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## INSECTICIDES FOR THE CONTROL OF MOSQUITOES AND OTHER DIPTERA

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**ABSTRACT.** A compilation of insecticides and formulations labeled in the U. S. A. for use

for control of mosquitoes and some other Diptera is provided.

The following tables contain a compilation of insecticides and formulations currently labeled for use for the control of mosquitoes and some other Diptera of public health importance and are presented as an aid to persons presently engaged in their control.

Some insecticides and formulations given in the following tables are labeled for use only in certain states. Some states

may have 24C (special local need) or state labels for the use of additional insecticides or formulations which are not given here. It should also be pointed out that not all labeled insecticides or formulations are recommended for use by all state agencies. Therefore, appropriate state agencies or manufacturer's representatives should be contacted by potential users for further recommendations.

Table 1. Label recommendations of insecticides for use in ground applications for adult mosquito control.

Insecticide	Trade name	Concentrate		Formulation	Application	
		lb. AI/gal.	%		gph(ULV-fl.oz./min)	speed mph
chlorpyrifos fenthion	Dursban MFC	6.00	Ultra Low Volume 61.5	(conc.)	0.67-1.33 <sup>1</sup>	10
	Baytex LC	9.67	93.0	(conc.) <sup>2</sup>	0.3-0.5 0.6-1.0 0.9-1.5 1.2-2.0	5 10 15 20
malathion	Cythion	9.33	91.0	(conc.)	1.0-2.1 2.0-4.3	5 10
naled (tech.)	Dibrom 14 Conc.	14.00	85.0	(conc.) <sup>3</sup>	0.6 1.2 1.8 21.0 3.0-6.0 6.0-12.0 9.0-18.0	5 10 15 10 5 10 15
pyrethrins and pip. butoxide resmethrin	Pyroicide MAC SBP-1382-40MF	— 3.34	12&60 40.0	(5&25% w/w) <sup>6</sup> 8.9 <sup>7</sup>	2.0-2.25 <sup>6</sup> 9.1 <sup>7</sup>	5 5
	chlorpyrifos fenthion	Dursban MFC	6.00	Thermal Aerosol <sup>8</sup> 61.5	2.0	40
Baytex LC Baytex 4		9.67 4.00	93.0 45.0	0.4-0.8 1.0-2.0 <sup>9</sup>	40 40	5 5
malathion naled (tech.)	Cythion	9.33	91.0	3.9-5.2	40	5
	Dibrom 14 Conc.	14.00	85.0	0.775	40 80 120	10 10 15
chlorpyrifos	Dursban M	4.0	Mist <sup>10</sup> 41.2	(0.8-1.6 fl. oz./a) <sup>11</sup>	—	—
	Dursban 2E	2.0	22.4	(1.6-3.2 fl. oz./a) <sup>11</sup>	—	—
fenthion	Baytex 4	4.0	45.0	2.125-4.25	100	4
	Baytex LC	9.67	93.0	0.875-1.75	100	4
malathion	Cythion EL	5.0	57.0	2.0	60-100	3-5

Table 1. Continued

Insecticide	Trade name	Concentrate		Formulation		Application	
		lb. AI/gal.	%	gals. conc. per 100 gals.	gph(ULV-fl.oz/min)	discharge	speed mph
naled (Tech.) propoxur	Dibrom 8	8.0	58.0	0.75-1.25	— <sup>12</sup>	— <sup>12</sup>	— <sup>12</sup>
	Baygon 1.5	1.5	13.9	5.50-8.00	100	100	4
	Baygon WP	—	70.0	11.75-17.25 lbs.	100	100	4

<sup>1</sup> Label for distribution and use only within Florida allows 2.1 fl. oz./min. @ 10 mph for control of *Culex nigripalpus*.

<sup>2</sup> Registered for use in Florida, Texas, Mississippi, Arkansas, Tennessee, Louisiana, Alabama and Georgia only.

<sup>3</sup> Registered for Florida use only.

<sup>4</sup> Registered for Florida use only. Label states dilute 20 H. oz./5 gal. in HAN (heavy aromatic naphtha), Chevron 400 solvent or diesel oil and Ortho additive.

<sup>5</sup> Label states dilute 2 qt./5 gal. in soybean oil or HAN.

<sup>6</sup> Label states dilute 1 part of concentrate with 1.4 parts (wt.) of light mineral oil. Consult label for oil specification. Up to 8 fl. oz./min. may be used to control certain mosquito species.

<sup>7</sup> Label states dilute 12½ fl. oz. of concentrate in 1 gal. of light mineral oil and apply at 3 fl. oz. per acre at a 300 ft. swath. Consult label for oil specifications.

<sup>8</sup> Thermal aerosol formulations—No. 2 diesel oil, No. 2 fuel oil or kerosene dilutions may be used. Addition of additive may be required as a sludge inhibitor. Consult manufacturers' recommendations for type and amount.

<sup>9</sup> Also labeled for use as non-thermal aerosol at same rate, formulation and discharge.

<sup>10</sup> Mist formulations—Water dilutions. Dursban M and 2E labels state apply in water or oil. Baytex LC requires addition of emulsifier and aromatic solvent.

<sup>11</sup> Label states use in sufficient volume to give uniform coverage.

<sup>12</sup> Calibrate rate of travel and discharge to apply 0.1 lb. AI per acre.

Table 2. Label recommendations of insecticides for use in aerial applications for adult mosquito control

Insecticide	Trade name	Concentrate		Fluid ounces conc. per acre	Gross amt <sup>1</sup> per acre <sup>1</sup>	Pounds AI per acre
		lb. AI/gal.	%			
malathion naled (tech.)	Cythion	9.33	<i>Ultra Low Volume</i> 91.0	2.6-3.0	2.6-3.0 fl. oz.	0.198-0.228
	Dibrom 14 Conc.	14.00	85.0	0.5-1.0 0.91	0.5-1.0 fl. oz. 2.6 fl. oz. <sup>6</sup>	0.05-0.10 0.10
pyrethrins and pip. butoxide <sup>2</sup>	Pyrocide 7067	—	5&25	—	—	0.004-0.1
chlorpyrifos	Dursban M	4.00	<i>Low Volume</i> 41.2	0.8-1.6	SFAC <sup>4</sup>	0.025-0.05
	Dursban 2E	2.00	22.4	1.6-3.2	SFAC <sup>4</sup>	0.025-0.05
	Baytex LC	9.67	93.0	0.67-1.33	1-4 qts. <sup>3</sup>	0.05-0.10
	Baytex 4	4.00	45.0	1.60-3.20	4 qts. <sup>4</sup>	0.05-0.10
malathion naled (tech.)	Cythion	9.33	91.0	2.0-5.0	2-4 qts. <sup>3</sup>	0.15-0.36
	Dibrom 14 Conc.	14.00	85.0	0.5-1.0	4 qts. <sup>3</sup>	0.05-0.10
	Dibrom 8	8.00	58.0	0.8-1.6	2-8 qts. <sup>5</sup>	0.05-0.10
	Baygon 1.5 Baygon WP	1.50 —	13.9 70.0	4.25-6.0 (1-4 wt. oz.)	2-4 qts. <sup>5</sup> 2-4 qts. <sup>5</sup>	0.05-0.07 0.05-0.175
fenthion <sup>2</sup> malathion <sup>2</sup> naled (tech.) <sup>2</sup>	Baytex LC Cythion Dibrom 14 Conc.	<i>Thermal Aerosol</i>		0.4 2.6 0.8	0.2-0.8 qt. <sup>3</sup> 0.2-0.8 qt. <sup>3</sup> 0.5 qt. <sup>7</sup>	0.03 0.1978 0.0872
		9.67	93.0			
		9.33	91.0			
	Dibrom 14 Conc.	14.00	85.0			

<sup>1</sup> SFAC—sufficient for adequate coverage.<sup>2</sup> Registered for use in Florida only.<sup>3</sup> Diluted in diesel or fuel oil.<sup>4</sup> Diluted in oil or water.<sup>5</sup> Diluted in water.<sup>6</sup> 35% v/v in soybean oil.<sup>7</sup> 5% v/v in fuel or diesel oil.

Table 3. Label recommendations of insecticides for use in ground and aerial applications for larval mosquito control.

Insecticide	Trade name	Concentrate		Appl. type <sup>1</sup>	Fluid ounces conc. per acre	Gross amt <sup>2</sup> per acre <sup>2</sup>	Pounds AI per acre
		lb. AI/gal.	%				
methoprene	Altosid SR-10	0.86	10.0	a-g	3-4	SFAC <sup>5</sup>	0.020-0.027
	SR-10 sand granular <sup>3</sup>	—	0.2	a-g	—	10 lbs.	0.020
oils	Altosid briquets	—	4.0	a-g	—	1/100 sq. ft.	—
	Flit MLO	—	98.8	a-g	—	1-5 gals.	—
	Fla. mosquito larvicide <sup>4</sup>	—	99.56	a-g	—	3-6 gals.	—
chlorpyrifos	Dursban M	4.00	41.2	a-g	0.4-1.6	SFAC <sup>6</sup>	0.0125-0.05
	Dursban 2E	2.00	22.4	a-g	0.8-3.2	SFAC <sup>6</sup>	0.0125-0.05
	Dursban 10 CR	—	10.6	g	(0.1167 lb./1000 gal. area)	—	(1.5 ppm)
	Dursban 1G	—	1.0	a-g	—	2.5-5 lbs.	0.025-0.5
fenthion	Baytex LC	9.67	93.0	a	0.67-1.33	1-2 qts. <sup>7</sup>	0.05-0.1
	Baytex 4	4.00	45.0	g	0.67	SFAC <sup>7</sup>	0.05
malathion	Cythion	9.33	91.0	a	1.6-3.2	1 gal. <sup>8</sup>	0.05-0.1
	Cythion EL	5.00	57.0	a-g	1.5	SFAC <sup>6</sup>	0.05
temephos	Abate 4E	4.0	43.0	a-g	6.9	1 gal. <sup>7</sup>	0.5
	Abate 1G	—	1.0	a-g	13.0	SFAC <sup>7</sup>	0.5
	Abate 2G	—	2.0	a-g	0.5-1.5	SFAC <sup>5</sup>	0.016-0.47
	Abate 5G	—	5.0	a-g	—	5-20 lbs <sup>8</sup>	0.05-0.2
						2.5-25 lbs <sup>8</sup>	0.05-0.5
						2-10 lbs <sup>8</sup>	0.10-0.5

<sup>1</sup> a = air application; g = ground application.<sup>2</sup> SFAC = sufficient for adequate coverage.<sup>3</sup> See formulation procedure in Zoecon Corp. Tech. Bull. March 1, 1977.<sup>4</sup> For use in Florida only.<sup>5</sup> Diluted in water.<sup>6</sup> Diluted in water or oil.<sup>7</sup> Diluted in diesel or fuel oil (may require cosolvent).<sup>8</sup> Recommended rates vary with type of water and habitat. Consult label for specific amounts.

Table 4. Label recommendations of insecticides for the control of some adult and larval insect pests other than mosquitoes.

Insecticide	Trade name	Application	Insect	Formulation and application
fenthion	Baytex LC	ground ULV	stable fly eye gnat	1.0 fl. oz./min. @ 10 mph <sup>1</sup>
malathion	Cythion	ground ULV	stable fly	2.1 fl. oz./min. @ 5 mph or 4.3 fl. oz./min. @ 10 mph
methoxychlor	EM2 or 2E	ground spray	stable fly	4 gals./100 gals. water @ 2 qts./25 sq. ft. <sup>1,2</sup>
naled (tech.)	Dibrom 14 Conc.	ground ULV	stable fly & gnat	3.125% v/v in HAN, Chevron 400 solvent or diesel oil/ additive @ 10 gph @ 10 mph <sup>1</sup>
		ground fog	house fly gnat, midge stable fly	1% v/v in fuel oil @ 40 gph @ 5 mph
		aerial spray	house fly, gnat midge stable fly	0.75-1.75% v/v in fuel oil @ 1 gpa
		aerial ULV	stable fly	25% v/v in soybean oil @ 4.5 fl. oz./a <sup>1</sup>
	Dibrom 8	ground mist	house fly gnat, stable fly	3-5 qts./100 gals. water @ 0.1-0.25 lb./a
		aerial spray	house fly gnat, stable fly	0.8-4 fl. oz. in 2-8 qts. water per acre
resmethrin	SBP-1382-40MF	ground ULV	stable fly	0.25 gph of conc. @ 5 mph or 0.50 gph @ 10 mph
temephos	Abate 2G	ground aerial	or gnat, midge, sand fly larvae	2% granular @ 5-10 lb./a

<sup>1</sup> Registered for Florida use only.<sup>2</sup> Apply spray to surface of fly breeding material (piles of aquatic weeds, manure, etc.).