

TRACER® NATURALYTE INSECT CONTROL PHYSICAL PROPERTY ATTRIBUTES

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Abstract

Tracer® Naturalyte Insect Control is a specially developed suspension concentrate formulation for use in the cotton market. The product is water-based and contains no volatile organic solvents, making it more environmentally and user friendly. The particle size has been controlled for optimal performance against Heliothine species in cotton. Physical properties of the formulation have been chosen to deliver performance in a variety of spray usages including aerial and ground applications, to give the user a problem-free approach to insect control. Tracer® Naturalyte Insect Control is compatible with most other insect control agents, giving the user an excellent array of choices for their insect control needs.

Physical Properties and Attributes

Research and development to ensure good physical properties is a must to deliver a product such as Tracer® Naturalyte Insect Control. Formulation inerts have been chosen to balance viscosity, settling characteristics of the concentrate, and dispersion of the diluted product. When diluted in aerial or ground application spray equipment, the formulation will suspend very well. The particle size is controlled between 2 and 6 microns to ensure good efficacious performance. Tracer®, a 480 g/L (4 pounds/gal.) product, can be tank mixed with a number of common insecticides and defoliants to give a broad spectrum of control throughout the year.

Stability

Tracer® is formulated to be both chemically and physically stable over a wide range of temperatures and time. In Table I, particle size and density remain constant. The amount of separation in the concentrate is minimal.

In Table II, it can be seen that viscosity remains constant even when subjected to freeze/thaw and heated cycling regimes. No hard pack settling of material was noted in any sample.

Data in Table III shows the stability of the diluted product over time and temperature. Even after 3 months at elevated storage conditions, the dilution properties of Tracer® remain very good.

Suspension/Resuspension Comparison

As can be seen in Tables IV and V, Tracer® suspends and resuspends equivalent to or better than commercially available products.

Tank-Mix Compatibility

TRACER® is compatible with all cotton insecticides and defoliants tested to date. The following data in Table VI shows results of some tank-mix compatibility tests run in the laboratory. No incompatibility was observed in any case. Preliminary tests with oils and adjuvants have also shown no incompatibilities. Further testing with other cotton tank-mix partners is ongoing.

Conclusion

Tracer® exhibits excellent chemical and physical properties across a wide range of test regimes.

Tracer® dilutes well in a variety of hard waters and shows no deterioration over time and temperature storage conditions.

Tracer® mixes well with commonly used insecticides and defoliants used in the cotton market.

Table 1. Physical Property Data of Stability Samples

Sample	Part. Size, (μ)	Density
Initial	3.58	1.087 g/ml
1 month R.T	3.23	1.089 g/ml
F/T	3.79	1.087 g/ml
R.T./122°F	3.45	1.091 g/ml
100°F	3.19	1.092 g/ml
122°F	3.45	1.091 g/ml
2 month R.T.	3.58	1.086 g/ml
F/T	3.66	1.091 g/ml
R.T./122°F	3.93	1.092 g/ml
100°F	3.41	1.089 g/ml
122°F	4.33	1.089 g/ml
3 month R.T.	3.79	1.087 g/ml
F/T	3.86	1.091 g/ml
R.T./122°F	3.97	1.091 g/ml
100°F	3.81	1.087 g/ml
122°F	4.07	1.088 g/ml

Table 2. Viscosity and Settling of the Concentrate

SAMPLE	ASSAY	VISC. @100RS(cps)	PROBE
Initial	43.2%	168.3	neg.
1 month R.T.	N.D.	196.6	neg.
F/T	45.8%	170.6	"
R.T./122oF	45.8%	155.9	"
100oF	45.3%	167.2	"
122oF	45.4%	160.0	"
2 month R.T.	45.4%	199.9	"
F/T	45.3%	181.2	"
R.T./122oF	45.7%	172.5	"
100oF	46.4%	173.9	"
122oF	46.2%	178.6	"
3 month R.T.	45.2%	191.1	"
F/T	45.4%	169.7	"
R.T./122oF	45.4%	175.2	"
100oF	45.4%	172.0	"
122oF	45.3%	175.3	"

Table 3. Dilution Stability. Sedimentation numbers are mls. of precipitation.

		Tap	342	1026	300
Initial	0.25 hr.	0	0	0	0
	1 hr.	0.15	0.10	0.20	0.20
	4 hr.	0.30	0.30	0.50	0.35
		Tap	342	1026	300
3 month R.T.	0.25 hr.	0	0	0	0
	1 hr.	0.13	0.15	0.15	0.15
	4 hr.	0.25	0.30	0.35	0.30
Fr./Th	0.25 hr.	0	0	0	0
	1 hr.	0.12	0.17	0.17	0.15
	4 hr.	0.25	0.33	0.35	0.30
R.T./50oC	0.25 hr.	0	0	0	0
	1 hr.	0.15	0.15	0.15	0.15
	4 hr.	0.22	0.20	0.25	0.25
100oF	0.25 hr.	tr	tr	tr	0
	1 hr.	0.12	0.17	0.17	0.15
	4 hr.	0.25	0.33	0.35	0.30
122oF	0.25 hr.	0	0	0	0
	1 hr.	0.13	0.15	0.15	0.15
	4 hr.	0.30	0.30	0.35	0.33

Table 4. Suspension Comparison. Water Hardness

		Tap	57 ppm	342 ppm	1026 ppm
Larvin 3.2F ⁺	0.25 hr.	0.005 ml	0.005 ml	0.005 ml	0.02 ml
	1 hr.	0.02 ml	0.1 ml	0.25 ml	2.0 ml
	4 hr.	1.5 ml	0.4 ml	1.8 ml	50 ml
	24 hr.	4.0 ml	1.0 ml	4.5 ml	5.5 ml
Tracer* 480 g/L	0.25 hr.	0.005 ml	0.005 m	0.005 ml	0.005 ml
	1 hr.	0.05 ml	0.05 ml	0.05 ml	0.1 ml
	4 hr.	0.25 ml	0.2 ml	0.25 ml	0.4 ml
	24 hr.	0.4 ml	0.4 ml	0.7 ml	0.7 ml

Larvin 3.2 F Registered trademark of Rhone-Poulenc

TABLE5. Resuspension Comparison

Sample	# of Inversions to resuspend
Furadan 4F ⁺	28
Larvin 3.2F ⁺	15
Tracer* 480 g/L	13

Furadan 4F Registered trademark of FMC Corp.

Larvin 3.2 F Registered trademark of Rhone-Poulenc

TABLE 6. Tracer® Compatibility Tests With Various Tank Mix Partners

Product	Rep	50 Mesh	100 Sieve	325 Mesh	# Inv.
Lorsban 4/Tracer	#1	0	0	0	10
	2	0	0	0	11
	3	0	0	0	11
Pix/Tracer	1	0	0	0	18
	2	0	0	0	20
	3	0	0	0	17
Ciracrpm/Tracer	1	0	0	0	18
	2	0	0	0	20
	3	0	0	0	17
Karate/Tracer	1	0	0	0	7
	2	0	0	0	6
	3	0	0	0	6
Guthion/Tracr	1	0	0	tr	18
	2	0	0	tr	21
	3	0	0	tr	18
Orthene 75/Tracer	1	0	0	0	8
	2	0	0	0	8
	3	0	0	0	7

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