamine Standard	200 mg
6	Propetamphos	138 236 194	164-23171	Propetamphos Standard	100 mg
7	Pirimicarb	166 238	164-14803	Pirimicarb Standard	200 mg
8	Imazalil	215 217 173	092-03504	Imazalil Standard	100 mg
9	Flusilazole	233 206 315	065-03591	Flusilazole Standard	100 mg
10	Famphur	218 217 125	069-06431	Famphur Standard	100 mg
11	Endosulfan Sulfate (Benzoepin Sulfate)	272 387 422	026-06763	Benzoepin Sulfate Standard	100 mg
12	Piperonyl Butoxide	176 177	168-17863	Piperonyl Butoxide Standard	100 mg
13	Bioresmethrin	123 171 143	-	-	-
14	Iprodione	314 316	092-02384	Iprodione Standard	100 mg
15	Iprodione Metabolite	329 331	099-02394	Iprodione Metabolite Standard	100 mg
16	Fenoxaprop-ethyl	288 361 261	062-03621	Fenoxaprop-ethyl Standard	200 mg
17	Prochloraz	180 308 266	162-17903	Prochloraz Standard	100 mg

\* The measurement conditions, charts and monitoring ions are for reference only and do not constitute a guarantee for the product.

Code No.	Product Name	Grade	Volume
160-23053	Pesticides Mixture Standard Solution PL-10-1	for Pesticide Residue Analysis	1 mL
164-23051	(each 20 µg/mL Acetone Solution)		1 mL×5A

#### GC/MS chromatogram\*



#### Analysis conditions

##### [Instrument]

Shimadzu QP-2010 Ultra

##### [GC]

Column: Rtx-5MS 0.25 µm, 0.32 mm×30 m  
 Column temperature: 50°C (1 min.)→20°C/min.→180°C  
 →5°C/min.→300°C (10 min.)

Injection temperature: 260°C

Carrier gas: He 2.3 mL/min.

Splitless: 1 min.

##### [MS]

Ionization: EI

Interface temperature: 280°C

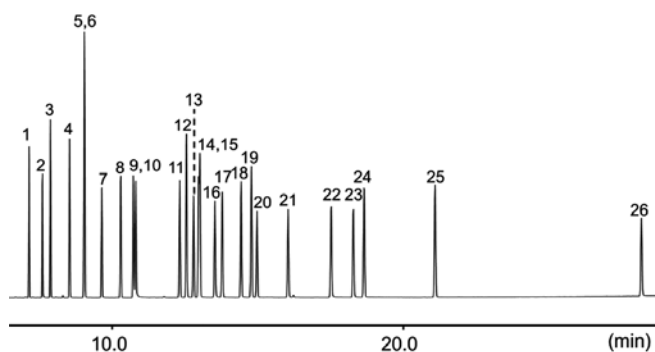
#### List of 9 components (each 20 µg/mL acetone solution)

Peak No.	Components	Monitoring Ions (m/z)	Related Products		
			Code No.	Product Name	Volume
1	Aldicarb (deg.)	68 115 100	012-14111	Aldicarb Standard	200 mg
2	Aldoxycarb (Aldicarb sulfone) (deg.)	68 80	553-78011	Aldicarb sulfone	100 mg
3	Acephate	136 94	015-08954	Acephate Standard	100 mg
4	Bendiocarb	151 166 223	028-11691	Bendiocarb Standard	200 mg
5	Metribuzin	198 144	134-17421	Metribuzin Standard	100 mg
6	Carbaryl (NAC)	144 115 116	144-03833	NAC Standard	100 mg
7	Metalaxyl	206 249	130-11683	Metalaxyl Standard	100 mg
8	Thiabendazole	201 174	200-13213	Thiabendazole Standard	100 mg
9	Azoxystrobin	344 388	015-19003	Azoxystrobin Standard	100 mg

\* The measurement conditions, charts and monitoring ions are for reference only and do not constitute a guarantee for the product.

Code No.	Product Name	Grade	Volume
167-23943	Pesticides Mixture Standard Solution PL-12-1	for Pesticide Residue Analysis	1 mL
161-23941	(each 20 µg/mL Acetone Solution)		1 mL×5A

### GC/MS chromatogram\*1



### Analysis conditions

#### [Instrument]

Shimadzu QP-2010

#### [GC]

Column: BPX5 0.25 µm, 0.32 mm×30 m  
 Column temperature: 80°C (1 min.)→20°C/min.→180°C  
 →5°C/min.→300°C (5 min.)

Injection temperature: 260°C

Carrier gas: He 2.2 mL/min.

Splitless: 1 min.

#### [MS]

Ionization: EI

Interface temperature: 280°C

### List of 26 components (each 20 µg/mL acetone solution)

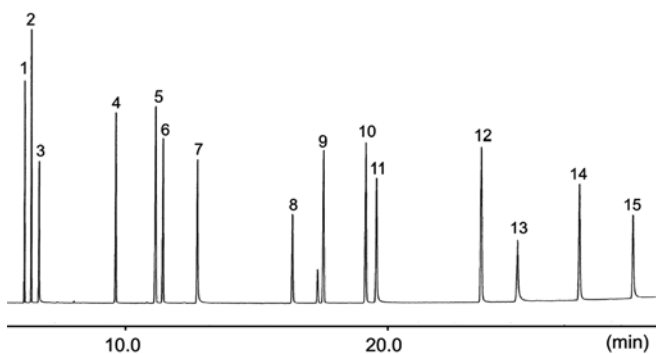
Peak No.	Components	Monitoring Ions (m/z)	Related Products		
			Code No.	Product Name	Volume
1	Chlorethoxyfos	153 263	-	-	-
2	Dicrotophos	127 193 237	-	-	-
3	Phorate	75 121 260	166-22911	Phorate Standard	100 mg
4	Clomazone	125 204	037-20371	Clomazone Standard	100 mg
5	Isazofos	161 257 172	095-05451	Isazofos Standard	200 mg
6	Disulfoton (Ethylthiomethon)	88 274	055-03154	Ethylthiomethon Standard	100 mg
7	Formothion*2	125 125	068-01303	Formothion Standard	200 mg
8	Fenclorphos	285 287	068-03581	Fenclorphos Standard	200 mg
9	Ethofumesate	207 161 286	055-07451	Ethofumesate Standard	200 mg
10	2- (1-Naphthyl) acetamide (1-Naphthylacetamide)	141 185	141-06501	1-Naphthylacetamide Standard	200 mg
11	Mecarbam	111 153	136-16881	Mecarbam Standard	100 mg
12	Methoprene	131 159	136-17621	Methoprene Standard (mixture of isomers)	100 mg
13	Bromophos-ethyl	359 303	025-12821	Bromophos-ethyl Standard	200 mg
14	Propaphos	220 304	168-10244	Propaphos Standard	100 mg
15	Chlorbenside	125 127 268	038-22121	Chlorbenside Standard	100 mg
16	Flutriafol	123 164 219	065-05671	Flutriafol Standard	100 mg
17	Chlorofenson (CPCBS)	111 175 302	030-16451	CPCBS Standard	200 mg
18	Carboxin	143 235	030-19773	Carboxin Standard	100 mg
19	1,1-Dichloro-2,2-bis-(4-ethylphenyl)ethane	223 224 167	044-29601	1,1-Dichloro-2,2-bis(4-ethylphenyl) ethane Standard	200 mg
20	Flufenpyr-ethyl	408 335	068-04681	Flufenpyr-ethyl Standard	100 mg
21	Carfentrazone-ethyl	312 340 330	030-20361	Carfentrazone-ethyl Standard	100 mg
22	Epoxiconazole	192 138 165	054-07661	Epoxiconazole Standard	200 mg
23	Picolinafen	376 238	169-22901	Picolinafen Standard	200 mg
24	Fenamidone	238 268	-	-	-
25	Spirodiclofen	312 259	199-14231	Spirodiclofen Standard	200 mg
26	Cinidon-ethyl	330 358	034-24041	Cinidon-ethyl Standard	100 mg

\*1 The measurement conditions, charts and monitoring ions are for reference only and do not constitute a guarantee for the product.

\*2 Organic phosphorus pesticides may be adsorbed or decomposed at the injection port or column. For example, analysis by splitless injection has shown that some formothiones may decompose into dimethoate.

Code No.	Product Name	Grade	Volume
164-23953	Pesticides Mixture Standard Solution PL-13-1	for Pesticide Residue Analysis	1 mL
168-23951	(each 20 µg/mL Acetone Solution)		1 mL×5A

#### GC/MS chromatogram\*



#### Analysis conditions

##### [Instrument]

Shimadzu QP-2010 Ultra

##### [GC]

Column: BPX5 0.25 µm, 0.32 mm×30 m  
 Column temperature: 80°C (1 min.)→20°C/min.→180°C  
 →5°C/min.→300°C (5 min.)

Injection temperature: 260°C  
 Carrier gas: He 2.2 mL/min.  
 Splitless: 1 min.

##### [MS]

Ionization: EI  
 Interface temperature: 280°C

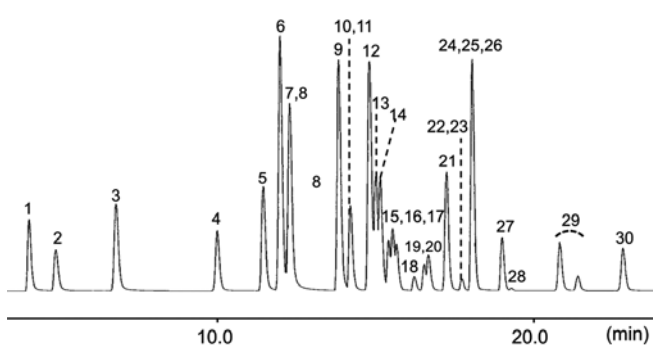
#### List of 15 components (each 20 µg/mL acetone solution)

Peak No.	Components	Monitoring Ions (m/z)	Related Products		
			Code No.	Product Name	Volume
1	Nitrapyrin	194 196	141-08201	Nitrapyrin Standard	200 mg
2	Methacrifos	208 180 240	131-18391	Methacrifos Standard	100 mg
3	Tebuthiuron	156 171	203-17941	Tebuthiuron Standard	100 mg
4	Oxabetrinil	73 77 103	155-03021	Oxabetrinil Standard	100 mg
5	S-Metolachlor	162 238	-	-	-
6	Flufenacet	151 211	063-06831	Flufenacet Standard	100 mg
7	Triflumizole	206 278	202-10191	Triflumizole Standard	200 mg
8	Azamethiphos	215 217 324	013-23311	Azamethiphos Standard	100 mg
9	Resmethrin	123 171	182-02071	Resmethrin Standard (mixture of isomers)	200 mg
10	Furathiocarb	163 194	062-03981	Furathiocarb Standard	200 mg
11	Triticonazole	235 237 299	204-18331	Triticonazole Standard	100 mg
12	Boscalid	140 342 344	027-15821	Boscalid Standard	100 mg
13	Thiacloprid	251 101	203-15763	Thiacloprid Standard	100 mg
14	Famoxadone	330 196 197	064-04203	Famoxadone Standard	100 mg
15	Propaquizafop	443 299	165-25041	Propaquizafop Standard	100 mg

\* The measurement conditions, charts and monitoring ions are for reference only and do not constitute a guarantee for the product.

Code No.	Product Name	Grade	Volume
161-23963	Pesticides Mixture Standard Solution PL-14-2	for Pesticide Residue Analysis	1 mL
165-23961	(each 20 µg/mL Acetonitrile Solution)		1 mL×5A

### ■ LC/MS/MS chromatogram\*1



### Analysis conditions

#### [Instrument]

Shimadzu LCMS-8040

#### [HPLC]

Column:	Product Name	Code No.	Volume*2
	Wakopak® Wakosil®-II	231-50241	1 EA (D)
	3C18HG 2.0×150 mm	237-50243	1 EA (W)

Column temperature: 40°C

Eluent: A) 5 mmol/L CH<sub>3</sub>COONH<sub>4</sub> in H<sub>2</sub>O,

B) 5 mmol/L CH<sub>3</sub>COONH<sub>4</sub> in CH<sub>3</sub>OH

Gradient:	Time (min.)	B conc. (%)
	0-1	15-40
	1-3.5	40
	3.5-6	40-50
	6-8	50-55
	8-17.5	55-95
	17.5-30	95
	30-40	95-15

Flow rate: 0.2 mL/min.

#### [MS]

Ionization: ESI

Mode: MRM

### ■ List of 30 components (each 20 µg/mL acetonitrile solution)

Peak No.	Components	Monitoring Ions (m/z)			Mode	Related Products		
		Precursor	Product			Code No.	Product Name	Volume
1	Methomyl	163.1	88.0	+	132-17461	Methomyl Reference Material <b>CRM</b>	100 mg	
2	Imidacloprid	256.1	175.0	+	099-03771	Imidacloprid Standard	200 mg	
3	Oxycarboxin	268.1	174.9	+	158-03011	Oxycarboxin Standard	100 mg	
4	Bendiocarb	224.3	109.0	+	028-11691	Bendiocarb Standard	200 mg	
5	Thiodicarb	355.1	87.9	+	207-11361	Thiodicarb Standard	200 mg	
6	Pirimicarb	239.2	72.0	+	164-14803	Pirimicarb Standard	200 mg	
7	Methabenzthiazuron	222.1	165.0	+	131-12311	Methabenzthiazuron Standard	200 mg	
8	Furametpyr	334.1	156.9	+	062-03741	Furametpyr Standard	200 mg	
9	Azoxystrobin	404.1	372.0	+	015-19003	Azoxystrobin Standard	100 mg	
10	Methiocarb	226.1	169.0	+	-	-	-	
11	Acibenzolar-S-methyl	211.0	135.9	+	014-18331	Acibenzolar-S-methyl Standard	200 mg	
12	Dymron (Daimuron)	269.2	151.0	+	043-26251	Dymron Standard	200 mg	
13	Cumyluron	303.2	185.0	+	034-17353	Cumyluron Standard	100 mg	
14	Chloroxuron	291.1	72.1	+	030-19751	Chloroxuron Standard	200 mg	
15	Mepanipyrim	224.3	106.0	+	137-12651	Mepanipyrim Standard	200 mg	
16	Triticonazole	318.3	70.0	+	204-18331	Triticonazole Standard	100 mg	
17	Indanofan	341.1	175.0	+	094-06521	Indanofan Reference Material <b>CRM</b>	100 mg	
18	Tetrachlorvinphos(CVMP)	366.9	127.0	+	033-15081	CVMP Standard	200 mg	
19	Carpropamid	336.1	138.9	+	034-22721	Carpropamid Standard	100 mg	
20	Imazalil	297.1	158.9	+	092-03504	Imazalil Standard	100 mg	
21	Pencycuron	329.2	125.0	+	167-26221	Pencycuron Standard	100 mg	
22	Hexaflumuron	463.1	157.9	+	084-09141	Hexaflumuron Standard	100 mg	
23	Cycloate	216.2	83.1	+	037-21351	Cycloate Standard	100 mg	
24	Pentoxazone	354.1	286.1	+	169-19691	Pentoxazone Standard	200 mg	
25	Oxaziclomefone	376.1	190.0	+	150-02851	Oxaziclomefone Standard	100 mg	
26	Fenoxaprop-ethyl	362.1	287.9	+	062-03621	Fenoxaprop-ethyl Standard	200 mg	
27	Flufenoxuron	489.0	158.0	+	063-03553	Flufenoxuron Standard	100 mg	
28	Cycloprothrin	499.1	180.9	+	035-14701	Cycloprothrin Standard	100 mg	
29	Spinosad*3	(Spinosyn A)	732.4	142.1	+	195-15051	Spinosad Standard	100 mg
		(Spinosyn D)	746.6	142.0	+			
30	Silafluofen	426.2	287.0	+	199-11193	Silafluofen Standard	100 mg	

\*1 The measurement conditions, charts and monitoring ions are for reference only and do not constitute a guarantee for the product.

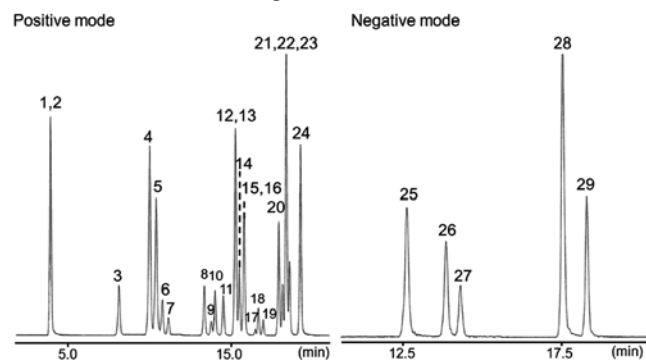
\*2 There are two types of column connection: W type and D type. For details, please refer to "HPLC Column Connection Types" P. 17.

\*3 Spinosad contains spinosyn A and spinosyn D, 20 µg/mL in total.



Code No.	Product Name	Grade	Volume
168-23973	Pesticides Mixture Standard Solution PL-15-1	for Pesticide Residue Analysis	1 mL
162-23971	(each 20 µg/mL Acetonitrile Solution)		1 mL×5A

### ■ LC/MS/MS chromatogram\*1



### Analysis conditions

#### [Instrument]

Shimadzu LCMS-8040

#### [HPLC]

Column:	Product Name	Code No.	Volume*2
	Wakopak® Wakosil®-II	231-50241	1 EA (D)
	3C18HG 2.0×150 mm	237-50243	1 EA (W)

Column temperature: 40°C

Eluent: A) 5 mmol/L CH<sub>3</sub>COONH<sub>4</sub> in H<sub>2</sub>O,

B) 5 mmol/L CH<sub>3</sub>COONH<sub>4</sub> in CH<sub>3</sub>OH

Gradient:	Time (min.)	B conc. (%)
	0-1	15-40
	1-3.5	40
	3.5-6	40-50
	6-8	50-55
	8-17.5	55-95
	17.5-30	95
	30-30.01	95-15
	30.01-40	15

Flow rate: 0.2 mL/min.

#### [MS]

Ionization: ESI

Mode: MRM

■ List of 28 components (each 20 µg/mL acetonitrile solution)

Peak No.	Components	Monitoring Ions (m/z)			Mode	Related Products		
		Precursor	Product			Code No.	Product Name	Volume
1	Aldoxycarb (Aldicarb sulfone)	240.0	86.1	+	-	-	-	
2	Oxamyl	237.0	72.0	+	151-01781	Oxamyl Standard	200 mg	
3	Aldicarb	208.0	116.1	+	012-14111	Aldicarb Standard	200 mg	
4	Carbofuran	222.1	165.1	+	039-16323	Carbofuran Standard	100 mg	
5	Tebuthiuron	229.1	172.3	+	203-17941	Tebuthiuron Standard	100 mg	
6	Carbaryl (I NAC)	202.0	145.1	+	144-03833	NAC Standard	100 mg	
7	Monolinuron	215.1	126.2	+	136-17001	Monolinuron Standard	100 mg	
8	Fluridone	330.0	309.1	+	062-04601	Fluridone Standard	200 mg	
9	(E)-Dimetomorph <sup>*3</sup>	389.0	302.1	+	049-28671	Dimethomorph Standard (mixture of isomers)	200 mg	
10	(Z)-Dimetomorph <sup>*3</sup>	389.0	302.1	+				
11	Fenamidone	312.0	92.2	+	-	-	-	
12	Flufenacet	364.0	152.1	+	063-06831	Flufenacet Standard	100 mg	
13	Epoxiconazole	331.1	121.1	+	054-07661	Epoxiconazole Standard	200 mg	
14	Diflubenzuron	328.0	158.2	+	043-31901	Diflubenzuron Reference Material CRM	100 mg	
15	Tebufenozide	353.1	297.2	+	207-19041	Tebufenozide Reference Material	100 mg	
16	Cyprodinil	226.1	93.1	+	037-17723	Cyprodinil Standard	100 mg	
17	Triflumuron	359.1	156.2	+	203-17701	Triflumuron Standard	100 mg	
18	Clofentezine	304.0	138.1	+	031-14541	Clofentezine Standard	200 mg	
19	Quizalofop-ethyl	373.1	299.0	+	179-00721	Quizalofop-ethyl Standard	100 mg	
20	Propaquizafop	445.1	100.1	+	165-25041	Propaquizafop Standard	100 mg	
21	(Z)-Fenpyroximate	422.1	366.2	+	067-05011	(Z)-Fenpyroximate Standard	20 mg	
22	Hexythiazox	354.1	229.1	+	087-05351	Hexythiazox Standard	200 mg	
23	(E)-Fenpyroximate	422.1	366.2	+	063-03293	Fenpyroximate Standard	100 mg	
24	Diuron (DCMU)	232.0	186.9	-	049-31861	DCMU Reference Material CRM	100 mg	
25	Linuron	247.9	160.7	-	124-06131	Linuron Reference Material CRM	100 mg	
26	Boscalid	342.9	113.9	-	027-15821	Boscalid Standard	100 mg	
27	Novaluron	491.1	84.6	-	143-09361	Novaluron Standard	100 mg	
28	Teflubenzuron	381.1	152.1	-	204-12373	Teflubenzuron Standard	100 mg	
29	Lufenuron	508.9	339.1	-	122-06171	Lufenuron Reference Material	100 mg	

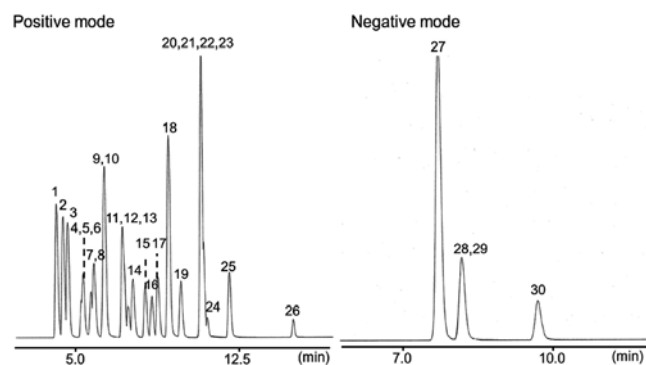
\*1 The measurement conditions, charts and monitoring ions are for reference only and do not constitute a guarantee for the product.

\*2 There are two types of column connection: W type and D type. For details, please refer to "HPLC Column Connection Types" P. 17.

\*3 Dimetomorph contains (E)-dimetomorph (Peak No. 9) and (Z)-dimetomorph (Peak No. 10), 20 µg/mL in total.

Code No.	Product Name	Grade	Volume
165-23983	Pesticides Mixture Standard Solution PL-16-2	for Pesticide Residue Analysis	1 mL
169-23981	(each 20 µg/mL Acetonitrile Solution)		1 mL×5A

### ■ LC/MS/MS chromatogram\*1



### Analysis conditions

#### [Instrument]

Shimadzu LCMS-8040

#### [HPLC]

Column:

Product Name	Code No.	Volume*2
Wakopak® Wakosil®-II	231-50241	1 EA (D)
3C18HG 2.0×150 mm	237-50243	1 EA (W)

Column temperature: 40°C

Eluent: A) 5 mmol/L CH<sub>3</sub>COONH<sub>4</sub> in H<sub>2</sub>O,

B) 5 mmol/L CH<sub>3</sub>COONH<sub>4</sub> in CH<sub>3</sub>OH

Gradient:

Time (min.)	B conc. (%)
0-1	25-40
1-3.5	40
3.5-6	40-50
6-8	50-55
8-17.5	55-95
17.5-30	95
30-40	95-25

Flow rate: 0.2 mL/min.

#### [MS]

Ionization: ESI

Mode: MRM

■ List of 30 components (each 20 µg/mL acetonitrile solution)

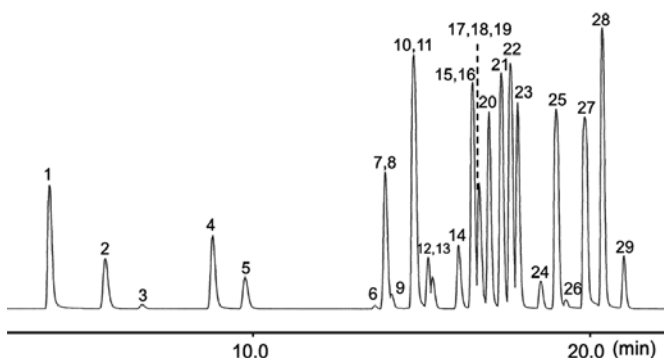
Peak No.	Components	Monitoring Ions (m/z)		Mode	Related Products		
		Precursor	Product		Code No.	Product Name	Volume
1	Metsulfuron-methyl	382.1	167.0	+	131-12671	Metsulfuron-methyl Standard	200 mg
2	Azimsulfuron	425.1	182.0	+	018-18253	Azimsulfuron Standard	100 mg
3	Cinosulfuron	414.1	183.0	+	033-16441	Cinosulfuron Standard	200 mg
4	Sulfosulfuron	471.1	211.0	+	195-17751	Sulfosulfuron Standard	100 mg
5	Flazasulfuron	408.1	182.0	+	060-03323	Flazasulfuron Standard	100 mg
6	Imazosulfuron	413.1	156.0	+	094-07481	Imazosulfuron Reference Material CRM	100 mg
7	Propoxycarbazone	399.1	199.0	+	-	-	-
8	Triasulfuron	402.1	167.0	+	206-17931	Triasulfuron Standard	100 mg
9	Mesosulfuron-methyl	504.1	182.0	+	-	-	-
10	Ethametsulfuron-methyl	411.1	196.0	+	059-07591	Ethametsulfuron-methyl Standard	200 mg
11	Pyrazosulfuron-ethyl	415.1	182.0	+	168-17841	Pyrazosulfuron-ethyl Standard	200 mg
12	Naptalam	292.1	144.0	+	140-08271	Naptalam Standard	200 mg
13	Trifloxysulfuron	438.1	182.0	+	201-17861	Trifloxysulfuron Standard	100 mg
14	Iodosulfuron-methyl	508.1	166.9	+	096-07061	Iodosulfuron-methyl Standard	100 mg
15	Metosulam	418.0	174.9	+	134-18881	Metosulam Standard	100 mg
16	Penoxsulam	484.1	195.0	+	169-26801	Penoxsulam Standard	100 mg
17	Chlorimuron-ethyl	415.1	186.0	+	036-16671	Chlorimuron-ethyl Standard	200 mg
18	Ethoxysulfuron	399.1	261.0	+	054-06821	Ethoxysulfuron Standard	50 mg
19	Prosulfuron	420.1	141.0	+	160-27291	Prosulfuron Standard	100 mg
20	Clodinafop Acid	312.0	266.0	+	032-22021	Clodinafop Standard	100 mg
21	Fluazifop	328.1	282.1	+	067-03453	Fluazifop Standard	100 mg
22	Triflusulfuron-methyl	493.1	264.1	+	204-16751	Triflusulfuron-methyl Standard	200 mg
23	Bensulfuron-methyl	411.1	149.1	+	029-12623	Bensulfuron-methyl Standard	100 mg
24	Primisulfuron-methyl	469.0	254.0	+	165-24561	Primisulfuron-methyl Standard	100 mg
25	Cyclosulfamuron	422.1	217.9	+	033-18901	Cyclosulfamuron Standard	200 mg
26	Fenhexamid	302.1	97.1	+	069-04111	Fenhexamid Standard	200 mg
27	Halosulfuron-methyl	433.1	252.0	-	089-07251	Halosulfuron-methyl Standard	200 mg
28	2,4-D (2,4-PA)	218.9	161.0	-	163-18153	2,4-PA Standard	100 mg
29	MCPA (MCP)	198.9	141.0	-	135-16971	MCP Reference Material CRM	100 mg
30	Sulfentrazone	384.9	307.0	-	193-14751	Sulfentrazone Standard	100 mg

\*1 The measurement conditions, charts and monitoring ions are for reference only and do not constitute a guarantee for the product.

\*2 There are two types of column connection: W type and D type. For details, please refer to "HPLC Column Connection Types" P. 17.

Code No.	Product Name	Grade	Volume
164-23693	Pesticides Mixture Standard Solution PL-17-2	for Pesticide Residue Analysis	1 mL
168-23691	(each 20 µg/mL Acetonitrile Solution)		1 mL×5A

### ■ LC/MS/MS chromatogram\*1



### Analysis conditions

#### [Instrument]

Shimadzu LCMS-8040

#### [HPLC]

Column:

Product Name	Code No.	Volume*2
Wakopak® Wakosil®-II	231-50241	1 EA (D)
3C18HG 2.0×150 mm	237-50243	1 EA (W)

Column temperature: 40°C

Eluent: A) 5 mmol/L CH<sub>3</sub>COONH<sub>4</sub> in H<sub>2</sub>O,

B) 5 mmol/L CH<sub>3</sub>COONH<sub>4</sub> in CH<sub>3</sub>OH

Gradient:

Time (min.)	B conc. (%)
0-1	15-40
1-3.5	40
3.5-6	40-50
6-8	50-55
8-17.5	55-95
17.5-30	95
30-40	95-15

Flow rate: 0.2 mL/min.

#### [MS]

Ionization: ESI

Mode: MRM

### ■ List of 29 components (each 20 µg/mL acetonitrile solution)

Peak No.	Components	Monitoring Ions (m/z)		Mode	Related Products		
		Precursor	Product		Code No.	Product Name	Volume
1	Pymetrozine	218.1	105.1	+	163-19971	Pymetrozine Standard	200 mg
2	3-OH Carbofuran (3-Hydroxycarbofuran)	255.1	163.1	+	085-08571	3-Hydroxycarbofuran Standard	50 mg
3	Cymoxanil	199.2	128.1	+	032-16793	Cymoxanil Standard	100 mg
4	Carbetamide	237.2	188.1	+	039-22031	Carbetamide Standard	100 mg
5	Bromacil	261.0	205.0	+	020-17511	Bromacil Reference Material	100 mg
6	Oxabetrinil	233.1	87.1	+	155-03021	Oxabetrinil Standard	100 mg
7	Chlorbufam	224.1	172.0	+	031-22111	Chlorbufam Standard	100 mg
8	Ametryn	228.1	186.1	+	015-13643	Ametryn Standard	100 mg
9	Pyrimethanil	200.1	107.1	+	160-29491	Pyrimethanil Reference Material CRM	100 mg
10	Barban	275.2	177.9	+	026-17231	Barban Standard	100 mg
11	Flamprop-methyl	336.1	105.1	+	063-04991	Flamprop-methyl Standard	100 mg
12	Triflumizole Metabolite	295.1	73.1	+	205-10181	Triflumizole Metabolite Standard	200 mg
13	Prometryn	242.4	200.1	+	167-15373	Prometryn Standard	100 mg
14	Clodinafop-propargyl	350.1	266.1	+	032-21661	Clodinafop-propargyl Standard	100 mg
15	Carfentrazone-ethyl	411.5	365.5	+	030-20361	Carfentrazone-ethyl Standard	100 mg
16	Benalaxyl	326.1	148.1	+	028-12791	Benalaxyl Standard	200 mg
17	Mefenpyr-diethyl	373.2	327.0	+	137-16551	Mefenpyr-diethyl Standard	100 mg
18	Pyraclostrobin	390.1	194.1	+	163-22921	Pyraclostrobin Standard	200 mg
19	Phoxim	299.1	129.1	+	163-16811	Phoxim Standard	200 mg
20	Pyrazophos	374.2	222.1	+	168-25031	Pyrazophos Standard	100 mg
21	Trifloxystrobin	409.1	186.1	+	207-15783	Trifloxystrobin Standard	100 mg
22	Triflumizole	346.1	73.1	+	202-10191	Triflumizole Standard	200 mg
23	Benfuracarb	411.3	195.1	+	023-09551	Benfuracarb Standard	200 mg
24	Fluazuron	506.1	158.0	+	063-04871	Fluazuron Standard	200 mg
25	Etoxazole	360.2	141.0	+	050-06683	Etoxazole Standard	100 mg
26	Chlorfluazuron	540.1	383.0	+	034-14391	Chlorfluazuron Standard	100 mg
27	Amitraz	294.2	163.1	+	015-09593	Amitraz Standard	200 mg
28	Carbosulfan	381.2	118.1	+	031-16361	Carbosulfan Standard	200 mg
29	Fenpropimorph	304.2	147.1	+	066-04981	Fenpropimorph Standard	200 mg

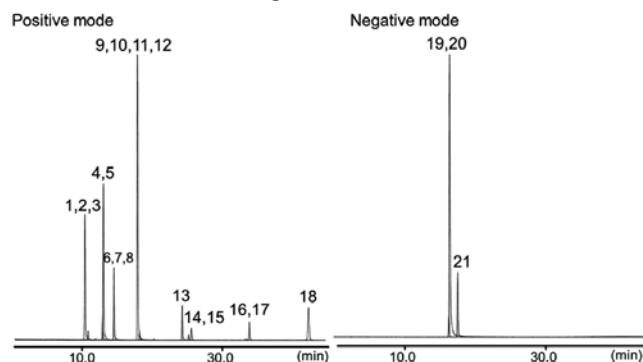
\*1 The measurement conditions, charts and monitoring ions are for reference only and do not constitute a guarantee for the product.

\*2 There are two types of column connection: W type and D type. For details, please refer to "HPLC Column Connection Types" P. 17.



Code No.	Product Name	Grade	Volume
226-01683	Veterinary Drugs Mixture Standard Solution PL-1-3	for HPLC	1 mL
220-01681	(each 20 µg/mL Methanol Solution)		1 mL×5A

### ■ LC/MS/MS chromatogram\*1



### Analysis conditions

#### [Instrument]

Shimadzu LCMS-8040

#### [HPLC]

Column:	Product Name	Code No.	Volume*2
	Wakopak® Wakosil®-II	235-50261	1 EA (D)
	3C18HG 3.0×150 mm	231-50263	1 EA (W)

Column temperature: 40°C

Eluent: A) 0.1% HCOOH in H<sub>2</sub>O, B) 0.1% HCOOH in CH<sub>3</sub>CN

Time (min.)	B conc. (%)
0-35	1-100
35-40	100

Flow rate: 0.2 mL/min.

#### [MS]

Ionization: ESI

Mode: MRM

### ■ List of 21 components (each 20 µg/mL methanol solution)

Peak No.	Components	Monitoring Ions (m/z)			Mode	Related Products		
		Precursor	Product			Code No.	Product Name	Volume
1	Lincomycin*3	407.2	126.2	+	121-05781	Lincomycin Hydrochloride Monohydrate Standard	100 mg	
2	Sulfacetamide	215.1	155.9	+	192-14581	Sulfacetamide Standard	200 mg	
3	Danofloxacin*3	358.2	82.0	+	043-29551	Danofloxacin Mesylate Standard	200 mg	
4	Clenbuterol*3	277.1	203.0	+	032-20441	Clenbuterol Hydrochloride Standard	100 mg	
5	Xylazine*3	221.3	90.0	+	240-00821	Xylazine Hydrochloride Standard	200 mg	
6	Pyrimethamine	249.1	176.9	+	163-18631	Pyrimethamine Standard	200 mg	
7	Trichlorfon (DEP)	257.1	108.8	+	041-31681	DEP Reference Material <a href="#">CRM</a>	100 mg	
8	Tilmicosin	869.5	174.0	+	200-19151	Tilmicosin Standard (mixture of isomers)	100 mg	
9	Tiamulin*3	494.3	192.1	+	201-16881	Tiamulin Fumarate Standard	200 mg	
10	Prednisolone	361.2	147.0	+	162-21911	Prednisolone Standard	200 mg	
11	Hydrocortisone	363.3	121.0	+	086-08241	Hydrocortisone Standard	200 mg	
12	Dexamethasone	393.2	337.0	+	045-29491	Dexamethasone Standard	200 mg	
13	Emamectin B1a	887.6	158.1	+	-	-	-	
14	Famphur	326.1	92.8	+	069-06431	Famphur Standard	100 mg	
15	Fenobucarb(BPMC)	208.2	95.0	+	021-06774	BPMC Standard	100 mg	
16	Temephos (Abate)	467.0	124.9	+	-	-	-	
17	Allethrin	303.2	135.1	+	018-17011	Allethrin Standard	200 mg	
18	Monensin	688.4	125.1	+	-	-	-	
19	Florfenicol	358.1	185.1	-	060-05001	Florfenicol Standard	200 mg	
20	2-Acetylamino-5-nitrothiazole	186.2	139.1	-	018-21421	2-Acetylamino-5-nitrothiazole Standard	200 mg	
21	Clorsulon	380.0	344.0	-	033-20471	Clorsulon Standard	100 mg	

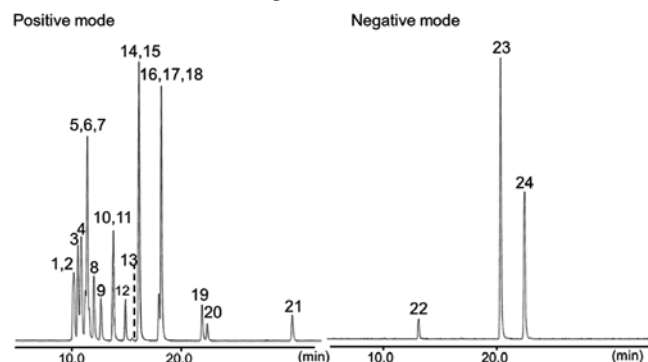
\*1 The measurement conditions, charts and monitoring ions are for reference only and do not constitute a guarantee for the product.

\*2 There are two types of column connection: W type and D type. For details, please refer to "HPLC Column Connection Types" P. 17.

\*3 The concentration of the mixture standard solution is converted to 20 µg/mL as the salt-free form.

Code No.	Product Name	Grade	Volume
223-01693	Veterinary Drugs Mixture Standard Solution PL-2-1	for HPLC	1 mL
227-01691	(each 20 µg/mL Methanol Solution)		1 mL×5A

### ■ LC/MS/MS chromatogram\*1



### Analysis conditions

#### [Instrument]

Shimadzu LCMS-8040

#### [HPLC]

Column:

Product Name	Code No.	Volume*2
Wakopak® Wakosil®-II	235-50261	1 EA (D)
3C18HG 3.0×150 mm	231-50263	1 EA (W)

Column temperature: 40°C

Eluent: A) 0.1% HCOOH in H<sub>2</sub>O, B) 0.1% HCOOH in CH<sub>3</sub>CN

Gradient:

Time (min.)	B conc. (%)
0-35	1-100
35-40	100

Flow rate: 0.2 mL/min.

#### [MS]

Ionization: ESI

Mode: MRM

### ■ List of 24 components (each 20 µg/mL methanol solution)

Peak No.	Components	Monitoring Ions (m/z)		Mode	Related Products		
		Precursor	Product		Code No.	Product Name	Volume
1	5-Propylsulfonyl-1H-benzimidazole-2-amine	240.1	133.1	+	161-25381	5-Propylsulfonyl-1H-benzimidazole-2-amine Standard	100 mg
2	Levamisole*3	207.1	180.0	+	126-04991	Levamisole Hydrochloride Standard	200 mg
3	Thiabendazole	202.2	174.9	+	200-13213	Thiabendazole Standard	100 mg
4	Trimethoprim	291.2	230.0	+	206-13911	Trimethoprim Standard	200 mg
5	Sulfadiazine	251.1	155.9	+	198-11381	Sulfadiazine Standard	200 mg
6	Ormetoprim	275.2	123.1	+	152-02551	Ormetoprim Standard	50 mg
7	Sulfathiazole	256.1	155.9	+	197-14651	Sulfathiazole Standard	200 mg
8	Sulfapyridine	250.1	156.0	+	199-14471	Sulfapyridine Standard	200 mg
9	Sulfamerazine	265.1	92.1	+	192-11301	Sulfamerazine Standard	200 mg
10	Sulfadimidine	279.1	92.1	+	198-11141	Sulfadimidine Standard	200 mg
11	Sulfamethoxypyridazine	281.1	156.1	+	190-14641	Sulfamethoxypyridazine Standard	200 mg
12	Sulfamonomethoxine	281.1	156.0	+	198-18961	Sulfamonomethoxine Monohydrate Standard	100 mg
13	Sulfachlorpyridazine*3	286.2	156.9	+	194-14661	Sulfachlorpyridazine Sodium Salt Standard	200 mg
14	Sulfadoxine	311.1	155.9	+	192-14221	Sulfadoxine Standard	200 mg
15	Sulfamethoxazole	254.1	156.0	+	191-11131	Sulfamethoxazole Standard	200 mg
16	Ethopabate	238.3	136.0	+	055-06231	Ethopabate Standard	200 mg
17	Sulfadimethoxine	311.1	156.0	+	190-11101	Sulfadimethoxine Standard	200 mg
18	Sulfaquinoxaline*3	301.1	156.0	+	194-11481	Sulfaquinoxaline Sodium Salt Standard	200 mg
19	β-Trenbolone	271.2	199.0	+	205-16281	β-Trenbolone Standard	200 mg
20	α-Trenbolone	271.2	199.0	+	203-20991	α-Trenbolone Standard	20 mg
21	Melengestrol Acetate	397.3	279.0	+	132-15401	Melengestrol Acetate Standard	50 mg
22	Thiamphenicol	356.1	185.1	-	203-13921	Thiamphenicol Standard	200 mg
23	Zeranol	321.3	277.4	-	262-01461	Zeranol Standard	200 mg
24	Sulfantran	334.0	136.1	-	195-17011	Sulfantran Standard	100 mg

\*1 The measurement conditions, charts and monitoring ions are for reference only and do not constitute a guarantee for the product.

\*2 There are two types of column connection: W type and D type. For details, please refer to "HPLC Column Connection Types" P. 17.

\*3 The concentration of the mixture standard solution is converted to 20 µg/mL as the salt-free form.

# Veterinary Drugs Mixture Standard Solutions by Drug Classification

## What are veterinary drugs?

Pharmaceuticals used for animals are called “veterinary drugs.” Veterinary drugs are used in a wide variety of animals, not confined to just pets but also including livestock and fish. Veterinary drugs are used to prevent and treat diseases, but in livestock, the drugs may remain in foodstuffs (meat, eggs, milk, marine products, etc.) derived from the animals for which the drugs were used. <sup>1)</sup> If such foods are consumed by humans, adverse effects such as allergic reactions and the emergence of antimicrobial resistant bacteria may occur. In addition to the PL series (P. 6-30) introduced above, Fujifilm Wako also provides mixture standard solutions of veterinary drugs classified by type.

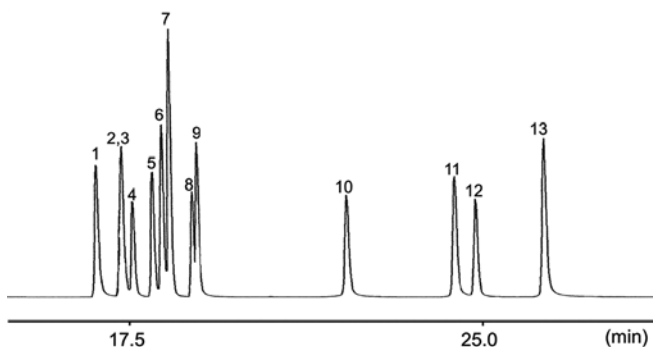
### ■ Product list of veterinary drug mixture standard solutions by drug classification

Code No.	Product Name	Volume	Number of Components	Analysis Equipment	Mark	Product Page
227-02051	Veterinary Drugs Mixture Standard Solution (Quinolone) (each 20 µg/mL)	1 mL 1 mL×5A	13	LC/MS	<b>VDQ</b>	P. 32
228-02081	Veterinary Drugs Mixture Standard Solution (Sulfonamide + Antifolate) (each 20 µg/mL)	1 mL 1 mL×5A	27	LC/MS	<b>VDS</b>	P. 33
225-02091	Veterinary Drugs Mixture Standard Solution (Macrolide) (each 20 µg/mL Acetonitrile Solution)	1 mL 1 mL×5A	7	LC/MS	<b>VDM</b>	P. 34
220-02203	Veterinary Drugs Mixture Standard Solution (Hormone) (each 20 µg/mL Acetonitrile Solution)	1 mL 1 mL×5A	6	LC/MS	<b>VDH</b>	P. 35

1) Ministry of Health, Labour and Welfare of Japan website

Code No.	Product Name	Grade	Volume
227-02051	Veterinary Drugs Mixture Standard Solution (Quinolone)	for HPLC	1 mL
223-02053	(each 20 µg/mL)		1 mL×5A

### ■ LC/MS chromatogram\*1



### Analysis conditions

#### [Instrument]

Shimadzu LC/MS-2020

#### [HPLC]

Column:

Product Name	Code No.	Volume*2
Wakopak® Wakosil®-II	231-50241	1 EA (D)
3C18HG 2.0×150 mm	237-50243	1 EA (W)

Column temperature: 40°C

Eluent: A) 0.1% HCOOH in H<sub>2</sub>O, B) CH<sub>3</sub>CN

Gradient:

Time (min.)	B conc. (%)
0-10	1-10
10-35	10-100
35-40	100

Flow rate: 0.2 mL/min.

#### [MS]

Ionization: ESI

Mode: TIC

### ■ List of 13 components (each 20 µg/mL)

Peak No.	Components	Monitoring Ions (m/z)	Mode	Related Products		
				Code No.	Product Name	Volume
1	Marbofloxacin	363	+	133-15291	Marbofloxacin Standard	200 mg
2	Norfloxacin	320	+	149-08241	Norfloxacin Standard	200 mg
3	Ofloxacin	362	+	150-02611	Ofloxacin Standard	200 mg
4	Ciprofloxacin*3	332	+	033-19621	Ciprofloxacin Hydrochloride Monohydrate Standard	200 mg
5	Danofloxacin*3	358	+	043-29551	Danofloxacin Mesylate Standard	200 mg
6	Enrofloxacin	360	+	059-07471	Enrofloxacin Standard	200 mg
7	Orbifloxacin	396	+	154-03351	Orbifloxacin Standard	100 mg
8	Sarafloxacin*3	386	+	195-14211	Sarafloxacin Hydrochloride Standard	200 mg
9	Difloxacin	400	+	049-30021	Difloxacin Standard	200 mg
10	Oxolinic Acid	262	+	156-01851	Oxolinic Acid Standard	200 mg
11	Nalidixic Acid	233	+	144-06611	Nalidixic Acid Standard	200 mg
12	Flumequine	262	+	069-04971	Flumequine Standard	200 mg
13	Piromidic Acid	289	+	169-18091	Piromidic Acid Standard	200 mg

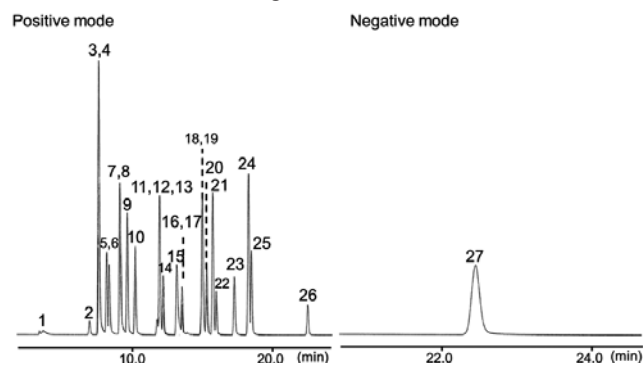
\*1 The measurement conditions, charts and monitoring ions are for reference only and do not constitute a guarantee for the product.

\*2 There are two types of column connection: W type and D type. For details, please refer to "HPLC Column Connection Types" P. 17.

\*3 The concentration of the mixture standard solution is converted to 20 µg/mL as the salt-free form.

Code No.	Product Name	Grade	Volume
228-02081	Veterinary Drugs Mixture Standard Solution	for HPLC	1 mL
224-02083	(Sulfonamide + Antifolate) (each 20 µg/mL)		1 mL×5A

### LC/MS/MS chromatogram\*1



### Analysis conditions

#### [Instrument]

Shimadzu LCMS-8040

#### [HPLC]

Column:	Product Name	Code No.	Volume*2
	Wakopak® Wakosil®-II	231-50241	1 EA (D)
	3C18HG 2.0×150 mm	237-50243	1 EA (W)

Column temperature: 40°C

Eluent: A) 0.01% HCOOH in H<sub>2</sub>O, B) CH<sub>3</sub>CN

Gradient:	Time (min.)	B conc. (%)
	0-25	2-45
	25-35	45

Flow rate: 0.2 mL/min.

#### [MS]

Ionization: ESI

Mode: MRM

### List of 27 components (each 20 µg/mL)

Peak No.	Components	Monitoring Ions (m/z)		Mode	Related Products		
		Precursor	Product		Code No.	Product Name	Volume
1	Sulfanilamide	173	156	+	198-14061	Sulfanilamide Standard	200 mg
2	Sulfacetamide	215	156	+	192-14581	Sulfacetamide Standard	200 mg
3	Diaverdine	261	245	+	048-29621	Diaverdine Standard	200 mg
4	Sulfisomidine	279	124	+	190-11221	Sulfisomidine Standard	200 mg
5	Sulfadiazine	251	156	+	198-11381	Sulfadiazine Standard	200 mg
6	Trimethoprim	291	230	+	206-13911	Trimethoprim Standard	200 mg
7	Ormetoprim	275	259	+	152-02551	Ormetoprim Standard	50 mg
8	Sulfathiazole	256	156	+	197-14651	Sulfathiazole Standard	200 mg
9	Sulfapyridine	250	156	+	199-14471	Sulfapyridine Standard	200 mg
10	Sulfamerazine	265	92	+	192-11301	Sulfamerazine Standard	200 mg
11	Sulfisozole*3	240	156	+	195-14071	Sulfisozole Sodium Standard	200 mg
12	Sulfametoxydiazine	281	92	+	198-17001	Sulfametoxydiazine Standard	100 mg
13	Sulfadimidine	279	92	+	198-11141	Sulfadimidine Standard	200 mg
14	Sulfamethoxyypyridazine	281	156	+	190-14641	Sulfamethoxyypyridazine Standard	200 mg
15	Pyrimethamine	249	233	+	163-18631	Pyrimethamine Standard	200 mg
16	Sulfamonomethoxine	281	92	+	198-18961	Sulfamonomethoxine Monohydrate Standard	100 mg
17	Sulfachlorpyridazine*3	285	156	+	194-14661	Sulfachlorpyridazine Sodium Salt Standard	200 mg
18	Sulfamethoxazole	254	92	+	191-11131	Sulfamethoxazole Standard	200 mg
19	Sulfadoxine	311	156	+	192-14221	Sulfadoxine Standard	200 mg
20	Sulfatroxazole	268	92	+	196-16941	Sulfatroxazole Standard	100 mg
21	Sulfaethoxypyridazine	295	156	+	199-16931	Sulfaethoxypyridazine Standard	100 mg
22	Sulfisoxazole	268	92	+	191-16991	Sulfisoxazole Standard	100 mg
23	Sulfabenzamide	277	156	+	193-14871	Sulfabenzamide Standard	100 mg
24	Sulfadimethoxine	311	156	+	190-11101	Sulfadimethoxine Standard	200 mg
25	Sulfaquinoxaline*3	301	156	+	194-11481	Sulfaquinoxaline Sodium Salt Standard	200 mg
26	Sulfabromomethazine	359	92	+	192-16921	Sulfabromomethazine Standard	100 mg
27	Sulfanitran	336	156	-	195-17011	Sulfanitran Standard	100 mg

\*1 The measurement conditions, charts and monitoring ions are for reference only and do not constitute a guarantee for the product.

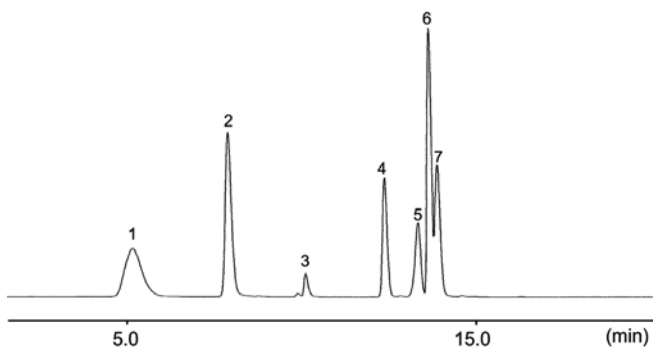
\*2 There are two types of column connection: W type and D type. For details, please refer to "HPLC Column Connection Types" P. 17.

\*3 The concentration of the mixture standard solution is converted to 20 µg/mL as the salt-free form.



Code No.	Product Name	Grade	Volume
225-02091	Veterinary Drugs Mixture Standard Solution (Macrolide)	for HPLC	1 mL
221-02093	(each 20 µg/mL Acetonitrile Solution)		1 mL×5A

### ■ LC/MS chromatogram\*1



### Analysis conditions

#### [Instrument]

Shimadzu LC-20AD

#### [HPLC]

Column:	Product Name	Code No.	Volume
	Wakopak® Ultra C18-3 2.0×100 mm	232-63581	1 EA

Column temperature: 40°C

Eluent: A) 0.5% HCOOH in H<sub>2</sub>O, B) 0.5% HCOOH in CH<sub>3</sub>CN

Gradient:	Time (min.)	B conc. (%)
	0-15	15-50
	15-20	50

Flow rate: 0.2 mL/min.

#### [MS]

Ionization: ESI

Mode: TIC

### ■ List of 7 components (each 20 µg/mL acetonitrile solution)

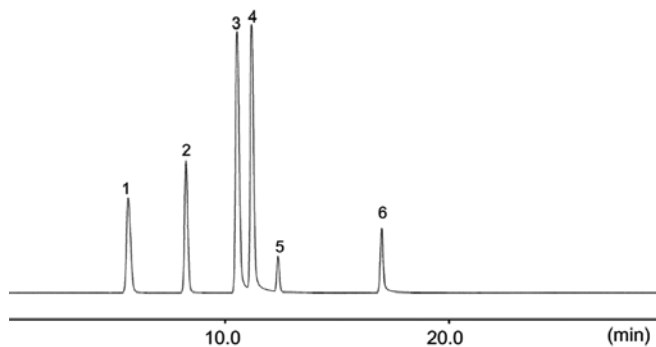
Peak No.	Components	Monitoring Ions (m/z)	Mode	Related Products		
				Code No.	Product Name	Volume
1	Neospiramycin I	350	+	147-07061	Neospiramycin I Standard	10 mg
2	Spiramycin I	422	+	197-11971	Spiramycin I Standard	10 mg
3	Tilmicosin (mixture of isomers)	870	+	200-19151	Tilmicosin Standard (mixture of isomers)	100 mg
4	Erythromycin A	734	+	056-07361	Erythromycin A Standard	100 mg
5	Tylosin	916	+	208-19331	Tylosin Standard	100 mg
6	Tiamulin*2	494	+	201-16881	Tiamulin Fumarate Standard	200 mg
7	Leucomycin A <sub>5</sub>	772	+	125-06301	Leucomycin A <sub>5</sub>	50 mg

\*1 The measurement conditions, charts and monitoring ions are for reference only and do not constitute a guarantee for the product.

\*2 The concentration of the mixture standard solution is converted to 20 µg/mL as the salt-free form.

Code No.	Product Name	Grade	Volume
220-02203	Veterinary Drugs Mixture Standard Solution (Hormone)	for HPLC	1 mL
224-02201	(each 20 µg/mL Acetonitrile Solution)		1 mL×5A

### ■ LC/MS chromatogram\*1



### Analysis conditions

#### [Instrument]

Shimadzu LC/MS-2020

#### [HPLC]

Column:	Product Name	Code No.	Volume*2
	Wakopak® Wakosil®-II	231-50241	1 EA (D)
	3C18HG 2.0×150 mm	237-50243	1 EA (W)

Column temperature: 40°C

Eluent: A) 0.1% HCOOH in H<sub>2</sub>O, B) CH<sub>3</sub>CN

Gradient:	Time (min.)	B conc. (%)
	0-20	30-70
	20-30	70

Flow rate: 0.2 mL/min.

#### [MS]

Ionization: ESI

Mode: TIC

### ■ List of 6 components (each 20 µg/mL acetonitrile solution)

Peak No.	Components	Monitoring Ions (m/z)	Mode	Related Products		
				Code No.	Product Name	Volume
1	Prednisolone	361	+	162-21911	Prednisolone Standard	200 mg
2	Methylprednisolone	375	+	137-15451	Methylprednisolone Standard	100 mg
3	β-Trenbolone	271	+	205-16281	β-Trenbolone Standard	200 mg
4	α-Trenbolone	271	+	203-20991	α-Trenbolone Standard	20 mg
5	Zeranol	323	+	262-01461	Zeranol Standard	200 mg
6	Clostebol	323	+	034-20141	Clostebol Standard	200 mg

\*1 The measurement conditions, charts and monitoring ions are for reference only and do not constitute a guarantee for the product.

\*2 There are two types of column connection: W type and D type. For details, please refer to "HPLC Column Connection Types" P. 17.

# Organic Phosphorus Pesticides Mixture Standard Solutions, FA Series

## What are organophosphorus pesticides?

Organophosphorus pesticides are widely used as insecticides. They inhibit the action of cholinesterase, making it difficult to decompose acetylcholine, a neurotransmitter, thereby impairing neurotransmission. In Japan, there have been many cases in the past where they have been detected in processed foods, for example, food poisoning occurred when frozen dumplings from China (2008) were found to contain methamidophos, as well as cases of frozen foods (2013) contaminated with malathion. Consequently, their toxicity is now considered problematic.

There is a simultaneous analysis method for organic phosphorus pesticides established by the Ministry of Health, Labor and Welfare of Japan.<sup>1)</sup> The use of our FA series enables simultaneous analysis studies of organic phosphorus pesticides.

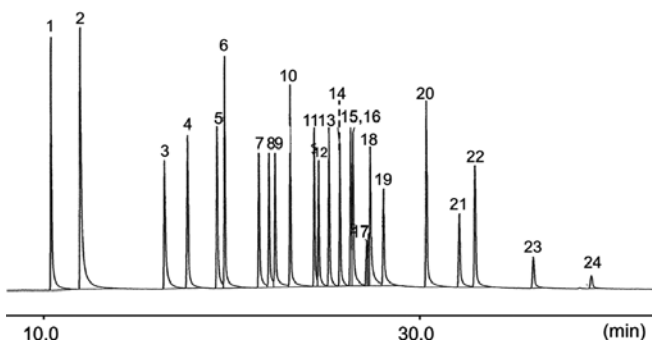
### Product list of organic phosphorus pesticides mixture standard solutions, FA series

Code No.	Product Name	Volume	Number of Components	Analysis Equipment	Mark	Product Page
152-02931	Organophosphorus Pesticides Mixture Standard Solution FA-1 (each 20 µg/mL)	1 mL	24	GC	FA1	P. 37
159-02941	Organophosphorus Pesticides Mixture Standard Solution FA-2 (each 20 µg/mL)	1 mL	22	GC	FA2	P. 38
156-02951	Organophosphorus Pesticides Mixture Standard Solution FA-3 (each 20 µg/mL Acetone Solution)	1 mL	10	GC	FA3	P. 39
153-01481	Organophosphorus Pesticides Mixture Standard Solution (each 1 mg/mL Toluene Solution)	1 mL×5A	4	GC	OP	P. 39

1) Ministry of Health, Labour and Welfare of Japan website

Code No.	Product Name	Grade	Volume
152-02931	Organophosphorus Pesticides Mixture Standard Solution FA-1 (each 20 µg/mL)	for Pesticide Residue Analysis	1 mL

### GC chromatogram\*



### Analysis conditions

#### [Instrument]

Shimadzu GC-2014

#### [GC]

Column: DB-1701 0.25 µm, 0.25 mm×30 m  
Column temperature: 60°C (2 min.)→25°C/min.→150°C  
→5°C/min.→270°C (20 min.)

Injection temperature: 250°C

Carrier gas: He 1.0 mL/min.

Split ratio: 1/10

Detector temperature: 270°C

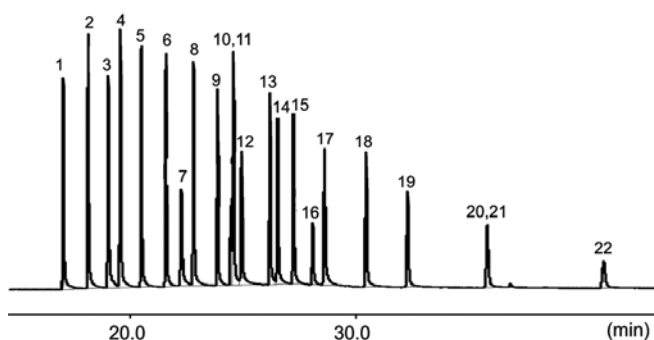
### List of 24 components (each 20 µg/mL)

Peak No.	Components	Related Products		
		Code No.	Product Name	Volume
1	Dichlorvos (DDVP)	046-16633	DDVP Standard	200 mg
2	Methamidophos	139-11631	Methamidophos Standard	200 mg
3	Acephate	015-08954	Acephate Standard	100 mg
4	Cadusafos	036-18871	Cadusafos Standard	100 mg
5	Salithion	191-07341	Salithion Standard	200 mg
6	Diazinon	040-31891	Diazinon Reference Material <span style="border: 1px solid black; padding: 0 2px;">CRM</span>	100 mg
7	Iprobenfos (IBP)	093-02233	IBP Standard	200 mg
8	Cyanophos (CYAP)	039-08493	CYAP Standard	200 mg
9	Chlorpyrifosmethyl	031-09673	Chlorpyrifosmethyl Standard	200 mg
10	Pirimiphos-methyl	161-13713	Pirimiphos-methyl Standard	100 mg
11	(E)-Dimethylvinphos	044-26063	(E)-Dimethylvinphos Standard	50 mg
12	Malathion (Malathon)	136-05514	Malathon Standard	100 mg
13	(Z)-Dimethylvinphos	045-25231	(Z)-Dimethylvinphos Standard	200 mg
14	(E)-Chlorfenvinphos (α-CVP)	033-21691	α-CVP Standard	50 mg
15	Quinalphos	175-00441	Quinalphos Standard	200 mg
16	(Z)-Chlorfenvinphos (β-CVP)	033-22791	β-CVP Standard	50 mg
17	Fosthiazate	062-05941	Fosthiazate Reference Material(mixture of isomers)	100 mg
18	Propaphos	168-10244	Propaphos Standard	100 mg
19	Profenofos	169-17653	Profenofos Standard	100 mg
20	Ethion	051-03173	Ethion Standard	200 mg
21	Edifenphos (EDDP)	053-03133	EDDP Standard	200 mg
22	Cyanofenphos (CYP)	037-08411	CYP Standard	200 mg
23	Pyridaphenthion	169-10914	Pyridaphenthion Standard	100 mg
24	Phosalone	167-09383	Phosalone Standard	100 mg

\* The measurement conditions and charts are for reference only and do not constitute a guarantee for the product.

Code No.	Product Name	Grade	Volume
159-02941	Organophosphorus Pesticides Mixture Standard Solution FA-2 (each 20 µg/mL)	for Pesticide Residue Analysis	1 mL

### GC chromatogram\*1



### Analysis conditions

#### [Instrument]

Shimadzu GC-2014

#### [GC]

Column: DB-1701 0.25 µm, 0.25 mm×30 m  
 Column temperature: 60°C (2 min.)→25°C/min.→150°C  
 →5°C/min.→270°C (20 min.)

Injection temperature: 250°C

Carrier gas: He 1.0 mL/min.

Split ratio: 1/10

Detector temperature: 270°C

### List of 22 components (each 20 µg/mL)

Peak No.	Components	Related Products		
		Code No.	Product Name	Volume
1	Ethoprophos	051-05611	Ethoprophos Standard	200 mg
2	Phorate	166-22911	Phorate Standard	100 mg
3	Thiometon	207-13181	Thiometon Standard Solution (1 mg/mL Hexane Solution)	1 mL×5A
4	Terbufos	200-12691	Terbufos Standard	200 mg
5	Etrimfos	058-06081	Etrimfos Standard Solution (1 mg/mL Hexane Solution)	1 mL×5A
6	Dichlofenthion (ECP)	056-03503	ECP Standard	200 mg
7	Dimethoate*2	041-15843	Dimethoate Standard	100 mg
8	Tolclofos-methyl	207-11383	Tolclofos-methyl Standard	100 mg
9	Chlorpyrifos	032-22881	Chlorpyrifos Reference Material	100 mg
10	Formothion*2	068-01303	Formothion Standard	200 mg
11	Fenthion (MPP)	130-06634	MPP Standard	100 mg
12	Fenitrothion (MEP)	130-05534	MEP Standard	100 mg
13	Isofenphos	090-03463	Isofenphos Standard	100 mg
14	Phenthoate (PAP)	161-27081	PAP Standard	100 mg
15	Prothiofos	163-26201	Prothiofos Standard	100 mg
16	Methidathion (DMTP)	043-17081	DMTP Standard	200 mg
17	Butamifos	026-10933	Butamifos Standard	100 mg
18	Sulprofos	193-16951	Sulprofos Standard	100 mg
19	Fensulfothion	064-02961	Fensulfothion Standard	200 mg
20	EPN	058-02843	EPN Standard	100 mg
21	Phosmet (PMP)	163-09221	PMP Standard	200 mg
22	Pyraclufos	160-17801	Pyraclufos Standard	200 mg

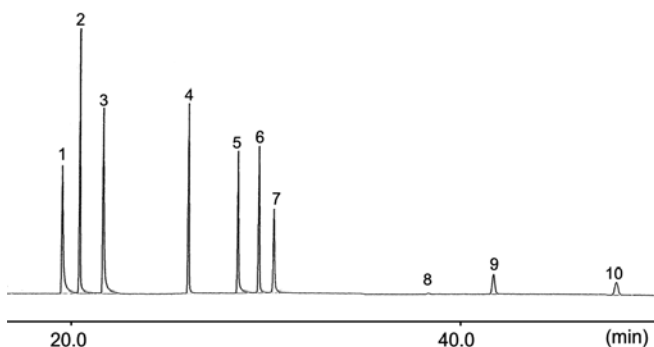
\*1 The measurement conditions and charts are for reference only and do not constitute a guarantee for the product.

\*2 Organic phosphorus pesticides may be adsorbed or decomposed at the injection port or column. For example, analysis by spitless injection has shown that some formothiones may decompose into dimethoate.



Code No.	Product Name	Grade	Volume
156-02951	Organophosphorus Pesticides Mixture Standard Solution FA-3 (each 20 µg/mL Acetone Solution)	for Pesticide Residue Analysis	1 mL

#### GC chromatogram\*



#### Analysis conditions

##### [Instrument]

Shimadzu GC-2014

##### [GC]

Column: DB-1701 0.25 µm, 0.25 mm×30 m  
Column temperature: 60°C (2 min.)→25°C/min.→150°C  
→5°C/min.→270°C (25 min.)

Injection temperature: 250°C

Carrier gas: He 1.0 mL/min.

Split ratio: 1/10

Detector temperature: 270°C

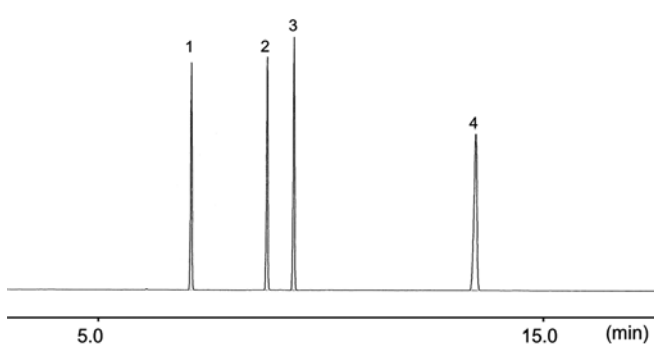
#### List of 10 components (each 20 µg/mL acetone solution)

Peak No.	Components	Related Products		
		Code No.	Product Name	Volume
1	Omethoate	157-01881	Omethoate Standard	200 mg
2	Disulfoton (Ethylthiomethon)	055-03154	Ethylthiomethon Standard	100 mg
3	Monocrotophos	138-11101	Monocrotophos Standard	200 mg
4	Bromophos-ethyl	025-12821	Bromophos-ethyl Standard	200 mg
5	Fenamiphos	066-03521	Fenamiphos Standard	100 mg
6	Isoxathion	098-02244	Isoxathion Standard	100 mg
7	Vamidothion	227-01711	Vamidothion Standard	100 mg
8	Azinphos-methyl	012-16051	Azinphos-methyl Standard	200 mg
9	Azinphos-ethyl	016-22061	Azinphos-ethyl Standard	100 mg
10	Coumaphos	033-16463	Coumaphos Standard	100 mg

\* The measurement conditions and charts are for reference only and do not constitute a guarantee for the product.

Code No.	Product Name	Grade	Volume
153-01481	Organophosphorus Pesticides Mixture Standard Solution (each 1 mg/mL Toluene Solution)	for Pesticide Residue Analysis	1 mL×5A

#### GC chromatogram\*



#### Analysis conditions

##### [Instrument]

Shimadzu GC-2014

##### [GC]

Column: BP1 (SGE) 1.0 µm, 0.53 mm×25 m  
Column temperature: 100°C (1 min.)→20°C/min.→260°C (11 min.)

Injection temperature: 150°C

Carrier gas: He 6.0 mL/min.

Split ratio: 1/5

Detector temperature: 280°C

#### List of 4 components (each 1 mg/mL toluene solution)

Peak No.	Components	Related Products		
		Code No.	Product Name	Volume
1	Methyl Demeton	134-15601	Methyl Demeton Standard	100 mg
2	Methylparathion	131-06061	Methylparathion Standard	200 mg
3	Parathion	168-08573	Parathion Standard	200 mg
4	EPN	058-02843	EPN Standard	100 mg

\* The measurement conditions and charts are for reference only and do not constitute a guarantee for the product.

# Neonicotinoid Pesticides Mixture Standard Solution

## What are neonicotinoid pesticides?

Neonicotinoid pesticides are insecticides based on nicotine-like components. Because of their selective action against insects, they began to be used as an alternative to organophosphorus pesticides, which are highly toxic to humans. However, coinciding with the expansion of their use, increasing instances of colony collapse disorder (CCD) were reported from many parts of the world. This is a phenomenon in which bees fail to overwinter and disappear, or worker bees suddenly disappear leaving behind the queen and larvae, making it impossible to maintain the colony. This has led to negative effects on ecosystems being reported, and the EU has prohibited the use of some of neonicotinoid pesticides.<sup>1)</sup> Fujifilm Wako provides a mixture standard solution of neonicotinoid pesticides and their metabolites.

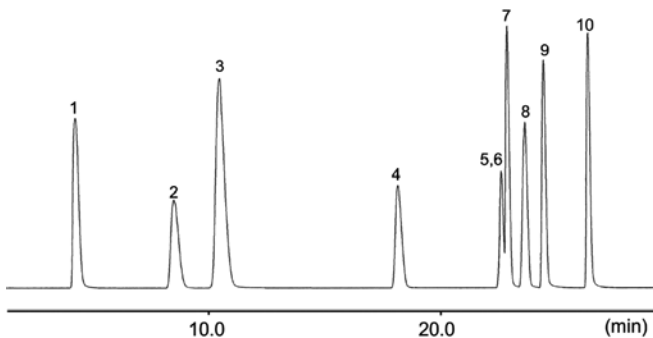
### Product list of neonicotinoid pesticides mixture standard solution

Code No.	Product Name	Volume	Number of Components	Analysis Equipment	Mark	Product Page
149-09461	Neonicotinoid Pesticides Mixture Standard	1 mL	10	LC/MS	NP	P. 41
145-09463	Solution(each 20 µg/mL Acetonitrile Solution)	1 mL×5A				

1) Ministry of Agriculture, Forestry and Fisheries of Japan website

Code No.	Product Name	Grade	Volume
149-09461	Neonicotinoid Pesticides Mixture Standard Solution	for Pesticide Residue Analysis	1 mL
145-09463	(each 20 µg/mL Acetonitrile Solution)		1 mL×5A

### ■ LC/MS chromatogram\*



### Analysis conditions

#### [Instrument]

Shimadzu LC/MS-2020

#### [HPLC]

Column:	Product Name	Code No.	Volume
	Wakopak® Ultra C18-3 2.0×100 mm	232-63581	1 EA

Column temperature: 30°C

Eluent: A) 0.1% HCOOH in 5 mmol/L CH<sub>3</sub>COONH<sub>4</sub>

B) CH<sub>3</sub>OH

Gradient:	Time (min.)	B conc. (%)
	0-10	10
	10-30	10-70

Flow rate: 0.2 mL/min.

#### [MS]

Ionization: ESI

Mode: TIC

### ■ List of 10 components (each 20 µg/mL acetonitrile solution)

Peak No.	Components	Monitoring Ions (m/z)	Related Products		
			Code No.	Product Name	Volume
1	CPMF	212	036-26061	CPMF	200 mg
2	Dinotefuran	203	041-29731	Dinotefuran Standard	100 mg
3	Nitenpyram	271	142-06771	Nitenpyram Standard	200 mg
4	Thiamethoxam	292	201-19061	Thiamethoxam Reference Material <small>CRM</small>	100 mg
5	Clothianidin	250	034-22581	Clothianidin Reference Material <small>CRM</small>	100 mg
6	Imidacloprid	256	099-03771	Imidacloprid Standard	200 mg
7	Thiacloprid-amide	271	204-15771	Thiacloprid-amide Standard	50 mg
8	CPF	199	037-17201	CPF Standard	200 mg
9	Acetamiprid	223	010-16493	Acetamiprid Standard	100 mg
10	Thiacloprid	253	203-15763	Thiacloprid Standard	100 mg

\* The measurement conditions, charts and monitoring ions are for reference only and do not constitute a guarantee for the product.



Classification	Code No.	Product Name <sup>*1</sup>	Grade	Volume	WQ Series															
					1	2	3	4	5	6	7	8	9	10						
Target	027-07594	Bentazone Standard	for Pesticide Residue Analysis	100 mg				○												
Target	029-06954	Benthioncarb Standard (Thiobencarb)	for Pesticide Residue Analysis	100 mg	○															
Target	023-15781	Benzobicyclon Standard	for Pesticide Residue Analysis	100 mg					○											
	026-06763	Benzoepin Sulfate Standard	for Pesticide Residue Analysis	100 mg		○														
Target	021-16223	Benzofenap Standard	for Pesticide Residue Analysis	100 mg					○											
Target	026-11533	Bethrodine Standard (Benfluralin)	for Pesticide Residue Analysis	100 mg	○															
Exclusion	027-08253	Bifenox Standard	for Pesticide Residue Analysis	100 mg	○															
Other	024-14111	Bispyribac-sodium Standard	for Pesticide Residue Analysis	100 mg																
Other	027-15821	Boscalid Standard	for Pesticide Residue Analysis	100 mg					○	○										
Target	021-06774	BPMC Standard (Fenobucarb)	for Pesticide Residue Analysis	100 mg	○															
Other	024-06943	BPPS Standard (Propargite)	for Pesticide Residue Analysis	200 mg						○										
Review	020-17511	Bromacil Reference Material	Traceable Reference Material	100 mg					○	○										
Target	026-17591	Bromobutide Standard	for Pesticide Residue Analysis	100 mg	○															
	028-12671	Bromobutide-debromo Standard	for Pesticide Residue Analysis	200 mg																
Target	022-08264	Buprofezin Standard	for Pesticide Residue Analysis	100 mg	○															
Target	021-12161	Butachlor Standard	for Pesticide Residue Analysis	200 mg						○										○
Target	026-10933	Butamifos Standard	for Pesticide Residue Analysis	100 mg	○															
	024-15571	Butamifos Oxon Standard	for Pesticide Residue Analysis	100 mg		○														
Target	036-18871	Cadusafos Standard	for Pesticide Residue Analysis	100 mg						○										○
Target	035-17001	Cafenstrole Standard	for Pesticide Residue Analysis	200 mg	○															
Target	034-08301	Captan Standard	for Pesticide Residue Analysis	200 mg	○															
	032-23361	Carbendazim Standard	for Pesticide Residue Analysis	100 mg																
Target	039-16323	Carbofuran Standard	for Pesticide Residue Analysis	100 mg					○											
Exclusion	034-22721	Carpropamid Standard	for Pesticide Residue Analysis	100 mg					○											
Target	033-22431	Cartap Hydrochloride Standard	for Pesticide Residue Analysis	100 mg																
Target	030-22561	CAT Reference Material (Simazine)	TraceSure <sup>®</sup> CRM	100 mg	○															
Exclusion	036-14493	Chloroneb Standard	for Pesticide Residue Analysis	100 mg	○															
Review	032-13851	Chloropicrin Standard Solution (1 mg/mL Hexane Solution)	for Water Analysis	2 mL×10A																
Target	032-22881	Chlorpyrifos Reference Material	Traceable Reference Material	100 mg	○															
Other	031-09673	Chlorpyrifosmethyl Standard	for Pesticide Residue Analysis	200 mg						○										○
	037-20131	Chlorpyrifos Oxon Standard	for Pesticide Residue Analysis	100 mg		○														
Other	033-18141	Chromafenozide Standard	for Pesticide Residue Analysis	200 mg					○											
Other	035-16521	Cinmethylin Standard	for Pesticide Residue Analysis	200 mg						○										○
Other	033-16441	Cinosulfuron Standard	for Pesticide Residue Analysis	200 mg						○										
Target	033-20731	Clomeprop Standard	for Pesticide Residue Analysis	100 mg						○										
	037-23051	Clomeprop Metabolite B Standard	for Pesticide Residue Analysis	100 mg																
Other	034-22581	Clothianidin Reference Material	TraceSure <sup>®</sup> CRM	100 mg						○										
Target	032-08983	CNP Standard (Chlornitrofen)	for Pesticide Residue Analysis	200 mg	○															
	036-22541	CNP-amino Reference Material (Chlornitrofen Amino Form)	TraceSure <sup>®</sup> CRM	100 mg																
	031-19281	CPT Standard (Fentrazamide Metabolite)	for Pesticide Residue Analysis	50 mg																
Target	034-17353	Cumyluron Standard	for Pesticide Residue Analysis	100 mg						○	○									
Other	033-15081	CVMP Standard (Tetrachlorvinphos)	for Pesticide Residue Analysis	200 mg						○	○									
Target	037-22951	Cyanazine Standard	for Pesticide Residue Analysis	100 mg						○	○									
Target	039-08493	CYAP Standard (Cyanophos)	for Pesticide Residue Analysis	200 mg						○										○
Other	035-14701	Cycloprothrin Standard	for Pesticide Residue Analysis	100 mg																
Other	033-18901	Cyclosulfamuron Standard	for Pesticide Residue Analysis	200 mg																
Other	033-14361	Cyfluthrin Standard	for Pesticide Residue Analysis	200 mg																
Target	035-22511	Cyhalofop-butyl Standard	for Pesticide Residue Analysis	100 mg							○									
Other	039-15441	Cypermethrin Standard	for Pesticide Residue Analysis	200 mg																○
Other	039-23251	Cyproconazole Standard	for Pesticide Residue Analysis	100 mg						○	○									
Other	037-17723	Cyprodinil Standard	for Pesticide Residue Analysis	100 mg						○	○									
Target	045-29631	Dazomet Standard	for Pesticide Residue Analysis	200 mg																
Other	048-29741	2,4-DB Standard ((2,4-Dichlorophenoxy)butyric Acid)	for Pesticide Residue Analysis	200 mg																
Other	-	DBEDC (Dodecylbenzenesulfonic Acid Bisethylenediamine Copper Complex Salt (III)) <sup>*2</sup>																		
Target	048-25461	DBN Standard (Dichlobenil)	for Pesticide Residue Analysis	200 mg	○															
Target	049-31861	DCMU Reference Material (Diuron)	TraceSure <sup>®</sup> CRM	100 mg						○										
Other	046-16471	DCPA Standard (Propanil)	for Pesticide Residue Analysis	200 mg						○	○									
Target	046-16633	DDVP Standard (Dichlorvos)	for Pesticide Residue Analysis	200 mg	○															
Target	041-31681	DEP Reference Material (Trichlorfon)	TraceSure <sup>®</sup> CRM	100 mg	○															
Target	040-31891	Diazinon Reference Material	TraceSure <sup>®</sup> CRM	100 mg	○															
	042-24021	Diazinon Oxon Standard	for Pesticide Residue Analysis	200 mg		○														
Target	-	cis-1,3-Dichloropropene <sup>*2</sup>																		

Pesticides /  
Veterinary Drugs  
for Positive List System

Veterinary Drugs  
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Organic Phosphorus  
Pesticides

Neonicotinoid Pesticides

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Classification	Code No.	Product Name <sup>1</sup>	Grade	Volume	WQ Series															
					1	2	3	4	5	6	7	8	9	10						
Target	090-03463	Isofenphos Standard	for Pesticide Residue Analysis	100 mg	○															
	098-03981	Isofenphos Oxon Standard	for Pesticide Residue Analysis	200 mg		○														
Target	098-06281	Isoprothiolane Reference Material	TraceSure <sup>®</sup> CRM	100 mg	○															
Target	098-02244	Isoxathion Standard	for Pesticide Residue Analysis	100 mg	○															
	093-03931	Isoxathion Oxon Standard	for Pesticide Residue Analysis	200 mg		○														
Other	-	Kelthane (Dicofol) <sup>2</sup>																		
Other	124-06131	Linuron Reference Material	TraceSure <sup>®</sup> CRM	100 mg				○												
	137-15211	Malaoxon Standard	for Pesticide Residue Analysis	200 mg		○														
Target	136-05514	Malathion Standard	for Pesticide Residue Analysis	100 mg	○															
Target	-	Maneb <sup>2</sup>																		
Target	133-06803	Manzeb Standard	for Pesticide Residue Analysis	200 mg																
Target	132-10901	MBPMC Standard (Terbucarb)	for Pesticide Residue Analysis	200 mg	○															
Target	135-16971	MCP Reference Material (4-Chloro- <i>o</i> -tolylxyacetic Acid)	TraceSure <sup>®</sup> CRM	100 mg				○												
Other	133-12491	MCPB Standard (4-(4-Chloro-2-methylphenoxy)butanoic Acid)	for Pesticide Residue Analysis	200 mg																
Other	138-17821	MCPB-ethyl Standard (4-(4-Chloro-2-methylphenoxy)ethyl Butyrate)	for Pesticide Residue Analysis	100 mg																
	-	MCPM (2-Chloropropionic Acid) <sup>2</sup>																		
Target	132-10423	MCPP Standard (Mecoprop)	for Pesticide Residue Analysis	100 mg			○													
	130-15441	MCPP-P Standard (Mecoprop-P)	for Pesticide Residue Analysis	200 mg																
Target	133-11673	Mefenacet Standard	for Pesticide Residue Analysis	100 mg	○															
Target	130-05534	MEP Standard (Fenitrothion)	for Pesticide Residue Analysis	100 mg	○															
	131-11691	MEP Oxon Standard (Fenitrothion Oxon)	for Pesticide Residue Analysis	200 mg		○														
Target	131-07904	Mepronil Standard	for Pesticide Residue Analysis	100 mg	○															
Target	130-11683	Metalaxyl Standard	for Pesticide Residue Analysis	100 mg	○															
Target	134-15623	Metalaxyl M Standard	for Pesticide Residue Analysis	100 mg																
Review	130-18741	Metaldehyde Standard	for Pesticide Residue Analysis	100 mg																
Target	130-18001	Metam-sodium Standard	for Pesticide Residue Analysis	100 mg																
Other	139-11631	Methamidophos Standard	for Pesticide Residue Analysis	200 mg																○
Target	132-17461	Methomyl Reference Material	TraceSure <sup>®</sup> CRM	100 mg			○													
Exclusion	133-10791	Methylidymron Standard	for Pesticide Residue Analysis	200 mg	○															
Target	139-14791	Methyl Isothiocyanate Standard	for Pesticide Residue Analysis	200 mg																
Review	131-06061	Methylparathion Standard	for Pesticide Residue Analysis	200 mg																
Review	131-17431	Metolachlor Standard	for Pesticide Residue Analysis	100 mg					○											○
Target	139-15891	( <i>E</i> )-Metominostrobin Standard	for Pesticide Residue Analysis	100 mg				○	○											
Target	134-17421	Metribuzin Standard	for Pesticide Residue Analysis	100 mg				○	○											
	137-11791	Metribuzin DA Standard	for Pesticide Residue Analysis	100 mg																
	130-11781	Metribuzin DADK Standard	for Pesticide Residue Analysis	100 mg																
	130-11801	Metribuzin DK Standard	for Pesticide Residue Analysis	100 mg																
Target	130-06813	MIPC Standard (Isoprocarb)	for Pesticide Residue Analysis	100 mg	○															
Target	130-12163	Molinate Standard	for Pesticide Residue Analysis	100 mg	○															
Other	138-11101	Monocrotophos Standard	for Pesticide Residue Analysis	200 mg				○												
Target	130-06634	MPP Standard (Fenthion)	for Pesticide Residue Analysis	100 mg	○	○														
	137-14971	MPP Oxon Standard (Fenthion Oxon)	for Pesticide Residue Analysis	200 mg		○	○													
	139-15151	MPP Oxon Sulfone Standard (Fenthion Oxon Sulfone)	for Pesticide Residue Analysis	100 mg		○	○													
	136-15161	MPP Oxon Sulfoxide Standard (Fenthion Oxon Sulfoxide)	for Pesticide Residue Analysis	100 mg		○	○													
	138-06691	MPP Sulfone Standard (Fenthion Sulfone)	for Pesticide Residue Analysis	200 mg		○	○													
	131-06701	MPP Sulfoxide Standard (Fenthion Sulfoxide)	for Pesticide Residue Analysis	200 mg		○	○													
Target	144-03833	NAC Standard (Carbaryl)	for Pesticide Residue Analysis	100 mg																○
Other	148-08211	Naproanilide Standard	for Pesticide Residue Analysis	100 mg				○												
Target	144-05893	Napropamide Standard	for Pesticide Residue Analysis	100 mg	○															
	141-04161	Nereistoxin Oxalate Standard	for Pesticide Residue Analysis	200 mg									○							
Other	142-06771	Nitenpyram Standard	for Pesticide Residue Analysis	200 mg				○												
Target	152-02671	Orysastrobin Standard	for Pesticide Residue Analysis	50 mg					○											○
	159-02681	(5Z)-Orysastrobin Standard	for Pesticide Residue Analysis	50 mg																○
Other	155-02661	Oxadiazyl Standard	for Pesticide Residue Analysis	100 mg				○												
Other	151-01781	Oxamyl Standard	for Pesticide Residue Analysis	200 mg				○												
Target	150-02851	Oxaziclofene Standard	for Pesticide Residue Analysis	100 mg				○												
Target	156-01214	Oxine-copper Standard	for Pesticide Residue Analysis	100 mg																
Other	156-01851	Oxolinic Acid Standard	for Pesticide Residue Analysis	200 mg																
Target	163-18153	2,4-PA Standard (2,4-Dichlorophenoxyacetic Acid)	for Pesticide Residue Analysis	100 mg			○													
Other	160-26211	Pacllobutrazol Standard	for Pesticide Residue Analysis	100 mg					○											○
Target	161-27081	PAP Standard (Phenthoate)	for Pesticide Residue Analysis	100 mg	○															
Target	160-08871	Paraquat Dichloride Standard	for Pesticide Residue Analysis	100 mg																○

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Classification	Code No.	Product Name <sup>1</sup>	Grade	Volume	WQ Series															
					1	2	3	4	5	6	7	8	9	10						
Target	167-26221	Pencycuron Standard	for Pesticide Residue Analysis	100 mg	○															
Target	168-11903	Pendimethalin Standard	for Pesticide Residue Analysis	100 mg	○															
Review	169-19691	Pentoxazone Standard	for Pesticide Residue Analysis	200 mg				○												
Other	168-16523	<i>cis</i> -Permethrin Standard	for Pesticide Residue Analysis	100 mg															○	
Other	168-21033	<i>trans</i> -Permethrin Standard	for Pesticide Residue Analysis	100 mg															○	
Other	168-09293	PHC Standard (Propoxur)	for Pesticide Residue Analysis	100 mg						○									○	
Review	167-09383	Phosalone Standard	for Pesticide Residue Analysis	100 mg						○									○	
Other	163-16811	Phoxim Standard	for Pesticide Residue Analysis	200 mg					○											
Target	160-11223	Piperophos Standard	for Pesticide Residue Analysis	200 mg	○															
Other	161-13713	Pirimiphos-methyl Standard	for Pesticide Residue Analysis	100 mg					○	○										
Target	167-26581	Polycarbamate Standard	for Pesticide Residue Analysis	100 mg																
Target	168-16361	Pretilachlor Standard	for Pesticide Residue Analysis	200 mg	○															
Target	168-17483	Probenazole Standard	for Pesticide Residue Analysis	100 mg				○												
Target	161-11214	Procymidone Standard	for Pesticide Residue Analysis	100 mg	○															
Other	168-18061	Prohexadione Standard	for Pesticide Residue Analysis	200 mg																
Other	167-15373	Prometryn Standard	for Pesticide Residue Analysis	100 mg					○	○										
Other	168-10244	Propaphos Standard	for Pesticide Residue Analysis	100 mg						○									○	
Target	169-16771	Propiconazole Standard	for Pesticide Residue Analysis	200 mg	○															
Target	160-26331	Propineb Standard	for Pesticide Residue Analysis	100 mg																
Target	169-25061	Propyzamide Reference Material	TraceSure <sup>®</sup> CRM	100 mg	○															
Target	163-26201	Prothiofos Standard	for Pesticide Residue Analysis	100 mg																
	165-11913	Prothiofos Oxon Standard	for Pesticide Residue Analysis	200 mg																
Other	163-19971	Pymetrozine Standard	for Pesticide Residue Analysis	200 mg					○											
Review	160-17801	Pyraclufos Standard	for Pesticide Residue Analysis	200 mg						○									○	
Target	163-23521	Pyraclonil Standard	for Pesticide Residue Analysis	100 mg									○							
Target	165-17091	Pyrazolate Standard	for Pesticide Residue Analysis	200 mg						○										
Other	168-17841	Pyrazosulfuron-ethyl Standard	for Pesticide Residue Analysis	200 mg						○										
Target	164-16743	Pyrazoxyfen Standard	for Pesticide Residue Analysis	100 mg							○								○	
Other	161-29161	Pyrethrins Standard Solution (Pyrethrin I+II: 1 mg/mL Acetone Solution)	for Pesticide Residue Analysis	1 mL×5A																
Target	163-16213	Pyributicarb Standard	for Pesticide Residue Analysis	100 mg	○															
Target	169-10914	Pyridaphenthion Standard	for Pesticide Residue Analysis	100 mg	○															
Other	166-19841	( <i>E</i> )-Pyrinobac-methyl Standard	for Pesticide Residue Analysis	200 mg						○	○									
Other	163-19851	( <i>Z</i> )-Pyrinobac-methyl Standard	for Pesticide Residue Analysis	50 mg						○	○									
Exclusion	163-18751	Pyriproxyfen Standard	for Pesticide Residue Analysis	200 mg	○															
Target	164-18041	Pyroquilon Standard	for Pesticide Residue Analysis	200 mg	○															
Other	179-00721	Quizalofop-ethyl Standard	for Pesticide Residue Analysis	100 mg						○										
Other	191-10651	Sethoxydim Standard	for Pesticide Residue Analysis	50 mg							○									
Exclusion	195-10073	Siduron Standard	for Pesticide Residue Analysis	100 mg							○									
Other	199-11193	Sialfluofen Standard	for Pesticide Residue Analysis	100 mg							○									
Other	196-12781	Simeconazole Standard	for Pesticide Residue Analysis	200 mg							○	○								
Target	191-08044	Simetryn Standard	for Pesticide Residue Analysis	100 mg	○															
Other	195-15051	Spinosad Standard	for Pesticide Residue Analysis	100 mg																
Other	202-07901	TCTP Standard (Chlorthal-dimethyl)	for Pesticide Residue Analysis	200 mg								○								
Review	203-13801	Tebuconazole Standard	for Pesticide Residue Analysis	200 mg							○	○								
Other	207-19041	Tebufenozide Reference Material	Traceable Reference Material	100 mg								○								
Other	205-13481	Teclotalam Standard	for Pesticide Residue Analysis	200 mg																
Target	207-19921	Tefuryltrione Standard	for Pesticide Residue Analysis	100 mg																○
Other	205-19101	Tetraconazole Reference Material	TraceSure <sup>®</sup> CRM	100 mg								○	○							
Exclusion	203-13421	Thenylchlor Standard	for Pesticide Residue Analysis	200 mg	○															
Other	203-15763	Thiacloprid Standard	for Pesticide Residue Analysis	100 mg								○	○							
Other	205-19581	Thiadiazin Standard (Milneb)	for Pesticide Residue Analysis	100 mg																
Other	201-19061	Thiamethoxam Reference Material	TraceSure <sup>®</sup> CRM	100 mg								○	○							
Other	204-14774	Thifluzamide Standard	for Pesticide Residue Analysis	100 mg								○	○							
Other	207-20891	Thiocyclam Hydrogen Oxalate Standard	for Pesticide Residue Analysis	100 mg																
Target	207-11361	Thiodicarb Standard	for Pesticide Residue Analysis	200 mg								○								
Target	200-19411	Thiophanate-methyl Standard	for Pesticide Residue Analysis	100 mg																
Target	200-11373	Thiuram Standard	for Pesticide Residue Analysis	100 mg								○								
Target	205-18741	Tiadinil Reference Material	TraceSure <sup>®</sup> CRM	100 mg									○							
Exclusion	207-11383	Tolclofos-methyl Standard	for Pesticide Residue Analysis	100 mg	○															
	202-16551	Tolclofos-methyl Oxon Standard	for Pesticide Residue Analysis	100 mg								○								
Other	209-16843	Tolfenpyrad Standard	for Pesticide Residue Analysis	100 mg																○
Target	207-19301	TPN Reference Material (Chlorothalonil)	Traceable Reference Material	100 mg	○															
Target	202-12911	Triclopyr Standard	for Pesticide Residue Analysis	200 mg								○								
Target	202-19111	Tricyclazole Reference Material	TraceSure <sup>®</sup> CRM	100 mg								○								
Other	202-10191	Triflumizole Standard	for Pesticide Residue Analysis	200 mg									○	○						

Classification	Code No.	Product Name <sup>*1</sup>	Grade	Volume	WQ Series															
					1	2	3	4	5	6	7	8	9	10						
	205-10181	Triflumizole Metabolite Standard	for Pesticide Residue Analysis	200 mg																
Target	208-06783	Trifluralin Standard	for Pesticide Residue Analysis	100 mg	○															
Other	207-15401	Trinexapac-ethyl Standard	for Pesticide Residue Analysis	200 mg				○												
Other	212-00981	Uniconazole P Standard	for Pesticide Residue Analysis	200 mg					○											○
Other	221-02211	Validamycin A Standard	for Pesticide Residue Analysis	100 mg																
Target	266-00783	Zineb Standard	for Pesticide Residue Analysis	200 mg																
Target	264-01301	Ziram Standard	for Pesticide Residue Analysis	200 mg																

\*1 Listed in alphabetical order based on our product names. Aliases are listed in parentheses.

\*2 Product not for sale.

\*3 The above information is current as of December 2023. Please refer to the website of the Ministry of Health, Labour and Welfare of Japan for details.

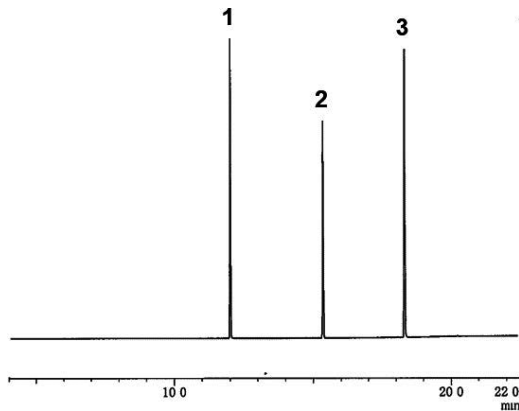
### ■ Product list of mixture standard solutions for the simultaneous analysis method of JP Water Quality Act, WQ series

Code No.	Product Name	Volume	Number of Components	Corresponding Analysis Method	Mark	Product Page
091-05791	3 Internal Standards Mixture Solution (each 100 µg/mL Dichloromethane Solution)	2 mL×5A	3	Attachment Method 5 Attachment Method 6	-	P. 48
168-26631	66 Pesticides Mixture Standard Solution WQ-1-2 (each 20 µg/mL Acetone Solution)	1 mL 1 mL×5A	66	Attachment Method 5 Attachment Method 20-2	WQ1	P. 48
169-23883	15 Pesticides Mixture Standard Solution WQ-2 (each 20 µg/mL Acetone Solution)	1 mL 1 mL×5A	15	Attachment Method 5 Attachment Method 20-2	WQ2	P. 50
166-23893	28 Pesticides Mixture Standard Solution WQ-3 (each 20 µg/mL Acetonitrile Solution)	1 mL 1 mL×5A	28	Attachment Method 18 Attachment Method 20-2	WQ3	P. 51
168-26011	63 Pesticides Mixture Standard Solution WQ-4 (each 20 µg/mL Acetonitrile Solution)	1 mL 1 mL×5A	63	Attachment Method 20-2	WQ4	P. 52
161-26001	48 Pesticides Mixture Standard Solution WQ-5 (each 20 µg/mL Acetone Solution)	1 mL 1 mL×5A	48	Attachment Method 5-2	WQ5	P. 54
164-27613	Pesticides Mixture Standard Solution WQ-6 (Ferimzone, Pyraclonil, Nereistoxin each 20 µg/mL Methanol Solution)	1 mL 1 mL×5A	3	Attachment Method 20-2	WQ6	P. 56
168-27633	Pesticides Mixture Standard Solution WQ-7 (Iminoctadine, Diquat, Paraquat each 20 µg/mL Water Solution)	1 mL 1 mL×5A	3	Attachment Method 21	WQ7	P. 57
165-27643	Pesticides Mixture Standard Solution WQ-8 (Glyphosate, Glufosinate, AMPA each 20 µg/mL Water Solution)	1 mL 1 mL×5A	3	Attachment Method 22	WQ8	P. 58
160-28433	29 Pesticides Mixture Standard Solution WQ-9 (each 20 µg/mL Acetonitrile Solution)	1 mL 1 mL×5A	29	Attachment Method 20-2	WQ9	P. 60
166-29133	3 Pesticides Mixture Standard Solution WQ-10 (each 20 µg/mL Acetone Solution)	1 mL 1 mL×5A	3	Attachment Method 5-2 Attachment Method 20-2	WQ10	P. 62

## Internal Standard

Code No.	Product Name	Grade	Volume
091-05791	3 Internal Standards Mixture Solution (each 100 µg/mL Dichloromethane Solution)	for Water Analysis	2 mL×5A

### GC chromatogram\*



### Analysis conditions

#### [Instrument]

Shimadzu QP-2010 Ultra

#### [GC]

Column: DB-1 25 µm, 0.32 mm×30 m  
 Column temperature: 50°C (1 min.)→20°C/min.→140°C→10°C/min.  
 →280°C (3 min.)

Injection temperature: 280°C

Carrier gas: He 2.0 mL/min.

Split ratio: 1/10

### List of 3 components (each 100 µg/mL dichloromethane solution)

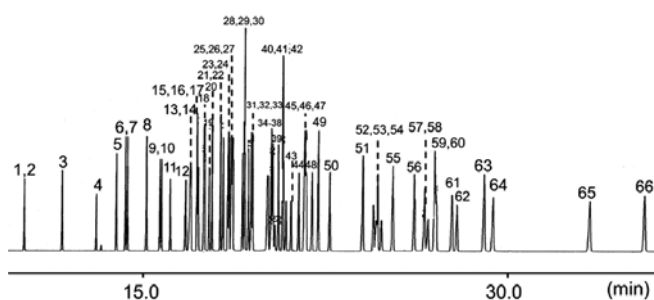
Peak No.	Components	Related Products		
		Code No.	Product Name	Volume
1	Anthracene-d <sub>10</sub>	018-28121	Anthracene-d <sub>10</sub>	1 g
2	9-Bromoanthracene	025-14141	9-Bromoanthracene Standard	200 mg
3	Chrysene-d <sub>12</sub>	037-16081	Chrysene-d <sub>12</sub>	100 mg

\* The measurement conditions and charts are for reference only and do not constitute a guarantee for the product.

## Mixture Standard Solutions

Code No.	Product Name	Grade	Volume
168-26631	66 Pesticides Mixture Standard Solution WQ-1-2	for Pesticide Residue Analysis	1 mL
164-26633	(each 20 µg/mL Acetone Solution)		1 mL×5A

### GC/MS chromatogram\*



### Analysis conditions

#### [Instrument]

Shimadzu QP-2010 Ultra

#### [GC]

Column: BPX5 0.25 µm, 0.25 mm×30 m  
 Column temperature: 50°C (2 min.)→10°C/min.→220°C  
 →2.5°C/min.→270°C→10°C/min.  
 →300°C (5 min.)

Injection temperature: 220°C

Carrier gas: He 2.0 mL/min.

Splitless: 2 min.

#### [MS]

Ionization: EI

Interface temperature: 250°C

### List of 66 components (each 20 µg/mL acetone solution)

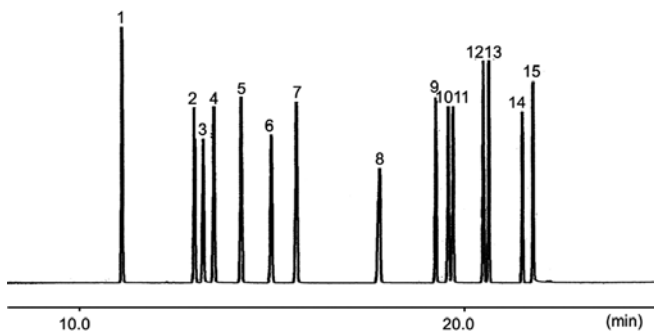
Peak No.	Components	Monitoring Ions (m/z)	Related Products		
			Code No.	Product Name	Volume
1	Dichlorvos (DDVP)	79 109 185	046-16633	DDVP Standard	200 mg
2	Trichlorfon (DEP) (deg.)	109 79 185	041-31681	DEP Reference Material <small>CRM</small>	100 mg
3	Dichlobenil (DBN)	171 100 173	048-25461	DBN Standard	200 mg
4	Etridiazole (Echlomezol)	211 183 213	051-03494	Echlomezol Standard	100 mg
5	Chloroneb	191 193 206	036-14493	Chloroneb Standard	100 mg
6	Isoprocarb (MIPC)	121 136 122	130-06813	MIPC Standard	100 mg
7	Molinate	126 98 188	130-12163	Molinate Standard	100 mg

Peak No.	Components	Monitoring Ions (m/z)			Related Products		
					Code No.	Product Name	Volume
8	Fenobucarb (BPMC)	121	208	150	021-06774	BPMC Standard	100 mg
9	Trifluralin	306	264	290	208-06783	Trifluralin Standard	100 mg
10	Benfluralin (Bethrodine)	292	264	276	026-11533	Bethrodine Standard	100 mg
11	Pencycuron	125	180	127	167-26221	Pencycuron Standard	100 mg
12	Dimethoate	87	125	93	041-15843	Dimethoate Standard	100 mg
13	Simazine (CAT)	201	186	173	030-22561	CAT Reference Material CRM	100 mg
14	Atrazine	200	215	173	016-15633	Atrazine Standard	100 mg
15	Diazinon	179	137	304	040-31891	Diazinon Reference Material CRM	100 mg
16	Propyzamide	173	145	175	169-25061	Propyzamide Reference Material CRM	100 mg
17	Pyroquilon	173	130	144	164-18041	Pyroquilon Standard	200 mg
18	Disulfoton (Ethylthiomethon)	89	97	186	055-03154	Ethylthiomethon Standard	100 mg
19	Chlorothalonil (TPN)	266	264	268	207-19301	TPN Reference Material	100 mg
20	Iprobenfos (IBP)	204	246		093-02233	IBP Standard	200 mg
21	Terbucarb (MBPMC)	205	220	206	132-10901	MBPMC Standard	200 mg
22	Bromobutide	119	232	120	026-17591	Bromobutide Standard	100 mg
23	Alachlor	188	160	146	012-16333	Alachlor Standard	100 mg
24	Tolclofos-methyl	265	125	250	207-11383	Tolclofos-methyl Standard	100 mg
25	Dithiopyr	354	306	286	048-25123	Dithiopyr Standard	100 mg
26	Metalaxyl	160	206	132	130-11683	Metalaxyl Standard	100 mg
27	Simetryn	213	170	155	191-08044	Simetryn Standard	100 mg
28	Fenitrothion (MEP)	277	260	125	130-05534	MEP Standard	100 mg
29	Malathion (Malathon)	127	173	93	136-05514	Malathon Standard	100 mg
30	Esprocarb	91	222	162	055-05893	Esprocarb Standard	100 mg
31	Chlorpyrifos	197	199	314	032-22881	Chlorpyrifos Reference Material	100 mg
32	Thiobencarb (Benthiocarb)	100	72	125	029-06954	Benthiocarb Standard	100 mg
33	Fenthion (MPP)	278	153	125	130-06634	MPP Standard	100 mg
34	Fthalide	243	241	215	061-01594	Fthalide Standard	100 mg
35	Pendimethalin	252	191	281	168-11903	Pendimethalin Standard	100 mg
36	Isofenphos	213	121	185	090-03463	Isofenphos Standard	100 mg
37	Dimethametryn	212	255	240	048-28261	Dimethametryn Standard	200 mg
38	Methylmymron	107	119	91	133-10791	Methylmymron Standard	200 mg
39	Phenthoate (PAP)	274	125	93	161-27081	PAP Standard	100 mg
40	Procymidone	283	96	285	161-11214	Procymidone Standard	100 mg
41	Dimepiperate	119	145	91	043-25173	Dimepiperate Standard	100 mg
42	Captan	79	149	117	034-08301	Captan Standard	200 mg
43	Methidathion (DMTP)	145	85	302	043-17081	DMTP Standard	200 mg
44	Butamifos	286	258	200	026-10933	Butamifos Standard	100 mg
45	Flutolanil	173	145	281	065-05811	Flutolanil Reference Material CRM	100 mg
46	Napropamide	72	128	100	144-05893	Napropamide Standard	100 mg
47	Pretilachlor	176	238	262	168-16361	Pretilachlor Standard	200 mg
48	Isoprothiolane	118	189	290	098-06281	Isoprothiolane Reference Material CRM	100 mg
49	Buprofezin	105	175	106	022-08264	Buprofezin Standard	100 mg
50	Isoxathion	105	177	313	098-02244	Isoxathion Standard	100 mg
51	Mepronil	119	269	91	131-07904	Mepronil Standard	100 mg
52	Chlornitrofen (CNP)	317	319	289	032-08983	CNP Standard	200 mg
53	Propiconazole	259	173	261	169-16771	Propiconazole Standard (mixture of isomers)	200 mg
54	Edifenphos (EDDP)	109	173	310	053-03133	EDDP Standard	200 mg
55	Thenylchlor	127	288	141	203-13421	Thenylchlor Standard	200 mg
56	Pyributicarb	165	108	181	163-16213	Pyributicarb Standard	100 mg
57	Pyridaphenthion	340	199	125	169-10914	Pyridaphenthion Standard	100 mg
58	Iprodione	314	316	187	092-02384	Iprodione Standard	100 mg
59	Piperophos	122	140	320	160-11223	Piperophos Standard	200 mg
60	EPN	157	169	185	058-02843	EPN Standard	100 mg
61	Anilofos	226	125	228	012-20243	Anilofos Standard	100 mg
62	Bifenox	341	310	343	027-08253	Bifenox Standard	100 mg
63	Pyriproxyfen	136	226	137	163-18751	Pyriproxyfen Standard	200 mg
64	Mefenacet	192	120	136	133-11673	Mefenacet Standard	100 mg
65	Cafenstrole	100	188	167	035-17001	Cafenstrole Standard	200 mg
66	Etofenprox	163	135	183	051-05194	Etofenprox Standard	100 mg

\* The measurement conditions, charts and monitoring ions are for reference only and do not constitute a guarantee for the product.

Code No.	Product Name	Grade	Volume
169-23883	15 Pesticides Mixture Standard Solution WQ-2	for Pesticide Residue Analysis	1 mL
163-23881	(each 20 µg/mL Acetone Solution)		1 mL×5A

#### GC/MS chromatogram\*



#### Analysis conditions

##### [Instrument]

Shimadzu QP-2010 Ultra

##### [GC]

Column: BPX5 0.25 µm, 0.25 mm×30 m  
 Column temperature: 80°C (1 min.)→15°C/min.→170°C  
 →3°C/min.→200°C→10°C/min.  
 →300°C (3 min.)

Injection temperature: 220°C

Carrier gas: He 1.8 mL/min.

Splitless: 1 min.

##### [MS]

Ionization: EI

Interface temperature: 280°C

#### List of 15 components (each 20 µg/mL acetone solution)

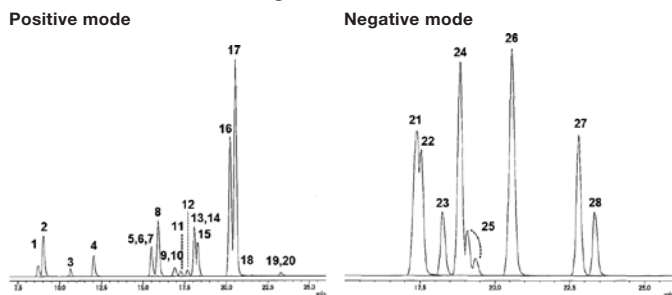
Peak No.	Components	Monitoring Ions (m/z)	Related Products		
			Code No.	Product Name	Volume
1	Diazinon Oxon	137 273 288	042-24021	Diazinon Oxon Standard	200 mg
2	Tolclofos-methyl Oxon	249 109 251	202-16551	Tolclofos-methyl Oxon Standard	100 mg
3	MEP Oxon	244 109 261	131-11691	MEP Oxon Standard	200 mg
4	Malaoxon	127 195 99	137-15211	Malaoxon Standard	200 mg
5	MPP Oxon	262 109 247	137-14971	MPP Oxon Standard	200 mg
6	Chlorpyrifos Oxon	270 242 298	037-20131	Chlorpyrifos Oxon Standard	100 mg
7	Isofenphos Oxon	229 201 314	098-03981	Isofenphos Oxon Standard	200 mg
8	Butamifos Oxon	244 216 287	024-15571	Butamifos Oxon Standard	100 mg
9	Isoxathion Oxon	161 105 125	093-03931	Isoxathion Oxon Standard	200 mg
10	MPP Oxon Sulfoxide	262 278 247	136-15161	MPP Oxon Sulfoxide Standard	100 mg
11	MPP Oxon Sulfone	294 109 215	139-15151	MPP Oxon Sulfone Standard	100 mg
12	MPP Sulfoxide	278 125 294	131-06701	MPP Sulfoxide Standard	200 mg
13	MPP Sulfone	310 125 231	138-06691	MPP Sulfone Standard	200 mg
14	Benzoepin Sulfate	272 274 229	026-06763	Benzoepin Sulfate Standard	100 mg
15	EPN Oxon	141 169 306	059-06011	EPN Oxon Standard	200 mg

\* The measurement conditions, charts and monitoring ions are for reference only and do not constitute a guarantee for the product.



Code No.	Product Name	Grade	Volume
166-23893	28 Pesticides Mixture Standard Solution WQ-3	for Pesticide Residue Analysis	1 mL
160-23891	(each 20 µg/mL Acetonitrile Solution)		1 mL×5A

### LC/MS/MS chromatogram\*



### Analysis conditions

#### [Instrument]

Shimadzu LCMS-8040

#### [HPLC]

Column:	Product Name	Code No.	Volume
	Wakopak® Ultra C18-3 2.0×150 mm	239-63591	1 EA

Column temperature: 40°C

Eluent: A) 0.1% HCOOH in H<sub>2</sub>O, B) CH<sub>3</sub>CN

Gradient:	Time (min.)	B conc. (%)
	0-30	0-100
	30-35	100
	35-35.01	100-0
	35.01-45	0

Flow rate: 0.2 mL/min.

#### [MS]

Ionization: ESI

Mode: MRM

### List of 28 components (each 20 µg/mL acetonitrile solution)

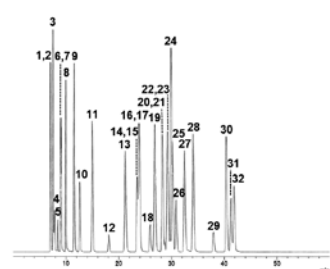
Peak No.	Components	Monitoring Ions (m/z)		Mode	Related Products		
		Precursor	Product		Code No.	Product Name	Volume
1	Asulam	231.1	156.0	+	015-13523	Asulam Standard	100 mg
2	Methomyl	163.1	106.2	+	132-17461	Methomyl Reference Material <small>CRM</small>	100 mg
3	MPP Oxon Sulfoxide	279.1	263.9	+	136-15161	MPP Oxon Sulfoxide Standard	100 mg
4	Tricyclazole	190.1	136.0	+	202-19111	Tricyclazole Reference Material <small>CRM</small>	100 mg
5	Thiodicarb	355.1	87.8	+	207-11361	Thiodicarb Standard	200 mg
6	MPP Oxon Sulfone	295.2	216.9	+	139-15151	MPP Oxon Sulfone Standard	100 mg
7	MPP Sulfoxide	295.2	109.0	+	131-06701	MPP Sulfoxide Standard	200 mg
8	Carbofuran	222.3	165.0	+	039-16323	Carbofuran Standard	100 mg
9	Thiram (Thiuram)	241.2	87.8	+	200-11373	Thiuram Standard	100 mg
10	Probenazole	224.1	41.1	+	168-17483	Probenazole Standard	100 mg
11	Diuron (DCMU)	233.2	71.9	+	049-31861	DCMU Reference Material <small>CRM</small>	100 mg
12	MPP Oxon	263.1	230.9	+	137-14971	MPP Oxon Standard	200 mg
13	Bensulfuron- methyl	411.1	149.0	+	029-12623	Bensulfuron-methyl Standard	100 mg
14	MPP Sulfone	311.2	125.0	+	138-06691	MPP Sulfone Standard	200 mg
15	Flazasulfuron	408.2	182.0	+	060-03323	Flazasulfuron Standard	100 mg
16	Azoxystrobin	404.1	372.0	+	015-19003	Azoxystrobin Standard	100 mg
17	Dymron	269.2	151.1	+	043-26251	Dymron Standard	200 mg
18	Iprodione	330.2	244.9	+	092-02384	Iprodione Standard	100 mg
19	Carpropamid	334.1	139.1	+	034-22721	Carpropamid Standard	100 mg
20	Fenthion (MPP)	279.2	168.9	+	130-06634	MPP Standard	100 mg
21	Bentazone	239.2	132.2	-	027-07594	Bentazone Standard	100 mg
22	2,4-D (2,4-PA)	219.0	161.1	-	163-18153	2,4-PA Standard	100 mg
23	Triclopyr	253.9	196.1	-	202-12911	Triclopyr Standard	200 mg
24	Mecoprop(MCPP)	213.2	141.1	-	132-10423	MCPP Standard	100 mg
25	Siduron	277.2	45.1	-	195-10073	Siduron Standard (mixture of isomers)	100 mg
26	Halosulfuron- methyl	433.1	252.1	-	089-07251	Halosulfuron-methyl Standard	200 mg
27	Fipronil	437.0	332.0	-	068-04103	Fipronil Standard	100 mg
28	Bensulide	396.2	213.2	-	021-07673	Bensulide Standard	100 mg

\* The measurement conditions, charts and monitoring ions are for reference only and do not constitute a guarantee for the product.

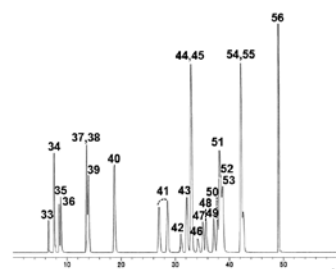
Code No.	Product Name	Grade	Volume
168-26011	63 Pesticides Mixture Standard Solution WQ-4	for Pesticide Residue Analysis	1 mL
164-26013	(each 20 µg/mL Acetonitrile Solution)		1 mL×5A

### ■ LC/MS/MS chromatogram\*1

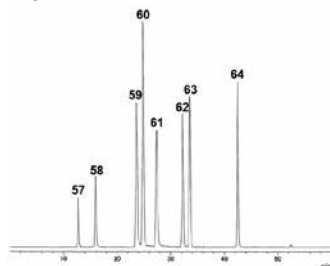
Positive mode ①



Positive mode ②



Negative mode



### Analysis conditions

#### [Instrument]

Shimadzu LCMS-8040

#### [HPLC]

Column:	Product Name	Code No.	Volume
	Wakopak® Ultra C18-3 2.0×75 mm	235-63571	1 EA

Column temperature: 40°C

Eluent: A) 5 mmol/L CH<sub>3</sub>COONH<sub>4</sub> in H<sub>2</sub>O,

B) 5 mmol/L CH<sub>3</sub>COONH<sub>4</sub> in CH<sub>3</sub>OH

Gradient:	Time (min.)	B conc. (%)
	0-2	5
	2-6	5-40
	6-41	40-75
	41-46	75-100
	46-50	100
	50-50.01	100-5
	50.01-60	5

Flow rate: 0.15 mL/min.

#### [MS]

Ionization: ESI

Mode: MRM

### ■ List of 63 components (each 20 µg/mL acetonitrile solution\*2)

Peak No.	Components	Monitoring Ions (m/z)			Mode	Related Products		
		Precursor	Product			Code No.	Product Name	Volume
1	Oxamyl	237	72	+	151-01781	Oxamyl Standard	200 mg	
2	Pymetrozine	218	105	+	163-19971	Pymetrozine Standard	200 mg	
3	Thiamethoxam	292	211	+	201-19061	Thiamethoxam Reference Material CRM	100 mg	
4	Trinexapac-ethyl	253	69	+	207-15401	Trinexapac-ethyl Standard	200 mg	
5	Cinosulfuron	414	183	+	033-16441	Cinosulfuron Standard	200 mg	
6	Acetamiprid	223	126	+	010-16493	Acetamiprid Standard	100 mg	
7	Thiacloprid	253	126	+	203-15763	Thiacloprid Standard	100 mg	
8	Pyrazosulfuron-ethyl	415	182	+	168-17841	Pyrazosulfuron-ethyl Standard	200 mg	
9	Cyanazine	241	214	+	037-22951	Cyanazine Standard	100 mg	
10	Bromacil	261	205	+	020-17511	Bromacil Reference Material	100 mg	
11	Bendiocarb	224	167	+	028-11691	Bendiocarb Standard	200 mg	
12	Ethoxysulfuron	399	261	+	054-06821	Ethoxysulfuron Standard	50 mg	
13	Furametpyr	334	157	+	062-03741	Furametpyr Standard	200 mg	
14	(E)-Metominostrobin	285	196	+	139-15891	(E)-Metominostrobin Standard	100 mg	
15	(Z)-Pyriminobac-methyl*3	362	330	+	163-19851	(Z)-Pyriminobac-methyl Standard	50 mg	
16	Ametryn	228	186	+	015-13643	Ametryn Standard	100 mg	
17	(E)-Pyriminobac-methyl*3	362	330	+	166-19841	(E)-Pyriminobac-methyl Standard	200 mg	
18	Cumyluron	303	185	+	034-17353	Cumyluron Standard	100 mg	
19	Cyproconazole	292	70	+	039-23251	Cyproconazole Standard (mixture of isomers)	100 mg	
20	Prometryn	242	158	+	167-15373	Prometryn Standard	100 mg	
21	Chromafenozide	395	175	+	033-18141	Chromafenozide Standard	200 mg	
22	Simeconazole	294	70	+	196-12781	Simeconazole Standard	200 mg	
23	Naproanilide	292	171	+	148-08211	Naproanilide Standard	100 mg	
24	Tebufenozide	351	133	+	207-19041	Tebufenozide Reference Material	100 mg	
25	Difenoconazole	406	251	+	042-25241	Difenoconazole Standard (mixture of isomers)	200 mg	
26	Triflumizole	346	278	+	202-10191	Triflumizole Standard	200 mg	
27	Benzofenap	431	105	+	021-16223	Benzofenap Standard	100 mg	
28	Quizalofop-ethyl	373	299	+	179-00721	Quizalofop-ethyl Standard	100 mg	

Peak No.	Components	Monitoring Ions (m/z)			Mode	Related Products		
		Precursor	Product			Code No.	Product Name	Volume
29	Oxaziclofene	376	190	+	150-02851	Oxaziclofene Standard	100 mg	
30	Dinotefuran	203	129	+	041-29731	Dinotefuran Standard	100 mg	
31	Nitenpyram	271	56	+	142-06771	Nitenpyram Standard	200 mg	
32	Monocrotophos	224	193	+	138-11101	Monocrotophos Standard	200 mg	
33	Imidacloprid	256	209	+	099-03771	Imidacloprid Standard	200 mg	
34	Clothianidin	250	132	+	034-22581	Clothianidin Reference Material CRM	100 mg	
35	Metribuzin	215	49	+	134-17421	Metribuzin Standard	100 mg	
36	Fluazifop	328	282	+	067-03453	Fluazifop Standard	100 mg	
37	Linuron	249	182	+	124-06131	Linuron Reference Material CRM	100 mg	
38	Acibenzolar-S-methyl	211	136	+	014-18331	Acibenzolar-S-methyl Standard	200 mg	
39	Boscalid	343	307	+	027-15821	Boscalid Standard	100 mg	
40	Benzobicyclon	447	257	+	023-15781	Benzobicyclon Standard	100 mg	
41	Dicloromezine	255	141	+	044-25201	Dicloromezine Standard	200 mg	
42	Tetraconazole	372	159	+	205-19101	Tetraconazole Reference Material CRM	100 mg	
43	Indanofan	341	175	+	094-06521	Indanofan Reference Material CRM	100 mg	
44	Diflubenzuron	311	158	+	043-31901	Diflubenzuron Reference Material CRM	100 mg	
45	Tetrachlorvinphos (CVMP)	367	127	+	033-15081	CVMP Standard	200 mg	
46	Tebuconazole	308	70	+	203-13801	Tebuconazole Standard	200 mg	
47	Cyprodinil	226	108	+	037-17723	Cyprodinil Standard	100 mg	
48	Fentrazamide	350	154	+	062-05201	Fentrazamide Standard	100 mg	
49	Etobenzanid	340	179	+	055-06351	Etobenzanid Standard	200 mg	
50	Oxadiargyl	358	341	+	155-02661	Oxadiargyl Standard	100 mg	
51	Phoxim	299	77	+	163-16811	Phoxim Standard	200 mg	
52	Pirimiphos-methyl	306	164	+	161-13713	Pirimiphos-methyl Standard	100 mg	
53	Pyrazolate	439	91	+	165-17091	Pyrazolate Standard	200 mg	
54	Clomeprop	324	120	+	033-20731	Clomeprop Standard	100 mg	
55	Pentoxazone	371	286	+	169-19691	Pentoxazone Standard	200 mg	
56	Silafluofen	426	287	+	199-11193	Silafluofen Standard	100 mg	
57	MCPA (MCP)	199	141	-	135-16971	MCP Reference Material CRM	100 mg	
58	Dichlorprop	233	161	-	049-29411	Dichlorprop Standard	200 mg	
59	Propanil (DCPA)	216	160	-	046-16471	DCPA Standard	200 mg	
60	Inabenfide	337	122	-	092-06821	Inabenfide Standard	100 mg	
61	Tiadinil	266	71	-	205-18741	Tiadinil Reference Material CRM	100 mg	
62	Thifluzamide	527	125	-	204-14774	Thifluzamide Standard	100 mg	
63	Flusulfamide	413	171	-	068-03363	Flusulfamide Standard	100 mg	
64	Fluazinam	463	416	-	068-02861	Fluazinam Standard	200 mg	

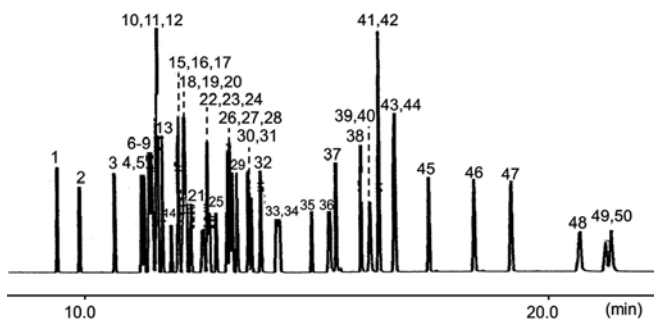
\*1 The measurement conditions, charts and monitoring ions are for reference only and do not constitute a guarantee for the product.

\*2 This product contains 2% methanol.

\*3 Pyriminobac-methyl contains 10 µg/mL each of (E)-pyriminobac-methyl (Peak No. 17) and (Z)-pyriminobac-methyl (Peak No. 15), 20 µg/mL in total.

Code No.	Product Name	Grade	Volume
161-26001	48 Pesticides Mixture Standard Solution WQ-5	for Pesticide Residue Analysis	1 mL
167-26003	(each 20 g/mL Acetone Solution)		1 mL×5A

■ GC/MS/MS chromatogram\*1



Analysis conditions

**[Instrument]**

Shimadzu QP-2010 Ultra

**[GC]**

Column: BPX5 0.25 μm, 0.25 mm×30 m

Column temperature: 50°C (1 min.)→20°C/min.→210°C  
→10°C/min.→290°C (5 min.)

Injection temperature: 250°C

Carrier gas: He 1.2 mL/min.

Splitless: 1 min.

**[MS]**

Ionization: EI

Interface temperature: 280°C

■ List of 48 components (each 20 µg/mL acetone solution)

Peak No.	Components	Monitoring Ions (m/z)		Related Products		
		Precursor	Product	Code No.	Product Name	Volume
1	Propoxur (PHC)	110	152	168-09293	PHC Standard	100 mg
2	Cadusafos	159	158	036-18871	Cadusafos Standard	100 mg
3	Cyanophos (CYAP)	243	109	039-08493	CYAP Standard	200 mg
4	Dichlofenthion (ECP)	279	223	056-03503	ECP Standard	200 mg
5	Benfuresate	163	256	023-12883	Benfuresate Standard	100 mg
6	Chlorpyrifos-methyl (Chlorpyrifosmethyl)	286	288	031-09673	Chlorpyrifosmethyl Standard	200 mg
7	Propanil (DCPA)	161	163	046-16471	DCPA Standard	200 mg
8	Simeconazole	121	73	196-12781	Simeconazole Standard	200 mg
9	Metribuzin	198	144	134-17421	Metribuzin Standard	100 mg
10	Cinmethylin	105	123	035-16521	Cinmethylin Standard	200 mg
11	Prometryn	241	184	167-15373	Prometryn Standard	100 mg
12	Ametryn	227	212	015-13643	Ametryn Standard	100 mg
13	Pirimiphos-methyl	290	276	161-13713	Pirimiphos-methyl Standard	100 mg
14	(E)-Dimethylvinphos* <sup>2</sup>	295	297	044-26063	(E)-Dimethylvinphos Standard	50 mg
15	Bromacil	205	207	020-17511	Bromacil Reference Material	100 mg
16	Metolachlor	162	238	131-17431	Metolachlor Standard	100 mg
17	(Z)-Dimethylvinphos* <sup>2</sup>	295	297	045-25231	(Z)-Dimethylvinphos Standard	200 mg
18	Chlorthal-dimethyl(TCTP)	301	299	202-07901	TCTP Standard	200 mg
19	Tetraconazole	336	338	205-19101	Tetraconazole Reference Material CRM	100 mg
20	Cyanazine	225	212	037-22951	Cyanazine Standard	100 mg
21	Quinoclamine (ACN)	207	172	013-15741	ACN Standard	200 mg
22	Fosthiazate	195	283	062-05941	Fosthiazate Reference Material (mixture of isomers)	100 mg
23	Cyprodinil	224	225	037-17723	Cyprodinil Standard	100 mg
24	Thiamethoxam	212	182	201-19061	Thiamethoxam Reference Material CRM	100 mg
25	Triflumizole	278	206	202-10191	Triflumizole Standard	200 mg
26	Propaphos	220	304	168-10244	Propaphos Standard	100 mg
27	Butachlor	176	160	021-12161	Butachlor Standard	200 mg
28	Tetrachlorvinphos(CVMP)	329	331	033-15081	CVMP Standard	200 mg
29	Paclobutrazol	236	125	160-26211	Paclobutrazol Standard	100 mg
30	(E)-Metominostrobin	191	196	139-15891	(E)-Metominostrobin Standard	100 mg
31	Thifluzamide	194	449	204-14774	Thifluzamide Standard	100 mg
32	Uniconazole P	234	236	212-00981	Uniconazole P Standard	200 mg
33	(Z)-Pyrinobac-methyl* <sup>3</sup>	302	256	163-19851	(Z)-Pyrinobac-methyl Standard	50 mg
34	Cyproconazole	222	139	039-23251	Cyproconazole Standard (mixture of isomers)	100 mg
35	(E)-Pyrinobac-methyl* <sup>3</sup>	302	256	166-19841	(E)-Pyrinobac-methyl Standard	200 mg
36	Propargite (BPPS)	173	150	024-06943	BPPS Standard	200 mg
37	Tebuconazole	250	125	203-13801	Tebuconazole Standard	200 mg
38	Orysastrobin	116	205	152-02671	Orysastrobin Standard	50 mg
39	Acetamiprid	152	126	010-16493	Acetamiprid Standard	100 mg
40	Cumyluron	267	120	034-17353	Cumyluron Standard	100 mg
41	Furametpyr	157	298	062-03741	Furametpyr Standard	200 mg
42	Indanofan	174	159	094-06521	Indanofan Reference Material CRM	100 mg
43	Phosalone	182	367	167-09383	Phosalone Standard	100 mg
44	Cyhalofop-butyl	256	229	035-22511	Cyhalofop-butyl Standard	100 mg
45	Pyraclofos	360	194	160-17801	Pyraclofos Standard	200 mg
46	Etobenzanid	179	149	055-06351	Etobenzanid Standard	200 mg
47	Boscalid	140	342	027-15821	Boscalid Standard	100 mg
48	Thiacloprid	126	101	203-15763	Thiacloprid Standard	100 mg
49	Difenoconazole	323	265	042-25241	Difenoconazole Standard (mixture of isomers)	200 mg
50	Pyrazoxyfen	105	91	164-16743	Pyrazoxyfen Standard	100 mg

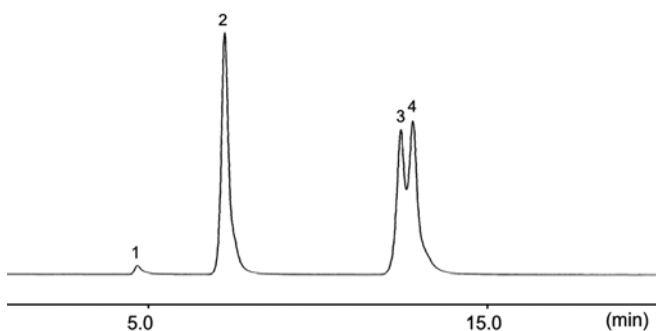
\*1 The measurement conditions, charts and monitoring ions are for reference only and do not constitute a guarantee for the product.

\*2 Dimethylvinphos contains 10 µg/mL each of (E)-dimethylvinphos (Peak No. 14) and (Z)-dimethylvinphos (Peak No. 17), 20 µg/mL in total.

\*3 Pyriminobac-methyl contains (E)-pyriminobac-methyl (Peak No. 35) and (Z)-pyriminobac-methyl (Peak No.33), 20 µg/mL in total.

Code No.	Product Name	Grade	Volume
164-27613	Pesticides Mixture Standard Solution WQ-6 (Ferimzone, Pyraclonil, Nereistoxin each 20 µg/mL Methanol Solution)	for Pesticide Residue Analysis	1 mL
168-27611			1 mL×5A

### ■ LC/MS/MS chromatogram\*1



### Analysis conditions

#### [Instrument]

Shimadzu LCMS-8040

#### [HPLC]

Column:	Product Name	Code No.	Volume*2
	Wakopak® Wakosil®-II	231-50241	1 EA (D)
	3C18HG 2.0×150 mm	237-50243	1 EA (W)

Column temperature: 40°C

Eluent: A) 5 mmol/L CH<sub>3</sub>COONH<sub>4</sub> in H<sub>2</sub>O,

B) 5 mmol/L CH<sub>3</sub>COONH<sub>4</sub> in CH<sub>3</sub>OH

Gradient:	Time (min.)	B conc. (%)
	0-25	50-70
	25-30	70

Flow rate: 0.2 mL/min.

#### [MS]

Ionization: ESI

Mode: MRM

### ■ List of 3 components (each 20 µg/mL methanol solution)

Peak No.	Components	Monitoring Ions (m/z)			Mode	Related Products		
		Precursor	Product			Code No.	Product Name	Volume
1	Nereistoxin*3	150	105	+	141-04161	Nereistoxin Oxalate Standard	200 mg	
2	Pyraclonil	315	169	+	163-23521	Pyraclonil Standard	100 mg	
3	(E)-Ferimzone*4	255	91	+	063-04131	(E)-Ferimzone Standard	200 mg	
4	(Z)-Ferimzone*4	255	91	+	066-04121	(Z)-Ferimzone Standard	200 mg	

\*1 The measurement conditions, charts and monitoring ions are for reference only and do not constitute a guarantee for the product.

\*2 There are two types of column connection: W type and D type. For details, please refer to "HPLC Column Connection Types" P. 17.

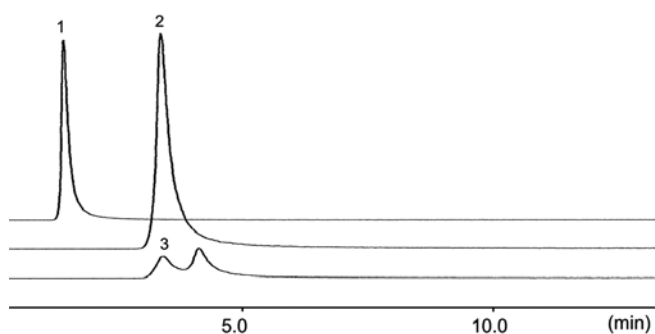
\*3 The concentration of the mixture standard solution is converted to 20 µg/mL as the salt-free form.

\*4 Ferimzone contains (E)-ferimzone (Peak No. 3) and (Z)-ferimzone (Peak No. 4), 20 µg/mL in total. Ten µg/mL each of (E)-ferimzone and (Z)-ferimzone are prepared, but the ratio may change during storage.



Code No.	Product Name	Grade	Volume
168-27633	Pesticides Mixture Standard Solution WQ-7 (Iminoctadine, Diquat, Paraquat each 20 µg/mL Water Solution)* <sup>1</sup>	for Pesticide Residue Analysis	1 mL
162-27631			1 mL×5A

### ■ LC/MS/MS chromatogram\*<sup>2</sup>



### Analysis conditions

#### [Instrument]

Shimadzu LCMS-8040

#### [HPLC]

Column:	Product Name	Code No.	Volume* <sup>3</sup>
	Wakopak® Wakosil®-II	232-63461	1 EA (D)
	5SIL-AQ 2.0×150 mm	238-63463	1 EA (W)

Column temperature: 40°C

Eluent: HCOONH<sub>4</sub> Buffer:CH<sub>3</sub>CN = 70:30

Flow rate: 0.4 mL/min.

#### [MS]

Ionization: ESI

Mode: MRM

### ■ List of 3 components (each 20 µg/mL water solution)

Peak No.	Components	Monitoring Ions (m/z)			Mode	Related Products		
		Precursor	Product			Code No.	Product Name	Volume
1	Iminoctadine	179	69	+	092-03901	Iminoctadine Triacetate Standard	200 mg	
					097-04051	Iminoctadine Albesilate Standard	200 mg	
2	Diquat* <sup>4</sup>	183	157	+	047-30441	Diquat Dibromide Monohydrate Standard	100 mg	
3	Paraquat* <sup>4</sup>	185	170	+	160-08871	Paraquat Dichloride Standard	100 mg	

\*1 Use polytetrafluoroethylene or polypropylene utensils and containers for handling this product.

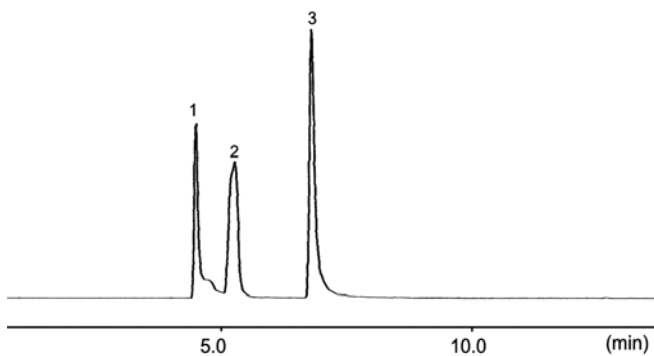
\*2 The measurement conditions, charts and monitoring ions are for reference only and do not constitute a guarantee for the product.

\*3 There are two types of column connection: W type and D type. For details, please refer to "HPLC Column Connection Types" P. 17.

\*4 The concentration of the mixture standard solution is converted to 20 µg/mL as the salt-free form.

Code No.	Product Name	Grade	Volume
165-27643	Pesticides Mixture Standard Solution WQ-8 (Glyphosate, Glufosinate, AMPA each 20 µg/mL Water Solution)* <sup>1</sup>	for Pesticide Residue Analysis	1 mL
169-27641			1 mL×5A

■ LC/MS/MS chromatogram\*<sup>2</sup>



**Analysis conditions**

**[Instrument]**

Shimadzu LCMS-8040

**[HPLC]**

Column:

Product Name	Code No.	Volume
Wakopak® Ultra C18-5 4.6×150 mm	235-02651	1 EA

Column temperature: 40°C

Eluent: A) 5 mmol/L CH<sub>3</sub>COONH<sub>4</sub> in H<sub>2</sub>O, B) CH<sub>3</sub>CN

Gradient:

Time (min.)	B conc. (%)
0-15	30-100

Flow rate: 0.5 mL/min.

**[MS]**

Ionization: ESI

Mode: MRM

■ List of 3 components (each 20 µg/mL water solution)

Peak No.	Components	Monitoring Ions (m/z)			Mode	Related Products		
		Precursor	Product			Code No.	Product Name	Volume
1	Glyphosate	390	168	-	071-05951	Glyphosate Reference Material CRM	100 mg	
2	Glufosinate* <sup>3</sup>	402	180	-	079-05371	Glufosinate Ammonium Standard	100 mg	
3	AMPA (Aminomethyl)- phosphonic Acid)	332	110	-	016-24641	(Aminomethyl)phosphonic Acid Reference Material	100 mg	

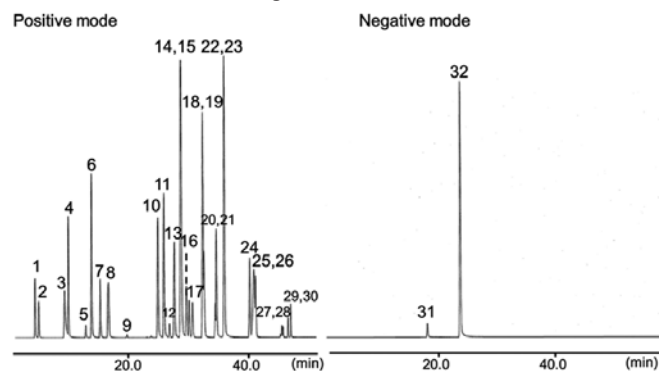
\*1 Use polytetrafluoroethylene or polypropylene utensils and containers for handling this product.

\*2 The measurement conditions, charts and monitoring ions are for reference only and do not constitute a guarantee for the product.

\*3 The concentration of the mixture standard solution is converted to 20 µg/mL as the salt-free form.

Code No.	Product Name	Grade	Volume
160-28433	29 Pesticides Mixture Standard Solution WQ-9	for Pesticide Residue Analysis	1 mL
164-28431	(each 20 µg/mL Acetonitrile Solution)		1 mL×5A

### ■ LC/MS/MS chromatogram\*1



### Analysis conditions

#### [Instrument]

Shimadzu LCMS-8040

#### [HPLC]

Column:	Product Name	Code No.	Volume*2
	Wakopak® Wakosil®-II	231-50241	1 EA (D)
	3C18HG 2.0×150 mm	237-50243	1 EA (W)

Column temperature: 40°C

Eluent: A) 5 mmol/L CH<sub>3</sub>COONH<sub>4</sub> in H<sub>2</sub>O,

B) 5 mmol/L CH<sub>3</sub>COONH<sub>4</sub> in CH<sub>3</sub>OH

Gradient:	Time (min.)	B conc. (%)
	0-7	10-45
	7-42	45-80
	42-46	80-100
	46-51	100

Flow rate: 0.2 mL/min.

#### [MS]

Ionization: ESI

Mode: MRM

■ List of 29 components (each 20 µg/mL acetonitrile solution)

Peak No.	Components	Monitoring Ions (m/z)			Mode	Related Products		
		Precursor	Product			Code No.	Product Name	Volume
1	Methamidophos	142	94	+	139-11631	Methamidophos Standard	200 mg	
2	Acephate	184	143	+	015-08954	Acephate Standard	100 mg	
3	Amitraz Metabolite <sup>*3</sup>	163	107	+	011-14941	Amitraz Metabolite Hydrochloride Standard	200 mg	
4	Tefuryltrione	460	262	+	207-19921	Tefuryltrione Standard	100 mg	
5	Quinoclamine (ACN)	208	105	+	013-15741	ACN Standard	200 mg	
6	Propoxur (PHC)	210	111	+	168-09293	PHC Standard	100 mg	
7	Carbaryl (NAC)	202	145	+	144-03833	NAC Standard	100 mg	
8	Fosthiazate	284	104	+	062-05941	Fosthiazate Reference Material (mixture of isomers)	100 mg	
9	Benfuresate	274	18	+	023-12883	Benfuresate Standard	100 mg	
10	Paclobutrazol	294	70	+	160-26211	Paclobutrazol Standard	100 mg	
11	Oryzastrobin <sup>*4</sup>	392	205	+	152-02671	Oryzastrobin Standard	50 mg	
12	(Z)-Dimethylvinphos <sup>*5</sup>	333	127	+	045-25231	(Z)-Dimethylvinphos Standard	200 mg	
13	(5Z)-Oryzastrobin <sup>*4</sup>	392	205	+	159-02681	(5Z)-Oryzastrobin Standard	50 mg	
14	(E)-Dimethylvinphos <sup>*5</sup>	333	127	+	044-26063	(E)-Dimethylvinphos Standard	50 mg	
15	Metolachlor	284	252	+	131-17431	Metolachlor Standard	100 mg	
16	Uniconazole P	292	70	+	212-00981	Uniconazole P Standard	200 mg	
17	Fenoxanil	329	302	+	064-04301	Fenoxanil Standard	200 mg	
18	Propaphos	305	221	+	168-10244	Propaphos Standard	100 mg	
19	Pyrazoxyfen	403	91	+	164-16743	Pyrazoxyfen Standard	100 mg	
20	Pyraclofos	361	257	+	160-17801	Pyraclofos Standard	200 mg	
21	Phosalone	368	182	+	167-09383	Phosalone Standard	100 mg	
22	Cadusafos	271	159	+	036-18871	Cadusafos Standard	100 mg	
23	Chlorpyrifosmethyl	324	125	+	031-09673	Chlorpyrifosmethyl Standard	200 mg	
24	Cinmethylin	292	105	+	035-16521	Cinmethylin Standard	200 mg	
25	Butachlor	312	238	+	021-12161	Butachlor Standard	200 mg	
26	Tolfenpyrad	384	197	+	209-16843	Tolfenpyrad Standard	100 mg	
27	Dichlofenthion (ECP)	315	259	+	056-03503	ECP Standard	200 mg	
28	Cypermethrin	433	191	+	039-15441	Cypermethrin Standard (mixture of isomers)	200 mg	
29	<i>trans</i> -Permethrin <sup>*5</sup>	408	183	+	168-21033	<i>trans</i> -Permethrin Standard	100 mg	
30	<i>cis</i> -Permethrin <sup>*5</sup>	408	183	+	168-16523	<i>cis</i> -Permethrin Standard	100 mg	
31	Cyanophos (CYAP)	228	118	-	039-08493	CYAP Standard	200 mg	
32	Ethiprole	395	331	-	055-07571	Ethiprole Standard	200 mg	

\*1 The measurement conditions, charts and monitoring ions are for reference only and do not constitute a guarantee for the product.

\*2 There are two types of column connection: W type and D type. For details, please refer to "HPLC Column Connection Types" P. 17.

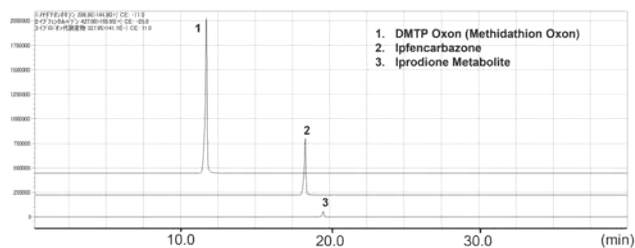
\*3 The concentration of the mixture standard solution is converted to 20 µg/mL as the salt-free form.

\*4 Oryzastrobin contains 10 µg/mL each of oryzastrobin (Peak No. 11) and (5Z)- oryzastrobin (Peak No. 13), 20 µg/mL in total.

\*5 Dimethylvinphos contains 10 µg/mL each of (Z)-dimethylvinphos (Peak No. 12) and (E)-dimethylvinphos (Peak No. 14), 20 µg/mL in total. Permethrin contains 10 µg/mL each of *trans*-permethrin (Peak No. 29) and *cis*-permethrin (Peak No. 30), 20 µg/mL in total.

Code No.	Product Name	Grade	Volume
166-29133	3 Pesticides Mixture Standard Solution WQ-10	for Pesticide Residue Analysis	1 mL
160-29131	(each 20 µg/mL Acetone Solution)		1 mL×5A

### ■ LC/MS/MS chromatogram\*1



### Analysis conditions

#### [Instrument]

Shimadzu LC/MS-8040

#### [HPLC]

Column:	Product Name	Code No.	Volume*2
	Wakopak® Wakosil®-II	231-50241	1 EA (D)
	3C18HG 2.0×150 mm	237-50243	1 EA (W)

Column temperature: 40°C

Eluent: A) 5 mmol/L CH<sub>3</sub>COONH<sub>4</sub> in H<sub>2</sub>O,  
B) 5 mmol/L CH<sub>3</sub>COONH<sub>4</sub> in CH<sub>3</sub>OH

Gradient:	Time (min.)	B conc. (%)
	0-20	5-100
	20-40	100

Flow rate: 0.2 mL/min.

#### [MS]

Ionization: ESI

### ■ List of 3 components (each 20 µg/mL acetone solution)

Peak No.	Components	Monitoring Ions (m/z)			Related Products		
		Precursor	Product	Mode	Code No.	Product Name	Volume
1	DMTP Oxon (Methidathion Oxon)	287	145	+	049-30381	DMTP Oxon Standard	50 mg
2	Ipfencarbazone	427	156	+	099-07051	Ipfencarbazone Standard	100 mg
3	Iprodione Metabolite	328	141	-	099-02394	Iprodione Metabolite Standard	100 mg

\*1 The measurement conditions, charts and monitoring ions are for reference only and do not constitute a guarantee for the product.

\*2 There are two types of column connection: W type and D type. For details, please refer to "HPLC Column Connection Types" P. 17.

# Other Pesticide Mixture Standard Solutions

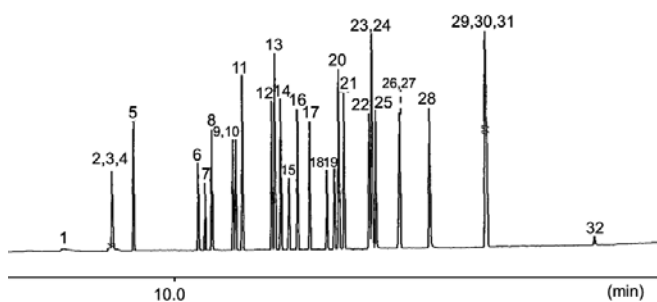
## Product list of other pesticide mixture standard solutions

Code No.	Product Name	Volume	Number of Components	Analysis Equipment	Mark	Product Page
162-19201	32 Pesticides Mixture Standard Solution (each 10 µg/mL Acetone Solution)	1 mL×5A	32	GC/MS	PM32	P. 64
164-18421	13 Pesticides Mixture Standard Solution (each 10 µg/mL Acetone Solution)	1 mL×5A	13	GC/MS	PM13	P. 65
160-18401	8 Pesticides Mixture Standard Solution (each 10 µg/mL Acetonitrile Solution)	1 mL×5A	8	HPLC	PM8	P. 66



Code No.	Product Name	Grade	Volume
162-19201	32 Pesticides Mixture Standard Solution (each 10 µg/mL Acetone Solution)	for Pesticide Residue Analysis	1 mL×5A

### GC/MS chromatogram\*



### Analysis conditions

#### [Instrument]

Shimadzu QP-2010 Ultra

#### [GC]

Column: BP-1MS 0.1 µm, 0.25 mm×30 m

Column temperature: 70°C (5 min.)→20°C/min.→170°C  
→10°C/min.→270°C (2 min.)

Injection temperature: 180°C

Carrier gas: He 2.0 mL/min.

Split: 1/20

#### [MS]

Ionization: EI

Interface temperature: 270°C

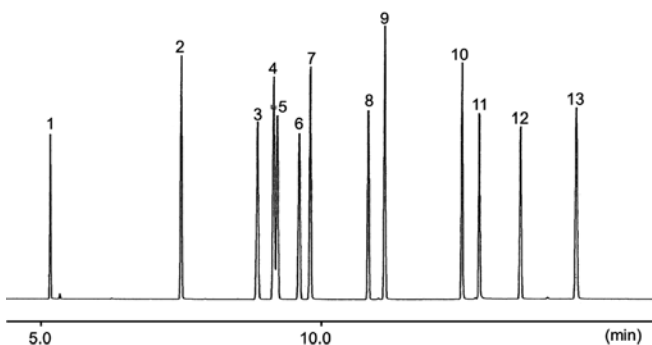
### List of 32 components (each 10 µg/mL acetone solution)

Peak No.	Components	Monitoring Ions (m/z)	Related Products		
			Code No.	Product Name	Volume
1	Methamidophos	94	139-11631	Methamidophos Standard	200 mg
2	Acephate	42	015-08954	Acephate Standard	100 mg
3	Trichlorfon (DEP)	109	041-31681	DEP Reference Material CRM	100 mg
4	Etridiazole (Echloomezol)	211	051-03494	Echloomezol Standard	100 mg
5	Chloroneb	191	036-14493	Chloroneb Standard	100 mg
6	Pencycuron	125	167-26221	Pencycuron Standard	100 mg
7	Benfluralin (Bethrodine)	292	026-11533	Bethrodine Standard	100 mg
8	Simazine (CAT)	44	030-22561	CAT Reference Material CRM	100 mg
9	Chlorothalonil (TPN)	266	207-19301	TPN Reference Material	100 mg
10	Propyzamide	173	169-25061	Propyzamide Reference Material CRM	100 mg
11	Diazinon	137	040-31891	Diazinon Reference Material CRM	100 mg
12	Tolclofos-methyl	265	207-11383	Tolclofos-methyl Standard	100 mg
13	Terbucarb (MBPMC)	205	132-10901	MBPMC Standard	200 mg
14	Metalaxyl	45	130-11683	Metalaxyl Standard	100 mg
15	Fenitrothion (MEP)	125	130-05534	MEP Standard	100 mg
16	Dithiopyr	354	048-25123	Dithiopyr Standard	100 mg
17	Chlorpyrifos	97	032-22881	Chlorpyrifos Reference Material	100 mg
18	Captan	79	034-08301	Captan Standard	200 mg
19	Pendimethalin	252	168-11903	Pendimethalin Standard	100 mg
20	Methyldymron	107	133-10791	Methyldymron Standard	200 mg
21	Isofenphos	58	090-03463	Isofenphos Standard	100 mg
22	Isoprothiolane	118	098-06281	Isoprothiolane Reference Material CRM	100 mg
23	Napropamide	72	144-05893	Napropamide Standard	100 mg
24	Butamifos	286	026-10933	Butamifos Standard	100 mg
25	Flutolanil	173	065-05811	Flutolanil Reference Material CRM	100 mg
26	Isoxathion	105	098-02244	Isoxathion Standard	100 mg
27	Triclopyrbutoxyethyl (Triclopyr-2-butoxyethyl)	57	204-14051	Triclopyr-2-butoxyethyl Standard	200 mg
28	Mepronil	119	131-07904	Mepronil Standard	100 mg
29	Pyributicarb	108	163-16213	Pyributicarb Standard	100 mg
30	Pyridaphenthion	340	169-10914	Pyridaphenthion Standard	100 mg
31	Iprodione	314	092-02384	Iprodione Standard	100 mg
32	SAP (Bensulide)	43	021-07673	Bensulide Standard	100 mg

\* The measurement conditions, charts and monitoring ions are for reference only and do not constitute a guarantee for the product.

Code No.	Product Name	Grade	Volume
164-18421	13 Pesticides Mixture Standard Solution (each 10 µg/mL Acetone Solution)	for Pesticide Residue Analysis	1 mL×5A

### GC/MS chromatogram\*



### Analysis conditions

#### [Instrument]

Shimadzu QP-2010 Ultra

#### [GC]

Column: BPX-5 0.25 µm, 0.32 mm×30 m

Column temperature: 50°C (1 min.)→30°C/min.→180°C

→5°C/min.→200°C→20°C/min.

→270°C (4 min.)

Injection temperature: 260°C

Carrier gas: He 2.3 mL/min.

Splitless: 1 min.

#### [MS]

Ionization: EI

Interface temperature: 250°C

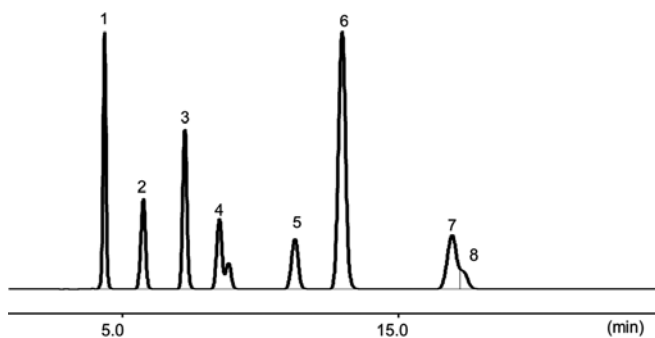
### List of 13 components (each 10 µg/mL acetone solution)

Peak No.	Components	Monitoring Ions (m/z)	Related Products		
			Code No.	Product Name	Volume
1	Dichlorvos (DDVP)	109	046-16633	DDVP Standard	200 mg
2	Fenobucarb (BPMC)	121	021-06774	BPMC Standard	100 mg
3	Simazine (CAT)	201	030-22561	CAT Reference Material <small>CRM</small>	100 mg
4	Diazinon	137	040-31891	Diazinon Reference Material <small>CRM</small>	100 mg
5	Propyzamide	173	169-25061	Propyzamide Reference Material <small>CRM</small>	100 mg
6	Chlorothalonil (TPN)	266	207-19301	TPN Reference Material	100 mg
7	Iprobenfos (IBP)	91	093-02233	IBP Standard	200 mg
8	Fenitrothion (MEP)	277	130-05534	MEP Standard	100 mg
9	Thiobencarb (Benthiocarb)	100	029-06954	Benthiocarb Standard	100 mg
10	Isoprothiolane	118	098-06281	Isoprothiolane Reference Material <small>CRM</small>	100 mg
11	Isoxathion	105	098-02244	Isoxathion Standard	100 mg
12	Chlornitrofen (CNP)	317	032-08983	CNP Standard	200 mg
13	EPN	157	058-02843	EPN Standard	100 mg

\* The measurement conditions, charts and monitoring ions are for reference only and do not constitute a guarantee for the product.

Code No.	Product Name	Grade	Volume
160-18401	8 Pesticides Mixture Standard Solution (each 10 µg/mL Acetonitrile Solution)	for Pesticide Residue Analysis	1 mL×5A

### HPLC chromatogram\*1



### Analysis conditions

#### [Instrument]

Shimadzu LC-20AB

#### [HPLC]

Column:	Product Name	Code No.	Volume*2
	Wakopak® Wakosil®	237-59361	1 EA (D)
	Agri-9 4.6×250 mm	233-59363	1 EA (W)

Column temperature: 35°C

Eluent:	Product Name	Code No.	Volume
	Wakosil® Agri-9 Eluent, for 4.6×250 mm	238-01281	1 L

Flow rate: 1.0 mL/min.

Detection: 0-5 min. UV 270 nm

5-30 min. UV 230 nm

### List of 8 components (each 100 µg/mL acetonitrile solution)

Peak No.	Components	Related Products		
		Code No.	Product Name	Volume
1	Asulam	015-13523	Asulam Standard	100 mg
2	Mecoprop (MCP)	132-10423	MCP Standard	100 mg
3	Thiuram	200-11373	Thiuram Standard	100 mg
4	Siduron	195-10073	Siduron Standard	100 mg
5	Iprodione	092-02384	Iprodione Standard	100 mg
6	Chlorothalonil (TPN)	207-19301	TPN Reference Material	100 mg
7	Pencycuron	167-26221	Pencycuron Standard	100 mg
8	SAP (Bensulide)	021-07673	Bensulide Standard	100 mg

\*1 The measurement conditions and charts are for reference only and do not constitute a guarantee for the product.

\*2 There are two types of column connection: W type and D type. For details, please refer to "HPLC Column Connection Types" P. 17.

# Related Products

## Solvents for Pesticide Residue Analysis (PCB 300 / 5,000 Series)

This product series includes solvents that are guaranteed to conform to the following test (suitability for pesticide residue-PCB analysis) when a solvent is concentrated 300 and 5,000 times. It can be used as a solvent for extraction of trace amounts of pesticides, GC sample preparation, etc.

### Suitability for pesticide residue-PCB analysis

- ECD-GC: Impurities in the solvent are less than 1/2 of the peak height at 20 pg of  $\gamma$ -BHC (organic chlorine pesticide).
- FPD-GC: Impurities in the solvent are less than 1/5 of the peak height at 0.5 ng of MPP (organic phosphate pesticide).

## Solvents for HPLC and LC/MS

Solvents for HPLC and LC/MS are used as liquid chromatography mobile phase. These products are guaranteed for changes in the refractive index due to water, peroxides, residue after evaporation, and impurities in the solvent, and low baseline noise in UV absorbance and fluorescence tests. In addition, since filtration is performed with a 0.45  $\mu$ m membrane filter in the final process, clogging of the pipeline and filter and strain on the column are minimized. This means highly reproducible data can be obtained.

In addition to the features of the HPLC solvent series, the LC/MS solvent series guarantee low baseline noise in MS (suitability for LC/MS analysis) and an guaranteed particle size to prevent capillary clogging. In addition, the solvents for LC/MS have been reviewed in terms of manufacturing methods and caps to further reduce background noise in line with the increased sensitivity of LC/MS equipment.

### Features of LC/MS solvent series

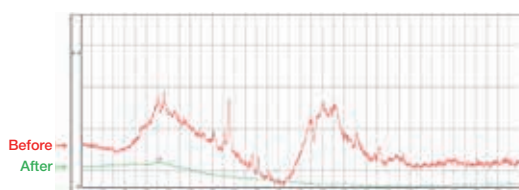
- Guaranteed low background noise in the mass spectrometer (suitability for LC/MS analysis).
- Uses special glass bottles that suppress elution of sodium and other substances (Patent No. 4586729).
- Guaranteed particle size to prevent capillary clogging.
- Guaranteed specification items of HPLC solvent series in addition to the above items.

### Comparison of specification items in each solvent grade

Grade	Requirement				
Guaranteed Reagent					
for HPLC	Absorbance test	Gradient test	Fluorescence test		
for LC/MS	Absorbance test	Gradient test	Fluorescence test	Particles	Stability for LC/MS analysis

### Renewed to further reduce background noise!

- Replacing aluminum caps with resin caps reduces the risk of solvent contamination due to cap-derived aluminum foil.
- Background noise has been further reduced compared to conventional products by reviewing the manufacturing process.



## Product list

Code No.	Product Name	Volume
<b>for Pesticide Residue Analysis PCB 300 Series</b>		
015-11281	Acetone	1 L
011-11283		3 L
015-11301	Acetonitrile	1 L
011-11303		3 L
021-08631	Benzene	1 L
024-14351	<i>t</i> -Butyl Methyl Ether	1 L
039-11801	Chloroform	1 L
038-16751	Cyclohexane	1 L
034-16753		3 L
133-08841	Dichloromethane	1 L
139-08843		3 L
050-04461	Diethyl Ether	1 L
056-04441	Ethanol	1 L
052-04443		3 L
052-04421	Ethyl Acetate	1 L
058-04423		3 L
084-04761	Hexane	1 L
080-04763		3 L
139-08821	Methanol	1 L
135-08823		3 L
165-12971	Petroleum Ether	1 L
203-11601	Toluene	1 L
209-11603		3 L
<b>for Pesticide Residue Analysis PCB 5,000 Series</b>		
011-19201	Acetone	1 L
017-19203		3 L
013-19401	Acetonitrile	1 L
019-19403		3 L
028-14751	Benzene	1 L
020-14831	<i>t</i> -Butyl Methyl Ether	1 L
033-18641	Chloroform	1 L
036-18631	Cyclohexane	1 L
043-28451	Dichloromethane	1 L
049-28453		3 L
040-28461	Diethyl Ether	1 L
053-07011	Ethanol	1 L
052-06981	Ethyl Acetate	1 L
058-06983		3 L
083-07911	Hexane	1 L
089-07913		3 L
132-14161	Methanol	1 L
138-14163		3 L
162-20671	Petroleum Ether	1 L
209-15581	Toluene	1 L
205-15583		3 L
<b>Solvents for HPLC</b>		
014-08681	Acetone	1 L
010-08683		3 L
019-08631	Acetonitrile	1 L
015-08633		3 L
023-10801	1-Butanol	1 L
024-12771	<i>t</i> -Butyl Methyl Ether	1 L
034-08661	Carbon Tetrachloride	1 L
033-08631	Chloroform	1 L
039-08633		3 L

Code No.	Product Name	Volume
031-20531	Chloroform, Amylene added	1 L
037-20533		3 L
033-08511	Cyclohexane	1 L
039-08513		3 L
046-18671	<i>o</i> -Dichlorobenzene	1 L
048-22301	1,2-Dichloroethane	1 L
136-06751	Dichloromethane	1 L
132-06753		3 L
042-20621	<i>N,N</i> -Dimethylformamide	1 L
048-20623		3 L
042-16691	1,4-Dioxane	1 L
046-16971	Distilled Water	1 L
042-16973		3 L
056-03341	Ethanol (99.5)	1 L
052-03343		3 L
057-03371	Ethyl Acetate	1 L
053-03373		3 L
085-03691	Heptane	1 L
085-06991	1,1,1,3,3,3-Hexafluoro-2-propanol	100 mL
087-06995		500 mL
084-03421	Hexane	1 L
080-03423		3 L
138-06473	Methanol	1 L
132-06471		3 L
162-13461	1-Propanol	1 L
165-09161	2-Propanol	1 L
161-09163		3 L
209-06811	Tetrahydrofuran, Stabilizer Free	1 L
205-06813		3 L
209-06791	Toluene	1 L
206-16451	0.1 vol% Trifluoroacetic Acid -	1 L
202-16453	Acetonitrile	3 L
207-06731	2,2,4-Trimethylpentane	1 L
200-19391	Tetrahydrofuran, with Stabilizer	1 L
206-19393		3 L
<b>Solvents for LC/MS</b>		
012-19851	Acetonitrile	1 L
018-19853		3 L
050-09221	Ethanol (99.5)	1 L
056-09223		3 L
138-14521	Methanol	1 L
134-14523		3 L
168-25531	2-Propanol	1 L
164-25533		3 L
214-01301	Ultrapure Water	1 L
210-01303		3 L

TOP > Analytical Chemistry > Pesticide & Veterinary Drug Analysis > Solvent

[https://labchem-wako.fujifilm.com/us/category/analysis/residual\\_pesticide/solvent/index.html](https://labchem-wako.fujifilm.com/us/category/analysis/residual_pesticide/solvent/index.html)



# GalloTect™

GalloTect™ is a protective equipment for gallon glass jug. It was developed in response to customer feedback such as “gallon glass jugs broke when they were lifted or bumped,” or “gallon glass jugs tipped over and rolled during an earthquake.”



**Received iF DESIGN AWARD 2022!**



Sponsored by the “iF International Forum Design GmbH,” the iF DESIGN AWARD is one of the world’s most prestigious awards for outstanding industrial design.



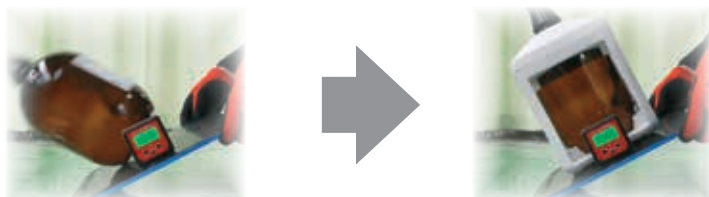
GalloTect™ is made from biomass plastic. Biomass plastic is a “renewable organic resource” made from plant-derived raw materials. Fujifilm Wako aims to reduce CO<sub>2</sub> emissions by 15 t/year by 2030. (as of December 2023)

Our Approach

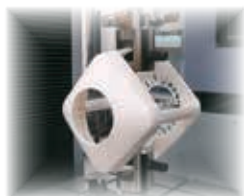


## Features

- Makes it hard for the gallon glass jug to tip over!



- High durability!

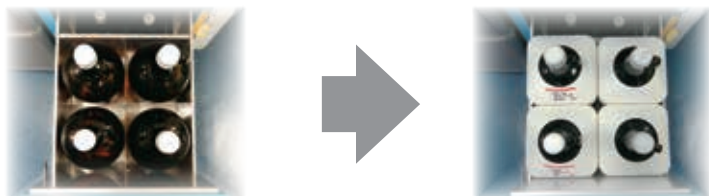


Pulled by a force of 350 N (about 35 kg)

- Carried out solvent resistance test with 11 kinds solvents!

Acetone	Acetonitrile	Benzyl Alcohol	1-Butanol
DMF	DMSO	Ethanol	Glycerin
Methanol	2-Propanol	Water	

- Just fits your reagent shelf!\*



\*Our survey scope

## Product list

Code No.	Product Name	Volume
293-36321	GalloTect™ (White)	1 pcs
295-36881	GalloTect™ (Red)	1 pcs

TOP > Common Chemicals & Lab Tools > Labware > GalloTect™  
<https://labchem-wako.fujifilm.com/us/category/02166.html>



## Solid Phase Extraction Columns, Presep® Series

This product is a solid-phase extraction column filled with styrene divinylbenzene-polymethacrylate resin for quick and easy pretreatment of samples containing pesticides.

### Features

- Divinylbenzene-polymethacrylate resin with features of both normal and reverse phase, is effective for concentration of trace hydrophobic analytes in water, and has better retention of highly polar analytes and metal-coordinating analytes (asulam, oxine-copper), etc. that are difficult to recover.
- The lineup includes two types: a cartridge with both ends closed and a syringe type.

### Additive recovery test of pesticides in drinking water using Presep®-C Agri (Short) and Presep®-C Na<sub>2</sub>SO<sub>4</sub>

#### Solid phase extraction conditions

Internal standard: acenaphthene and chrysene (each 2 µg/mL in hexane solution)

Sample: sample + internal standard (100 µL) + hexane (→1 mL)

#### Presep®-C Agri (Short)

##### Conditioning

- 1) Dichloromethane (5 mL)
- 2) Methanol (5 mL)
- 3) Distilled water (5 mL)



##### Loading

Distilled water (200 mL) + standard solution or sample (100 µL)  
Flow rate: 10-20 mL/min.



##### Elution

- 1) Air purge (10 min.)
- 2) Connecting Presep®-C Na<sub>2</sub>SO<sub>4</sub> (x2)
- 3) Dichloromethane (2.5 mL) (Eluent 1)
- 4) Remove Presep®-C Agri (Short)
- 5) Dichloromethane (6 mL) (Eluent 2)



##### Concentration

- 1) Eluent 1 + Eluent 2 + Hexane (2 mL)
- 2) Concentrate under airflow of N<sub>2</sub> (→ about 0.8 mL)



GC/MS

#### Presep®-C Na<sub>2</sub>SO<sub>4</sub> (x2)

##### Conditioning

- 1) Dichloromethane (10 mL)





**Analysis conditions****[Instrument]**

GC: HP5890 PACKARD SERIESE GC/MS

MS: AUTO mass JMS-AM150 (JEOL)

**[GC]**

Column: 100% Dimethylpolysiloxane packed column

0.25 µm, 0.25 mm×30 m

Column temperature: 60°C (2 min.)→20°C/min.→120°C→10°C/min.→300°C (5 min.)

Injector temperature: 250°C

**Additive recovery test for various pesticides**

Product Name	Recovery Rate (%)	Product Name	Recovery Rate (%)
Benfluralin	82.3	Isoxathion	91.8
BPMC	107.5	MBPMC	106.3
Butamifos	84.1	MEP	97.3
Captan	103.9	Mepronil	116.6
Chloroneb	91.8	Metalaxyl	100.7
Chlorpyrifos	88.9	Methyldymron	84.6
CNP	112.0	Napropamide	99.7
DDVP (Dichlorvos)	108.9	Pencycuron	90.8
Diazinon	97.7	Pendimethalin	85.7
Dithiopyr	89.4	Propyzamide	95.8
EPN	115.4	Pyributicarb	93.5
Etridiazole	92.3	Pyridaphenthion	106.5
Futolanil	100.3	Simazine	101.5
IBP	115.1	Thiobencarb	101.0
Iprodione	98.0	Tolclofos-methyl	89.7
Isofenphos	91.3	TPN	95.8
Isoprothiolane	96.6	Triclopyr-2-butoxyethyl	94.1

TOP &gt; Analysis Chemistry &gt; Solid-Extraction Columns &gt; SPE Column for Pesticides Analysis

<https://labchem-wako.fujifilm.com/us/category/00992.html>**Product list of Presep® series**

Packing Agent	Code No.	Product Name	Packing Agent Amount (mg/cartridge)	Column Shape	Volume
Alumina	290-32051	Presep®-C Alumina	1,700	cartridge	10 pcs x 5
Silica gel	294-31851	Presep®-C Silica Gel	800	cartridge	50 pcs
C18 modified silica gel (ODS)	296-36791	Presep®-C C18 (ODS)-II (Short)	300	cartridge	10 pcs x 5
	299-36781	Presep®-C C18 (ODS)-II	600	cartridge	10 pcs x 5
	292-36771	Presep® C18 (ODS)-II (2 g/15 mL)	2,000/15 mL	syringe	100 EA
Styrene divinyl benzene copolymer	296-32651	Presep®-C Agri (short)	220	cartridge	10 pcs x 5
	291-26851	Presep®-C Agri	500	syringe	50 EA
Floridil	290-31951	Presep®-C Florisil®	800	cartridge	10 pcs x 5
Polyamide	298-33571	Presep® (Luer Lock) Polyamide C-200 Type M (2 g/25 mL)	2,000/25 mL	syringe	10 pcs x 5
Sodium sulfate (Na <sub>2</sub> SO <sub>4</sub> )	296-32151	Presep®-C Na <sub>2</sub> SO <sub>4</sub>	2,300	cartridge	10 pcs x 5

TOP &gt; Analytical Chemistry &gt; Solid-Phase Extraction Columns

<https://labchem-wako.fujifilm.com/us/category/analysis/solidphase/index.html>

# HPLC Columns, Wakopak® Series

Wakopak® is our HPLC analytical column series. A variety of products are available for use (reverse and normal phase, and HILIC).

## Features

- Quality assurance for peace of mind (GMP analysis validation support is also provided for some products)

To each column in the Wakopak® series is attached a “Wakopak® Column Performance Report,” which provides a test results of packing condition. Also, to the Wakopak®-II HG/RS/AR series of the Wakopak® series a “Wakopak® Certificate of Analysis” is attached. This is guaranteed reproducibility by describing the [1] various physical properties of unbonded raw silica gel and [2] the various characteristics of packing agents after modification as support for the analytical validation.

## Typical Wakopak® series\*

	Functional Group	Product Series	Features
Reverse Phase	C18	Wakosil®	<ul style="list-style-type: none"> <li>• Standard ODS columns for HPLC.</li> <li>• 3 types of end capping (high end capping, end capping, and non-end capping).</li> <li>• Two carbon content types.</li> </ul>
		Wakosil®- II HG	<ul style="list-style-type: none"> <li>• The highest number of theoretical plates of any of our products (around 15,000 plates for a column size of 4.6 mm x 150 mm).</li> </ul>
		Wakosil®- II RS	<ul style="list-style-type: none"> <li>• High retention capacity due to large specific surface area.</li> <li>• High end capping ensures high separation and retention capacity even with aqueous eluents and is useful for the separation of highly polar analytes.</li> </ul>
		Wakosil®- II AR	<ul style="list-style-type: none"> <li>• High stereoselectivity due to polymer-type chemical modification.</li> <li>• Highly durable, allowing the use of mobile phases over a wide pH range (pH 1.4-9.4).</li> </ul>
		Wakosil® Navi	<ul style="list-style-type: none"> <li>• Analysis with different alkyl chain lengths of C18, C22 and C30 is possible.</li> <li>• C22 and C30 may show excellent structural recognition ability for analytes of homologues, etc.</li> </ul>
		Ultra	<ul style="list-style-type: none"> <li>• Highly durable, allowing the use of mobile phases over a wide pH range (pH 1.6-10).</li> <li>• Available in three particle sizes (5, 2 and 3 µm) for use in HPLC and UHPLC.</li> </ul>
		Wakosil® Agri-9	<ul style="list-style-type: none"> <li>• Guaranteed separation in simultaneous analysis of the 9 pesticides using dedicated eluent.</li> </ul>
	Ph	Wakosil® Ph	<ul style="list-style-type: none"> <li>• Compared to general ODS columns, the lower carbon content and lower hydrophobicity of ODS columns enable shorter elution times.</li> <li>• May show specific separation for aromatic analytes.</li> </ul>
Normal / Reverse Phase	NH <sub>2</sub>	Wakosil® 5NH <sub>2</sub>	<ul style="list-style-type: none"> <li>• Available in both normal and reverse phase.</li> <li>• Useful for the analysis of monosaccharides and disaccharides due to the ion exchange capacity derived from the NH<sub>2</sub> groups.</li> </ul>
	CN	Wakosil® CN Wakosil®- II CN	<ul style="list-style-type: none"> <li>• Available in both normal and reverse phase.</li> <li>• Compared to general ODS columns, the lower carbon content and lower hydrophobicity of ODS columns enable shorter elution times.</li> <li>• Useful for the analysis of mixture samples with strong hydrophilic interactions and large polarity differences.</li> <li>• The π-electron interaction due to the triple bonding of CN groups and the hydrogen bonding action of unshared electron pairs localized on the nitrogen atom may result in specific separation for aromatic compounds, etc.</li> </ul>
Normal Phase	OH (Unmodified)	Wakosil® SIL Wakosil® SIL-120	<ul style="list-style-type: none"> <li>• The use of non-polar organic solvents as mobile phase makes it useful for the separation of highly polar analytes that are difficult to separate in reverse phase.</li> <li>• Two pore sizes (SIL: 6 nm, SIL-120: 12 nm).</li> </ul>
HILIC	OH (Unmodified)	Wakosil®- II 5SIL-AQ	<ul style="list-style-type: none"> <li>• In reverse phase, available in analysis of polar analytes under the same mobile phase conditions.</li> <li>• Analysis conditions can be set up without ion-pair reagents (easy transfer to LC/MS analysis).</li> </ul>

\* Other packing agents and HPLC columns for specialized applications are also available.

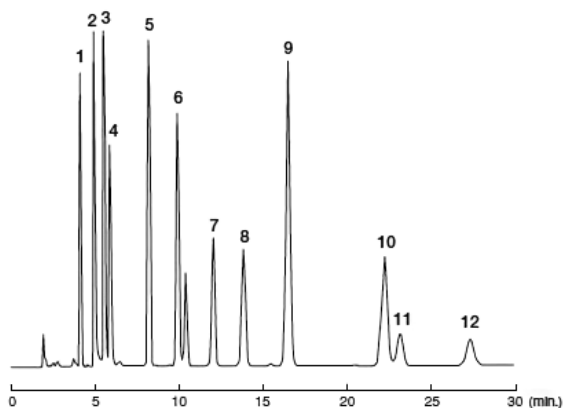
## Wakopak® Wakosil® Agri-9

Wakopak® Wakosil® Agri-9 is suitable for the analysis of pesticides in drinking water. By combining with a dedicated eluent, it guarantees separation of 9 pesticides\* in simultaneous analysis.

\* Asulam, Bensulide, Iprodione, MCPP, Oxine-copper, Pencycuron, Siduron, Thiuram, TPN

### Example of simultaneous analysis of 12 pesticide analytical standards

#### HPLC chromatogram\*1



#### Analysis conditions

##### [HPLC]

Column:	Product Name	Code No.	Volume*2
	Wakopak® Wakosil®	237-59361	1 EA (D)
	Agri-9 4.6×250 mm	233-59363	1 EA (W)

Column temperature: 35°C

Eluent:	Product Name	Code No.	Volume
	Wakosil® Agri-9 Eluent, for 4.6×250 mm	238-01281	1 L

Flow rate: 1.0 mL/min.

Detection: UV 230 nm-270 nm

#### Component list

Peak No.	Components	Peak No.	Components
1	Asulam	7	Propyzamide
2	Oxine-Cu	8	Iprodione
3	Simazine (CAT)	9	Chlorothalonil (TPN)
4	Mecoprop (MCP)	10	Pencycuron
5	Thiuram	11	Bensulide
6	Siduron	12	Butamifos

\*1 The measurement conditions, charts and monitoring ions are for reference only and do not constitute a guarantee for the product.

\*2 There are two types of column connection: W type and D type. For details, please refer to "HPLC Column Connection Types" P. 17.

Top > Analytical Chemistry > Column for HPLC > Reverse Phase Chromatography (C18)  
> HPLC Column for Pesticide Residue Analysis "Wakopak® Wakosil® Agri-9"

<https://labchem-wako.fujifilm.com/us/category/01094.html>



#### Product list of Wakopak® series

	Functional Group	Product Series	Particle Size	Column Size
Reverse Phase	C18	Wakosil®	5 µm, 7 µm, 10 µm	I. D. : 1-20 mm Length: 10-300 mm
		Wakosil®- II HG	3 µm, 5 µm	
		Wakosil®- II RS	3 µm, 5 µm	
		Wakosil®- II AR	3 µm, 5 µm	
		Wakosil® Navi	5 µm	
		Ultra	2 µm, 3 µm, 5 µm	
Reverse Phase	Ph	Wakosil® Agri-9	5 µm	I. D. : 4.6 mm Length: 30 mm, 150 mm, 250 mm
		Wakosil® 5Ph	5 µm	I. D. : 4.0 mm, 4.6 mm Length: 10-250 mm
Normal / Reverse Phase	NH <sub>2</sub>	Wakosil® 5NH <sub>2</sub>	5 µm	I. D. : 2-10 mm Length: 10-300 mm
		Wakosil® 5CN	5 µm	I. D. : 2-10 mm Length: 50-250 mm
		Wakosil®- II 5CN	5 µm	
Normal Phase	OH (Unmodified)	Wakosil® SIL	5 µm, 7 µm, 10 µm	I. D. : 2-20 mm Length: 10-300 mm
		Wakosil® SIL-120	5 µm, 7 µm, 10 µm	
HILIC	OH (Unmodified)	Wakosil®- II 5SIL-AQ	5 µm	I. D. : 4.6 mm Length: 150 mm, 250 mm

TOP > Analytical Chemistry > Column for HPLC

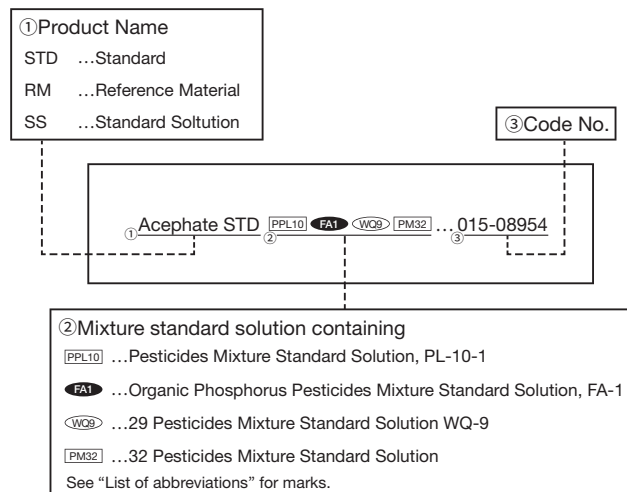
<https://labchem-wako.fujifilm.com/us/category/analysis/hplc/index.html>



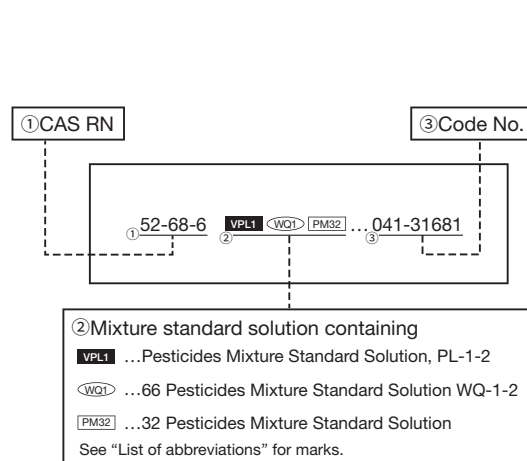
# List of Pesticides and Veterinary Drugs Analytical Standards (Index)

## How to read the index

### Index - Arranged Alphabetically



### Index - Arranged CAS RN



## List of abbreviations

### Pesticides / veterinary-drugs mixture standard solutions for the simultaneous analysis method of JP Food Sanitation Act "Positive List System," PL series: P. 6-30

PPL1 ... PL-1-2	PPL2 ... PL-2-1	PPL3 ... PL-3-3	PPL4 ... PL-4-2
PPL5 ... PL-5-1	PPL6 ... PL-6-3	PPL7 ... PL-7-2	PPL8 ... PL-8-1
PPL9 ... PL-9-2	PPL10 ... PL-10-1	PPL12 ... PL-12-1	PPL13 ... PL-13-1
PPL14 ... PL-14-2	PPL15 ... PL-15-1	PPL16 ... PL-16-2	PPL17 ... PL-17-2
VPL1 ... PL-1-3	VPL2 ... PL-2-1		

### Veterinary drugs mixture standard solutions by drug classification: P. 31-35

VDQ ... Quinolone	VDS ... Sulfonamide + Antifolate	VDM ... Macrolide	VDH ... Hormone
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### Organic phosphorus pesticides mixture standard solutions, FA series: P. 36-39

FA1 ... FA-1	FA2 ... FA-2	FA3 ... FA-3	OP ... Organophosphorus Pesticides Mixture Standard Solution
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### Neonicotinoid pesticides mixture standard solution: P. 40-41

NP ... Neonicotinoid Pesticides Mixture Standard Solution
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### Pesticides mixture standard solutions for the simultaneous analysis method specified in JP Water Quality Act, WQ series: P. 42-62

WQ1 ... WQ-1-2	WQ2 ... WQ-2	WQ3 ... WQ-3	WQ4 ... WQ-4
WQ5 ... WQ-5	WQ6 ... WQ-6	WQ7 ... WQ-7	WQ8 ... WQ-8
WQ9 ... WQ-9	WQ10 ... WQ-10		

### Other pesticides mixture standard solutions: P. 63-66

PM32 ... 32 Pesticides Mixture Standard Solution	PM13 ... 13 Pesticides Mixture Standard Solution	PM8 ... 8 Pesticides Mixture Standard Solution
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Diethofencarb STD [PPL4]	045-24131	Ethoxysulfuron STD [PPL16] (W04)	054-06821	Fuoxastrobins STD	067-06971	Iminocyclidine Albesilate STD (W07)	097-04051
Diethylstilbestrol STD	048-30111	Ethyl Carbamate STD	052-08201	Fuoxastrobins Metabolite M55 STD	062-07021	Iminocyclidine Triacetate STD (W07)	092-03901
N,N-Diethyl-m-toluamide	045-26211	Ethylene thiourea STD	053-06151	Fuoxastrobins Metabolite Z STD	065-07011	Inabenfide STD (W04)	092-06821
Difenoconazole STD [PPL2] (W04) (W05)	042-25241	Ethylthiomethion STD [PPL12] (FA3) (W01)	055-03154	Flupoxam STD	062-05561	Indanofan RM [PPL14] (W04) (W05)	094-06521
Difenoconazole Metabolite D STD	045-33661	Etiproston Tromethamine STD	050-08501	Flupropanate STD	063-05731	Indoxacarb-MP STD [PPL7]	095-04993
Difenzoquat Methyl Sulfate STD	045-25851	Etobenzanil STD (W04) (W05)	055-06351	Flupyrimint STD	069-06931	Inpyrflumax STD	097-07351
Difloxacin STD [VDO]	049-30021	Etofenprox STD [PPL5] (W01)	051-05194	Fluridone STD [PPL2] [PPL15]	062-04601	Iodomethane	137-02863
Diflubenzuron RM [PPL15] (W04)	043-31901	Etoxazole STD [PPL4] [PPL17]	050-06683	Fluroxypyr STD [PPL8]	069-05071	Iodosulfuron-methyl STD [PPL16]	096-07061
Diflufenican STD [PPL1]	044-28121	Etoxazole-amino Hydrochloride STD	051-06691	Flusilazole STD [PPL9]	065-03591	Ioxynil STD [PPL8]	098-05561
Diflumetorim STD	046-27461	Etrifimos SS (1 mg/mL in Hexane) (FA2)	051-06691	Flusilazole Metabolite D STD	067-06611	Ioxynil Octanoate STD	098-03861
Difolatan STD	042-16211	Eugenol STD	059-07351	Flusulfamide STD (W04)	068-03363	Ipconazole STD	098-04221
Dimeperate STD [PPL4] (W01)	043-25173	<b>F</b>		Fluthiacet-methyl STD [PPL5]	062-04461	Ipencarbazone STD (W010)	099-07051
Dimethachlon STD	041-32421	Famoxadone STD [PPL13]	064-04203	Flutianil STD	063-06211	Ipriflufenquin STD	095-07411
Dimethametryn STD [PPL5] (W01)	048-28261	Famphur STD [PPL9] [VPL1]	069-06431	Flutolanil RM [PPL3] (W01) [PM32]	065-05811	Iprodione STD [PPL9] (W01) (W03) [PM32] [PM8]	092-02384
Dimethenamid STD [PPL4]	043-26751	Febantel STD	066-05081	Flutrialol Metabolite M4 STD	064-06481	Iprodione Metabolite STD [PPL9] (W010)	099-02394
Dimethipin STD	046-25521	Fenamiphos STD [PPL1] (FA3)	066-03521	Flutriafol STD [PPL12]	065-05671	Ipronidazole STD	098-07261
Dimethirimol STD [PPL7]	040-26901	Fenarimol STD [PPL1]	069-05191	Fluvalinate STD [PPL1]	061-02471	Ipronidazole Metabolite B STD	095-07271
Dimethoate STD [PPL1] (FA2) (W01)	041-15843	Fenazaquin STD	064-06981	Fluxametamide STD	065-06891	Iprovalcarb STD [PPL7]	095-06551
Dimethomorph STD [PPL15]	049-28671	Fenbendazole STD	064-04661	Fluxapyroxazone STD	068-06881	Isofentofos STD [PPL2]	095-05451
Dimethyl Ethylenebisdithiocarbamate STD	043-33601	Fenbuconazole STD [PPL2]	068-05041	Folpet STD	068-03461	Isofenphos STD [PPL2] (FA2) (W01) [PM32]	090-03463
Dimethyl 1-Methylethylenebisdithio carbamate STD	040-33611	Fenbutatin Oxide STD	067-02951	Fomesafen STD [PPL8]	060-04761	Isofenphos-methyl STD	097-06871
N,N-Dimethylhydrazine STD	048-25221	Fenchlorphos STD [PPL12]	068-03581	Fonofos STD	067-03431	Isofetamid STD	091-07371
1,4-Dimethylnaphthalene STD	040-35051	Fenhexamid STD [PPL16]	069-04111	Foramsulfuron	510-22151	Isofetamid Metabolite C STD	098-07381
4,4-Dimethyl-2-oxazolidinone STD	046-28441	Fenprop STD	066-04861	Forchlorfenuron STD [PPL8]	066-04621	Isometamidium Chloride STD	094-05301
(E)-Dimethylvinphos STD (FA1) (W05) (W06)	044-26063	Fenpropimorph STD [PPL1] [PPL17]	066-04981	Formetanate Hydrochloride STD	060-03541	N-Isopropylaniline STD	094-07241
(Z)-Dimethylvinphos STD [PPL5] (FA1) (W05) (W06)	045-25231	Fenpyroximate STD [PPL15]	069-06171	Formothion STD [PPL12] (FA2)	068-01303	Isoprothiolane RM [PPL2] (W01) [PM32] [PM13]	098-06281
Dimetridazole STD	047-30181	(Z)-Fenpyroximate STD [PPL15]	067-05011	Fosetyl STD	065-01813	Isoprothiolane Metabolite C STD	091-07491
Dimetridazole Metabolite A STD	045-34141	Fenpyroximate Metabolite M-3 STD	066-06941	Fosthiazate RM [PPL4] (FA1) (W05) (W06)	062-05941	Isoprazam STD	097-07471
Diminazene Diaceturate STD	048-29501	Fenoxasulfone STD	068-06901	Fthalide STD [PPL4] (W01)	061-01594	Isotianil STD	097-06991
Diniconazol STD	044-32411	Fenoxycarb STD [PPL7]	068-02981	Furametpyr STD [PPL14] (W04) (W05)	062-03741	Isouron STD	099-06831
Dinitolmide STD	049-29531	Fenpropathrin STD [PPL3]	068-03503	Furametpyr-hydroxy STD	069-03871	Isoxaben STD	092-03923
Dinotefuran STD (NP) (W04)	041-29731	Fenpropimorph STD [PPL1] [PPL17]	066-04981	Furathiocarb STD [PPL7] [PPL13]	062-03981	Isoxadifen-ethyl STD	097-07231
Dinoterb STD	042-34031	Fenpyrazamine STD	069-06171	Furilazole STD	062-06301	Glycyrrhizic Acid STD	070-06021
Diofenolan STD	047-32521	Fenpyroximate STD [PPL15]	063-03293	G		Glyphosate RM (W08)	071-05951
Dioxathion STD	049-34041	(Z)-Fenpyroximate STD [PPL15]	067-05011	Ganthromycin STD	072-06841	Glufosinate Ammonium STD (W08)	079-05371
Diphacinone STD	045-33781	Fenquintrone STD	061-06871	Gentamicin C1 STD	079-06591	Glufosinate Metabolite Z STD	076-06861
Diphenamid STD [PPL6]	041-17021	Fenquintrone Metabolite C STD	060-06841	Gibberellin A <sub>3</sub> STD [PPL8]	078-05081	Glycyrrhizic Acid STD	070-06021
Diphenylamine STD [PPL9]	041-25211	Fensulfotion STD [PPL5] (FA2)	064-02961	Glifosate STD	071-05951	Glyphosate RM (W08)	071-05951
Dipropyl Isocinchomerone STD	046-33951	Fentazamide STD (W04)	062-05201	H		Halofenoxone STD	089-10681
Diquat Dibromide Monohydrate STD (W07)	047-30441	Fenvalerate STD [PPL3]	060-03281	Halifenpropr STD [PPL4]	088-07101	Halosulfuron-methyl STD [PPL16] (W03)	089-07251
Ditalimfos STD	045-32701	(E)-Ferimzone STD [PPL7] (W06)	063-04131	Haloxon STD	084-10011	Haloxypol STD [PPL8]	089-09191
Dithianon STD	044-18373	(Z)-Ferimzone STD [PPL7] (W06)	066-04121	Haloxyfop-methyl STD	088-10271	Haloxypop-methyl STD	088-10271
Dithiopyr STD (W01) [PM32]	048-25123	Fipronil STD [PPL3] (W03)	068-04103	Heptenophos STD	082-09821	Heptenophos STD	082-09821
DMTP STD [PPL1] (FA2) (W01)	043-17081	Fipronil Sulfone STD	062-04961	Hexaconazole RM [PPL6]	083-09731	Hexaconazole RM [PPL6]	083-09731
DMTP Oxon STD (W010)	049-30381	Flazasulfuron STD [PPL16] (W03)	063-04991	Hexaflumuron STD [PPL14]	084-09141	Hexaflumuron STD [PPL14]	084-09141
DNBP STD	043-25151	Flazoxypyr STD [PPL4]	066-04481	Hexazinone STD [PPL2]	081-08311	Hexazinone STD [PPL2]	081-08311
Dodine STD	047-25291	Fluazifop STD [PPL16] (W04)	067-03453	Hexazinone Metabolite B STD	082-10171	Hexazinone Metabolite B STD	082-10171
Doxycycline Hyclate STD	049-31481	Fluazifop-butyl STD	064-03441	Hexazinone Metabolite C STD	086-10211	Hexazinone Metabolite C STD	086-10211
DPA Sodium STD	046-25141	Fluazinam STD (W04)	068-02861	Hexazinone Metabolite F STD	089-10181	Hexazinone Metabolite F STD	089-10181
DPC STD	042-26601	Fluazinam Metabolite D STD	069-07031	Hexythiazox STD [PPL15]	087-05351	Hexythiazox STD [PPL15]	087-05351
Dymron STD [PPL14] (W03)	043-26251	Fluazinam Metabolite E STD	066-07041	Hexythiazox Metabolite PT-1-3 STD	081-10521		
<b>E</b>		Fluazuron STD [PPL17]	063-04871	Hydramethylnon STD	081-08551		
Echlomezol STD [PPL9] (W01) [PM32]	051-03494	Flubendazole STD	065-06411	Hydrocortisone STD [VPL1]	086-08241		
ECP STD [PPL6] (FA2) (W05) (W06)	056-03503	Flubendazole Metabolite R35475 STD	069-06671	4-Hydroxybiphenyl STD	086-08501		
EDDP STD [PPL6] (FA1) (W01)	053-03133	Flubendiamide STD	061-05031	3-Hydroxycarbofuran STD [PPL17]	085-08571		
Endothal Monohydrate STD	053-06411	Flucarbazone STD	060-06581	Hydroxylisoxazole STD	084-06863		
Enrofloxacin STD [VDO]	059-07471	Flucetosulfuron STD	063-05471	5-Hydroxythiabendazole STD	080-08521		
EPN STD [PPL5] (FA2) (OP) (W01) [PM13]	058-02843	Flucythrinate STD [PPL1]	069-02911	I			
EPN Oxon STD (W02)	059-06011	Fludioxonil STD	060-03683	IBP STD [PPL5] (FA1) (W01) [PM13]	093-02233		
Epoxiconazole STD [PPL12] [PPL15]	054-07661	Fluensulfone STD	060-07061	Imazalil STD [PPL9] [PPL14]	092-03504		
EPTC STD [PPL9]	058-06221	Flufenacet STD [PPL13] [PPL15]	063-06831	Imazamethabenz-methyl STD [PPL4]	096-05501		
Erythromycin A STD [VDM]	056-07361	Flufenacet Metabolite P1 STD	064-06861	Imazamox STD	095-04591		
Esfenvalerate STD	052-08061	Flufenacet Metabolite W STD	067-06851	Imazapic STD	093-05491		
Esprocarb STD [PPL5] (W01)	055-05893	Flufenoxuron STD [PPL14]	063-03553	Imazapyr STD	099-04011		
Ethaboxam STD	053-08471	Flufenpyr-ethyl STD [PPL12]	068-04681	Imazaquin STD	092-04001		
Ethalfuralin STD [PPL4]	052-07461	Flumequine STD [VDO]	069-04971	Imazethapyr STD	093-05511		
Ethametsulfuron-methyl STD [PPL16]	059-07591	Flumetsulam STD [PPL8]	063-04751	Imazosulfuron RM [PPL16]	094-07481		
Ethephon STD	050-04961	Fluriclorac-pentyl STD [PPL5]	067-04771	Imibenconazole STD [PPL4]	095-04091		
Ethiofencarb STD	051-04033	Flumioxazin STD [PPL6]	060-04141	Imibenconazole-debenzyl STD [PPL5]	098-04081		
Ethion STD [PPL2] (FA1)	051-03173	Flunixin Meglumine STD	063-05091	Imibenconazole-debenzyl STD [PPL5]	098-04081		
Ethiozin STD	057-06551	Fluometuron STD	063-06571	Imicyafos STD	091-06911		
Ethiprole STD (W03)	055-07571	Flupicolide STD	064-06361	Imidacloprid STD [PPL14] (NP) (W04)	099-03771		
Ethofumesate STD [PPL12]	055-07451	Flopyram STD	060-06721				
Ethofumesate Metabolite M2 STD	053-09211	Flopyram Metabolite M21 STD	067-06731				
Ethopabate STD [VPL2]	055-06231	Fluorimidate STD	063-03531				
Ethoprophos STD [PPL3] (FA2)	051-05611						





Sethoxydim 5-OH-M-SO <sub>2</sub> STD	190-15121	
Siduron STD	195-10073	WG3 PM8
Silafluofen STD	146-08251	PPL14 WQ4
Simeconazole STD	196-12781	PPL7 WQ4 WQ5
Simetryn STD	191-08044	PPL5 WQ1
Sodium Nifurstyrenate STD	199-11193	
Spectinomycin Dihydrochloride Pentahydrate	191-11533	
Spinetoram STD	194-16741	
Spinosad STD	195-15051	PPL14
Spiramycin I STD	197-11971	VDM
Spirodiclofen STD	199-14231	PPL12
Spirodiclofen Metabolite M1 STD	199-17411	
Spiromesifen STD	194-15141	
Spiromesifen Metabolite M1 STD	192-17261	
Spirotetramat STD	196-18881	
Spirotetramat Metabolite M1 STD	194-18821	
Spiroxamine STD	198-16401	PPL1
Streptomycin Sulfate	192-14341	
Sulfabenzamide STD	193-14871	VDS
Sulfabromomethazine STD	192-16921	VDS
Sulfacetamide STD	192-14581	VPL1 VDS
Sulfachlorpyridazine Sodium Salt STD		VPL2 VDS
Sulfadiazine STD	194-14661	VPL2 VDS
Sulfadimethoxine STD	198-11381	VPL2 VDS
Sulfadimidine STD	190-11101	VPL2 VDS
Sulfadoxine STD	192-14221	VPL2 VDS
Sulfathiazole STD	199-16931	VDS
Sulfaguanidine Monohydrate STD	192-15561	
Sulfamerazine STD	192-11301	VPL2 VDS
Sulfamethoxazole STD	191-11131	VPL2 VDS
Sulfamethoxydiazine STD	198-17001	VDS
Sulfamethoxypyridazine STD	190-14641	VPL2 VDS
Sulfamonomethoxine Monohydrate STD	198-18961	VPL2 VDS
Sulfamoyldapsona STD	199-17771	VDS
Sulfanilamide STD	198-14061	VPL2 VDS
Sulfantran STD	195-17011	VPL2 VDS
Sulfapyridine STD	199-14471	VPL2 VDS
Sulfaquinoxaline Sodium Salt STD	194-11481	VPL2 VDS
Sulfathiazole STD	197-14651	VPL2 VDS
Sulfatrazole STD	196-16941	VDS
Sulfentrazone STD	193-14751	PPL16
Sulfisomidine STD	190-11221	VDS
Sulfisoxazole STD	191-16991	VDS
Sulfisozole Sodium STD	195-14071	VDS
Sulfosulfuron STD	195-17751	PPL16
Sulfosaxiflor STD	190-19021	
Sulprofos STD	193-16951	FA2
Sulprofos Oxon STD	193-13651	
<b>T</b>		
2,4,5-T STD	208-11911	
TCMTB STD	202-19591	
TCTP STD	202-07901	PPL4 WQ5
Tebuconazole STD	203-13801	PPL3 WQ4 WQ5
Tebufenozide RM	207-19041	PPL15 WQ4
Tebufenpyrad STD	206-13293	PPL6
Tebufloquin STD	206-20621	
Tebufloquin Metabolite M1 STD	203-20631	
Tebuthiuron STD	203-17941	PPL13 PPL15
Tecloftalam STD	205-13481	
Tecloftalam Metabolite STD	202-13491	
Tecnazene STD	209-16441	PPL4
Teflubenzuron STD	204-12373	PPL15
Tefluthrin STD	204-13191	PPL1
Tefuryltrione STD	207-19921	WQ3
Tepraloxidim STD	204-16511	
Tepraloxidim Metabolite (DMP) STD	206-16691	
Tepraloxidim Metabolite (OH-DMP) STD	209-16701	
Tepraloxidim Metabolite (5-OH-DP) STD	209-16681	
Terbacil STD	209-15341	PPL5
Terbufos STD	200-12691	PPL1 FA2
Terbuthylazine STD	206-20361	
Terbutryn STD	201-16641	PPL1
Tetraconazole RM	205-19101	PPL5 WQ4 WQ5
Tetracycline Hydrochloride STD	206-15091	
Tetradifon STD	208-16651	PPL4
Tetramethrin STD	203-19021	
Tetraniliprole STD	204-21141	
TFNA STD	205-16781	
TFNA-AM STD	202-16791	
TFNG STD	208-16771	
Thenylchlor STD	203-13421	PPL5 WQ1
Thiabendazole STD	200-13213	PPL7 PPL10 VPL2
Thiacloprid STD	203-15763	PPL7 PPL13 NP WQ4 WQ5
Thiacloprid-amide STD	204-15771	NP
Thiadiazin STD	205-19581	
Thiamethoxam RM	201-19061	PPL7 NP WQ4 WQ5
Thiamphenicol STD	203-13921	VPL2
Thiazopyr STD	204-16991	
Thidiazuron STD	203-16221	PPL8
Thifensulfuron STD	203-20371	
Thifensulfuron-methyl STD	207-16741	PPL8
Thifluzamide STD	204-14774	WQ4 WQ5
Thiocyclam Hydrogen Oxalate STD	207-20891	
Thiodicarb STD	207-11361	PPL14 WQ3
Thiometon SS (1 mg/mL in Hexane)	207-13181	FA2
Thiophanate STD	204-13613	
Thiophanate-methyl STD	200-19411	
Thiuram STD	200-11373	WQ3 PM8
Tiadinil RM	205-18741	WQ4
Tiadinil Metabolite C STD	207-21251	
Tiadinil Metabolite E STD	204-21261	
Tiamulin Fumarate STD	201-16881	VPL1 VDM
Tildipirosin STD	205-21171	
Tilmicosin STD	200-19151	VPL1 VDM
Tiopronin STD	204-16871	
Tolclofos-methyl STD	207-11383	PPL4 FA2 WQ1 PM32
Tolclofos-methyl Oxon STD	202-16551	WQ2
Tolfenamic Acid STD	208-16911	
Tolfenpyrad STD	209-16843	PPL6 WQ3
Tolprocarb STD	207-21371	
Tolpyralate STD	207-21131	
Toltrazuril STD	205-16921	
Toltrazuril Sulfone STD	201-17241	
Toltrazuril Sulfoxide STD	204-17231	
Tolyfluanid STD	200-13171	
TPN RM	207-19301	WQ1 PM32 PM13 PM8
Tralkoxydim STD	207-20391	
Tralometrin STD	209-12661	PPL4
α-Trenbolone STD	203-20991	VPL2 VDH
β-Trenbolone STD	205-16281	VPL2 VDH
Triadimefon STD	203-08494	PPL3
Triadimenol STD	208-08503	PPL2
Triafamone STD	206-21221	
Tri-allate STD	208-16531	PPL2
Triasulfuron STD	206-17931	PPL16
Triaziflam STD	206-19511	
Triazine STD	201-06751	
Triazophos STD	203-13161	PPL3
Tribenuron-methyl STD	208-14191	
Tribromsalan STD	204-16491	
Tribufos STD	201-16521	PPL5
Trichlamide STD	204-09301	
2,4,6-Trichlorophenol STD	203-15481	
Triclabendazole STD	207-14301	
Triclabendazole Oxon STD	200-14891	
Triclabendazole Sulfone STD	202-17411	
Triclabendazole Sulfoxide STD	205-17401	
Triclopyr STD	202-12911	PPL8 WQ3
Triclopyr-2-butoxyethyl STD	204-14051	PM32
Tricyclazole RM	202-19111	PPL5 WQ3
Tricyclohexylin(IV) Hydroxide STD	203-06571	
Tridemorph STD	539-57251	
Trifloxystrobin STD	207-15783	PPL6 PPL17
Trifloxystrobin Metabolite B STD	208-20061	
Trifloxysulfuron STD	201-17861	PPL16
Triflumezopyrim STD	203-21111	
Triflumizole STD	202-10191	PPL13 PPL17 WQ4 WQ5
Triflumizole Metabolite STD	205-10181	PPL17
Triflumuron STD	203-17701	PPL15
α,α,α-Trifluoro- <i>o</i> -toluic Acid STD	201-17121	
Trifluralin STD	208-06783	PPL1 WQ1
Triflusulfuron-methyl STD	204-16751	PPL16
Triforin STD	202-08861	
Trimethoprim STD	206-13911	VPL2 VDS
Trinexapac STD	206-15591	
Trinexapac-ethyl STD	207-15401	WQ4
Tripelennamine Hydrochloride STD	208-17011	
Triphenylin(IV) Acetate STD	204-13331	
Triphenylin(IV) Chloride STD	201-13341	
Triphenylin(IV) Hydroxide STD	208-13351	
Triticonazole STD	204-18331	PPL13 PPL14
Tulathromycin A STD	201-21411	
Tylosin STD	208-19331	VDM
Tylvalosin Tartrate	204-21521	
<b>U</b>		
( <i>R</i> )-Uniconazole STD	215-01331	
Uniconazole P STD	212-00981	PPL4 WQ3 WQ5
<b>V</b>		
Validamycin A STD	221-02211	
Valnemulin Hydrochloride STD	228-02461	
Vamidothion STD	227-01711	FA3
Vedaprofen STD	227-02291	
Vernolate STD	229-02011	
Vinclozolin STD	228-00744	PPL2
Virginiamycin	221-02451	
<b>W</b>		
Warfarin STD	238-02283	
<b>X</b>		
XMC STD	244-00503	PPL6
Xylazine Hydrochloride STD	240-00821	VPL1
2,6-Xylidine	247-00772	
<b>Z</b>		
Zeranol STD	262-01461	VPL2 VDH
Zineb STD	266-00783	
Ziram STD	264-01301	





51997-43-4	030-17291	66332-96-5	PPL3 WQ1 PM32	80844-07-1	PPL5 WQ1	051-05194	101205-02-1	038-17591
52236-30-3	130-11781			80983-34-2	VPL2	161-25381	101312-92-9	228-02461
52315-07-8	PPL3 WQ3	66441-23-4	PPL9 PPL14	81261-84-9		166-27391		(Hydrochloride)
52570-16-8	PPL7 WQ4	66652-06-0	PPL7 VDS	81334-34-1		099-04011	101463-69-8	PPL14
52756-25-9	PPL6 PPL17	66841-25-6	PPL4	81335-37-7		092-04001	101831-37-2	048-28021
52888-80-9		67485-29-4	081-08551	81335-77-5		093-05511	101903-30-4	168-23071
52918-63-5	PPL3	67564-91-4	PPL1 PPL17	81405-85-8	PPL4	096-05501	103055-07-8	PPL15
53112-28-0	PPL5 PPL17	67628-93-7	PPL5 FA1 WQ3 WQ9	81777-89-1	PPL12	037-20371	103361-09-7	PPL6
53716-49-7				82050-13-3		069-06671	103980-44-5	030-21101
53716-50-0		67747-09-5	PPL9	82097-50-5	PPL16	206-17931	104030-54-8	PPL14 WQ3
54029-20-8		68085-85-8	PPL3	82211-24-3	WQ1	092-06821	104040-78-0	PPL16 WQ3
54992-23-3		68157-60-8	PPL8	82419-36-1	VQ	150-02611	104098-48-8	093-05491
55028-72-3		68359-37-5	PPL1	82558-50-7		092-03923	104206-82-8	136-17501
55179-31-2	PPL3	68505-69-1	PPL5 WQ3 WQ9	82560-54-1	PPL17	023-09551	105024-66-6	PPL14 WQ4
55219-65-3	PPL2			82657-04-3	PPL1	028-19871	105512-06-9	PPL17
55268-74-1		68694-11-1	PPL13 PPL17 WQ4	82692-44-2	PPL1 WQ4	021-16223	105779-78-0	
55283-68-6	PPL4			83055-99-6	PPL16 WQ3	029-12623	105827-78-9	PPL14 NP WQ4
55285-14-8	PPL17	68786-66-3		83121-18-0	PPL15	204-12373		099-03771
55290-64-7		69004-03-1		83130-01-2		017-15521	106613-06-3	190-15121
55297-95-5	VPL1 VDM	69004-04-2		83164-33-4	PPL1	044-28121	106791-37-1	202-17411
		69004-15-5		83227-22-9	PPL5	167-16691	106917-52-6	WQ1
55297-96-6	VPL1 VDM	69327-76-0	PPL2 WQ1	83227-23-0	PPL6	160-16701	107534-96-3	PPL3 WQ4 WQ5
55335-06-3	PPL8 WQ3	69335-91-7	PPL16 WQ4	83657-16-3		215-01331		203-13801
55512-33-9		69377-81-7	PPL8	83657-17-4	PPL4 WQ3 WQ9		108050-54-0	VPL1 VDM
55634-91-8		69392-32-1					109849-99-2	200-19151
		69409-94-5	PPL1	83657-24-3		212-00981	110235-47-7	PPL14
55635-13-7		69525-81-1		84087-01-4		044-32411	110488-70-5	PPL15
55814-41-0	PPL5 WQ1 PM32	69806-34-4	PPL8	84087-33-2		172-00451	110488-75-7	PPL14 WQ4
		69806-40-2		84332-86-5		174-00771	110956-75-7	PPL15 WQ4
55861-78-4		69806-50-4		84332-86-5		037-24911	111479-05-1	PPL13 PPL16
56238-63-2		70124-77-5	PPL1	84496-56-0	WQ1	033-20731	111872-58-3	PPL4
56362-05-1	WQ2	70193-21-4		84496-85-5		037-23051	111988-49-9	PPL7 PPL13 NP WQ1
56507-37-0		70253-62-2	VDM	84878-61-5		137-16811		WQ3
56611-54-2		70288-86-7		85509-19-9	PPL9	065-03591	111991-09-4	
56611-55-3		70458-96-7	VQ	85721-33-1	VQ	033-19621	112281-77-3	PPL5 WQ4 WQ5
57018-04-9	PPL4 FA2 WQ1 PM32	70630-17-0	PPL6					(Hydrochloride)
		71048-99-2		85785-20-2	PPL5 WQ1	055-05893	112398-08-0	VPL1 VQ
57369-32-1	PPL4 WQ1	71109-09-6		86209-51-0	PPL16	165-24561		043-29551
57520-17-9	WQ7	71125-38-7		86393-32-0	VQ	033-19621	112410-23-8	PPL15 WQ4
57775-29-8		71363-52-5	FA1 WQ3 WQ9	86479-06-3	PPL14	084-09141	112636-83-6	040-32371
				86598-92-7	PPL4	095-04091	112885-41-3	135-19411
				86811-58-7	PPL17	063-04871	113136-77-9	035-23471
57801-81-7		71422-67-8	PPL17	87130-20-9	PPL4	045-24131	113507-06-5	139-18951
57808-65-8		71561-11-0	WQ3 WQ9	87546-18-7	PPL5	067-04771	113617-63-3	VQ
57837-19-1	PPL10 WQ1 PM32	71626-11-4	PPL5 PPL17	87674-68-8	PPL4	043-26751	113665-89-7	018-24961
		71751-41-2		87818-31-3	WQ3 WQ9	035-16521	114311-32-9	095-04591
57960-19-7		72140-17-1	PPL7	87820-88-0		207-20391	114369-43-6	PPL2
57960-31-3		72178-02-0	PPL8	88671-89-0	PPL2	135-11133	114420-56-3	PPL16
57966-95-7	PPL17	72585-88-7		88678-67-5	PPL6 WQ1 PM32		115550-35-1	VQ
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58306-30-2		73634-73-8		90982-32-4	PPL16	036-16671	116255-48-2	020-17991
59669-26-0	PPL14 WQ3	73684-69-2		91296-87-6	VQ	195-14211	116714-46-6	PPL15
59756-60-4	PPL2 PPL15	74003-63-7		93106-60-6	VQ	059-07471	116928-93-9	143-09361
60168-88-9	PPL1	74051-80-2		93697-74-6	PPL16 WQ4	168-17841	117018-19-6	045-33661
60200-06-8	VPL1	74115-24-5	PPL15	94125-34-5	PPL16	160-27291	117337-19-6	PPL5
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61336-70-7		76095-39-1		95465-99-9	PPL5 FA1 WQ3 WQ9		119126-15-7	062-05561
61432-55-1	PPL4 WQ1	76280-91-6				036-18871	119168-77-3	PPL6
61949-76-6	PPL1 WQ3	76578-12-6		95737-68-1	PPL2 WQ1	163-18751	119446-68-3	PPL2 WQ4 WQ5
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62610-77-9	PPL13	76738-62-0	PPL16 WQ3 WQ9	97483-08-4	WQ2	202-16551	119738-06-6	071-00661
62850-32-2	PPL5			97780-06-8	PPL16	059-07591	119758-39-3	137-16811
62865-36-5	WQ1	77182-82-2	WQ3	97886-45-8	WQ1 PM32	048-25123		(Ammonium Salt)
62893-20-3		77359-18-3	PPL7 WQ9	98079-51-7		122-06671	120068-36-2	062-04961
63409-12-1		77458-01-6	PPL2 FA2 WQ3 WQ9				120068-37-3	PPL3 WQ3
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63428-13-7		77501-63-4		98105-99-8	VQ	195-14211	120162-55-2	PPL16
63637-89-8	PPL9 WQ10	77698-96-5					120928-09-8	064-06981
63837-33-2		77732-09-3	PPL6	98106-17-3	VQ	049-30021	120983-64-4	167-29261
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		79127-80-3		98886-44-3	PPL4 FA1 WQ3 WQ9		121776-33-8	062-06301
64440-88-6		79277-27-3				062-05941	122008-85-9	PPL6 WQ5
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65907-30-4	PPL7 PPL13	80060-09-9		99675-03-3		097-06871	123572-88-3	PPL14 WQ4 WQ5
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		80555-60-8		100784-20-1	PPL16 WQ3	089-07251	124495-18-7	PPL3
66215-27-8		80621-81-4		101007-06-1	PPL5	014-16653	125225-28-7	197-00701
66230-04-4		80657-17-6	VPL2 VDH	101200-48-0		208-14191	125306-83-4	PPL6 WQ1



125401-92-5	024-14111	158474-72-7	PPL6	166-22891	868680-84-6	131-17931
126535-15-7	PPL16	160430-64-8	PPL3 NP WQ4 WQ5	010-16493	874195-61-6	206-21221
126801-58-9	PPL16 WQ4	161050-58-4	PPL7	135-15491	875775-74-9	060-06961
126833-17-8	PPL16	161326-34-7	PPL2 PPL15	550-93661	875915-78-9	091-07371
127277-53-6	168-18061 (Free Acid)	162650-77-3	053-08471	881685-58-1	887973-21-9	097-07471
128639-02-1	PPL12 PPL17	163520-33-0	097-07231	887973-21-9	907204-31-3	065-07011
129025-54-3	035-24451	165252-70-0	NP WQ4	041-29731	911499-62-2	068-06881
129558-76-5	PPL6 WQ5	168316-95-8	PPL14	195-15051	915972-17-7	207-21371
129630-19-9	PPL5	169202-06-6	097-04051	195-15051	926914-55-8	016-27941
130000-40-7	WQ4 WQ5	169327-82-6	066-07041	097-04051	926914-68-3	163-27541
130112-54-8	091-07491	173159-57-4	510-22151	066-07041	928783-29-3	160-27551
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131341-86-1	060-03683	174212-12-5	157-02361	139-18571	937717-66-3	194-16741
131475-57-5	206-19511	175013-18-0	PPL17	157-02361	942515-63-1	161-28821
131807-57-3	PPL13	177406-68-7	021-15961	163-22921	946578-00-3	168-28571
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	015-19003	179101-81-6	163-21941	066-04481	958647-10-4	044-34731
131929-60-7	195-15051 (Spinoad)	180409-60-3	PPL7	163-21941	1003318-67-9	063-06211
131929-63-0	195-15051 (Spinoad)	181373-11-5	110-01051	036-19231	1031756-98-5	153-03561
131983-72-7	PPL13 PPL14	181587-01-9	WQ5	110-01051	1101132-67-5	034-25761
133220-30-1	PPL14 WQ4 WQ5	183304-68-9	204-21261	055-07571	1112127-95-3	207-21131
	094-06521	183675-82-3	164-28811	204-21261	1201920-88-8	060-06841
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133855-98-8	PPL5	200132-83-8	115-00761	068-04681	1229654-66-3	167-29401
133868-46-9	PPL12 PPL15	201668-31-7	067-06851	115-00761	1253511-94-2	204-21141
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134605-64-4	PPL7	203312-38-3	194-18821	201668-31-7	1285071-33-1	203-21111
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137641-05-5	PPL12	210880-92-5	PPL7 NP WQ4	051-07431	1426296-49-2	203-20631
139528-85-1	PPL16	212201-70-2	WQ10	036-26061	1449021-97-9	132-19041
139920-32-4	PPL5	217500-96-4	201-21411	034-22581	1472649-01-6	019-27931
139970-56-2	132-18201	219714-96-2	PPL16	099-07051	1486617-21-3	026-19431
140163-89-9	091-06911	220899-03-6	139-19311	201-21411	1486617-22-4	121-06881
140923-17-7	PPL7	221205-90-9	166-26291	169-26801	1616678-32-0	121-06881 (Sodium Salt)
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142459-58-3	PPL13 PPL15	223580-51-6	WQ4	221654-71-3		186-01991
142891-20-1	PPL12	224049-04-1	097-06991	223580-51-6		
143294-89-7	206-15591	229977-93-9	066-04481	224049-04-1		
143390-89-0	PPL1	239110-15-7	064-06361	229977-93-9		
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144171-61-9	PPL7	252913-85-2	208-20061	248593-16-0		
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149878-40-0	029-18821	496925-02-1	164-27331	494793-67-8		
149979-41-9	204-16511	500008-45-7	038-21261	496925-02-1		
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158062-71-6	202-16791	799247-52-2	163-28761	790293-36-6		
158063-66-2	205-16781	852403-68-0	139-18191	799247-52-2		
158237-07-1	WQ4	863549-51-3	125-06421	852403-68-0		
158353-15-2	WQ6	865318-97-4	018-26541	863549-51-3		

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