

## Insecticide and Miticide Table

The following information will help you interpret the Insecticide and Miticide Table:

### Restricted or Cancelled Pesticides

Certain formulations, uses, or amounts of the pesticide compound have been restricted (R) or cancelled (C). Check a current label (the label of the product to be purchased) to determine which are restricted or general uses. Pesticides or pesticide uses which are restricted require the applicator to be certified or working under the supervision of a certified applicator. Pest control technicians working for a chartered company must be certified. You must be certified in Tennessee to buy a restricted-use chemical.

### Common Names

USDA, and later EPA, have assigned most pesticide chemicals an official common name. This name has been listed where possible. It should not be capitalized.

### Other Names

Some pesticide compounds are known by more than their common name. Most pesticides have more than one manufacturer and therefore have several trade names. Trade names are capitalized and have a trade mark following them.

### Class

Insecticides fall into several categories or classes based on their chemistry. They may be of botanical or bacterial origin (B), carbamate (Car), chlorinated hydrocarbon (CH), Formamidine (For), insect growth regulator (IGR), organic phosphate (OP), synthetic pyrethroid (SP), or miscellaneous (Misc.).

### Toxicity Category and LD<sub>50</sub> Values

When pesticides are registered, the Environmental Protection Agency uses the acute LD<sub>50</sub> values to determine the toxicity category and the words or symbols which must be placed on the label. The categories assigned in the following table are based on information available and may not reflect EPA's toxicity category.

LD<sub>50</sub> is the dosage at which one-half of the test animals are killed. Usually rats are tested, although mice or rabbits may be used. LD<sub>50</sub> is measured in milligrams of chemical being tested per kilogram of animal (mg./kg.). One part per million (ppm) is equal to one mg./kg. LD<sub>50</sub> is usually determined for the technical material rather than the formulated product. The higher the LD<sub>50</sub>, the less toxic the material.

Chemical LD<sub>50</sub>'s are generally tested by mouth (oral), by skin (dermal), or by inhalation in test organisms.

Acute toxicity refers to single exposure and quick action, while chronic toxicity refers to effects of repeated exposures over a period of time.

## Table of Toxicity Categories

Hazard Indicators	Categories			
	I	II	III	IV
Oral LD <sub>50</sub>	0-50 mg/kg	50-500 mg/kg	500-5,000 mg/kg	greater than 5,000 mg/kg
Inhalation LC <sub>50</sub>	0-0.2 mg/l.	0.2-2 mg/l.	2-20 mg/l.	greater than 20 mg/l.
Dermal LD <sub>50</sub>	0-200 mg/kg	200-2,000 mg/kg	2,000-20,000 mg/kg	greater than 20,000 mg/kg
Eye effects	Corrosive: Corneal opacity not reversible within 7 days	Corneal opacity reversible within 7 days: irritation persisting for 7 days	No corneal opacity. Irritation reversible within 7 days.	No irritation
Skin effects	Corrosive	Severe irritation at 72 hrs.	Moderate irritation at 72 hrs.	Mild or slight irritation at 72 hrs.
Signal Words/Symbol	<b>Danger/Poison:</b> in large boldfaced letters are usually accompanied by skull and crossbones symbol	<b>WARNING</b>	<b>CAUTION</b>	<b>CAUTION</b>
Common terms for dosage lethal to human adults (oral)	A few drops to 1 teaspoon	1 teaspoon to 2 tablespoons	1 ounce to 1 pint	> 1 pint

**All fumigants are extremely toxic; proper precautions must be observed.**

Common Name	Other Names	Class	Toxicity Category	Acute LD <sub>50</sub>	
				Dermal (Mg./Kg.)	Oral (Mg./Kg.)
abamectin	Avid PT370 Ascend Stopper Fire Ant Varsity Fire Ant Bait	Misc.	II	>2,000 (rabbits)	5,000
acephate	Orthene	OP	III	>10,000 (rabbits)	945
acequinocyl	Shuttle	ND	III	>2,000	>5,000
acetamiprid	Tristar Assail	NN	II	>2,000	886 (male rats) 805 (female rats)
(R) aldicarb	Temik	Car.	I	>5 (rabbits)	1.0
allethrin	Pynamin	B	III	---	>920
aluminum phosphide	Celphos	Misc.	I	0.3 ppm	
aminocarb		Car.	---	275	30
amitraz	Mitac	For.	II	>1,600	800
azadiractin	Azatin XL Bioneem Turplex BioInsecticide	B	II	>2,000	>5,000 (rabbits)
azinphos-ethyl	Crysthion	OP	I	250	17.5
(R) azinphos-methyl	Guthion	OP	I	220	5-20
<u>Bacillus thuringiensis</u>	Biobit Dipel Javelin Thuricide Ketch	B	III	None  (Non-toxic to mammals)	None  (Non-toxic to mammals)
bendiocarb	Turcam Ficam Ficam Plus Ficam W	Car.	II	1,000	40-156
beta-cyfluthrin	Tempo SC Ultra	SP	III	>2,000 (rabbits)	3,084 (Male rats) 1,733 (female rats)
bifenazate	Floramite	CAB	IV	>5,000	>5,000
bifenthrin	Biflex Capture Talstar	SP	II	>2,000 (rabbits)	375 (rats)
bomyl		Misc.	I	---	298

Common Name	Other Names	Class	Toxicity Category	Acute LD <sub>50</sub>	
				Dermal (Mg./Kg.)	Oral (Mg./Kg.)
buprofezin	Talus Courier	IGR	III	>2,000	>5,000
(R) calcium cyanide		Misc.	I	Extremely toxic. Immediately dangerous.	
carbaryl	Sevin	Car.	II	>4,000	246
(R) carbofuran	Furadan	Car.	I	10,200 (rabbits)	11
carbon disulfide	Carbon bisulfide Weevil-Tox	Misc.	II	Vapor Toxicity 200 ppm (Inhalation)	Note: Extremely flammable vapors.
carbon tetrachloride		Misc.	IV	Vapor Toxicity 300 ppm	7,500
(R) chlorfenvinphos	Birlane Supona	OP	I	30-108	10-39
(R) chlorobenzilate		CH	III	>10,200 (rabbits)	1,800
chloropicrin	Chlor-O-Pic Larvacide	Misc.	I	Vapor Toxicity 20 ppm	250
(R) chlorpyrifos	PT 1325 ME Duraguard Dursban Lorsban	OP	II	>2,000 (rabbits)	96-270
clofentezine	Ovation SC	TTZ	III	>2,100	>5,200
chlorfenapyr	Pylon	PL	III	>2,000 (rabbits)	560 (male rats) 567 (female rats)
clothianidin	Celero Arena	NN	III	>5,000	3,900 (male rats) 4,700 (female rats)
coumaphos	Co-Ral	OP	II	860	56-230
crotoxyphos	Ciodrin	OP	I	385 (rabbits)	125
crotoxyphos + dichlorvos	Ciovap	OP	---		
cryolite	Kryocide	Misc.	III	>2,100 (rabbits)	>5,000 (rats)
cyfluthrin	Baythroid Decathlon Tempo	SP	—	>2,000	826
cyromazine	Citation	TRZ	III	>3100	3,887
(R) cypermethrin	Ammo Cymbush Demon	SP	III	1,600	250

Common Name	Other Names	Class	Toxicity Category	Acute LD <sub>50</sub>	
				Dermal (Mg./Kg.)	Oral (Mg./Kg.)
deet	OFF	Misc.	III	1,750-1,800 (female rats)	1,800-2,700 (male rats)
deltamethrin	DeltaGard G		III	>5,000 (rabbits)	2,613 (rats)
(R) demeton	Systox	OP	I	8.2-14	2.5-6
diazinon	Spectracide	OP	II	>3,600 (rabbits)	300-400
dichlofenthion	VC-13 Nemacide	OP	II		270
dichloropropene	Telone	Misc.	I	Vapor Toxicity 500 ppm	127-250
dichlorvos	DDVP No-pest Vapona	OP	I	75	56-80
dicofol	Kelthane	CH	II	1,000-1,230	820-960
(R) dicrotophos	Bidrin	OP	I	225 (rabbits)	17-22
dieldrin	Dieldrex	CH	II	60-90	37-87
dienochlor	Pentac	CH	II		>3,000
(R) diflubenzuron	Dimilin Adept	IGR	III	>10,000	>4,640
dikar (fungicide + miticide)	Dithane-45 Karathane	---	III	>5,000 (rabbits)	>500 (rats)
dimethoate	Cygon	OP	II	>1,000 (guinea pigs)	215
dinocap	Karathane	Misc.	III		980
dinotefuran	Safari Venom	NN	III	>2,000	>2,000
(R) dioxathion	Deltic	OP	I	235	45
(R) disulfoton	Di-Syston	OP	I	6-25	2-12
emamectin benzoate	Denim Proclaim	Avm.	III	>2,000 (rabbits)	1,516 (rats)
endosulfan	Thiodan	CH	I	359 (rabbits)	30-110
(R) endrin	Endrex Hexadrin	CH	I	15	7-15
esfenvalerate	Asana XL	SP	II	>2,000 (rabbits)	75
(R) ethion	Ethiol	OP	II		208
(R) ethoprop	Mocap	OP	I	2.4 (rabbits)	61.5
ethylene dibromide	Bromofume E-D-B	Misc.	I	Vapor Toxicity 200 ppm	146

Common Name	Other Names	Class	Toxicity Category	Acute LD <sub>50</sub>	
				Dermal (Mg./Kg.)	Oral (Mg./Kg.)
ethylene dichloride	EBC	Misc.	III	Vapor Toxicity 1,000 ppm	670-890
etoxazole	TetraSan	IGR	III	>5,000	2,600 (female rats) 4,500 (male rats)
famphur	Warbex	OP	I	2,730 (rabbits)	36-62
fenitrothion	Accothion Agrothion	OP	II	1,300	800
fenoxycarb	Award Logic Torus PT 2100 Preclude Precision	---	IV	>2,000	16,800
(R) fenpropathrin	Danitol Tame	SP	I	>2,000	70.6-164
fenpyroximate	Fugimite Akari Protal	PP	III	>5,000 (rats)	810 (male rats) 1,004 (female rats)
(R) fensulfothion	Dasanit	OP	I	3-30	2-10
fenthion	Baytex Entex Tiguvon	OP	II	1,680	250-300
fenvalerate	Ectrin Pydrin	SP	II	>5,000	451
flonicamid	Aria	Misc.	III	>2,000	>2,000
(R) flucythrinate	Payoff	SP	I	>1,000 (rabbits)	67
fluvalinate	Mavrik Spur	SP	II	>20,000	261-282
(R) fonofos	Dyfonate	OP	I	25 (rabbits)	8-17.5
formetanate hydrochloride	Carzol Dicarzol	Car.	I	>10,200 (rabbits)	20
gamma-cyhalothrin	Prolex Proaxis	SP	I	>5,000 (rats)	2,250 (male rats) 2,646 (female rats)
halofenozide	MACH 2 GrubEx	DCH	III	>2000	>5000
hexakis	Vendex	Misc.	III	>2,000 (rabbits)	2,631
hexythiazox	Hexygon Savey	Misc.	IV	>5,000	5,000
hydramethylnon	Amdro Siege Fire Ant Bait	ADH	III	>2,000	>5,000

Common Name	Other Names	Class	Toxicity Category	Acute LD <sub>50</sub>	
				Dermal (Mg./Kg.)	Oral (Mg./Kg.)
hydrated lime	slaked lime	Misc.			
indoxacarb	Avuant Steward	OX	III - oral IV - dermal	>5,000 (rats)	1807 (male rats) 687 (female rats)
imidacloprid	Provado Admire Marathon Merit Trimax	NN	III	>2,000 (rats)	2,591 (male rats) 1,858 (female rats)
kerosene		Misc.	III		
kinoprene	Enstar II	IGR	II	5,000	4,900
lambda-cyhalothrin	Karate Warrior T Scimitar	SP	I	632	79
(R) lead arsenate	Gypsine Talbot	Misc.	I	>2,400	1,050 (man)
(R) lindane		CH	II	1,000	88-125
malathion	Cythion	OP	III	4,100 (rabbits)	1,375
mephosfolan	Cytrolane	OP	I	29	9
metaldehyde	Bug-Geta Deadline Slug-Geta	Misc.	III	--	630
metam-sodium	Vapam VPM	Misc.	I	>3,074 (rabbits)	1,700-1,800
(R) methamidophos	Monitor	OP	I	118 (rabbits)	18-21 (75% technical)
(R) methidathion	Supracide	OP	I	640 (2E formulation)	65 (2E formulation)
(R) methiocarb	Grandslam MesuroI	Car.	II	>2,000 (rabbits)	100-130
(R) methomyl	Lannate	Car.	I	>5,000 (rabbits) (52.8% material)	17
methoprene	Altosid	IGR	IV	>3,000 (rabbits)	>34,600
methoxychlor	Marlate	CH	IV	>6,000	6,000
methoxyfenozide	Intrepid	IGR	III	>2,000 (rats)	>5,000 (rats & mice)
(R) methyl bromide	Brom-O-Gas Meth-O-Gas	Misc.	I	Vapor Toxicity 200 ppm	

Common Name	Other Names	Class	Toxicity Category	Acute LD <sub>50</sub>	
				Dermal (Mg./Kg.)	Oral (Mg./Kg.)
(R) methyl parathion	M-Parathion Pennacap-M	OP	I	300-400 (rabbits)	9-25
(R) mevinphos	Phosdrin	OP	I	16-33 (rabbits)	3-12
mexacarbate	Zectran	Car.	II	>500 (rabbits)	19
Milky Disease Spores	<u>Bacillus popilliae</u> Doom	B	III	Considered non-toxic to mammals.	
naled	Dibrom	OP	I	1,100 (rabbits)	430
napthalene		Misc.	IV	>2,500	2,400
(R) nicotine sulfate	Black Leaf 40	B	I	50	50-60
novaluron	Diamond	IGR			
(R) oxamyl	Vydate	Car.	I	2,960 (24% liquid)	5.4 (rabbits)
(R) oxydemeton-methyl	Metasystox-R	OP	II	1,350	50
oxythioquinox	Morestan 4	Misc.	III	>2,000	638-690
para-dichlorobenzene	PDB	CH	II	>2,000 (rabbits)	500
(R) parathion	ethyl parathion	OP	I	55	4-13
PCP	Pentacon	Misc.	II	--	50-140
(R) permethrin	Ambush Atroban Dragnet Pounce Astro	SP	II/III depends on formulation	>2,500 (rabbits)	430-4,000
petroleum oils	superior horticultural oil (Sunspray Ultra-Fine Oil) crop oil diesel oil dormant oil kerosene Volck oil weed oil	Misc.	III	>5,000	>5,000
(R) phorate	Thimet	OP	I	6.2	2-4
phosalone	Zolone	OP	II	1,530 (rabbits)	120
phosfolan	Cylan Cylolane	OP	I	23 (rabbits)	0.9
phosmet	Imidan Prolate	OP	II	>4,640 (rabbits)	147-316



Common Name	Other Names	Class	Toxicity Category	Acute LD <sub>50</sub>	
				Dermal (Mg./Kg.)	Oral (Mg./Kg.)
(R) phosphamidon	Dimecron Swat	OP	I	267 (rabbits)	17-30
phoxim	Baythion	OP	III	>5,000	>2,000
piperonyl butoxide	Butacide	Misc.	IV	1,800 (rabbits)	>7,500
pirimicarb	Aficida	Car.	II	>500	147
pirimiphos-methyl	Actellic	OP	II	>4,592	>2,000
profenofos	Curacron	OP	II	277 (rabbits)	358
propargite	Ornamite Comite Omite	Misc.	I	>4,000 (rabbits)	2,800
(R) propetamphos	Safrotin	OP	II	2,825	119
propoxur	Baygon	Car.	II	>1,000	95-104
pymetrozine	Fullfill Endeavor	PEz	III	>2,000 (rat)	>5,000 (rat)
pyrethroids - synthetic: see allethrin, permethrin, fenvalerate, resmethrin					
pyrethrum	Pyrethrins	B	III	>1,800	1,500
pyridaben	Sanmite WSB	PRZ	III	>2,000	820-1350
pyriproxyfen	Distance Distance Fire Ant Bait Esteem Spectracide Fire Ant Bait	IGR	III	>2,000 (rabbits)	4,733 (male rats) 3,772 (female rats)
resmethrin	Chryson SBP-1382	SP	III	>3,000 (rabbits)	>2,500
rotenone	Derris Prentox	B	II	>350 (mouse)	132-1,500
s-methoprene	Extinguish	IGR	IV	>3,000	34,600
soap, pesticidal	Insecticidal Soap M-Pede	Misc.	III	Practically nontoxic	
sodium fluoride	Florocid	Misc.	I		75-150 (man)
spinosad	Tracer Spintor Justice Conserve SC	Act.	III	>2,000 (rats)	>5,000 (rats)
spiromesifen	Judo Forbid	TA	III	>2,000	>2,000

Common Name	Other Names	Class	Toxicity Category	Acute LD <sub>50</sub>	
				Dermal (Mg./Kg.)	Oral (Mg./Kg.)
(R) sulfotep	Bladafum Dithio Plantfume 103	OP	I	65	7-10
(R) sulprofos	Bolstar discontinued 1999	OP	II	820 (rabbits)	107
temephos	Abate	OP	III	>2,378 (rabbits)	>10,000
(R) terbufos	Counter	OP	I	11 (rabbits)	4.5
tetrachlorvinphos	Gardona Rabon	OP	III	>2,500 (rabbits)	>2,000
tetrachlorvinphos + dichlorvos	RaVap	OP OP	III I	>2500 300	<2000 50
tetradifon	Tedion	CH	III	>10,000	>14,700
thiamethoxam	Flagship Meridain Platinum Actara	NN	III	>2,000	>5,000
thiodicarb	Larvin	Car.	II	>2,000 (rabbits)	66
(R) toxaphene	Camphoclor	CH	II	1,075	69
(R) tralomethrin	Scout	SP	I	>2,800 (rabbits)	284
trimethacarb	Broot	---	III	>2,000 (rabbits)	125
tebufenozide	Mimic LV Confirm T/O	IGR	III	>5000	>5000

Original Source: Farm Chemicals Handbook 2000, 2004 (Meister Publishing Co, Willoughby, OH), plus many additional online sources, such as CDMS pesticide labels (<http://www.cdms.net/LabelsMsds/LMDefault.aspx?t=>)

## Pesticide Class:

Act.	- Actinomycete	ND	- Napthoquinone derivative
ADH	- Amidinohydrazone	NN	- Neonicotinoid
Avm.	- Avermectin	OP	- Organic phosphates
B	- Botanical or bacterial origin	Oxa.	- Oxadiazine
CAB	- Carbazate	PL	- Pyrrole
Car.	- Carbamate	PP	- Phenyl pyrazole
CH	- Chlorinated hydrocarbon	PRZ	- Pyridazinone
Car.	- Carbamate	PEz	- Pyridine ezomethines
CH	- Chlorinated hydrocarbon	PYR	- Pyridine insect growth regulator
DCH	- Diacylhydrazine	SP	- Synthetic pyrethroid
For.	- Formamidine	TA	- Tetronic acid
IGR	- Insect growth regulator	TTZ	- Tetrazine
Misc.	- Miscellaneous	TRZ	- Triazine