DuPont™ Krenite® S

brush control agent

Technical Bulletin

DuPont™ Krenite® S brush control agent is a water-soluble liquid formulation containing 4 pounds per gallon of ammonium salt of fosamine. It is diluted with water and applied as a foliar spray for control and/or growth suppression of many woody species on non-cropland, including highway, pipeline, utility and railroad rights-of-way, industrial plant sites, storage areas and other similar areas.

BIOLOGY

Krenite® S controls a broad spectrum of undesirable woody brush species without unsightly discoloration or undue loss of leaves. Foliar applications to deciduous species may be made during the period from full leaf expansion in the spring until development of full fall coloration. Normal seasonal leaf drop occurs the subsequent fall, but refoliation and growth of susceptible species the next spring is severely limited or entirely prevented. Coniferous species may be treated anytime during the growing season and generally display visible symptoms a few weeks to a few months after application. Applications directed only to parts of susceptible brush species will provide control only of the portions treated, resulting in a trimming effect.

PHYSICAL AND CHEMICAL PROPERTIES

Solubility

Krenite® S is completely dispersible in water. Agitation of the spray solution is not required once Krenite® S has been thoroughly mixed in the spray tank.

Compatibility

Krenite® S is compatible in tank mixes with most other non-crop herbicides.

Stability

Krenite® S is stable at normal storage and use conditions.

Volatility

Krenite® S is nonvolatile. It does not evaporate readily at normal atmospheric pressures and temperatures.

ENVIRONMENTAL FATE

Soil dissipation and biodegradability

Under field conditions fosamine ammonium is rapidly decomposed by soil microorganisms. Its half-life ranges from less than one day to five days. Degradation products are nonphytotoxic, low-molecular weight compounds resulting from normal soil microbial processes.

Metabolism and bioaccumulation

Fosamine ammonium is absorbed rapidly by the plant and is metabolized quickly in tolerant species. Fosamine ammonium is practically nontoxic to small mammalian species, fish, freshwater invertebrates and estuarine species due to its rapid degradation in plants and rapid elimination in animals.† It is also nontoxic to avian species and honey bees.† Fosamine ammonium does not bioaccumulate in fatty tissues.

Water quality

Fosamine ammonium is soluble in water and does not readily hydrolyze. In the environment it is absorbed by soil particles and is decomposed quickly by microorganisms in soil and water. Therefore, this material is not likely to run off into surface water or leach into subterranean aquifers. Krenite® S must not be applied directly to water, or to areas where surface water is present, or to intertidal areas below the mean high water mark.

Effects of repeated high-dose exposure

Fosamine ammonium has been evaluated extensively for toxicity and meets the U.S. Environmental Protection Agency (EPA) requirements for registration of products for non-crop uses. The results of these tests indicate consistently low to very low toxicity among all laboratory species evaluated. For example, negative results were obtained from the battery of tests for genetic damage

and mutations. Fosamine ammonium was not neurotoxic, nor did it affect fertility or produce birth defects. Prolonged dietary exposures to this compound, ranging from three to six months, did not produce precancerous lesions or evidence of significant organ toxicity at the highest doses tested. Fosamine ammonium does not bind to or accumulate in tissues; it does not produce genetic damage or mutations; and it did not produce any precancerous lesions as a result of prolonged dietary exposures. As part of the reregistration process for all products, the EPA conducted human and environmental risk assessments for the uses of Krenite® S and determined Krenite® S will not cause unreasonable risk to humans or the environment. Unconditional reregistration was granted in November 1997.

[†] EPA RED Fact Sheet. Fosamine ammonium; EPA 738-F95-005, January 1995.

Toxicity (Mammalian)			
Study	**Results**		**Comments**
Acute oral — rat	LD_{50}[1] > 5,000 mg/kg		Concentrated products are classified practically nontoxic by ingestion
Acute oral toxicity rating	**Class**	**LD_{50} (mg/kg)**	**Probable lethal dose (150 lb human)**
I	Very toxic	Up to 50	Up to 1 tsp
II	Moderately toxic	> 50-500	1 tsp to 1 oz
III	Slightly toxic	> 500-5,000	1 oz to 1 lb
IV*	Practically nontoxic	> 5,000	More than 1 lb
* Source: U.S.D.A. Agricultural Handbook No. 332 (1969).			
Study	**Results**		**Comments**
Acute dermal — rabbit	LD_{50}[1] > 5,000 mg/kg		Toxicity via skin contact: practically nontoxic
Acute inhalation — rat	4-hour LC_{50}[1] > 5.8 mg/L		Toxicity via inhalation: practically nontoxic
Skin irritation	Slight irritation		Toxicity: practically nontoxic
Skin sensitization	Nonsensitizer		
Eye irritation	Moderate irritation		Toxicity: slightly toxic

Toxicity (Avian and Aquatic)[3]		
Study	**Results**	**Comments**
Acute oral — LD_{50}[1] mallard duck	> 5,000 mg/kg	Practically nontoxic[4]
Acute oral — LD_{50}[1] bobwhite quail	> 5,000 mg/kg	Practically nontoxic[4]
Mallard duck — 8 day dietary LC_{50}[1]	> 5,620 ppm	Practically nontoxic[4]
Bobwhite quail — 8 day dietary LC_{50}[1]	> 5,620 ppm	Practically nontoxic[4]
Avian reproduction — mallard duck	NOEC[5] > 11,600 ppm	No adverse effects
Bluegill sunfish — 96 hour LC_{50}[1]	560 ppm	Low toxicity[2]
Rainbow trout — 96 hour LC_{50}[1]	330 ppm	Slightly toxic[2]
Water flea — 48 hour LC_{50}[1]	1,524 ppm	Low toxicity[2]
Honey bee — contact LD_{50}[1]	> 200 ug/bee	Practically nontoxic

[1] LD_{50} and LC_{50}: dose or concentration that is lethal to 50% of the test population. Doses are commonly defined in milligrams per kilogram of body weight (mg/kg). The smaller the numerical value of LD_{50} and LC_{50}, the greater the acute toxicity of the substance.

[2] Acute dermal and aquatic toxicity criteria are based on U.S.D.A. Handbook No. 332 (1969).

[3] Studies were conducted with the active ingredient.

[4] Avian toxicity criteria were taken from: Insecticides, H.L. Brooks, et al. (1973), Cooperative Extension Service, Kansas State University, Manhattan, Kan.

[5] No observed effects concentration.

Inerts

The inert ingredients contained in this product formulation are not classified by the EPA as inert ingredients of toxicological concern to humans or the environment.

Worker safety

Avoid contact with eyes or clothing. Wash thoroughly with soap and water after handling. In case of contact with eyes, flush with plenty of water. Call a physician if irritation persists.

Signal words

The EPA requires the Krenite® S label to bear the signal word “CAUTION” due to potential eye irritation.

This reference guide is not intended as a substitute for the product label for the product(s) referenced herein. Product labels for the above product(s) contain important precautions, directions for use and product warranty and liability limitations that must be read before using the product. Applicators must be in possession of the product label(s) at the time of application. Always read and follow all label directions and precautions for use when using any pesticide alone or in tank mix combinations.

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