

Solubility

So



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Chemical pesticides have become an integral part of the agricultural toolbox, offering protection to crops from destructive pests. However, some unfortunate side effects of their use include potential leaching of these, oftentimes, harmful chemicals into the environment and their eventual presence in the human food chain. As a result, pesticide residue analysis has become a critical testing process for many different types of laboratories.

Unfortunately, pesticide residue testing is a long, expensive and complicated process, covering hundreds of different compounds, made even more daunting by the plethora of varying pesticide types that sometimes require different testing techniques for identification. Fortunately, as the leader in HPLC, GC, LC/MS and GC/MS pesticide CRMs, SPEX CertiPrep is happy to assist all of our customers with all of their pesticide CRM needs.

For your convenience we have designed a pesticide residue testing kit which includes 144 of the most commonly analyzed pesticides per EPA, AOAC, FDA and other international testing methods. The kit is structured to maximize stability and solubility while minimizing unwanted analyte interaction and interference; enjoy shorter calibration times, fewer injections and money savings, as compared to purchasing individual pesticide standards.

As a companion piece to this new product, we have assembled this solubility guide, which covers all 144 pesticides included in the kit (SPEX CertiPrep part number SPXPR-KIT). We hope that you will find this information helpful and use it in order to assist you with your sample preparation and analysis.

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SOLUBILITY

Solubility is defined as a chemical property referring to the ability of a given substance, the solute, to dissolve into a solvent. It is measured in terms of the maximum amount of solute dissolved in a solvent at equilibrium. The resulting solution is called a saturated solution.

The following pages show the solubility of pesticide kit compounds in some of the most popular solvents. Use the legend below as a guide for concentrations of those solvents.

NOTE: All values are a compilation of resources and reference lists that are available upon request.

The chart below shows the concentration ranges for the tables on the following pages.

Solubility as $\mu\text{g}/\text{mL}$ at 20°C	
≥ 1000	Excellent Solubility
< 1000	Good Solubility
< 500	Moderate Solubility
< 100	Low Solubility
< 10	Insoluble
N/D	No Data

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SPXPR-1

Pesticide Mix 1 containing 16 compounds

	Water	Acetone	Methanol	Acetonitrile	Ethyl Acetate	Methylene Chloride	n-Hexane
Water							
Acetone	Miscible						
Methanol	Miscible	Miscible					
Acetonitrile	Miscible	Miscible	Miscible				
Ethyl Acetate	Immiscible	Miscible	Miscible	Miscible			
Methylene Chloride	Immiscible	Miscible	Miscible	Miscible	Miscible		
n-Hexane	Immiscible	Miscible	Immiscible	Immiscible	Miscible	Miscible	
	Water	Acetone	Methanol	Acetonitrile	Ethyl Acetate	Methylene Chloride	n-Hexane
Molecular Weight (MW)	18.02	58.05	32.04	41.05	88.11	84.93	86.18
UV Cutoff (nm)	200	330	205	190	260	235	200
BP (°C @ 1 atm)	100.0	56.1	64.7	81.6	77.1	39.5	69.0
Polarity Index (Snyder)	9.0	5.1	5.1	5.8	4.4	3.1	0.0
Viscosity (cP)	1.00	0.32	0.60	0.37	0.45	0.44	0.33
Solubility in Water (% wt/wt)	100%	100%	100%	100%	9%	2%	0%

Compound	CAS #	MW	Class	Group	Molecular Formula	BP (°C @ 1 atm)	MP (°C @ 1 atm)	Density (g/cm ³ @ 20°C)	Color	Form	Solubility (µg/mL)						
											Water	Acetone	Methanol	Acetonitrile	Ethyl Acetate	Methylene Chloride	n-Hexane
Trifloxystrobin	141517-21-7	408.4	Fungicide	Strobilurin	C ₂₀ H ₁₉ F ₃ N ₂ O ₄	312 °C	73 °C	1.36	White	Powder Solid	< 10	≥ 1000	≥ 1000	≥ 1000*	≥ 1000	N/D	N/D
Boscalid	188425-85-6	343.2	Fungicide	Carboxamide	C ₁₈ H ₁₂ Cl ₂ N ₂ O	Decomposes	143 °C	1.38	White	Crystalline Solid	< 10	≥ 1000	≥ 1000	≥ 1000	≥ 1000*	≥ 1000	≥ 1000**
Fenoxycarb	79127-80-3	301.3	Insecticide	Carbamate	C ₁₇ H ₁₉ NO ₄	100 °C	54 °C	1.23	White	Flaky Powder or Crystalline Solid	< 10	≥ 1000	≥ 1000	≥ 1000*	≥ 1000*	≥ 1000**	≥ 1000
Piperonyl butoxide	51-03-6	338.4	Insecticide	Cyclic aromatic	C ₁₉ H ₃₀ O ₅	N/D	N/D	1.06	Yellow to Brown	Oily Liquid	< 100	≥ 1000	≥ 1000	≥ 1000	≥ 1000	≥ 1000	≥ 1000
Tebufenpyrad	119168-77-3	333.9	Acaricide	Pyrazolium	C ₁₈ H ₂₄ ClN ₃ O	Decomposes	65 °C	1.17	Colorless to Off-White	Crystalline Solid	< 10	≥ 1000	≥ 1000	≥ 1000*	≥ 1000*	≥ 1000	≥ 1000
Iprodione	36734-19-7	330.2	Fungicide	Dicarboximide	C ₁₃ H ₁₃ Cl ₂ N ₃ O ₃	164 °C	134 °C	1.51	Colorless to White	Crystalline Solid	< 10	≥ 1000	≥ 1000	≥ 1000	≥ 1000	≥ 1000	< 1000
Imidacloprid	138261-41-3	255.7	Insecticide	Neonicotinoid	C ₉ H ₁₀ ClN ₅ O ₂	Decomposes	144 °C	1.54	Colorless to Off-White	Crystalline Solid	< 1000	≥ 1000*	≥ 1000*	≥ 1000*	≥ 1000**	≥ 1000	< 100
Imazalil	35554-44-0	297.2	Fungicide	Imidazole	C ₁₄ H ₁₄ Cl ₂ N ₂ O	Decomposes	51 °C	1.35	Yellow to Brown	Solidified Oil	< 500	≥ 1000	≥ 1000	≥ 1000*	≥ 1000	≥ 1000	≥ 1000
Aldicarb	116-06-3	190.3	Acaricide	Carbamate	C ₇ H ₁₄ N ₂ O ₂ S	Decomposes	99 °C	1.20	Colorless to White	Crystalline Solid	≥ 1000	≥ 1000	≥ 1000*	≥ 1000*	≥ 1000**	≥ 1000	≥ 1000**
Aldicarb sulfoxide	1646-87-3	206.3	Metabolite	Carbamate	C ₇ H ₁₄ N ₂ O ₃ S	N/D	N/D	1.21	White	Powder Solid	≥ 1000	≥ 1000	≥ 1000	≥ 1000	N/D	N/D	N/D
Thiacloprid	111988-49-9	252.7	Insecticide	Neonicotinoid	C ₁₀ H ₉ ClN ₄ S	Decomposes	136 °C	1.46	Colorless to Off-White	Crystalline Solid	< 500	≥ 1000	≥ 1000*	≥ 1000*	≥ 1000	N/D	< 100
Azoxystrobin	131860-33-8	403.4	Fungicide	Strobilurin	C ₂₂ H ₁₇ N ₃ O ₅	360 °C	116 °C	1.34	White	Crystalline Solid	< 10	≥ 1000	≥ 1000	≥ 1000	≥ 1000	≥ 1000	< 100
Acetamiprid	135410-20-7	222.7	Insecticide	Neonicotinoid	C ₁₀ H ₁₁ ClN ₄	Decomposes	99 °C	1.33	White to Yellow	Crystalline or Waxy Solid	≥ 1000	≥ 1000	≥ 1000	≥ 1000	≥ 1000*	≥ 1000	< 10
Aldicarb sulfone	1646-88-4	222.3	Insecticide	Carbamate	C ₇ H ₁₄ N ₂ O ₄ S	N/D	141 °C	1.35	White	Crystalline Solid	≥ 1000	≥ 1000*	≥ 1000	≥ 1000	≥ 1000**	≥ 1000**	N/D
Pirimicarb	23103-98-2	238.3	Insecticide	Carbamate	C ₁₁ H ₁₈ N ₄ O ₂	N/D	92 °C	1.18	Colorless to White	Crystalline Solid	≥ 1000	≥ 1000	≥ 1000	≥ 1000	≥ 1000	≥ 1000**	N/D
Chlorantraniliprole	500008-45-7	483.1	Insecticide	Anthranilic diamide	C ₁₈ H ₁₄ BrCl ₂ N ₅ O ₂	Decomposes	209 °C	1.51	Off-White	Crystalline Solid or Powder	< 10	≥ 1000	≥ 1000	< 1000	≥ 1000	≥ 1000	N/D

* SPEX CertiPrep's data shows minimum solubility @ 1,000 µg/mL

** Minimum solubility based on similar cited solvents



SPXPR-2

Pesticide Mix 2 containing 15 compounds

	Water	Acetone	Methanol	Acetonitrile	Ethyl Acetate	Methylene Chloride	n-Hexane
Water							
Acetone	Miscible						
Methanol	Miscible	Miscible					
Acetonitrile	Miscible	Miscible	Miscible				
Ethyl Acetate	Immiscible	Miscible	Miscible	Miscible			
Methylene Chloride	Immiscible	Miscible	Miscible	Miscible	Miscible		
n-Hexane	Immiscible	Miscible	Immiscible	Immiscible	Miscible	Miscible	
	Water	Acetone	Methanol	Acetonitrile	Ethyl Acetate	Methylene Chloride	n-Hexane
Molecular Weight (MW)	18.02	58.05	32.04	41.05	88.11	84.93	86.18
UV Cutoff (nm)	200	330	205	190	260	235	200
BP (°C @ 1 atm)	100.0	56.1	64.7	81.6	77.1	39.5	69.0
Polarity Index (Snyder)	9.0	5.1	5.1	5.8	4.4	3.1	0.0
Viscosity (cP)	1.00	0.32	0.60	0.37	0.45	0.44	0.33
Solubility in Water (% wt/wt)	100%	100%	100%	100%	9%	2%	0%

Compound	CAS #	MW	Class	Group	Molecular Formula	BP (°C @ 1 atm)	MP (°C @ 1 atm)	Density (g/cm ³ @ 20°C)	Color	Form	Solubility (µg/mL)						
											Water	Acetone	Methanol	Acetonitrile	Ethyl Acetate	Methylene Chloride	n-Hexane
Azinphos-methyl	86-50-0	317.3	Acaricide	Organophosphate	C ₁₀ H ₁₂ N ₃ O ₃ PS ₂	Decomposes	73 °C	1.44	White to Brown	Crystalline or Waxy Solid	< 100	≥ 1000	≥ 1000	≥ 1000	≥ 1000	≥ 1000	N/D
Carbophenothion	786-19-6	342.9	Acaricide	Organophosphate	C ₁₁ H ₁₆ ClO ₂ PS ₃	N/D	N/D	1.27	Off-White to Amber	Liquid	< 10	≥ 1000	≥ 1000	≥ 1000*	≥ 1000*	≥ 1000**	≥ 1000*
Coumaphos	56-72-4	362.8	Insecticide, Rodenticide	Phosphorothioate	C ₁₄ H ₁₆ ClO ₃ PS	N/D	95 °C	1.41	Colorless	Crystalline Solid	< 10	≥ 1000	≥ 1000*	≥ 1000*	≥ 1000*	≥ 1000**	< 1000
Ethoprophos	13194-48-4	242.3	Nematicide	Organophosphate	C ₈ H ₁₉ O ₂ PS ₂	244 °C	70 °C	1.09 WC	Yellow	Oily Liquid	≥ 1000	≥ 1000	≥ 1000	≥ 1000*	≥ 1000	≥ 1000**	N/D
Dimethoate	60-51-5	229.2	Acaricide	Organophosphate	C ₅ H ₁₂ NO ₃ PS ₂	Decomposes	50.5 °C	1.31	White	Crystalline Solid	≥ 1000	≥ 1000*	≥ 1000	≥ 1000*	≥ 1000*	≥ 1000*	< 500
Dicrotophos	141-66-2	237.2	Acaricide	Organophosphate	C ₈ H ₁₆ NO ₃ P	N/D	N/D	1.22	Yellow to Brown	Liquid	≥ 1000	≥ 1000	≥ 1000	≥ 1000	≥ 1000*	≥ 1000	≥ 1000**
Terbufos	13071-79-9	288.4	Insecticide	Organophosphate	C ₉ H ₂₁ O ₂ PS ₃	N/D	-29 °C	1.11	Colorless to Yellow	Liquid	< 10	≥ 1000	≥ 1000	≥ 1000	≥ 1000*	≥ 1000*	≥ 1000*
Quinalphos	13593-03-8	298.3	Insecticide	Organophosphate	C ₁₂ H ₁₈ N ₂ O ₃ PS	N/D	31 °C	1.24	Red Brown	Liquid	< 100	≥ 1000*	≥ 1000*	≥ 1000*	≥ 1000*	≥ 1000**	≥ 1000
Triazophos	24017-47-8	313.3	Acaricide	Organophosphate	C ₁₂ H ₁₆ N ₃ O ₃ PS	Decomposes	2.5 °C	1.24	Yellow to Brown	Oily Liquid	< 100	≥ 1000	≥ 1000	≥ 1000	≥ 1000	≥ 1000	≥ 1000
Dyfonate	944-22-9	246.3	Insecticide	Organophosphate	C ₁₀ H ₁₅ OPS ₂	130 °C	30 °C	1.16	Colorless to Yellow	Liquid	< 100	≥ 1000	≥ 1000	≥ 1000*	≥ 1000*	≥ 1000*	≥ 1000*
Malathion	121-75-5	330.4	Acaricide	Organophosphate	C ₁₀ H ₁₉ O ₆ PS ₂	Decomposes	-20 °C	1.21 CRC	Colorless to Amber	Liquid	< 500	≥ 1000	≥ 1000	≥ 1000*	≥ 1000*	≥ 1000*	≥ 1000*
Phosmet	732-11-6	317.3	Insecticide	Organophosphate	C ₁₁ H ₁₂ NO ₄ PS ₂	Decomposes	71.8 °C	1.44	Off-White	Crystalline Solid	< 100	≥ 1000	≥ 1000	≥ 1000*	≥ 1000	≥ 1000*	≥ 1000*
Phosalone	2310-17-0	367.8	Acaricide	Organophosphate	C ₁₂ H ₁₅ ClNO ₄ PS ₂	Decomposes	49.6 °C	1.49	Colorless to White	Crystalline Solid	< 10	≥ 1000	≥ 1000	≥ 1000	≥ 1000	≥ 1000*	≥ 1000
Methidathion	950-37-8	302.3	Acaricide	Organophosphate	C ₆ H ₁₁ N ₂ O ₄ PS ₃	N/D	39.5 °C	1.51	Colorless	Crystalline Solid	< 500	≥ 1000	≥ 1000	≥ 1000*	≥ 1000*	≥ 1000*	≥ 1000
Hexythiazox	78587-05-0	352.9	Acaricide	Carboxamide	C ₁₇ H ₂₁ ClN ₂ O ₂ S	222 °C	105.4 °C	1.31	Colorless to Off-White	Crystalline Solid or Powder	< 10	≥ 1000	≥ 1000	≥ 1000	≥ 1000**	≥ 1000**	≥ 1000

* SPEX CertiPrep's data shows minimum solubility @ 1,000 µg/mL

** Minimum solubility based on similar cited solvents



SPXPR-3

Pesticide Mix 3 containing 15 compounds

	Water	Acetone	Methanol	Acetonitrile	Ethyl Acetate	Methylene Chloride	n-Hexane
Water							
Acetone	Miscible						
Methanol	Miscible	Miscible					
Acetonitrile	Miscible	Miscible	Miscible				
Ethyl Acetate	Immiscible	Miscible	Miscible	Miscible			
Methylene Chloride	Immiscible	Miscible	Miscible	Miscible	Miscible		
n-Hexane	Immiscible	Miscible	Immiscible	Immiscible	Miscible	Miscible	
	Water	Acetone	Methanol	Acetonitrile	Ethyl Acetate	Methylene Chloride	n-Hexane
Molecular Weight (MW)	18.02	58.05	32.04	41.05	88.11	84.93	86.18
UV Cutoff (nm)	200	330	205	190	260	235	200
BP (°C @ 1 atm)	100.0	56.1	64.7	81.6	77.1	39.5	69.0
Polarity Index (Snyder)	9.0	5.1	5.1	5.8	4.4	3.1	0.0
Viscosity (cP)	1.00	0.32	0.60	0.37	0.45	0.44	0.33
Solubility in Water (% wt/wt)	100%	100%	100%	100%	9%	2%	0%

Compound	CAS #	MW	Class	Group	Molecular Formula	BP (°C @ 1 atm)	MP (°C @ 1 atm)	Density (g/cm ³ @ 20°C)	Color	Form	Solubility (µg/mL)						
											Water	Acetone	Methanol	Acetonitrile	Ethyl Acetate	Methylene Chloride	n-Hexane
Propargite	2312-35-8	350.5	Acaricide	Sulphite ester	C ₁₉ H ₂₆ O ₄ S	Decomposes	N/D	1.11	Yellow to Brown	Crystalline or Waxy Solid	< 10	≥ 1000	≥ 1000	≥ 1000*	≥ 1000*	< 500	≥ 1000
Carbaryl	63-25-2	201.2	Insecticide	Carbamate	C ₁₂ H ₁₁ NO ₂	210 °C	138 °C	1.21	White or Grey	Crystalline Solid	< 100	≥ 1000*	≥ 1000	≥ 1000*	≥ 1000	≥ 1000*	N/D
Myclobutanil	88671-89-0	288.8	Fungicide	Triazole	C ₁₅ H ₁₇ ClN ₄	391 °C	71 °C	1.24	White to Yellow	Crystalline Solid	< 500	≥ 1000	≥ 1000	≥ 1000*	≥ 1000	N/D	N/D
Dimethomorph	110488-70-5	387.9	Fungicide	Morpholine	C ₂₁ H ₂₂ ClNO ₄	N/D	137 °C	1.32	Colorless or Grey	Crystalline Solid	< 100	≥ 1000	≥ 1000	≥ 1000*	≥ 1000	< 500	< 500
Etoxazole	153233-91-1	359.4	Insecticide	Diphenyl oxazoline	C ₂₁ H ₂₃ F ₂ NO ₂	N/D	102 °C	1.24	White	Crystalline Solid	< 10	≥ 1000	≥ 1000	≥ 1000	≥ 1000	N/D	≥ 1000
Spirodiclofen	148477-71-8	411.3	Acaricide	Tetronic acid	C ₂₁ H ₂₄ Cl ₂ O ₄	Decomposes	95 °C	1.29	White	Solid Powder	< 10	≥ 1000	≥ 1000	≥ 1000	≥ 1000	≥ 1000	N/D
Thiamethoxam	153719-23-4	291.7	Fungicide & Insecticide	Neonicotinoid	C ₈ H ₁₀ ClN ₃ O ₅ S	Decomposes	139 °C	1.57	Light Brown	Solid Powder	≥ 1000	≥ 1000	≥ 1000	≥ 1000*	≥ 1000	≥ 1000	< 10
Fonicamid	158062-67-0	229.2	Insecticide	Pyridine compound	C ₉ H ₆ F ₃ N ₃ O	Decomposes	157 °C	1.54	White to Off-White	Crystalline Solid	≥ 1000	≥ 1000	≥ 1000*	≥ 1000*	≥ 1000	≥ 1000	N/D
Etofenprox	80844-07-1	376.5	Insecticide	Pyrethroid	C ₂₅ H ₂₈ O ₃	Decomposes	37 °C	1.17	White	Crystalline Solid	< 10	≥ 1000	≥ 1000	≥ 1000*	≥ 1000	N/D	N/D
Phorate	298-02-2	260.4	Insecticide	Organophosphate	C ₇ H ₁₇ O ₂ PS ₃	75-78 °C	-15 °C	1.17	Colorless to Yellow	Liquid	< 100	≥ 1000	≥ 1000	≥ 1000*	≥ 1000*	≥ 1000*	≥ 1000*
Methamidophos	10265-92-6	141.1	Acaricide	Organophosphate	C ₂ H ₈ NO ₂ PS	Decomposes	45 °C	1.27	Colorless to Off-White	Crystalline Solid	≥ 1000	≥ 1000	≥ 1000*	≥ 1000*	≥ 1000*	≥ 1000	≥ 1000
Profenofos	41198-08-7	373.6	Insecticide	Organophosphate	C ₁₁ H ₁₃ BrClO ₃ PS	N/D	N/D	1.46	Yellow to Brown	Oily Liquid	< 100	≥ 1000	≥ 1000	≥ 1000*	≥ 1000*	N/D	≥ 1000*
Monocrotophos	6923-22-4	223.2	Acaricide	Organophosphate	C ₇ H ₁₄ NO ₅ P	125 °C	54 °C	1.22	Colorless to Red Brown	Crystalline Solid	≥ 1000	≥ 1000	≥ 1000	≥ 1000*	≥ 1000*	N/D	N/D
Phenthoate	2597-03-7	320.4	Acaricide	Organophosphate	C ₁₂ H ₁₇ O ₄ PS ₂	N/D	17 °C	1.23	Colorless	Crystalline Solid	< 10	≥ 1000	≥ 1000	≥ 1000*	≥ 1000*	≥ 1000	≥ 1000
Pirimiphos-methyl	29232-93-7	305.3	Acaricide	Organophosphate	C ₁₁ H ₂₀ N ₃ O ₃ PS	Decomposes	21 °C	1.17	Yellow	Liquid	< 10	≥ 1000	≥ 1000	≥ 1000*	≥ 1000	≥ 1000	N/D

* SPEX CertiPrep's data shows minimum solubility @ 1,000 µg/mL

** Minimum solubility based on similar cited solvents

SPXPR-4

Pesticide Mix 4 containing 15 compounds

	Water	Acetone	Methanol	Acetonitrile	Ethyl Acetate	Methylene Chloride	n-Hexane
Water							
Acetone	Miscible						
Methanol	Miscible	Miscible					
Acetonitrile	Miscible	Miscible	Miscible				
Ethyl Acetate	Immiscible	Miscible	Miscible	Miscible			
Methylene Chloride	Immiscible	Miscible	Miscible	Miscible	Miscible		
n-Hexane	Immiscible	Miscible	Immiscible	Immiscible	Miscible	Miscible	
	Water	Acetone	Methanol	Acetonitrile	Ethyl Acetate	Methylene Chloride	n-Hexane
Molecular Weight (MW)	18.02	58.05	32.04	41.05	88.11	84.93	86.18
UV Cutoff (nm)	200	330	205	190	260	235	200
BP (°C @ 1 atm)	100.0	56.1	64.7	81.6	77.1	39.5	69.0
Polarity Index (Snyder)	9.0	5.1	5.1	5.8	4.4	3.1	0.0
Viscosity (cP)	1.00	0.32	0.60	0.37	0.45	0.44	0.33
Solubility in Water (% wt/wt)	100%	100%	100%	100%	9%	2%	0%

Compound	CAS #	MW	Class	Group	Molecular Formula	BP (°C @ 1 atm)	MP (°C @ 1 atm)	Density (g/cm ³ @ 20°C)	Color	Form	Solubility (µg/mL)						
											Water	Acetone	Methanol	Acetonitrile	Ethyl Acetate	Methylene Chloride	n-Hexane
Epn	2104-64-5	323.3	Acaricide	Organophosphate	C ₁₄ H ₁₄ NO ₄ PS	N/D	34.5 °C	1.27	Yellow	Crystalline or Waxy Solid	< 10	≥ 1000	≥ 1000	≥ 1000*	≥ 1000*	≥ 1000**	≥ 1000*
Dichlorvos	62-73-7	221.0	Acaricide	Organophosphate	C ₄ H ₇ Cl ₂ O ₄ P	Decomposes	N/D	1.42	Colorless to Amber	Liquid	≥ 1000	≥ 1000	≥ 1000	≥ 1000*	≥ 1000*	≥ 1000	≥ 1000
Edifenphos	17109-49-8	310.4	Fungicide	Organophosphate	C ₁₄ H ₁₅ O ₂ PS ₂	154 °C	-25 °C	1.25	Yellow to Brown	Liquid	< 100	≥ 1000	≥ 1000	≥ 1000*	≥ 1000*	≥ 1000	≥ 1000
Ethion	563-12-2	384.5	Acaricide	Organophosphate	C ₉ H ₂₂ O ₄ P ₂ S ₄	165 °C	-12 °C	1.22	Colorless to Amber	Liquid	< 10	≥ 1000	≥ 1000	≥ 1000*	≥ 1000*	≥ 1000*	≥ 1000*
Fenitrothion	122-14-5	277.2	Acaricide	Organophosphate	C ₉ H ₁₂ NO ₃ PS	Decomposes	3 °C	1.33	Yellow to Brown	Liquid	< 100	≥ 1000	≥ 1000	≥ 1000*	≥ 1000	≥ 1000	≥ 1000
Parathion	56-38-2	291.3	Insecticide	Organophosphate	C ₁₀ H ₁₄ NO ₃ PS	375 °C	6.1 °C	1.26	Yellow to Brown	Liquid	< 10	≥ 1000	≥ 1000	≥ 1000*	≥ 1000*	≥ 1000	≥ 1000
Methyl parathion	298-00-0	263.2	Insecticide	Organophosphate	C ₈ H ₁₀ NO ₃ PS	N/D	35 °C	1.36	Colorless to White	Crystalline Solid	< 100	≥ 1000	≥ 1000	≥ 1000*	≥ 1000*	≥ 1000	≥ 1000
Acephate	30560-19-1	183.2	Insecticide	Organophosphate	C ₄ H ₁₀ NO ₃ PS	Decomposes	89 °C	1.35	Colorless to White	Crystalline Solid	≥ 1000	≥ 1000	≥ 1000	≥ 1000*	≥ 1000	≥ 1000**	< 100
Disulfoton	298-04-4	274.4	Insecticide	Organophosphate	C ₈ H ₉ O ₂ PS ₃	128 °C	-25 °C	1.14	Colorless to Yellow	Oily Liquid	< 100	≥ 1000*	≥ 1000	≥ 1000*	≥ 1000*	≥ 1000	≥ 1000
Fenthion	55-38-9	278.3	Insecticide	Organophosphate	C ₁₀ H ₁₅ O ₃ PS ₂	90°C	7 °C	1.25	Colorless to Amber	Oily Liquid	< 10	≥ 1000	≥ 1000	≥ 1000*	≥ 1000*	≥ 1000	≥ 1000
Diazinon	333-41-5	304.3	Acaricide	Organophosphate	C ₁₂ H ₂₁ N ₂ O ₃ PS	Decomposes	N/D	1.11	Colorless to Amber	Oily Liquid	< 100	≥ 1000	≥ 1000	≥ 1000*	≥ 1000	≥ 1000	≥ 1000
Chlorpyrifos	2921-88-2	350.6	Acaricide	Organophosphate	C ₉ H ₁₁ Cl ₃ NO ₃ PS	Decomposes	41 °C	1.43	Colorless to Amber	Crystalline Solid	< 10	≥ 1000	≥ 1000	≥ 1000*	≥ 1000	≥ 1000	≥ 1000
Fipronil	120068-37-3	437.1	Insecticide	Phenylpyrazole	C ₁₂ H ₄ Cl ₂ F ₆ N ₄ OS	Decomposes	203 °C	1.71	White	Solid Powder	< 10	≥ 1000	≥ 1000	≥ 1000*	≥ 1000*	≥ 1000	< 100
Fludioxonil	131341-86-1	248.2	Fungicide	Phenylpyrazole	C ₁₂ H ₁₆ F ₂ N ₂ O ₂	Decomposes	200 °C	1.54	Colorless to Yellow	Crystalline Solid	< 10	≥ 1000	≥ 1000	≥ 1000*	≥ 1000*	≥ 1000**	< 100
Chlorothalonil	1897-45-6	265.9	Fungicide	Chloronitrile	C ₈ Cl ₄ N ₂	350 °C	252 °C	1.74	Colorless to White	Crystalline Solid	< 10	≥ 1000	≥ 1000	≥ 1000*	≥ 1000	≥ 1000*	≥ 1000*

* SPEX CertiPrep's data shows minimum solubility @ 1,000 µg/mL

** Minimum solubility based on similar cited solvents



SPXPR-5

Pesticide Mix 5 containing 14 compounds

	Water	Acetone	Methanol	Acetonitrile	Ethyl Acetate	Methylene Chloride	n-Hexane
Water							
Acetone	Miscible						
Methanol	Miscible	Miscible					
Acetonitrile	Miscible	Miscible	Miscible				
Ethyl Acetate	Immiscible	Miscible	Miscible	Miscible			
Methylene Chloride	Immiscible	Miscible	Miscible	Miscible	Miscible		
n-Hexane	Immiscible	Miscible	Immiscible	Immiscible	Miscible	Miscible	
	Water	Acetone	Methanol	Acetonitrile	Ethyl Acetate	Methylene Chloride	n-Hexane
Molecular Weight (MW)	18.02	58.05	32.04	41.05	88.11	84.93	86.18
UV Cutoff (nm)	200	330	205	190	260	235	200
BP (°C @ 1 atm)	100.0	56.1	64.7	81.6	77.1	39.5	69.0
Polarity Index (Snyder)	9.0	5.1	5.1	5.8	4.4	3.1	0.0
Viscosity (cP)	1.00	0.32	0.60	0.37	0.45	0.44	0.33
Solubility in Water (% wt/wt)	100%	100%	100%	100%	9%	2%	0%

Compound	CAS #	MW	Class	Group	Molecular Formula	BP (°C @ 1 atm)	MP (°C @ 1 atm)	Density (g/cm ³ @ 20°C)	Color	Form	Solubility (µg/mL)						
											Water	Acetone	Methanol	Acetonitrile	Ethyl Acetate	Methylene Chloride	n-Hexane
Baygon	114-26-1	209.2	Insecticide	Carbamate	C ₁₁ H ₁₅ NO ₃	Decomposes	90 °C	1.18	White to Tan	Crystalline or Waxy Solid	≥ 1000	≥ 1000	≥ 1000	≥ 1000*	≥ 1000*	≥ 1000	≥ 1000
Metalaxyl	57837-19-1	279.3	Fungicide	Phenylamide	C ₁₅ H ₂₁ NO ₄	296 °C	72 °C	1.20	Colorless to White	Crystalline Solid	≥ 1000	≥ 1000	≥ 1000	≥ 1000*	≥ 1000**	≥ 1000**	≥ 1000
Methomyl	16752-77-5	162.2	Insecticide	Carbamate	C ₅ H ₁₀ N ₂ O ₂ S	Decomposes	80 °C	1.32	White	Crystalline Solid	≥ 1000	≥ 1000	≥ 1000	≥ 1000*	≥ 1000*	≥ 1000**	N/D
Pymetrozine	123312-89-0	217.2	Insecticide	Pyridine	C ₁₀ H ₁₁ N ₃ O	Decomposes	Decomposes	1.37	Colorless to Tan	Crystalline Solid	< 500	≥ 1000	≥ 1000	≥ 1000*	< 500	≥ 1000	< 10
Pyraclostrobin	175013-18-0	387.8	Fungicide	Strobilurin	C ₁₉ H ₁₈ ClN ₃ O ₄	Decomposes	64 °C	1.37	White to Tan	Crystalline Solid	< 10	≥ 1000	≥ 1000	≥ 1000*	≥ 1000	≥ 1000	< 500
Oxamyl	23135-22-0	219.3	Insecticide	Carbamate	C ₇ H ₁₃ N ₃ O ₃ S	Decomposes	99 °C	1.31	Colorless to White	Crystalline Solid	≥ 1000	≥ 1000	≥ 1000	≥ 1000*	≥ 1000**	≥ 1000**	≥ 1000**
Paclobutrazol	76738-62-0	293.8	Herbicide & Fungicide	Triazole	C ₁₅ H ₂₀ ClN ₃ O	384 °C	164 °C	1.23	White to Tan	Solid Powder or Crystal	< 100	≥ 1000	≥ 1000	≥ 1000*	≥ 1000*	≥ 1000	≥ 1000
Prochloraz	67747-09-5	376.7	Fungicide	Imidazole	C ₁₅ H ₁₆ Cl ₃ N ₃ O ₂	Decomposes	48 °C	1.42	Colorless to Yellow	Liquid or Crystal	< 100	≥ 1000	≥ 1000	≥ 1000*	≥ 1000	≥ 1000	≥ 1000
Clofentezine	74115-24-5	303.1	Miticide	Tetrazine	C ₁₄ H ₈ Cl ₂ N ₄	Decomposes	183 °C	1.52	Red	Crystalline Solid	< 10	≥ 1000	< 1000	≥ 1000*	≥ 1000	≥ 1000	< 1000
Diuron	330-54-1	233.1	Herbicide	Phenylurea	C ₉ H ₁₀ Cl ₂ N ₂ O	Decomposes	157 °C	1.48	White to Off-White	Crystalline Solid	< 100	≥ 1000	≥ 1000	≥ 1000*	≥ 1000	≥ 1000*	N/D
Linuron	330-55-2	249.1	Herbicide	Urea	C ₉ H ₁₀ Cl ₂ N ₂ O ₂	Decomposes	93 °C	1.49	White	Crystalline Solid	< 100	≥ 1000	≥ 1000	≥ 1000*	≥ 1000	≥ 1000*	N/D
Isoproturon	34123-59-6	206.3	Herbicide	Urea	C ₁₂ H ₁₈ N ₂ O	Decomposes	157 °C	1.17	Colorless to White	Crystalline Solid	< 100	≥ 1000	≥ 1000	≥ 1000*	≥ 1000**	≥ 1000	< 500
Pencycuron	66063-05-6	328.8	Fungicide	Phenylurea	C ₁₉ H ₂₁ ClN ₂ O	286 °C	132 °C	1.22	Colorless to White	Crystalline Solid	< 10	≥ 1000	≥ 1000	≥ 1000*	≥ 1000	≥ 1000	< 1000
Oxydemeton-methyl	301-12-2	246.3	Acaricide	Organophosphate	C ₆ H ₁₅ O ₄ PS ₂	Decomposes	-49 °C	1.29	Colorless to Yellow	Oily Liquid	≥ 1000	≥ 1000	≥ 1000*	≥ 1000*	≥ 1000*	≥ 1000**	< 100

* SPEX CertiPrep's data shows minimum solubility @ 1,000 µg/mL

** Minimum solubility based on similar cited solvents



SPXPR-6

Pesticide Mix 6 containing 15 compounds

	Water	Acetone	Methanol	Acetonitrile	Ethyl Acetate	Methylene Chloride	n-Hexane
Water							
Acetone	Miscible						
Methanol	Miscible	Miscible					
Acetonitrile	Miscible	Miscible	Miscible				
Ethyl Acetate	Immiscible	Miscible	Miscible	Miscible			
Methylene Chloride	Immiscible	Miscible	Miscible	Miscible	Miscible		
n-Hexane	Immiscible	Miscible	Immiscible	Immiscible	Miscible	Miscible	
	Water	Acetone	Methanol	Acetonitrile	Ethyl Acetate	Methylene Chloride	n-Hexane
Molecular Weight (MW)	18.02	58.05	32.04	41.05	88.11	84.93	86.18
UV Cutoff (nm)	200	330	205	190	260	235	200
BP (°C @ 1 atm)	100.0	56.1	64.7	81.6	77.1	39.5	69.0
Polarity Index (Snyder)	9.0	5.1	5.1	5.8	4.4	3.1	0.0
Viscosity (cP)	1.00	0.32	0.60	0.37	0.45	0.44	0.33
Solubility in Water (% wt/wt)	100%	100%	100%	100%	9%	2%	0%

Compound	CAS #	MW	Class	Group	Molecular Formula	BP (°C @ 1 atm)	MP (°C @ 1 atm)	Density (g/cm ³ @ 20°C)	Color	Form	Solubility (µg/mL)						
											Water	Acetone	Methanol	Acetonitrile	Ethyl Acetate	Methylene Chloride	n-Hexane
Fenvalerete	51630-58-1	419.9	Insecticide	Pyrethroid	C ₂₅ H ₂₂ ClNO ₃	Decomposes	39 °C	1.18	Yellow to Brown	Crystalline or Waxy Solid	< 10	≥ 1000	≥ 1000	≥ 1000*	≥ 1000*	≥ 1000**	≥ 1000
Pyridaben	96489-71-3	364.9	Acaricide	Pyridazinone	C ₁₉ H ₂₅ ClN ₂ OS	Decomposes	109 °C	1.20	Colorless to White	Crystalline Solid	< 10	≥ 1000	≥ 1000	≥ 1000*	≥ 1000*	≥ 1000**	≥ 1000
tau-Fluvalinate	102851-06-9	502.9	Insecticide	Synthetic pyrethroid	C ₂₆ H ₂₂ ClF ₃ N ₂ O ₃	Decomposes	-14 °C	1.27	Colorless to Yellow	Oily Liquid	< 10	≥ 1000	≥ 1000	≥ 1000*	≥ 1000*	≥ 1000**	≥ 1000
Quinoxifen	124495-18-7	308.1	Fungicide	Quinoline	C ₁₅ H ₈ Cl ₂ FNO	N/D	103 °C	1.56	Off-White	Solid	< 10	≥ 1000	≥ 1000	≥ 1000*	≥ 1000*	≥ 1000**	≥ 1000
Alachlor	15972-60-8	269.8	Herbicide	Chloroacetamide	C ₁₄ H ₂₀ ClNO ₂	N/D	41 °C	1.13	Colorless to Yellow	Crystalline Solid	< 500	≥ 1000	≥ 1000	≥ 1000*	≥ 1000	≥ 1000*	≥ 1000*
Pendimethalin	40487-42-1	281.3	Herbicide	Dinitroaniline	C ₁₃ H ₁₉ N ₃ O ₄	246 °C	56 °C	1.17	Yellow to Orange	Crystalline Solid	< 10	≥ 1000	≥ 1000	≥ 1000*	≥ 1000*	≥ 1000	≥ 1000
Kresoxim-methyl	143390-89-0	313.3	Fungicide	Strobilurin	C ₁₈ H ₁₉ NO ₄	Decomposes	102 °C	1.26	White to Off-White	Crystalline Solid	< 10	≥ 1000	≥ 1000	≥ 1000*	≥ 1000	≥ 1000**	≥ 1000**
Chlorpropham	101-21-3	213.7	Herbicide	Carbamate	C ₁₀ H ₁₂ ClNO ₂	256 °C	36 °C	1.18	White to Brown	Crystalline Solid	< 500	≥ 1000	≥ 1000	≥ 1000*	≥ 1000*	≥ 1000	≥ 1000**
Epoxiconazole	133855-98-8	329.8	Fungicide	Triazole	C ₁₇ H ₁₃ ClFN ₃ O	Decomposes	137 °C	1.38	Colorless to White	Crystalline Solid	< 10	≥ 1000	≥ 1000	≥ 1000*	≥ 1000	≥ 1000**	N/D
Fenpropathrin	39515-41-8	349.4	Acaricide	Pyrethroid	C ₂₂ H ₂₃ NO ₃	N/D	47 °C	1.15	Yellow to Brown	Oily Liquid	< 10	≥ 1000*	≥ 1000	≥ 1000*	≥ 1000	≥ 1000**	≥ 1000
Fenoprop	93-72-1	269.5	Herbicide	Phenoxipropionic acid	C ₉ H ₇ Cl ₃ O ₃	N/D	180 °C	1.21	Colorless to White	Solid Powder	< 100	≥ 1000	≥ 1000	≥ 1000*	≥ 1000*	≥ 1000*	N/D
Bentazone	25057-89-0	240.3	Herbicide	Benzothiazinone	C ₁₀ H ₁₂ N ₂ O ₃ S	Decomposes	139 °C	1.41	Colorless to Yellow	Crystalline Solid	< 1000	≥ 1000	≥ 1000	≥ 1000*	≥ 1000	≥ 1000*	N/D
Metolachlor	51218-45-2	283.8	Herbicide	Chloroacetamide	C ₁₅ H ₂₂ ClNO ₂	N/D	-62 °C	1.21	Colorless to Off-White	Liquid	< 1000	≥ 1000	≥ 1000	≥ 1000*	≥ 1000*	≥ 1000	≥ 1000
Quintozene	82-68-8	295.3	Fungicide	Chlorophenyl	C ₆ Cl ₅ NO ₂	328 °C	143 °C	1.72	Yellow	Crystalline Solid	< 10	≥ 1000*	≥ 1000	≥ 1000*	≥ 1000*	≥ 1000*	≥ 1000*
Captan	133-06-2	301.0	Fungicide	Phthalimide	C ₉ H ₈ Cl ₃ NO ₂ S	Decomposes	174 °C	1.68	Colorless to Off-White	Crystalline Solid	< 10	≥ 1000	≥ 1000	≥ 1000*	≥ 1000*	≥ 1000*	< 100

* SPEX CertiPrep's data shows minimum solubility @ 1,000 µg/mL

** Minimum solubility based on similar cited solvents



SPXPR-7

Pesticide Mix 7 containing 8 compounds

	Water	Acetone	Methanol	Acetonitrile	Ethyl Acetate	Methylene Chloride	n-Hexane
Water							
Acetone	Miscible						
Methanol	Miscible	Miscible					
Acetonitrile	Miscible	Miscible	Miscible				
Ethyl Acetate	Immiscible	Miscible	Miscible	Miscible			
Methylene Chloride	Immiscible	Miscible	Miscible	Miscible	Miscible		
n-Hexane	Immiscible	Miscible	Immiscible	Immiscible	Miscible	Miscible	
	Water	Acetone	Methanol	Acetonitrile	Ethyl Acetate	Methylene Chloride	n-Hexane
Molecular Weight (MW)	18.02	58.05	32.04	41.05	88.11	84.93	86.18
UV Cutoff (nm)	200	330	205	190	260	235	200
BP (°C @ 1 atm)	100.0	56.1	64.7	81.6	77.1	39.5	69.0
Polarity Index (Snyder)	9.0	5.1	5.1	5.8	4.4	3.1	0.0
Viscosity (cP)	1.00	0.32	0.60	0.37	0.45	0.44	0.33
Solubility in Water (% wt/wt)	100%	100%	100%	100%	9%	2%	0%

Compound	CAS #	MW	Class	Group	Molecular Formula	BP (°C @ 1 atm)	MP (°C @ 1 atm)	Density (g/cm ³ @ 20°C)	Color	Form	Solubility (µg/mL)						
											Water	Acetone	Methanol	Acetonitrile	Ethyl Acetate	Methylene Chloride	n-Hexane
Cypermethrin	52315-07-8	416.3	Insecticide	Pyrethroid	C ₂₂ H ₁₉ Cl ₂ NO ₃	Decomposes	41 °C	1.25	Yellow	Crystalline or Waxy Solid	< 10	≥ 1000	≥ 1000	≥ 1000*	≥ 1000	≥ 1000	≥ 1000
Cyfluthrin	68359-37-5	434.3	Insecticide	Pyrethroid	C ₂₂ H ₁₈ Cl ₂ FNO ₃	Decomposes	79 °C	1.28	Yellow to Brown	Semi-Solid or Liquid	< 10	≥ 1000*	≥ 1000*	≥ 1000*	≥ 1000*	≥ 1000	≥ 1000
Bifenthrin	82657-04-3	422.9	Insecticide	Pyrethroid	C ₂₃ H ₂₂ ClF ₃ O ₂	Decomposes	80 °C	1.26	Off-White to Brown	Semi-Solid or Liquid	< 10	≥ 1000	≥ 1000	≥ 1000*	≥ 1000*	≥ 1000	≥ 1000*
Tetramethrin	7696-12-0	331.4	Insecticide	Pyrethroid	C ₁₉ H ₂₅ NO ₄	N/D	69 °C	1.11	Colorless	Crystalline Solid	< 10	≥ 1000	≥ 1000	≥ 1000*	≥ 1000*	≥ 1000**	≥ 1000
Prallethrin (mix of isomers)	23031-36-9	300.4	Insecticide	Pyrethroid	C ₁₉ H ₂₄ O ₃	313 °C	-25 °C	1.03	Yellow to Brown	Oily Liquid	< 10	≥ 1000**	≥ 1000	≥ 1000*	≥ 1000*	N/D	≥ 1000
Permethrin (mix of isomers)	52645-53-1	391.3	Insecticide	Pyrethroid	C ₂₁ H ₂₀ Cl ₂ O ₃	200 °C	34 °C	1.29	Colorless to Brown	Oily Liquid or Crystals	< 10	≥ 1000	≥ 1000	≥ 1000*	≥ 1000*	≥ 1000*	≥ 1000
Resmethrin (mix of isomers)	10453-86-8	338.4	Insecticide	Pyrethroid	C ₂₂ H ₂₆ O ₃	Decomposes	56 °C	0.96	Colorless to Tan	Oily Liquid or Crystals	< 10	≥ 1000	≥ 1000	≥ 1000*	≥ 1000*	≥ 1000	N/D
Pyrethrin (mix of isomers)	8003-34-7	328.4	Insecticide	Pyrethroid	C ₂₁ H ₂₈ O ₃	N/D	142 °C	0.85	Yellow to Brown	Oily Liquid	< 10	≥ 1000	≥ 1000*	≥ 1000*	≥ 1000*	≥ 1000**	≥ 1000**

* SPEX CertiPrep's data shows minimum solubility @ 1,000 µg/mL

** Minimum solubility based on similar cited solvents



SPXPR-8

Pesticide Mix 8 containing 15 compounds

	Water	Acetone	Methanol	Acetonitrile	Ethyl Acetate	Methylene Chloride	n-Hexane
Water							
Acetone	Miscible						
Methanol	Miscible	Miscible					
Acetonitrile	Miscible	Miscible	Miscible				
Ethyl Acetate	Immiscible	Miscible	Miscible	Miscible			
Methylene Chloride	Immiscible	Miscible	Miscible	Miscible	Miscible		
n-Hexane	Immiscible	Miscible	Immiscible	Immiscible	Miscible	Miscible	
	Water	Acetone	Methanol	Acetonitrile	Ethyl Acetate	Methylene Chloride	n-Hexane
Molecular Weight (MW)	18.02	58.05	32.04	41.05	88.11	84.93	86.18
UV Cutoff (nm)	200	330	205	190	260	235	200
BP (°C @ 1 atm)	100.0	56.1	64.7	81.6	77.1	39.5	69.0
Polarity Index (Snyder)	9.0	5.1	5.1	5.8	4.4	3.1	0.0
Viscosity (cP)	1.00	0.32	0.60	0.37	0.45	0.44	0.33
Solubility in Water (% wt/wt)	100%	100%	100%	100%	9%	2%	0%

Compound	CAS #	MW	Class	Group	Molecular Formula	BP (°C @ 1 atm)	MP (°C @ 1 atm)	Density (g/cm ³ @ 20°C)	Color	Form	Solubility (µg/mL)						
											Water	Acetone	Methanol	Acetonitrile	Ethyl Acetate	Methylene Chloride	n-Hexane
Hexaconazole	79983-71-4	314.2	Fungicide	Triazole	C ₁₄ H ₁₇ Cl ₂ N ₃ O	N/D	111 °C	1.29	White	Crystalline or Waxy Solid	< 100	≥ 1000	≥ 1000	≥ 1000*	≥ 1000	≥ 1000	< 1000
Tebuconazole	107534-96-3	307.8	Fungicide	Triazole	C ₁₆ H ₂₂ ClN ₃ O	Decomposes	105 °C	1.25	Colorless	Crystalline Solid	< 100	≥ 1000*	≥ 1000	≥ 1000*	≥ 1000*	≥ 1000	< 100
Propiconazole	60207-90-1	342.2	Fungicide	Triazole	C ₁₅ H ₁₇ Cl ₂ N ₃ O ₂	Decomposes	-23 °C	1.09	Colorless to Yellow	Oily Liquid	< 100	≥ 1000	≥ 1000	≥ 1000*	≥ 1000*	≥ 1000*	≥ 1000
Bifenazate	149877-41-8	300.4	Acaricide	Hydrazine carboxylate	C ₁₇ H ₂₀ N ₂ O ₃	Decomposes	122 °C	1.31	White to Tan	Crystalline Solid	< 10	≥ 1000	≥ 1000	≥ 1000*	≥ 1000	≥ 1000**	N/D
Spiromesifen	283594-90-1	370.5	Acaricide	Tetronic acid	C ₂₃ H ₃₀ O ₄	Decomposes	98 °C	1.13	Colorless to White	Crystalline Solid	< 10	≥ 1000	≥ 1000	≥ 1000*	≥ 1000	≥ 1000	≥ 1000**
Spinetoram (J)	187166-40-1	748.0	Insecticide	Spinosyn	C ₄₂ H ₆₉ NO ₁₀	Decomposes	107 °C	N/D	Off-White	Solid	< 100	≥ 1000	≥ 1000	≥ 1000*	N/D	N/D	≥ 1000**
Abamectin (mix of isomers)	71751-41-2	B1a: 872 B1b: 858	Insecticide	Macrocyclic lactone	C ₄₈ H ₇₂ O ₁₄ (B1a) & C ₄₇ H ₇₀ O ₁₄ (B1b)	N/D	157 °C	1.16	White to Yellow	Crystalline Solid	< 10	≥ 1000	≥ 1000	≥ 1000*	N/D	N/D	N/D
Fenobucarb (BPMC)	3766-81-2	207.3	Insecticide	Carbamate	C12H17NO2	Decomposes	31 °C	1.04	Yellow	Oily Liquid	< 1000	≥ 1000	≥ 1000	≥ 1000*	≥ 1000	≥ 1000	≥ 1000
Methiocarb	2032-65-7	225.3	Insecticide	Carbamate	C11H15NO2S	311 °C	118 °C	1.25	Colorless to White	Crystalline Solid	< 100	≥ 1000	≥ 1000	≥ 1000*	≥ 1000	≥ 1000	≥ 1000
Propazine	139-40-2	229.7	Herbicide	Triazine	C9H16ClN5	N/D	213 °C	1.16	Colorless to White	Crystalline Solid	< 10	≥ 1000	≥ 1000*	≥ 1000*	≥ 1000*	≥ 1000*	≥ 1000*
Isoprocarb (MIPC)	2631-40-5	193.2	Insecticide	Carbamate	C11H15NO2	N/D	92 °C	1.04	Colorless	Crystalline Solid	< 500	≥ 1000	≥ 1000	≥ 1000*	≥ 1000	≥ 1000**	≥ 1000
Spirotetramat	203313-25-1	373.4	Insecticide	Tetramic acid	C21H27NO5	Decomposes	142 °C	1.22	Off-White to Tan	Powder	< 100	≥ 1000	≥ 1000	≥ 1000*	≥ 1000	≥ 1000	< 100
Fenpyroximate (mix of isomers)	111812-58-9	421.5	Acaricide	Pyrazolium	C24H27N3O4	Decomposes	100 °C	1.25	White	Crystalline Solid	< 10	≥ 1000	≥ 1000	≥ 1000*	≥ 1000	≥ 1000**	≥ 1000
Spinosad (as Spinosyn A)	131929-60-7	732.0	Insecticide	Spinosyn	C41H65NO10	N/D	92 °C	0.51	White to Grey	Crystalline Solid	< 500	≥ 1000	≥ 1000	≥ 1000*	≥ 1000	≥ 1000**	≥ 1000
Bromacil	314-40-9	261.1	Herbicide	Uracil	C9H13BrN2O2	Decomposes	158 °C	1.59	Colorless to White	Crystalline Solid	< 1000	≥ 1000	≥ 1000	≥ 1000*	≥ 1000*	≥ 1000	< 500

* SPEX CertiPrep's data shows minimum solubility @ 1,000 µg/mL

** Minimum solubility based on similar cited solvents



SPXPR-9

Pesticide Mix 9 containing 16 compounds

	Water	Acetone	Methanol	Acetonitrile	Ethyl Acetate	Methylene Chloride	n-Hexane
Water							
Acetone	Miscible						
Methanol	Miscible	Miscible					
Acetonitrile	Miscible	Miscible	Miscible				
Ethyl Acetate	Immiscible	Miscible	Miscible	Miscible			
Methylene Chloride	Immiscible	Miscible	Miscible	Miscible	Miscible		
n-Hexane	Immiscible	Miscible	Immiscible	Immiscible	Miscible	Miscible	
	Water	Acetone	Methanol	Acetonitrile	Ethyl Acetate	Methylene Chloride	n-Hexane
Molecular Weight (MW)	18.02	58.05	32.04	41.05	88.11	84.93	86.18
UV Cutoff (nm)	200	330	205	190	260	235	200
BP (°C @ 1 atm)	100.0	56.1	64.7	81.6	77.1	39.5	69.0
Polarity Index (Snyder)	9.0	5.1	5.1	5.8	4.4	3.1	0.0
Viscosity (cP)	1.00	0.32	0.60	0.37	0.45	0.44	0.33
Solubility in Water (% wt/wt)	100%	100%	100%	100%	9%	2%	0%

Compound	CAS #	MW	Class	Group	Molecular Formula	BP (°C @ 1 atm)	MP (°C @ 1 atm)	Density (g/cm ³ @ 20°C)	Color	Form	Solubility (µg/mL)						
											Water	Acetone	Methanol	Acetonitrile	Ethyl Acetate	Methylene Chloride	n-Hexane
2,4-DB	94-82-6	249.1	Herbicide	Aryloxyalkanoic acid	C ₁₀ H ₁₀ Cl ₂ O ₃	Decomposes	119 °C	1.46	Colorless to White	Crystalline Solid	< 100	≥ 1000	≥ 1000	≥ 1000*	≥ 1000	≥ 1000**	N/D
Fenoxaprop	95617-09-7	333.7	Herbicide	Aryloxyphenoxypropionate	C ₁₆ H ₁₂ ClNO ₅	N/D	N/D	1.5	Tan to Brown	Powder	≥ 1000	≥ 1000*	≥ 1000*	≥ 1000*	N/D	N/D	N/D
Fluometuron	2164-17-2	232.2	Herbicide	Phenylurea	C ₁₀ H ₁₁ F ₃ N ₂ O	N/D	152 °C	1.39	Colorless to White	Crystalline Solid	< 500	≥ 1000	≥ 1000	≥ 1000*	≥ 1000**	≥ 1000	< 500
Fenhexamid	126833-17-8	302.2	Fungicide	Hydroxyanilide	C ₁₄ H ₁₇ Cl ₂ NO ₂	230 °C	154 °C	1.34	White	Powder	< 100	≥ 1000	≥ 1000	≥ 1000*	≥ 1000**	≥ 1000	< 100
Trichlorfon	52-68-6	257.4	Insecticide	Organophosphate	C ₄ H ₈ Cl ₃ O ₄ P	Decomposes	80 °C	1.68	Colorless to Yellow	Crystalline or Semi-Solid	≥ 1000	≥ 1000	≥ 1000	≥ 1000*	≥ 1000	≥ 1000	N/D
Fenamiphos-sulfoxide	31972-43-7	319.4	Insecticide	Metabolite / Breakdown Product	C ₁₃ H ₂₂ NO ₄ PS	N/D	N/D	1.22	Off-White to Yellow	Solid	N/D	≥ 1000*	≥ 1000*	≥ 1000*	≥ 1000*	N/D	N/D
Fenamiphos-sulfone	31972-44-8	335.4	Insecticide	Metabolite / Breakdown Product	C ₁₃ H ₂₂ NO ₅ PS	N/D	85 °C	1.21	Off-White	Solid	N/D	≥ 1000*	≥ 1000*	≥ 1000*	≥ 1000*	N/D	N/D
Molinate	2212-67-1	187.3	Herbicide	Thiocarbamate	C ₉ H ₁₇ NOS	278 °C	-25 °C	1.06	Colorless	Liquid	≥ 1000	≥ 1000	≥ 1000	≥ 1000*	≥ 1000	≥ 1000**	≥ 1000
3-Hydroxycarbofuran	16655-82-6	237.3	Insecticide	Metabolite / Breakdown Product	C ₁₂ H ₁₅ NO ₄	N/D	> 143 °C	1.24	White to Off-White	Solid	≥ 1000	≥ 1000*	≥ 1000	≥ 1000*	N/D	N/D	N/D
Thiophanate-methyl	23564-05-8	342.4	Fungicide	Benzimidazole	C ₁₂ H ₁₄ N ₄ O ₄ S ₂	Decomposes	Decomposes	1.45	Colorless	Crystalline Solid	< 100	≥ 1000	≥ 1000	≥ 1000*	≥ 1000	< 500	< 10
Acequinocyl	57960-19-7	384.5	Acaricide	Quinoline	C ₂₄ H ₃₂ O ₄	Decomposes	60 °C	1.13	Yellowish to Tan	Flaky Solid	< 10	≥ 1000	≥ 1000	≥ 1000*	≥ 1000*	≥ 1000	≥ 1000
Carbofuran	1563-66-2	221.3	Acaricide	Carbamate	C ₁₂ H ₁₅ NO ₃	254 °C	153 °C	1.26	White	Crystalline Solid	< 500	≥ 1000	≥ 1000	≥ 1000	≥ 1000	≥ 1000	N/D
Cyanazine	21725-46-2	240.7	Herbicide	Triazine	C ₉ H ₁₃ ClN ₆	N/D	168 °C	1.29	Colorless to White	Crystalline Solid	< 500	≥ 1000	≥ 1000	≥ 1000*	≥ 1000*	≥ 1000*	≥ 1000
Simazine	122-34-9	201.7	Herbicide	Triazine	C ₇ H ₁₂ ClN ₅	Decomposes	Decomposes	1.30	White to Off-White	Crystalline Solid	< 10	≥ 1000	< 1000	≥ 1000*	≥ 1000*	≥ 1000*	< 10
Atrazine	1912-24-9	215.7	Herbicide	Triazine	C ₈ H ₁₄ ClN ₅	Decomposes	176 °C	1.23	Colorless to White	Crystalline Solid	< 100	≥ 1000*	≥ 1000	≥ 1000	≥ 1000	≥ 1000	< 500
Atrazine-desethyl	6190-65-4	187.6	Herbicide	Triazine	C ₆ H ₁₀ ClN ₅	N/D	125 °C	1.38	White	Solid	≥ 1000	≥ 1000*	≥ 1000	≥ 1000*	≥ 1000	≥ 1000	≥ 1000*

* SPEX CertiPrep's data shows minimum solubility @ 1,000 µg/mL

** Minimum solubility based on similar cited solvents



SPXPR-10

Pesticide Mix 10 containing 15 compounds

	Water	Acetone	Methanol	Acetonitrile	Ethyl Acetate	Methylene Chloride	n-Hexane
Water							
Acetone	Miscible						
Methanol	Miscible	Miscible					
Acetonitrile	Miscible	Miscible	Miscible				
Ethyl Acetate	Immiscible	Miscible	Miscible	Miscible			
Methylene Chloride	Immiscible	Miscible	Miscible	Miscible	Miscible		
n-Hexane	Immiscible	Miscible	Immiscible	Immiscible	Miscible	Miscible	
	Water	Acetone	Methanol	Acetonitrile	Ethyl Acetate	Methylene Chloride	n-Hexane
Molecular Weight (MW)	18.02	58.05	32.04	41.05	88.11	84.93	86.18
UV Cutoff (nm)	200	330	205	190	260	235	200
BP (°C @ 1 atm)	100.0	56.1	64.7	81.6	77.1	39.5	69.0
Polarity Index (Snyder)	9.0	5.1	5.1	5.8	4.4	3.1	0.0
Viscosity (cP)	1.00	0.32	0.60	0.37	0.45	0.44	0.33
Solubility in Water (% wt/wt)	100%	100%	100%	100%	9%	2%	0%

Compound	CAS #	MW	Class	Group	Molecular Formula	BP (°C @ 1 atm)	MP (°C @ 1 atm)	Density (g/cm ³ @ 20°C)	Color	Form	Solubility (µg/mL)						
											Water	Acetone	Methanol	Acetonitrile	Ethyl Acetate	Methylene Chloride	n-Hexane
Aldrin	309-00-2	364.9	Insecticide	Organochlorine	C ₁₂ H ₈ Cl ₆	145 °C	104 °C	1.60	Colorless to Brown	Crystalline Solid	< 10	≥ 1000	≥ 1000	≥ 1000*	≥ 1000*	≥ 1000	N/D
DDE (p-p')	72-55-9	318.0	Insecticide	Organochlorine	C ₁₄ H ₈ Cl ₄	N/D	89 °C	1.40	White	Crystal or Powder	< 10	≥ 1000	≥ 1000*	≥ 1000*	≥ 1000*	≥ 1000*	≥ 1000
DDD (o-p)	53-19-0	320.0	Insecticide	Organochlorine	C ₁₄ H ₁₀ Cl ₄	N/D	77 °C	N/D	Colorless	Powder	< 10	≥ 1000*	≥ 1000	≥ 1000*	≥ 1000*	≥ 1000*	≥ 1000*
DDD (p-p')	72-54-8	320.0	Insecticide	Organochlorine	C ₁₄ H ₁₀ Cl ₄	350 °C	110 °C	1.39	Colorless to White	Crystalline Solid	< 10	≥ 1000*	≥ 1000*	≥ 1000*	≥ 1000*	≥ 1000*	≥ 1000*
DDE (o-p)	3424-82-6	318.0	Insecticide	Organochlorine	C ₁₄ H ₈ Cl ₄	N/D	75 °C	N/D	Colorless to Yellow	Crystalline Solid	< 10	≥ 1000*	≥ 1000*	≥ 1000*	≥ 1000*	≥ 1000*	≥ 1000*
DDT (o-p')	789-02-6	354.5	Insecticide	Organochlorine	C ₁₄ H ₉ Cl ₅	N/D	N/D	N/D	Colorless to White	Crystalline or Oily Solid	< 10	≥ 1000*	≥ 1000*	≥ 1000*	≥ 1000*	≥ 1000*	≥ 1000*
DDT (p-p')	50-29-3	354.5	Insecticide	Organochlorine	C ₁₄ H ₉ Cl ₅	185 °C	109 °C	0.99	Colorless to White	Crystalline Solid	< 10	≥ 1000	≥ 1000	≥ 1000*	≥ 1000*	≥ 1000	≥ 1000*
Dieldrin	60-57-1	380.9	Insecticide	Organochlorine	C ₁₂ H ₈ Cl ₆ O	Decomposes	177 °C	1.75	Colorless to Tan	Crystalline Solid	< 10	≥ 1000	≥ 1000	≥ 1000*	≥ 1000*	≥ 1000	≥ 1000*
Endrin	72-20-8	380.9	Insecticide	Organochlorine	C ₁₂ H ₈ Cl ₆ O	Decomposes	200 °C	1.84	Colorless to Off-White	Crystalline Solid	< 10	≥ 1000	≥ 1000*	≥ 1000*	≥ 1000*	≥ 1000*	≥ 1000
Endrin aldehyde	7421-93-4	380.9	Insecticide	Metabolite / Breakdown Product	C ₁₂ H ₈ Cl ₆ O	N/D	152 °C	1.72	Colorless to Off-White	Crystalline Solid	< 10	≥ 1000*	≥ 1000*	≥ 1000*	≥ 1000**	≥ 1000**	≥ 1000*
Endrin ketone	53494-70-5	380.9	Insecticide	Metabolite / Breakdown Product	C ₁₂ H ₈ Cl ₆ O	N/D	285 °C	N/D	N/D	Crystalline Solid	N/D	≥ 1000*	≥ 1000*	≥ 1000*	≥ 1000*	≥ 1000*	≥ 1000*
Isodrin	465-73-6	364.9	Insecticide	Cyclodiene	C ₁₂ H ₈ Cl ₆	Decomposes	241 °C	N/D	N/D	Crystalline Solid	< 10	≥ 1000*	≥ 1000*	≥ 1000*	≥ 1000*	≥ 1000*	≥ 1000*
Chlordecone	143-50-0	490.6	Insecticide	Organochlorine	C ₁₀ Cl ₁₀ O	Decomposes	Decomposes	1.60	Colorless to Tan	Crystalline Solid	< 10	≥ 1000	≥ 1000	≥ 1000*	≥ 1000*	≥ 1000*	≥ 1000
Metribuzin	21087-64-9	214.3	Herbicide	Triazinone	C ₈ H ₁₄ N ₄ OS	Decomposes	125 °C	1.26	Colorless to White	Crystalline Solid	≥ 1000	≥ 1000	≥ 1000	≥ 1000*	≥ 1000	≥ 1000	≥ 1000
Mirex	2385-85-5	545.5	Insecticide	Organochlorine	C ₁₀ Cl ₁₂	Decomposes	485 °C	N/D	White	Crystalline Solid	< 10	≥ 1000*	≥ 1000*	≥ 1000*	≥ 1000*	≥ 1000*	≥ 1000*

* SPEX CertiPrep's data shows minimum solubility @ 1,000 µg/mL

** Minimum solubility based on similar cited solvents