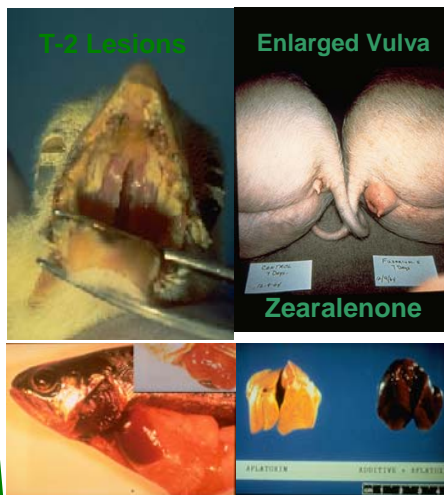


Dinaprop Composition

	Dinaprop Liquid	Dinaprop Dry-Buffered	Dinaprop Dry-Regular
Ammonium Propionate	100 %	48	N/A
Propionic Acid	65-70 %	1-2	50
Ammonium Hydroxide	30-35%	~50	50

How much DINAPROP Buffered will I use per ton of feed?

DINAPROP Buffered is included at a minimum level of 1 kilogram per metric ton of feed. When feed grain has much higher moisture than normal then the application rate should be increased proportionately to a level of up to 3 kg. per metric ton of grain or feed



AVIAN & TROUT HEPATOMEGALLY CAUSED BY AFLATOXICOSIS

Product Specifications

EFFICACY AND USES	As a mold inhibitor in animal feedstuffs, grain and feeds. Safe for all livestock.
COLOR	Amber Liquid
STORAGE	Dry and cool location. Avoid contact with direct sunlight.
STABILITY	One year in sealed original factory package
USE AND DOSE	Add at the rate of 1-3 kilograms per metric ton of grain or feed



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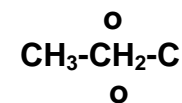
Advanced Mold Inhibition Technology



Electron microscope view of sporulation of *Aspergillus flavus*

Mold inhibitor containing ammonium propionate

The propionate ion in Dinaprop Liquid is easily released in order to provide a high level of efficacy.



DINAPROP Q & A

What are mold inhibitors?

Mold inhibitors are products that contain compounds which inhibit or kill mold to protect the feeds against the harmful effects molds and the mycotoxins they produce.

What are the compounds that are used as mold inhibitors?

Acetic acids, formic acid, potassium sorbate and propionic acid are some of the compounds that are used for mold inhibition. However, it is widely proven by researchers that propionic acid is the most potent compound to stop mold growth.

Why do we need to use a mold inhibitor like DINAPROP?

Mold inhibitors are products formulated to prevent the proliferation of toxins produced by molds called "mycotoxins". Molds are always present and they only need moisture, temperature, oxygen and an adequate food source to reproduce. Mold growth begins with the harvesting process, mechanical handling of grains, storage facilities, mixing and feeders in animal houses. Once molds grow, they start to produce mycotoxins which eventually create damage to feed nutrient and animals.

What is DINAPROP?

DINAPROP is a brand of mold inhibitor that contains propionic acid and/or ammonium di-propionate. There are both dry and liquid presentations of the buffered version.

What is DINAPROP BUFFERED?

DINAPROP BUFFERED is another form of mold inhibitor like DINAPROP REGULAR which is formulated to improve quality and minimize the deleterious corrosive effects caused by pure propionic acid. DINAPROP BUFFERED comes in two forms liquid and dry.

Is the content of DINAPROP BUFFERED and DINAPROP REGULAR similar?

No. DINAPROP REGULAR contains pure propionic acid which is absorbed in a dry mineral carrier. DINAPROP BUFFERED is made by the reaction of propionic acid and ammonium hydroxide resulting in ammonium di-propionate. Propionic acid is likewise included to make the product flow properly and to make it more effective than containing just ammonium di-propionate alone. Based on the studies conducted, ammonium di-propionate is the closest to propionic acid in effectiveness because of its ability to release free propionate ions.

What are the similarities and differences on how DINAPROP REGULAR and DINAPROP Buffered works?

Both preparations are intended to kill or inhibit mold growth by interfering with cellular respiration. DINAPROP REGULAR kills or inhibits mold by fumigation through the release of propionic acid. DINAPROP BUFFERED intervenes with cellular respiration by penetrating the cell membrane in the undissociated form and then rapidly dispersing within the cell membrane causing rapid acidification of the cytoplasm.

Advantages of using DINAPROP BUFFERED instead of using DINAPROP REGULAR DRY

It is widely documented that pure propionic acid is much more corrosive than the attenuated or buffered forms. The pH of DINAPROP BUFFERED is between 6.0 to 7.0 which is similar to the pH of feed stuffs. Propionic acid in its pure form is highly volatile and using BUFFERED DINAPROP will reduce volatility. This means that the ingredient has a greater degree of residual value. This is important where feed transport time and usage is relatively lengthy. BUFFERED DINAPROP minimizes the risk of injury to workers. Extended exposure of workers to propionic acid will cause irritation and contamination to clothing. Also inhalation of the vapors for an extended period of time may be conducive to respiratory difficulties. Because of the reduced volatility of DINAPROP BUFFERED these problems are reduced to "0".

Is there an advantage in combining several organic acids in a mold inhibitor?

It has been reported and proven by research at the **University of Georgia** conducted by Dr. Roger Wyatt that there is no synergism in combining organic acids. Since other acids are less effective than propionic acids and ammonium di-propionate their addition to the formula will result in over-all reduction of efficacy.

Aside from mold inhibition does DINAPROP BUFFERED exhibit bactericidal effect?

Yes. Depending on the level, DINAPROP BUFFERED can reduce *e. Coli* in the digestive tract of the animals thereby improving the animal performance.