

Certified Reference Materials



Accurately Quantify 380 Pesticides Using LC-MS/MS and GC-MS/MS

- CRM kits include comprehensive lists of pesticides of global concern.
- Formulated for maximum long-term stability.
- Manufactured and QC-tested in our ISO-accredited labs.



RESTEK

Pure Chromatography

www.restek.com



Accurately Quantify 380 Pesticides Using LC-MS/MS and GC-MS/MS with Restek's Multiresidue Pesticide CRM Kits

- Accurately detect and quantify pesticides of global food safety concern in a wide range of matrices.
- Formulated and grouped for maximum long-term stability.*
- Quantitatively tested to confirm composition; detailed support documentation provided.
- Optimized multiresidue pesticide method is offered free of charge; downloadable XLS file includes conditions and transition tables.
- Certified reference material (CRM) manufactured and QC-tested in Restek's ISO-accredited labs satisfies your ISO requirements.

* NOTE: When combining a large number of compounds with different chemical functionalities, mix stability can be an issue. In formulating these standards, we extensively studied all the compounds involved, then grouped them into as few mixes as possible while still ensuring maximum long-term stability and reliability. For quantitative analysis, we recommend analyzing each mix separately to ensure accurate results for every compound.



Set up, verify, and validate your pesticide-screening methods in less time,
with proven confidence, and at a significantly reduced cost.



LC Multiresidue Pesticide Kit

- Contains 204 compounds—see page 4 for the complete list.

Contains 1 mL each of these mixtures.
cat.# 31971 (kit)



GC Multiresidue Pesticide Kit

- Contains 203 compounds—see page 8 for the complete list.

Contains 1 mL each of these mixtures.
cat.# 32562 (kit)



LC Multiresidue Pesticide Standard #1 (13 components)

Organophosphorus Compounds
100 µg/mL each in acetonitrile, 1 mL/ampul

cat.# 31972 (ea.)

LC Multiresidue Pesticide Standard #2 (16 components)

Carbamate/Uron Compounds
100 µg/mL each in acetonitrile, 1 mL/ampul

cat.# 31973 (ea.)

LC Multiresidue Pesticide Standard #3 (38 components)

Carbamate/Uron Compounds
100 µg/mL each in acetonitrile, 1 mL/ampul

cat.# 31974 (ea.)

LC Multiresidue Pesticide Standard #4 (63 components)

Organonitrogen Compounds
100 µg/mL each in acetonitrile, 1 mL/ampul

cat.# 31975 (ea.)

LC Multiresidue Pesticide Standard #5 (30 components)

Organonitrogen Compounds
100 µg/mL each in acetonitrile, 1 mL/ampul

cat.# 31976 (ea.)

LC Multiresidue Pesticide Standard #6 (28 components)

Organonitrogen Compounds
100 µg/mL each in acetonitrile, 1 mL/ampul

cat.# 31977 (ea.)

LC Multiresidue Pesticide Standard #7 (7 components)

Organonitrogen Compounds
100 µg/mL each in acetonitrile, 1 mL/ampul

cat.# 31978 (ea.)

LC Multiresidue Pesticide Standard #8 (hydramethylnon)

Organonitrogen Compounds
100 µg/mL each in acetonitrile, 1 mL/ampul

cat.# 31979 (ea.)

LC Multiresidue Pesticide Standard #9 (7 components)

Carbamate/Uron Compounds
100 µg/mL each in acetonitrile, 1 mL/ampul

cat.# 31980 (ea.)

LC Multiresidue Pesticide Standard #10 (carbendazim)

Carbamate/Uron Compounds
100 µg/mL each in methanol, 1 mL/ampul

cat.# 31981 (ea.)

GC Multiresidue Pesticide Standard #1 (16 components)

Organophosphorus Compounds
100 µg/mL each in toluene, 1 mL/ampul

cat.# 32563 (ea.)

GC Multiresidue Pesticide Standard #2 (40 components)

Organochlorine Compounds
100 µg/mL each in toluene, 1 mL/ampul

cat.# 32564 (ea.)

GC Multiresidue Pesticide Standard #3 (25 components)

Organonitrogen Compounds
100 µg/mL each in toluene:acetonitrile (99:1), 1 mL/ampul

cat.# 32565 (ea.)

GC Multiresidue Pesticide Standard #4 (28 components)

Organonitrogen Compounds
100 µg/mL each in toluene, 1 mL/ampul

cat.# 32566 (ea.)

GC Multiresidue Pesticide Standard #5 (34 components)

Organonitrogen Compounds
100 µg/mL each in toluene, 1 mL/ampul

cat.# 32567 (ea.)

GC Multiresidue Pesticide Standard #6 (18 components)

Synthetic Pyrethroid Compounds
100 µg/mL each in toluene, 1 mL/ampul

cat.# 32568 (ea.)

GC Multiresidue Pesticide Standard #7 (10 components)

Herbicide Methyl Esters
100 µg/mL each in toluene, 1 mL/ampul

cat.# 32569 (ea.)

GC Multiresidue Pesticide Standard #8 (24 components)

Organophosphorus Compounds
100 µg/mL each in toluene, 1 mL/ampul

cat.# 32570 (ea.)

GC Multiresidue Pesticide Standard #9 (8 components)

Organophosphorus Compounds
100 µg/mL each in toluene, 1 mL/ampul

cat.# 32571 (ea.)

Perform Quantitative LC-MS/MS Multiresidue Pesticide Analysis of 204 Compounds with 1 Reference Standards Kit (cat.# 31971)

Std #	Compound (100 µg/mL each)	CAS #	Std #	Compound (100 µg/mL each)	CAS #	Std #	Compound (100 µg/mL each)	CAS #
4	Abamectin	71751-41-2	5	Fenamidone	161326-34-7	4	Myclobutanil (Systhane)	88671-89-0
1	Acephate	30560-19-1	6	Fenarimol	60168-88-9	3	Neburon	555-37-3
4	Acetamiprid	135410-20-7	4	Fenazaquin	120928-09-8	4	Nitenpyram	120738-89-8
5	Acibenzolar-S-methyl	135158-54-2	6	Fenbuconazole	114369-43-6	3	Novaluron	116714-46-6
2	Alanycarb	83130-01-2	4	Fenhexamid	126833-17-8	6	Nuarimol	63284-71-9
2	Aldicarb	116-06-3	3	Fenobucarb (BPMC)	3766-81-2	1	Omethoate	1113-02-6
2	Aldicarb sulfone	1646-88-4	3	Fenoxycarb	79127-80-3	4	Oxadixyl	77732-09-3
2	Aldicarb sulfoxide	1646-87-3	7	Fenpropimorph	67564-91-4	2	Oxamyl	23135-22-0
4	Ametryn	834-12-8	4	Fenpyroximate	111812-58-9	6	Paclbutrazol	76738-62-0
9	Aminocarb	2032-59-9	3	Fenuron	101-42-8	6	Penconazole	66246-88-6
4	Amitraz	33089-61-1	5	Fipronil	120068-37-3	9	Phenmedipham	13684-63-4
4	Azoxystrobin	131860-33-8	4	Flonicamid	158062-67-0	4	Picoxystrobin	117428-22-5
6	Baycor (Bitertanol)	55179-31-2	4	Fluazinam	79622-59-6	4	Piperonyl butoxide	51-03-6
4	Benalaxyl	71626-11-4	5	Flubendiamide	272451-65-7	3	Pirimicarb	23103-98-2
3	Bendiocarb	22781-23-3	4	Fludioxonil	131341-86-1	4	Prochloraz	67742-09-5
2	Benfuracarb	82560-54-1	5	Flufenacet (Fluthiamide)	142459-58-3	3	Promecarb	2631-37-0
4	Benzoximate	29104-30-1	3	Flufenoxuron	101463-69-8	4	Prometon	1610-18-0
3	Bifenazate	149877-41-8	3	Fluometuron	2164-17-2	5	Prometryne	7287-19-6
4	Boscalid	188425-85-6	4	Fluoxastrobin	361377-29-9	9	Propamocarb	24579-73-5
6	Bromuconazole	116255-48-2	6	Fluquinconazole	136426-54-5	5	Propargite (Omite)	2312-35-8
5	Bupirimate	41483-43-6	6	Flusilazole	85509-19-9	3	Propham	122-42-9
5	Buprofezin	69327-76-0	4	Flutolanil	66332-96-5	6	Propiconazole (Tilt)	60207-90-1
4	Butafenacil	134605-64-4	6	Flutriafol	76674-21-0	3	Propoxur (Baygon)	114-26-1
2	Butocarboxim	34681-10-2	3	Forchlorfenuron	68157-60-8	5	Prothioconazole	178928-70-6
2	Butoxycarboxim	34681-23-7	9	Formetanate hydrochloride	23422-53-9	4	Pymetrozine	123312-89-0
1	Carbaryl (Sevin)	63-25-2	6	Fuberidazole	3878-19-1	4	Pyracarbolid	24691-76-7
10	Carbendazim	10605-21-7	4	Furalaxyl	57646-30-7	3	Pyraclostrobin	175013-18-0
4	Carbetamide	16118-49-3	2	Furathiocarb	65907-30-4	5	Pyridaben	96489-71-3
3	Carbofuran	1563-66-2	4	Halofenozide	112226-61-6	4	Pyrimethanil	53112-28-0
5	Carboxin	5234-68-4	6	Hexaconazole	79983-71-4	4	Pyriproxyfen	95737-68-1
4	Carfentrazone ethyl	128639-02-1	3	Hexaflumuron	86479-06-3	4	Quinoxyfen	124495-18-7
4	Chloanthraniliprole	500008-45-7	5	Hexythiazox	78587-05-0	4	Rotenone	83-79-4
3	Chlorfluazuron	71422-67-8	8	Hydramethylnon	67485-29-4	4	Secbumeton	26259-45-0
3	Chlorotoluron	15545-48-9	3	3-Hydroxycarbofuran	16655-82-6	3	Siduron	1982-49-6
3	Chloroxuron	1982-47-4	4	Imazalil	35554-44-0	5	Simetryn	1014-70-6
5	Clethodim	99129-21-2	4	Imidacloprid	138261-41-3	7	Spinetoram (J&L)	187166-40-1
4	Clofentezine	74115-24-5	3	Indoxacarb	144171-61-9	7	Spinosad	168316-95-8
5	Clothianidin	210880-92-5	6	Ipconazole	125225-28-7	7	Spirodiclofen	148477-71-8
5	Cyazofamid	120116-88-3	3	Iprovalicarb	140923-17-7	7	Spiromesifen	283594-90-1
3	Cycluron	2163-69-1	1	Isocarboxiphos	24353-61-5	7	Spirotetramat	203313-25-1
4	Cymoxanil	57966-95-7	3	Isoprocab	2631-40-5	4	Spiroxamine	118134-30-8
6	Cyproconazole	94361-06-5	3	Isoproturon	34123-59-6	5	Sulfentrazone	122836-35-5
4	Cyprodinil	121552-61-2	4	Ivermectin	70288-86-7	6	Tebuconazole (Folicur)	107534-96-3
4	Cyromazine	66215-27-8	4	Kresoxim methyl	143390-89-0	4	Tebufenozide	112410-23-8
9	Desmedipham	13684-56-5	3	Linuron	330-55-2	4	Tebufenpyrad	119168-77-3
6	Dichlobutrazol	75736-33-3	3	Lufenuron	103055-07-8	2	Tebuthiuron	34014-18-1
1	Diclotophos	141-66-2	4	Mandipropamid	374726-62-2	3	Teflubenzuron	83121-18-0
3	Diethofencarb	87130-20-9	5	Mefenacet	73250-68-7	1	Temephos (Abate)	3383-96-8
6	Difenoconazole	119446-68-3	4	Mepanipyrim	110235-47-7	4	Terbumeton	33693-04-8
3	Diflubenzuron	35367-38-5	5	Mepronil	55814-41-0	5	Terbutryn	886-50-0
1	Dimethoate	60-51-5	4	Mesotrione	104206-82-8	6	Tetraconazole	112281-77-3
1	Dimethomorph	110488-70-5	4	Metaflumizone	139968-49-3	5	Thiabendazole	148-79-8
4	Dimoxystrobin	149961-52-4	4	Metalaxyl	57837-19-1	5	Thiacloprid	111988-49-9
6	Diniconazole	83657-24-3	6	Metconazole	125116-23-6	5	Thiamethoxam	153719-23-4
4	Dinotefuran	165252-70-0	2	Methabenzthiazuron	18691-97-9	2	Thidiazuron	51707-55-2
3	Dioxacarb	6988-21-2	1	Methamidophos	10265-92-6	3	Thiobencarb	28249-77-6
3	Diuron	330-54-1	2	Methiocarb	2032-65-7	5	Thiofanox	39196-18-4
4	Doramectin	117704-25-3	2	Methomyl	16752-77-5	2	Thiophanate-methyl	23564-05-8
7	Emamectin benzoate (Proclaim)	155569-91-8	5	Methoprotryne	841-06-5	4	Triadimefon	43121-43-3
6	Epoxiconazole	133855-98-8	4	Methoxyfenozide	161050-58-4	6	Triadimenol (Baytan)	55219-65-3
4	Eprinomectin	123997-26-2	3	Metobromuron	3060-89-7	1	Trichlorfon (Dylox)	52-68-6
6	Etaconazole	60207-93-4	5	Metribuzin	21087-64-9	5	Tricyclazole (Beam)	41814-78-2
2	Ethiofencarb	29973-13-5	1	Mevinphos (Phosdrin)	7786-34-7	4	Trifloxystrobin	141517-21-7
5	Ethiprole	181587-01-9	9	Mexacarbate (Zectran)	315-18-4	6	Triflumizole	68694-11-1
6	Ethirimol	23947-60-6	9	Monceren (Pencycuron)	66063-05-6	3	Triflumuron	64628-44-0
5	Ethofumesate	26225-79-6	1	Monocrotophos	6923-22-4	6	Triticonazole	131983-72-7
6	Etoazole	153233-91-1	3	Monolinuron	1746-81-2	1	Vamidotion (Vamidoate)	2275-23-2
4	Famoxadone	131807-57-3	4	Moxidectin	113507-06-5	4	Zoxamide	156052-68-5

For notes, see page 7.

Figure 1: LC Multiresidue Pesticide Standard #1 (cat.# 31972) on Ultra Aqueous C18 by LC-MS/MS.

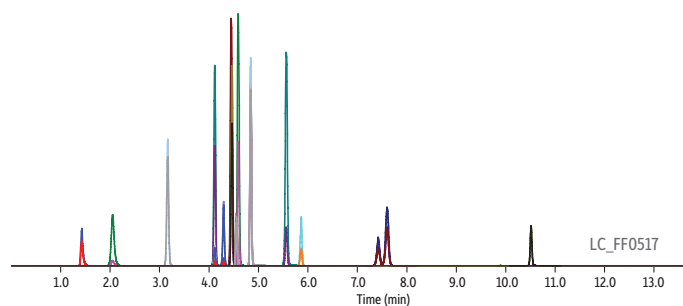


Figure 2: LC Multiresidue Pesticide Standard #2 (cat.# 31973) on Ultra Aqueous C18 by LC-MS/MS.

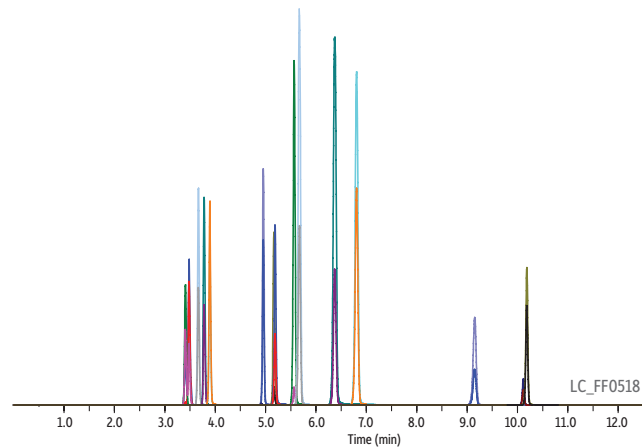


Figure 3: LC Multiresidue Pesticide Standard #3 (cat.# 31974) on Ultra Aqueous C18 by LC-MS/MS.

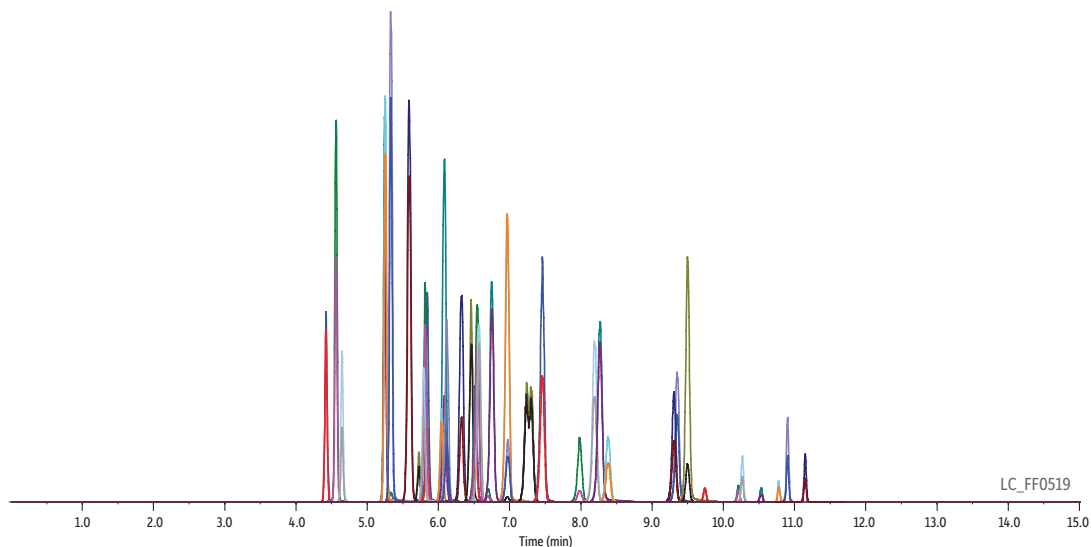
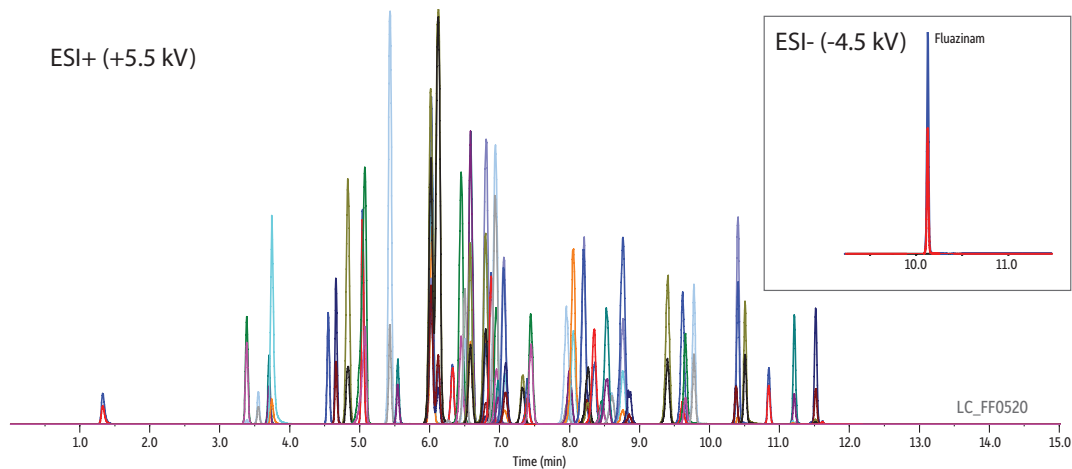


Figure 4: LC Multiresidue Pesticide Standard #4 (cat.# 31975) on Ultra Aqueous C18 by LC-MS/MS.



For notes, see page 7.

Figure 5: LC Multiresidue Pesticide Standard #5 (cat.# 31976) on Ultra Aqueous C18 by LC-MS/MS.

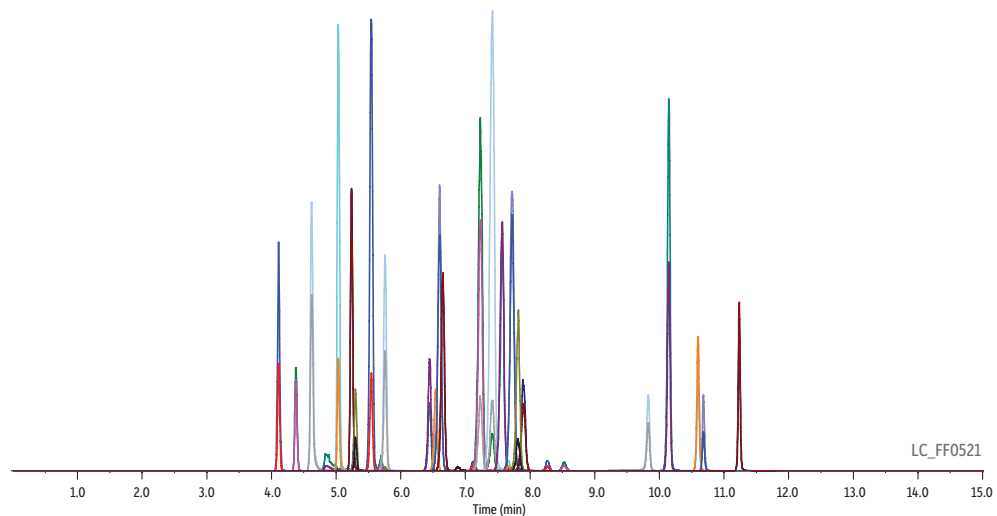


Figure 6: LC Multiresidue Pesticide Standard #6 (cat.# 31977) on Ultra Aqueous C18 by LC-MS/MS.

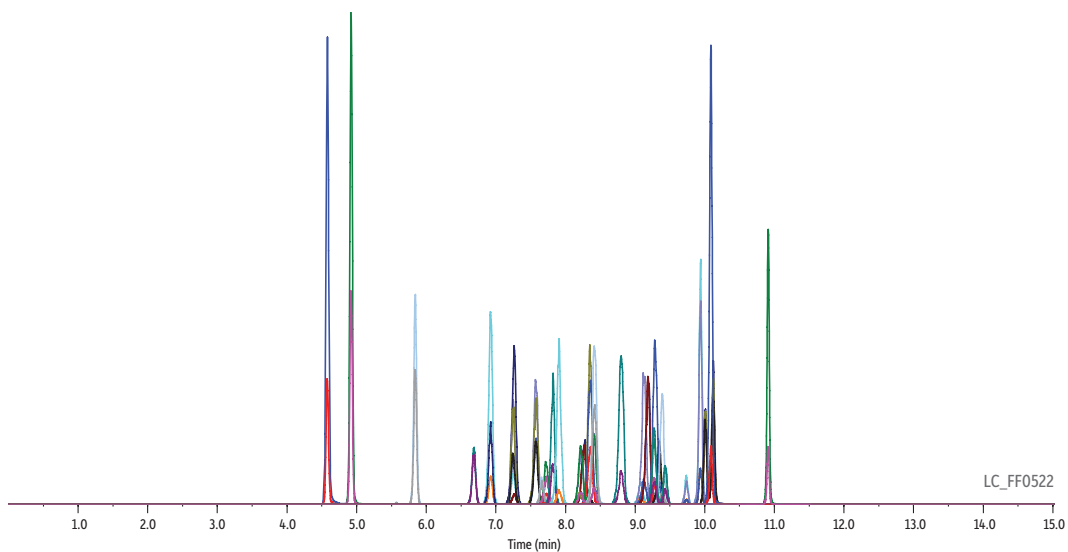
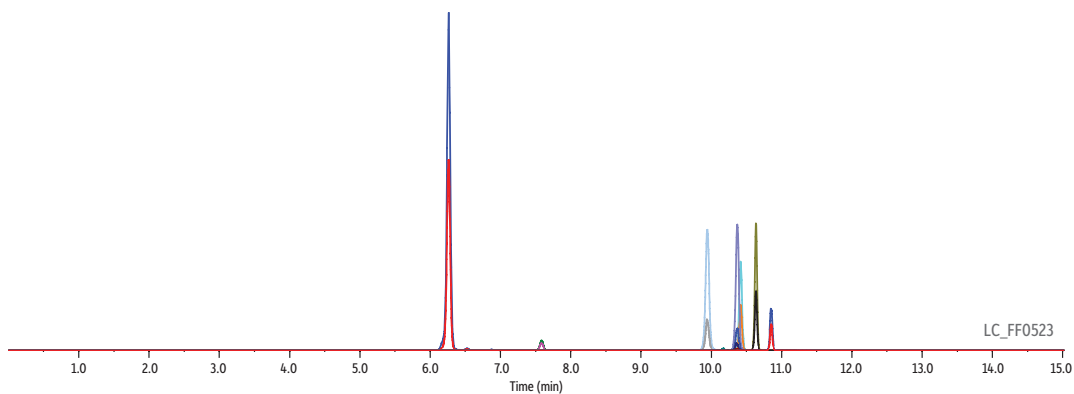


Figure 7: LC Multiresidue Pesticide Standard #7 (cat.# 31978) on Ultra Aqueous C18 by LC-MS/MS.



For notes, see page 7.

Figure 8: LC Multiresidue Pesticide Standard #8 (cat.# 31979) on Ultra Aqueous C18 by LC-MS/MS.

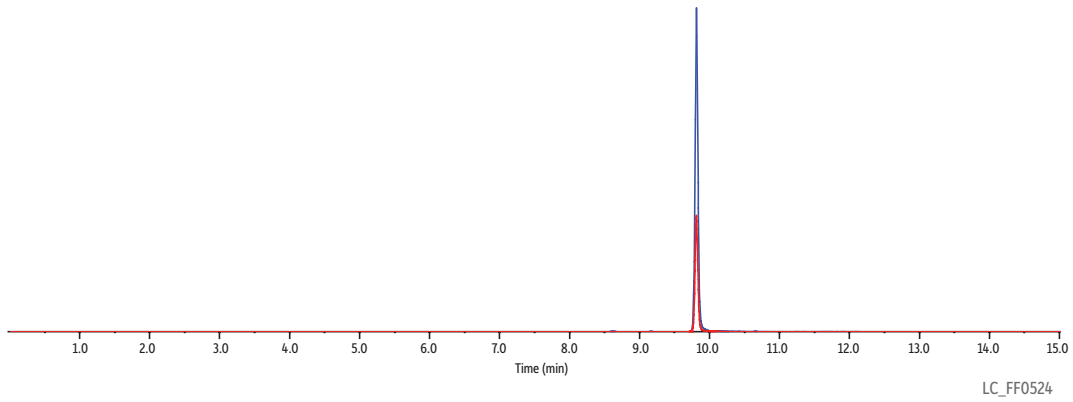


Figure 9: LC Multiresidue Pesticide Standard #9 (cat.# 31980) on Ultra Aqueous C18 by LC-MS/MS.

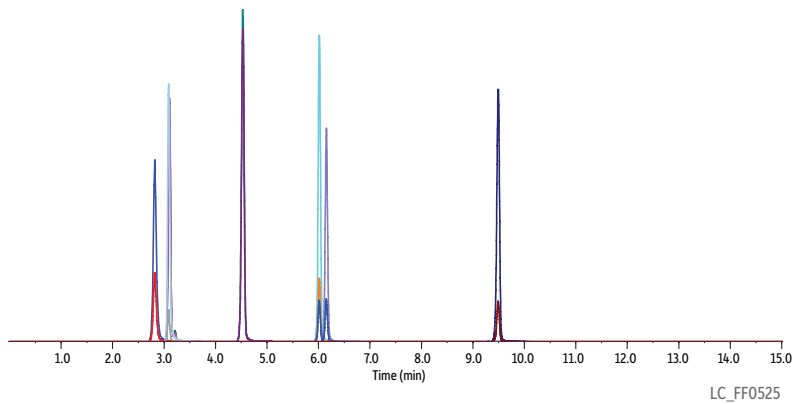
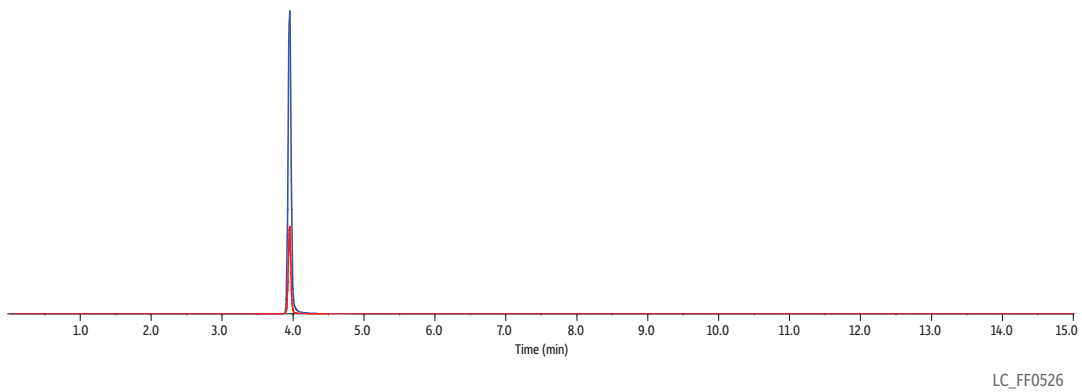


Figure 10: LC Multiresidue Pesticide Standard #10 (cat.# 31981) on Ultra Aqueous C18 by LC-MS/MS.



For compound list, see page 4. For conditions, retention times, and transitions, visit www.restek.com/multiresidue

NOTES: When combining a large number of compounds with different chemical functionalities, mix stability can be an issue. In formulating these standards, we extensively studied the 204 compounds involved, and then grouped them into as few mixes as possible while still ensuring maximum long-term stability and reliability. For quantitative analysis, we recommend analyzing each mix separately to ensure accurate results for every compound.

Perform Quantitative GC-MS/MS Multiresidue Pesticide Analysis of 203 Compounds With 1 Reference Standards Kit (cat.# 32562)

Std #	Compound (100 µg/mL each)	CAS #	Std #	Compound (100 µg/mL each)	CAS #	Std #	Compound (100 µg/mL each)	CAS #
3	2,3,5,6-Tetrachloroaniline	3481-20-7	2	Dieldrin	60-57-1	4	Oxadiazon	19666-30-9
2	2,4'-DDD	53-19-0	4	Dimethachlor	50563-36-5	3	Oxyfluorfen	42874-03-3
2	2,4'-DDE	3424-82-6	4	Diphenamid	957-51-7	5	Paclobutrazol	76738-62-0
2	2,4'-DDT	789-02-6	3	Diphenylamine	122-39-4	9	Parathion (Ethyl parathion)	56-38-2
2	2,4'-Methoxychlor	30667-99-3	9	Disulfoton	298-04-4	4	Pebulate	1114-71-2
3	2,6-Dichlorobenzonitrile (Dichlobenil)	1194-65-6	8	Edifenphos	17109-49-8	5	Penconazole	66246-88-6
7	2-Phenylphenol	90-43-7	2	Endosulfan ether	3369-52-6	3	Pendimethalin	40487-42-1
3	3,4-Dichloroaniline	95-76-1	2	Endosulfan I	959-98-8	3	Pentachloroaniline	527-20-8
2	4,4'-DDD	72-54-8	2	Endosulfan II	33213-65-9	2	Pentachloroanisole	1825-21-4
2	4,4'-DDE	72-55-9	2	Endosulfan sulfate	1031-07-8	2	Pentachlorobenzene	608-93-5
2	4,4'-DDT	50-29-3	2	Endrin	72-20-8	3	Pentachlorobenzonitrile	20925-85-3
2	4,4'-Dichlorobenzophenone	90-98-2	2	Endrin aldehyde	7421-93-4	3	Pentachloronitrobenzene (Quintozene)	82-68-8
2	4,4'-Methoxychlor olefin	2132-70-9	2	Endrin ketone	53494-70-5	2	Pentachlorothioanisole	1825-19-0
7	Acequinocyl	57960-19-7	1	EPN	2104-64-5	6	Phenothrin (<i>cis</i> & <i>trans</i>)	26002-80-2
4	Acetochlor	34256-82-1	3	Ethalfuralin	55283-68-6	9	Phorate	298-02-2
6	Acrinathrin	101007-06-1	8	Ethion	563-12-2	1	Phosalone	2310-17-0
4	Alachlor	15972-60-8	2	Ethylan (Perthane)	72-56-0	1	Phosmet	732-11-6
2	Aldrin	309-00-2	5	Etofenprox	80844-07-1	9	Piperonyl butoxide	51-03-6
4	Allidochlor	93-71-0	5	Ethionazole	2593-15-9	1	Pirimiphos ethyl	23505-41-1
2	alpha-BHC	319-84-6	8	Fenamiphos	22224-92-6	1	Pirimiphos methyl	29232-93-7
6	Anthraquinone	84-65-1	5	Fenarimol	60168-88-9	4	Pretilachlor	51218-49-6
5	Atrazine	1912-24-9	8	Fenchlorphos (Ronne)	299-84-3	4	Prochloraz	67747-09-5
1	Azinphos ethyl	2642-71-9	1	Fenitrothion	122-14-5	5	Procymidone	32809-16-8
1	Azinphos methyl	86-50-0	4	Fenpropathrin	39515-41-8	3	Prodiamine	29091-21-2
3	Benfluralin	1861-40-1	2	Fenson	80-38-6	8	Profenofos	41198-08-7
2	beta-BHC	319-85-7	8	Fenthion	55-38-9	3	Profluralin	26399-36-0
6	Bifenthrin	82657-04-3	6	Fenvalerate	51630-58-1	4	Propachlor	1918-16-7
6	Bioallethrin	584-79-2	5	Fipronil	120068-37-3	4	Propachlor	709-98-8
3	Biphenyl	92-52-4	7	Fluazifop- <i>p</i> -butyl	79241-46-6	5	Propargite	2312-35-8
8	Bromfenvinfos-methyl	13104-21-7	3	Fluchloralin	33245-39-5	4	Propisochlor	86763-47-5
8	Bromfenvinfos	33399-00-7	6	Flucythrinate	70124-77-5	4	Propyzamide	23950-58-5
8	Bromophos ethyl	4824-78-6	5	Fludioxonil	131341-86-1	8	Prothiofos	34643-46-4
8	Bromophos methyl	2104-96-3	4	Fluquinconazole	136426-54-5	1	Pyraclufos	77458-01-6
7	Bromopropylate	18181-80-1	5	Fluridone (Sonar)	59756-60-4	1	Pyrazophos	13457-18-6
5	Bupirimate	41483-43-6	5	Flusilazole	85509-19-9	4	Pyridaben	96489-71-3
5	Captafol	2425-06-01	4	Flutolanil	66332-96-5	1	Pyridaphenthion	119-12-0
5	Captan	133-06-2	5	Flutriafol	76674-21-0	5	Pyrimethanil	53112-28-0
8	Carbophenothion	786-19-6	5	Folpet	133-07-3	5	Pyriproxyfen	95737-68-1
7	Carfentrazone ethyl	128639-02-1	9	Fonofos	944-22-9	1	Quinalphos	13593-03-8
2	Chlorbenside	103-17-3	2	gamma-BHC (Lindane)	58-89-9	6	Resmethrin	10453-86-8
5	Chlorfenapyr	122453-73-0	2	Heptachlor	76-44-8	8	Sulfotepp	3689-24-5
2	Chlorfenson (Ovex)	80-33-1	2	Heptachlor epoxide (Isomer B)	1024-57-3	8	Sulprofos	35400-43-2
8	Chlorfenvinphos	470-90-6	2	Hexachlorobenzene	118-74-1	6	tau-Fluvalinate	102851-06-9
7	Chlorobenzilate	510-15-6	5	Hexazinone (Velpar)	51235-04-2	5	Tebuconazole	107534-96-3
2	Chloroneb	2675-77-6	8	Iodofenphos	18181-70-9	4	Tebufenpyrad	119168-77-3
3	Chlorothalonil	1897-45-6	5	Iprodione	36734-19-7	6	Tefluthrin	79538-32-2
7	Chlorpropham	101-21-3	1	Isazophos	42509-80-8	5	Terbacil	5902-51-2
1	Chlorpyrifos	2921-88-2	2	Isodrin	465-73-6	8	Terbufos	13071-79-9
1	Chlorpyrifos methyl	5598-13-0	3	Isopropalin	33820-53-0	5	Terbutylazine	5915-41-3
8	Chlorthiophos	60238-56-4	6	lambda-Cyhalothrin	91465-08-6	3	Tetrachloronitrobenzene (Tecnazene)	117-18-0
7	Chlozolinate	84332-86-5	5	Lenacil	2164-08-1	8	Tetrachlorvinfos	22248-79-9
2	<i>cis</i> -Chlordane	5103-71-9	8	Leptophos	21609-90-5	2	Tetradifon	116-29-0
2	<i>cis</i> -Nonachlor	5103-73-1	4	Linuron	330-55-2	6	Tetramethrin	7696-12-0
6	<i>cis</i> -Permethrin	61949-76-6	8	Malathion	121-75-5	3	THPI (Tetrahydrophthalimide)	1469-48-3
4	Clomazone (Command)	81777-89-1	7	Metalaxyl	57837-19-1	8	Tolclofos-methyl	57018-04-9
8	Coumaphos	56-72-4	4	Metazachlor	67129-08-2	3	Tolyfluanid	731-27-1
4	Cycoate	1134-23-2	8	Methacrifos	62610-77-9	2	<i>trans</i> -Chlordane	5103-74-2
6	Cyfluthrin	68359-37-5	4	Methoxychlor	72-43-5	6	Transfluthrin	118712-89-3
6	Cypermethrin	52315-07-8	9	Methyl parathion	298-00-0	2	<i>trans</i> -Nonachlor	39765-80-5
5	Cyprodinil	121552-61-2	4	Metolachlor	51218-45-2	6	<i>trans</i> -Permethrin	61949-77-7
7	DCPA methyl ester (Chlorthal-dimethyl)	1861-32-1	9	Mevinphos	7786-34-7	5	Triadimefon	43121-43-3
2	delta-BHC	319-86-8	5	MGK-264	113-48-4	5	Triadimenol	55219-65-3
6	Deltamethrin	52918-63-5	2	Mirex	2385-85-5	4	Triallate	2303-17-5
4	Diallate (<i>cis</i> & <i>trans</i>)	2303-16-4	5	Myclobutanil	88671-89-0	9	Triazophos	24017-47-8
1	Diazinon	333-41-5	4	N-(2,4-Dimethylphenyl)formamide	60397-77-5	5	Tricyclazole (Beam)	41814-78-2
3	Dichlofluanid	1085-98-9	3	Nitralin	4726-14-1	5	Triflumizole	68694-11-1
3	Dichloran	99-30-9	3	Nitrofen	1836-75-5	3	Trifluralin	1582-09-8
			4	Norflurazon	27314-13-2	5	Vinclozolin	50471-44-8

For notes, see page 11.

Figure 11: GC Multiresidue Pesticide Standard #1
(cat.# 32563)-OPP on Rxi®-5ms by GC-MS

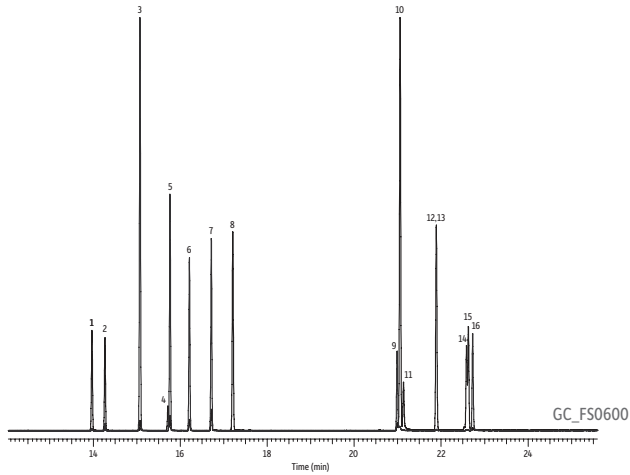


Figure 12: GC Multiresidue Pesticide Standard #2
(cat.# 32564)-OCP on Rxi®-5ms by GC-MS

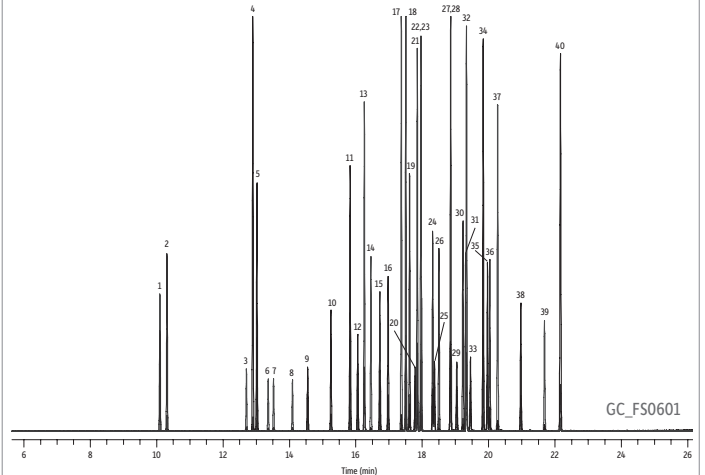


Figure 13: GC Multiresidue Pesticide Standard #3
(cat.# 32565)-ONP on Rxi®-5ms by GC-MS

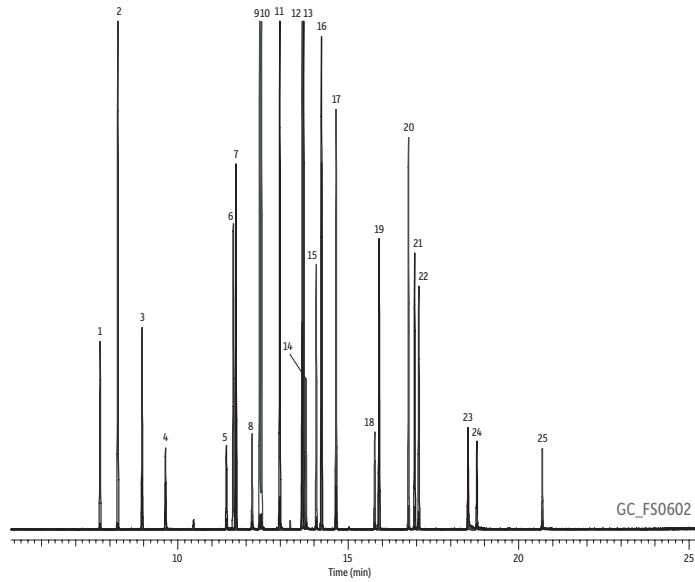
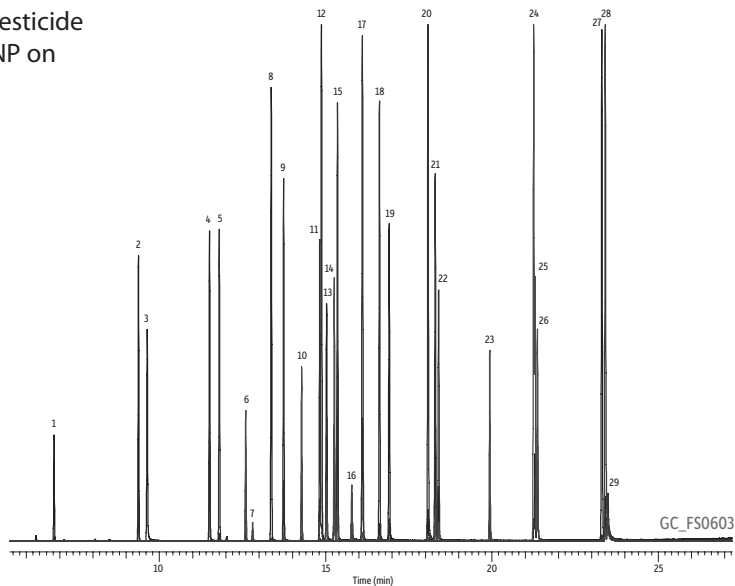


Figure 14: GC Multiresidue Pesticide Standard #4 (cat.# 32566)-ONP on Rxi®-5ms by GC-MS



For notes, see page 11.

Figure 15: GC Multiresidue Pesticide Standard #5 (cat.# 32567)-ONP on Rxi®-5ms by GC-MS

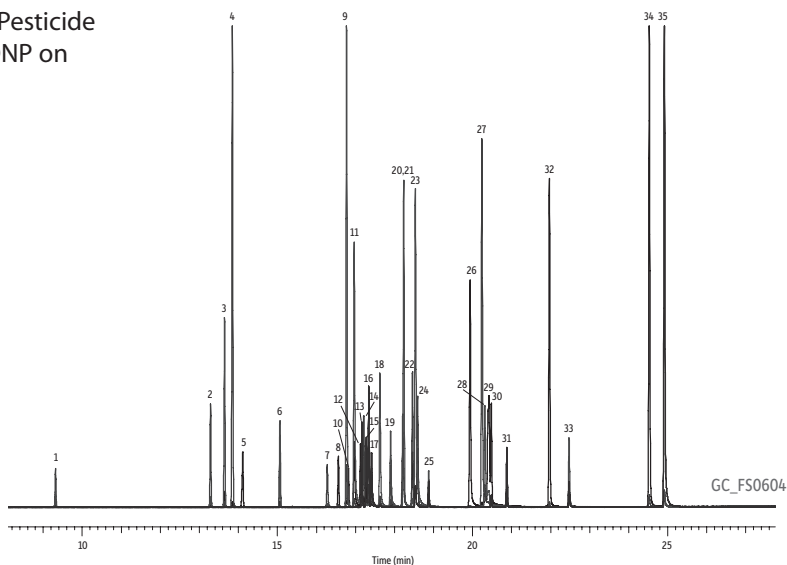


Figure 16: GC Multiresidue Pesticide Standard #6 (cat.# 32568)-SPP on Rxi®-5ms by GC-MS

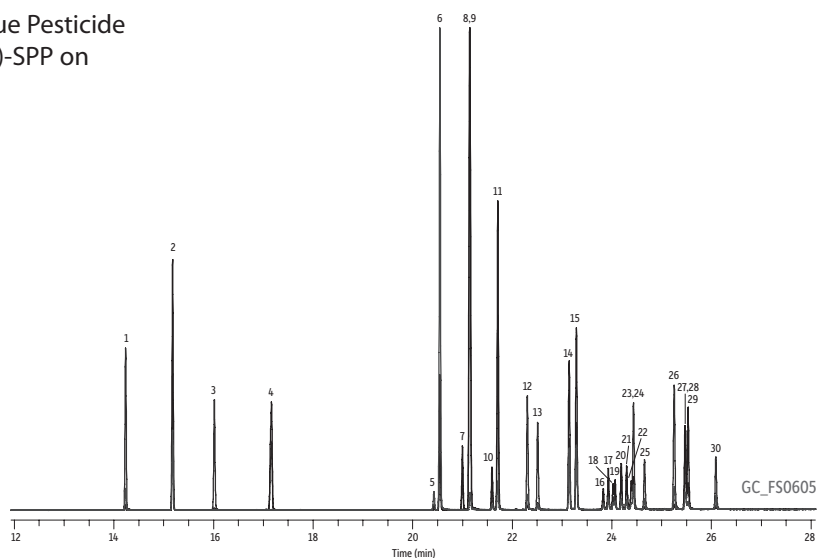
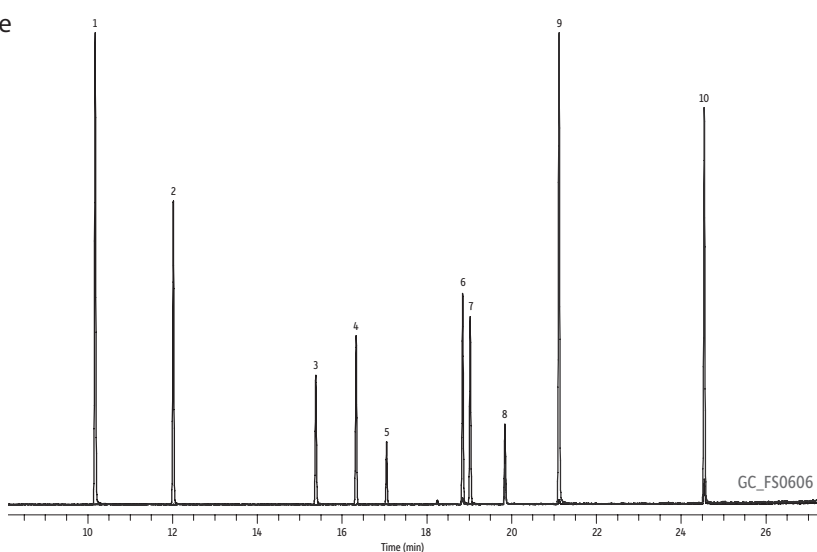


Figure 17: GC Multiresidue Pesticide Standard #7 (cat.# 32569)-HME on Rxi®-5ms by GC-MS



For notes, see page 11.

Figure 18: GC Multiresidue Pesticide Standard #8 (cat.# 32570)-OPP on Rxi®-5ms by GC-MS

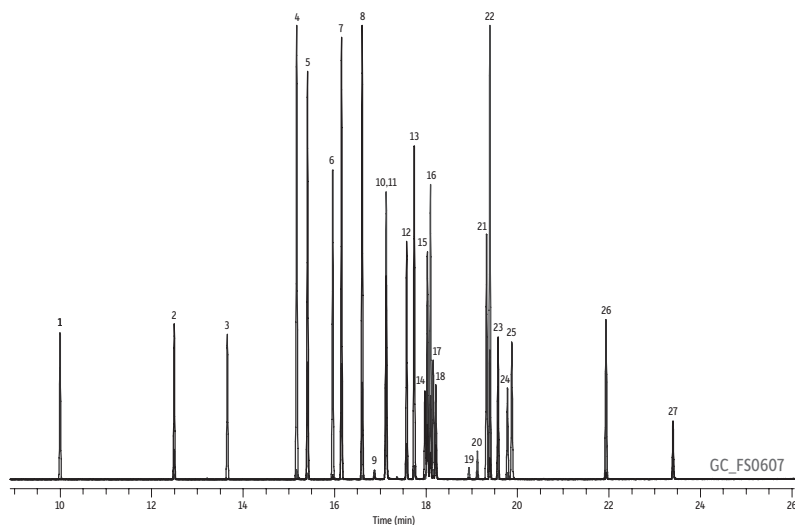
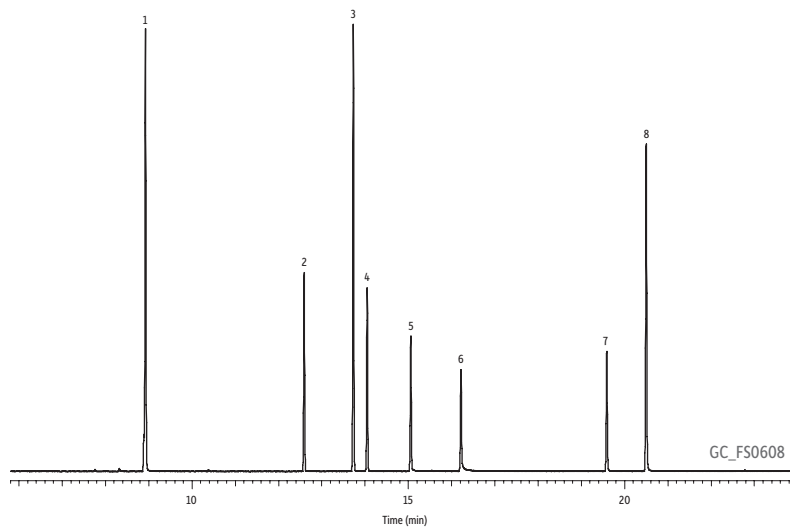


Figure 19: GC Multiresidue Pesticide Standard #9 (cat.# 32571)-OPP on Rxi®-5ms by GC-MS



For compound list, see page 8. For conditions, retention times, and transitions, visit www.restek.com/multiresidue

When combining a large number of compounds with different chemical functionalities, mix stability can be an issue. In formulating these standards, we extensively studied the 203 compounds involved, then grouped them into as few mixes as possible while still ensuring maximum long-term stability and reliability. For quantitative analysis, we recommend analyzing each mix separately to ensure accurate results for every compound.

Restek is Your Complete Supplier for World-Class LC-MS/MS and GC-MS/MS Multiresidue Pesticide Analysis.

We carry certified reference materials, analytical columns, sample preparation products, and accessories.



Column Characteristics:

particle size:	3 μm or 5 μm , spherical
pore size:	100 Å
carbon load:	15%
end-cap:	no
pH range:	2.5 to 8
temperature limit:	80 °C
USP phase code:	L1
phase category:	modified C18
ligand type:	proprietary polar modified and functionally bonded C18

Ultra Aqueous C18 Columns (USP L1)

Chromatographic Properties

The Restek® Aqueous C18 is a rugged, reversed-phase column with a well-balanced retention profile. It can effectively retain more types of solutes than a conventional C18 and is ideal for multicomponent LC-MS analyses. The general-purpose Aqueous C18 boasts high reproducibility and compatibility with many mobile phase conditions—even 100% aqueous. And when used with a gradient, it eliminates the all-too-common issue of multiple compounds eluting near the column void time.

Length	2.1 mm ID cat.#	3.0 mm ID cat.#	4.6 mm ID cat.#
3 μm Columns			
30 mm	9178332	917833E	9178335
50 mm	9178352	917835E	9178355
100 mm	9178312	917831E	9178315
150 mm	9178362	917836E	9178365
5 μm Columns			
30 mm	9178532	917853E	9178535
50 mm	9178552	917855E	9178555
100 mm	9178512	917851E	9178515
150 mm	9178562	917856E	9178565
200 mm	9178522	917852E	9178525
250 mm	9178572	917857E	9178575



Labeled Pesticide Residue Internal Standards for Food Analysis

- Isotopically labeled to provide the best approach for pesticide residue quantification.
- Multiple options let you choose internal and surrogate standards that will mitigate matrix effects.
- Economically priced and compatible with both LC-MS and GC-MS applications; even helpful for optimizing LC-MS/MS system performance.
- Certified reference material (CRM) manufactured and QC-tested in Restek's ISO-accredited labs—satisfy your ISO requirements.

Compound	CAS #	Solvent	Conc.	cat.#
Atrazine-d5	163165-75-1	ACN	100	31984
Carbaryl-d7	362049-56-7	ACN	100	31985
Diazinon-d10 (diethyl-d10)	100155-47-3	ACN	100	31986
Dichlorvos-d6	203645-53-8	A	100	31987
Dimethoate-d6	1219794-81-6	ACN	100	31988
Diuron-d6	1007536-67-5	ACN	100	31989
Linuron-d6	330-55-2	ACN	100	31990

A = acetone; ACN = acetonitrile

Volume is 1 mL/ampul. Concentration is $\mu\text{g/mL}$.

Rxi®-5ms Columns (fused silica)

(low-polarity phase; Crossbond® diphenyl dimethyl polysiloxane)

- Tested and guaranteed for ultra-low bleed; improved signal-to-noise ratio for better sensitivity and mass spectral integrity.
- Temperature range: -60 °C to 330/350 °C.
- Equivalent to USP G27 and G36 phases.

ID	df	temp. limits	15-Meter cat.#	30-Meter cat.#	60-Meter cat.#
0.25 mm	0.25 µm	-60 to 330/350 °C	13420	13423	13426
	0.40 µm	-60 to 330/350 °C	—	13481	—
	0.50 µm	-60 to 330/350 °C	13435	13438	13441
	1.00 µm	-60 to 330/350 °C	13450	13453	13456
0.32 mm	0.25 µm	-60 to 330/350 °C	13421	13424	13427
	0.50 µm	-60 to 330/350 °C	13436	13439	13442
	1.00 µm	-60 to 330/350 °C	13451	13454	13457
0.53 mm	0.25 µm	-60 to 330/350 °C	13422	13425	—
	0.50 µm	-60 to 330/350 °C	13437	13440	—
	1.00 µm	-60 to 330/350 °C	13452	13455	—
	1.50 µm	-60 to 330/350 °C	13467	13470	—

ID	df	temp. limits	12-Meter cat.#	20-Meter cat.#	25-Meter cat.#	50-Meter cat.#
0.18 mm	0.18 µm	-60 to 330/350 °C	—	13402	—	—
	0.30 µm	-60 to 330/350 °C	—	13409	—	—
	0.36 µm	-60 to 330/350 °C	—	13411	—	—
0.20 mm	0.33 µm	-60 to 330/350 °C	13497	—	13498	13499



Protect your instrument and improve data quality

Checking for leaks and verifying flows before you start helps you avoid costly problems later.

Restek's New Leak Detector

Redesigned and better than ever, our new leak detector is an essential tool for troubleshooting and routine maintenance of your gas chromatograph.

Leak Detector Specifications

Detectable Gases:	Helium, nitrogen, argon, carbon dioxide, hydrogen
Battery:	Rechargeable lithium ion internal battery pack (12 hours normal operation)
Operating Temperature Range:	32–120 °F (0–48 °C)
Humidity Range:	0–97%
Warranty:	One year
Certifications:	CE, Ex, Japan
Compliance:	WEEE, RoHS



ProFLOW 6000 Flowmeter

With its wide range of capabilities, the ProFLOW 6000 flowmeter simplifies gas flow measurement in the lab.

Flowmeter Specifications:

Type of Flowmeter:	Volumetric
Battery:	2-AA
Operating Temp. Range:	32–120 °F (0–48 °C)
Warranty:	One year
Certifications:	CE, Ex
Compliance:	WEEE, RoHS

Patented

Description	qty.	cat.#
Dynamic Duo Combo Pack (Restek Leak Detector and ProFLOW 6000 Flowmeter)	kit	22654



QuEChERS Products Simplify Multiresidue Pesticide Analysis



QuEChERS Internal Standard Mix for GC-MS Analysis (6 components)

PCB 18 (37680-65-2), 50 µg/mL
 PCB 28 (7012-37-5), 50 µg/mL
 PCB 52 (35693-99-3), 50 µg/mL
 Triphenylmethane (519-73-3), 10 µg/mL
 Triphenylphosphate (115-86-6), 20 µg/mL
 Tris-(1,3-dichloroisopropyl)phosphate (13674-87-8), 50 µg/mL

In acetonitrile, 5 mL/ampul

cat.# 33267 (ea.)



Q-sep® QuEChERS Extraction Salts

Salt packets eliminate the need for a second empty tube to transfer salts.

Description	Material	Methods	qty.	cat.#
Q-sep QuEChERS Extraction Kit (Original)	4 g MgSO ₄ , 1 g NaCl with 50 mL Centrifuge Tube	original unbuffered	50 packets & 50 tubes	23991
Q-sep QuEChERS Extraction Salt Packets Only (Original)	4 g MgSO ₄ , 1 g NaCl	original unbuffered	50 packets	23992
Q-sep QuEChERS Extraction Kit (EN)	4 g MgSO ₄ , 1 g NaCl, 1 g TSCD, 0.5 g DHS with 50 mL Centrifuge Tube	European EN 15662	50 packets & 50 tubes	26235
Q-sep QuEChERS Extraction Salt Packets Only (EN)	4 g MgSO ₄ , 1 g NaCl, 1 g TSCD, 0.5 g DHS	European EN 15662	50 packets	26236
Q-sep QuEChERS Extraction Kit (AOAC)	6 g MgSO ₄ , 1.5 g NaOAc with 50 mL Centrifuge Tube	AOAC 2007.01	50 packets & 50 tubes	26237
Q-sep QuEChERS Extraction Salt Packets Only (AOAC)	6 g MgSO ₄ , 1.5 g NaOAc	AOAC 2007.01	50 packets	26238
Empty 50 mL Centrifuge Tube, Polypropylene			50-pk.	26239
Empty 50 mL Centrifuge Tube, FEP			2-pk.	23997

TSCD—trisodium citrate dihydrate, DHS—disodium hydrogen citrate sesquihydrate, NaOAc—sodium acetate

QuEChERS Performance Standards Kit

- Designed for use in all QuEChERS methods for pesticides in fruits and vegetables, including the original unbuffered method, AOAC 2007.01, and EN 15662.
- Kit contains organochlorine, organonitrogen, organophosphorus, and carbamate pesticides commonly used on fruits and vegetables.
- Volatile, polar, active, base-sensitive, and nonvolatile compounds are included to allow comprehensive evaluation of QuEChERS extraction and cleanup efficiencies, and optimization of GC and LC instrumental conditions.
- Ideal for initial method evaluations and ongoing method performance validations.

Contains 1 mL each of these mixtures.
 31153: QuEChERS Performance Standard A
 31154: QuEChERS Performance Standard B
 31155: QuEChERS Performance Standard C

300 µg/mL each in acetonitrile/acetic acid (99.9:0.1), 1 mL/ampul. Blend equal volumes of all three ampoules for a 100 µg/mL final solution.

cat.# 31152 (kit)

kit

Q-sep® QuEChERS dSPE Tubes for Extract Cleanup

Packaged in foil subpacks of 10 for enhanced protection and storage stability.

Description	Methods	qty.	cat.#
2 mL Micro-Centrifuge Tubes Prefilled with dSPE Materials for Cleanup (1 mL Extract)			
150 mg MgSO ₄ , 25 mg PSA	original unbuffered, mini-multiresidue, European EN 15662	100-pk.	26215
150 mg MgSO ₄ , 25 mg PSA, 25 mg C18	mini-multiresidue	100-pk.	26216
150 mg MgSO ₄ , 25 mg PSA, 2.5 mg GCB	mini-multiresidue, European EN 15662	100-pk.	26217
150 mg MgSO ₄ , 25 mg PSA, 7.5 mg GCB	mini-multiresidue, European EN 15662	100-pk.	26218
150 mg MgSO ₄ , 50 mg PSA	AOAC 2007.01	100-pk.	26124
150 mg MgSO ₄ , 50 mg PSA, 50 mg C18	AOAC 2007.01	100-pk.	26125
150 mg MgSO ₄ , 50 mg PSA, 50 mg GCB	AOAC 2007.01	100-pk.	26123
150 mg MgSO ₄ , 50 mg PSA, 50 mg C18, 50 mg GCB	AOAC 2007.01	100-pk.	26219
150 mg MgSO ₄ , 50 mg C18	NA	100-pk.	26242
150 mg MgSO ₄ , 50 mg PSA, 50 mg C18, 7.5 mg GCB	universal	100-pk.	26243
15 mL Centrifuge Tubes Prefilled with dSPE Materials for Cleanup (6 mL and 8 mL Extract)			
1,200 mg MgSO ₄ , 400 mg PSA	AOAC 2007.01	50-pk.	26220
1,200 mg MgSO ₄ , 400 mg PSA, 400 mg C18	AOAC 2007.01	50-pk.	26221
1,200 mg MgSO ₄ , 400 mg PSA, 400 mg C18, 400 mg GCB	AOAC 2007.01	50-pk.	26222
1,200 mg MgSO ₄ , 400 mg C18	similar to AOAC 2007.01	50-pk.	26244
900 mg MgSO ₄ , 150 mg PSA	original unbuffered, European EN 15662	50-pk.	26223
900 mg MgSO ₄ , 150 mg PSA, 15 mg GCB	European EN 15662	50-pk.	26224
900 mg MgSO ₄ , 150 mg PSA, 45 mg GCB	European EN 15662	50-pk.	26225
900 mg MgSO ₄ , 150 mg PSA, 150 mg C18	similar to European EN 15662	50-pk.	26226
900 mg MgSO ₄ , 300 mg PSA, 300 mg C18, 45 mg GCB	universal	50-pk.	26245
900 mg MgSO ₄ , 300 mg PSA, 150 mg GCB	NA	50-pk.	26126

PSA—primary and secondary amine, GCB—graphitized carbon black

Thomson SINGLE StEP® Filter Vials

Remove Particulates Quickly and Reliably

- Easy-to-use vials offer fast sample filtration and require only a squeeze of your fingers.
- Minimize sample loss by eliminating multiple transfers.
- Color-coded caps allow easy identification of 0.2 µm or 0.45 µm membranes in PVDF, PTFE, PES, or nylon.
- Rugged polypropylene vial houses insert with 450 µL loading capacity and low dead volume (120 µL).
- Fit most standard 12 x 32 mm autosamplers, including UHPLC instruments.



Simply squeeze particulates and contaminants out of your sample!

Thomson SINGLE StEP® Standard Filter Vials

- Recommended for samples containing less than 10% solid particulates.
- Pre-slit PTFE/silicone caps help eliminate broken autosampler needles and cored septa.



Porosity	Color	qty.	cat.#
Nylon			
0.2 µm	black pre-slit cap	100-pk.	25891
0.45 µm	pink pre-slit cap	100-pk.	25892
PES (polyethersulfone)			
0.2 µm	grey pre-slit cap	100-pk.	25897
PTFE (polytetrafluoroethylene)			
0.2 µm	green pre-slit cap	100-pk.	25893
0.45 µm	blue pre-slit cap	100-pk.	25894
PVDF (polyvinylidene difluoride)			
0.2 µm	red pre-slit cap	100-pk.	25895
0.45 µm	yellow pre-slit cap	100-pk.	25896

Patent No. 7,790,117

Thomson SINGLE StEP® Low Evaporation Filter Vials

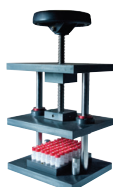
- Enhanced evaporation prevention technology ensures less than 0.4% evaporation over 24 hours.



Porosity	Color	qty.	cat.#
Nylon			
0.2 µm	black cap	100-pk.	25870
0.45 µm	purple cap	100-pk.	25871
PTFE (polytetrafluoroethylene)			
0.2 µm	green cap	100-pk.	25868
0.45 µm	blue cap	100-pk.	25872
PVDF (polyvinylidene difluoride)			
0.2 µm	red cap	100-pk.	25869
0.45 µm	yellow cap	100-pk.	25873

Accessories for Filter Vials

Description	qty.	cat.#
Toggle Press for eXtreme Filter Vials	ea.	25860
Filter Vial Press, Multi-Use: 8 Positions for 30 mL Filter Vials & 48 Position for Autosampler Ready Filter Vials	ea.	25861



Thomson SINGLE StEP® eXtreme Filter Vials

- Provide multilayer filtration for viscous samples and samples containing up to 30% solid particulates.
- Allow compounds to be separated from matrix, resulting in both higher signal-to-noise ratios and more differentiated peaks.
- Pre-slit PTFE/silicone caps help eliminate broken autosampler needles and cored septa.



Porosity	Color	qty.	cat.#
Nylon			
0.2 µm	black pre-slit cap	100-pk.	25878
0.45 µm	pink pre-slit cap	100-pk.	25879
PES (polyethersulfone)			
0.2 µm	grey pre-slit cap	100-pk.	25880
PTFE (polytetrafluoroethylene)			
0.2 µm	green pre-slit cap	100-pk.	25874
0.45 µm	blue pre-slit cap	100-pk.	25875
PVDF (polyvinylidene difluoride)			
0.2 µm	red pre-slit cap	100-pk.	25876
0.45 µm	yellow pre-slit cap	100-pk.	25877

Thomson SINGLE StEP® Nano Filter Vials

- Ultra-low dead volume allows you to filter as little as 10 µL of sample and still obtain enough filtrate to make a 2 µL injection.
- Available with either standard or pre-slit PTFE/silicone caps. Standard caps minimize evaporation and pre-slit caps help eliminate broken autosampler needles and cored septa.



Porosity	Color	qty.	cat.#
Nylon			
0.2 µm	black standard cap	100-pk.	25866
0.2 µm	black pre-slit cap	100-pk.	25886
PES (polyethersulfone)			
0.2 µm	grey standard cap	100-pk.	25867
0.2 µm	grey pre-slit cap	100-pk.	25887
PTFE (polytetrafluoroethylene)			
0.2 µm	green standard cap	100-pk.	25862
0.2 µm	green pre-slit cap	100-pk.	25882
0.45 µm	blue standard cap	100-pk.	25863
0.45 µm	blue pre-slit cap	100-pk.	25883
PVDF (polyvinylidene difluoride)			
0.2 µm	red standard cap	100-pk.	25864
0.2 µm	red pre-slit cap	100-pk.	25884
0.45 µm	yellow standard cap	100-pk.	25865
0.45 µm	yellow pre-slit cap	100-pk.	25885



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- **Established expertise.** We put our decades of experience in food safety analysis to work for you.
- **Best-in-class Restek® chromatography products**—GC and LC columns and consumables, certified reference materials, and sample preparation products.
- We're chemists too. We understand you need accurate results fast, and we are **committed to finding solutions** that work for you.

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