TABLE OF WEIGHTS, MEASURES AND DILUTIONS

Weights

28.35 grams = 1 ounce
16 ounces = 1 pound = 453.6 grams
1 gallon water = 8.34 pounds
1 cubic foot water = 62.4 pounds
1 gallon No. 2 fuel oil = 7 pounds
1 gallon kerosene = 6.7 pounds

Volume and Liquid Measure

3 teaspoons = 1 tablespoon = 14.8 cc
2 tablespoons = 1 fluid ounce = 29.6 cc
8 fluid ounces = 16 tablespoons = 1 cup = 236.6 cc
2 cups = 32 tablespoons = 1 pint = 473.1 cc
2 pints = 64 tablespoons = 1 quart = 946.2 cc
4 quarts = 256 tablespoons = 1 gallon = 3785 cc
128 fluid ounces = 1 gallon = 3785 cc

Land Measure

16½ feet = 5½ yards = 1 rod
66 feet = 4 rods = 1 chain
272¼ square feet = 30¼ square yards = 1 square rod
4356 square feet = 16 square rods = 1 square chain
43560 square feet = 160 square rods = 1 acre
43560 square feet = 10 square chains = 1 acre

Length of Row Required for One Acre

Row Spacing	Length or Distance
24 inch	7,260 yards = 21,780 feet
30 inch	5,808 yards = 17,424 feet
36 inch	4,840 yards = 14,520 feet
38 inch	4,585 yards = 13,756 feet
40 inch	4,356 yards = 13,068 feet
42 inch	4,149 yards = 12,446 feet
48 inch	3,630 yards = 10,890 feet

Determining Contents — Standard 55-Gallon Drum

Drum on Side		Drum Upright	
Depth of Liquid in Inches	Volume in Gallons	Depth of Liquid in Inches	Volume in Gallons
1	0.89	1	1.7
2	2.4	2	3.4
3	4.4	3	5.2
4	6.7	4	6.7
5	9.3	5	8.6
6	12.0	6	10.3
7	14.8	7	12.0
8	17.8	8	13.8
9	20.9	9	15.5
10	24.0	10	17.2
11	27.2	11	18.9
12	30.2	12	20.6
13	33.4	13	22.4
14	36.5	14	24.1
15	39.5	15	25.0
16	42.5	16	27.5
17	45.3	17	29.3
18	47.9	18	30.9
19	50.3	19	32.7
19.75	52.0	20	34.4
		21	36.1
		22	37.8
		23	39.6
		24	41.3
		25	43.0
		26	44.8
		27	46.5
		28	48.2
		29	49.9
		30	51.6
		30.19	52.0

Travel Speed Chart

Miles per Hour	Time Required in Seconds to Travel		
	100 Ft	200 Ft	300 Ft
1	68	136	205
2	34	68	102
3	23	46	68
4	17	34	51
5	14	27	41
6	11	23	34
7	10	20	29
8	9	17	26
9	8	15	23
10	7	14	21

1 MPH = 88 feet per minute
1 MPH = 1.466 feet per second

$$\text{Speed in MPH} = \frac{\text{Distance (ft)} \times 60}{\text{Time (seconds)} \times 88}$$

Tables of Dilutions for Liquids and Dusts

1. Equivalent Quantities of Liquid Materials When Mixed by Parts.

Water	Amount of Insecticides for Different Dilutions		
	1-400	1-800*	1-1600
100 gals	1 qt	1 pt	1 cup
50 gals	1 pt	1 cup	1/2 cup
5 gals*	3 T	5 t*	2 1/2 t
1 gal	2 t	1 t	1/2 t

*Example: If a recommendation calls for 1 part of the chemical to 800 parts of water, it would take 5 teaspoonfuls in 5 gallons of water to give 5 gallons of a mixture of 1-800.

2. Equivalent Quantities of Dry Materials (Wettable Powders) for Various Quantities of Water.

Water	Quantity of Material					
100 gals*	1 lb	2 lb	3 lb	4 lb*	5 lb	6 lb
50 gals	8 oz	1 lb	1 1/2 lb	2 lb	2 1/2 lb	3 lb
5 gals*	3 T	1 1/2 oz	2 1/2 oz	3 1/4 oz*	4 oz	5 oz
1 gal	2 t	3 t	1 1/2 T	2 T	3 T	3 T

*Example: If a recommendation calls for a mixture of 4 pounds of a wettable powder to 100 gallons of water, it would take 3 1/4 ounces (approximately 6 1/2 teaspoons) to 5 gallons of water to give 5 gallons of spray mixture of the same strength.

Note: Wettable pesticide materials vary considerably in density. Therefore, the teaspoonful (t) and tablespoonful (T) measurements in this table are not exact dosages by weight but are within the bounds of safety and efficiency for mixing small amounts of spray.

3. Equivalent Quantities of Liquid Materials (Emulsion, Concentrates, etc.) for Various Quantities of Water.

Water	Quantity of Material					
100 gals*	1/2 pt	1 pt	2 pts	3 pts	4 pts*	5 pts
50 gals	4 fl oz	8 fl oz	1 pt	24 fl oz	1 qt	2 1/2 pts
5 gals	1 T	1 fl oz	2 fl oz	2 1/2 fl oz	3 fl oz	4 fl oz
1 gal*	1/2 t	1 t	2 t	3 t	4 t*	5 t

*Example: If 4 pints of a liquid concentrate is recommended to 100 gallons of water, 4 teaspoonfuls of the chemical to 1 gallon of water will give a mixture of the same strength.

4. Table of Pounds of Active Ingredients per Gallon, Pounds per Pint of Liquid, and the Number of Pints for Various per Acre Rates.

Pounds of active ingredients in one gallon of commercial product	Pounds of active ingredients per pint*	Pints of commercial product needed each acre to give the following pounds of active ingredient					
		1/4 lb/A	1/2 lb/A	3/4 lb/A	1 lb/A	1 1/2 lbs/A	2 lbs/A
2.00	0.25	1 pt	2 pts	3 pts	4 pts	6 pts	8 pts
2.64	0.33	3/4	1 1/2	2 1/4	3	4 1/2	6
3.00	0.375	2/3	1 1/3	2	2 2/3	4	5 1/3
3.34	0.42	3/5	1 1/5	1 4/5	2 2/5	3 3/5	4 4/5
4.00	0.50	1/2	1	1 1/2	2	3	4
6.00	0.75	1/3	2/3	1	1 1/3	2	2 2/3

*1 pint = 16 liquid ozs. Liquid ounces may be measured with a discarded prescription bottle, liquid measuring cup, or a baby bottle.

5. Table of Available Commercial Materials in Pounds Active Ingredients per Gallon Necessary to Make Various Percentage Concentration Solutions.*

Pounds of active ingredients in one gallon of commercial product	Pounds of active ingredients per pint*	Liquid ounces of commercial product per one gallon solution* to make:				
		1/2%	1%	2%	5%	10%
	liq oz	liq oz	liq oz	liq oz	liq oz	liq oz
2.00	0.25	2.68	5.36	10.72	26.80	53.60
2.64	0.33	2.02	4.05	8.10	20.25	40.50
3.00	0.375	1.78	3.56	7.12	17.80	35.60
3.34	0.42	1.59	3.18	6.36	15.90	31.80
4.00	0.50	1.34	2.68	5.36	13.40	31.80
6.00	0.75	0.89	1.78	3.56	8.90	17.80

*Based on 8.4 pounds per gallon (weight of water).

Insecticide Toxicity to Fish

		LC_{50} in ppm*			
Trade Name	**Common Name**	**Catfish**	**Minnow**	**Bluegill**	**Random Treatment**
Altacor, Coragen	rynaxypyr			1.84	
Ambush, Eliminator, Permectrin II	permethrin	0.0011		0.033	0.020
Ammo, Cymbush	cypermethrin			0.00178	0.011
Atrapa, Fyfanon	malathion				
Baythroid	cyfluthrin			0.0015	
Bidrin	dicrotophos	7.7		24.2	6.3
Capture, Discipline	bifenthrin			.00035	
Centric	thiamethoxam			114	
Comite, Omite	propargite			0.10	0.12
Confirm	tebufenozide			.003	
Curacron	profenofos	0.02		0.3	
Cygon	dimethoate			6.0	6.2
Denim	emamectin benzoate			0.18	
Diamond	novaluron				>1.0 (trout)
Dibrom	naled	0.71	3.3	2.2	0.195
Di-Syston	disulfoton	4.7	4.3	0.30	1.85
Furadan	carbofuran	0.248	0.872	0.24	0.38
Mustang Max	zeta-cypermethrin		Highly Toxic (.000002-.00237)		
Guthion	azinphos-methyl	3.29		0.022	
Karate	lambda-cyhalothrin			.00021	
Kelthane	dicofol	8.36		0.52	
Lannate	methomyl	0.5	2.8	0.8	1.2
Larvin	thiodicarb			1.21	2.55
Lorsban, Dursban	chlorpyrifos	0.198	1.0	0.0024	0.0071
Methyl Parathion, Penncap-M	methyl parathion	5.24	8.9	4.38	3.7
Orthene	acephate	>1000	>1000	>50	>50
Phantom	chlorfenapyr	Very toxic to fish and aquatic invertebrates			
Poncho	clothianidin	Toxic to aquatic invertebrates			
Prolex	gamma-cyhalothrin	Extremely toxic to aquatic organisms and fish			
Regent, OverNOut Chipco Choice	fipronil			0.085	
Sevin	carbaryl	15.8	14.6	7.0	2.2
Steward	indoxacarb			.9	
Thiodan	endosulfan	0.0015	0.0015	0.0012	0.0014
Tracer, Elector	spinosad		Slightly Toxic (>100)		
Trimax, Premise, Merit	imidacloprid		Moderately Toxic (>200)		
Vydate L	oxamyl	11.7		4.2	
Zephyr	abamectin	.024	.015	.0096	

*To convert ppm to pounds per acre foot, multiply by 2.7. For example, Lorsban's LC_{50} for catfish = 0.198; 0.198 x 2.7 would be 0.534 lbs per acre foot which would give the LC_{50} concentration.

Field Re-Entry Times for Insecticides

Insecticide	**Common Name**	**Re-entry Period-Hours**
Admire	imidacloprid	12
Altacor, Coragen	rynaxypyr	4
Ambush	permethrin	12
Ammo	cypermethrin	12
Asana XL, Adjourn	esfenvalerate	12
Atrapa, Fyfanon	malathion	12
Baythroid, Tombstone	cyfluthrin	12
Belt	flubendiamide	12
Bidrin	dicrotophos	6 days
Capture, Discipline, Brigade	bifenthrin	12
Carbine	flonicamid	12
Centric	thiamethoxam	12
Comite	propargite	72
Confirm	tebufenozide	4
Curacron	profenofos	48
Cygon	dimethoate	96
Cymbush	cypermethrin	*
Denim	emamectin benzoate	48
Diamond	novaluron	12
Diazinon	spectracide	*
Dicofol, Kelthane	dicofol	12
Di-Syston	disulfoton	48
FujiMite, Portal	fenpyroximate	12
Furadan	carbofuran	14 days
Guthion	azinphos-methyl	14-30 days
Intrepid	methoxyfenozide	4
Intruder	acetamiprid	12
Karate	lambda-cyhalothrin	24
Lannate	methomyl	72
Larvin	thiodicarb	48
Leverage	cyfluthrin/imidacloprid	12
Lindane	lindane	24
Lorsban	chlorpyrifos	24
Methyl Parathion	methyl parathion	48
	penncap M	48
Methyl Parathion 2 + Thiodan 3	methyl parathion + endosulfan	48
Mustang Max, Respect	zeta-cypermethrin	12
Oberon	spiromesifen	12
Orthene, Spitfire	acephate	24
Prolex, Proaxis	gamma-cyhalothrin	24
Regent	fipronil	24
Sevin	carbaryl	*
Steward	indoxacarb	12
Thiodan	endosulfan	24
Tracer	spinosad	4
Trimax, Merit, Alias	imidacloprid	12
Vendex	fenbutatin oxide	24
Vydate	oxamyl	48
Warrior	cyhalothrin	*
Zeal	etoxazole	12
Zephyr	abamectin	12

*An asterisk in the re-entry period column means that the compound has a re-entry statement which reads as follows: **Do not enter treated areas without protective clothing until sprays have dried.**