



# Product Catalog



INSPIRED MOLECULAR SOLUTIONS™



[www.kemin.com](http://www.kemin.com)

# Kemin Industries

Kemin Industries, founded in 1961 by R.W. and Mary Nelson, was a family effort based on developing innovative agricultural products and marketing them throughout the Mid-western United States. The company's early products included mold inhibitors and flavors but quickly grew to encompass a full line of ingredients for animal feeds.

In just 50 years, Kemin has grown into a global company providing innovative ingredients to the animal health and nutrition, pet health and nutrition, and personal health, nutrition and beauty industries. Kemin ingredients provide nutritional and health solutions for animals and humans, impacting more than 1.3 billion people around the world every day.

In 2011, Kemin AgriFoods celebrated 50 years of business by renewing its commitment to customers worldwide to be the advisor you can count on. Our rich history, state of the art research and development and innovative products make us ready to meet your unique needs.

## **Inspired Molecular Solutions™**

Kemin AgriFoods remains committed to develop and implement the most advanced nutritional solutions for you. We are inspired to discover and understand our products and technologies at the molecular level, resulting in maximum efficiency and superior chemistry.

## **VALUE**

Our global research and development and manufacturing facilities are supported by local staff which take into account the various cultures, diverse issues and unique trends that exist in different regions. Our scientists, nutritionists and salespeople have the first-hand experience with the circumstances you encounter every day. In coordination with excellent customer service and support in the field, we are able to offer you the right products and services at the right price.

## **TOTAL NUTRITION™**

Through our TOTAL NUTRITION™ program, we offer you a range of nutritional solutions for raising healthy animals. We understand you need to raise naturally-healthy livestock that gives consumers the nutritional and health benefits they are looking for, while also returning profit. We focused our products and services to help you:

- Be Safe
- Be Efficient
- Be Healthy

We hope you find our solutions for producing safe, efficient and healthy animal protein can help you feed the world.

For the last 50 years and for many years to come, Kemin is the advisor you can count on. Our proven scientific knowledge, reliable technology and personalized service confirm our reputation as a total solution provider and your trusted advisor - helpful, honest and proven.

# Product Catalog - Dairy

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# Customer Service

## 1-800-752-2864

The Kemin Customer Service Department stands ready to take your product order or to connect you with the person who can answer your questions about our products and services. Working with your Key Account Manager, customer service makes your buying experience with Kemin complete and satisfactory.

### Customer Service can assist you with:

- Invoicing and billing questions.
- Product delivery time and product quality at delivery.
- MSDS and Product Specification Sheets.
- Product information requests.

Each customer situation is unique. Sometimes we get involved in developing completely new feed stability programs for customers. At other times, we help customers identify the source when problems occur and suggest how to correct them.

If requested, we provide assistance in monitoring microorganisms that can have an impact on feed quality and shelf life. In either case, CLS works closely with you and your Kemin Key Account and Technical Service Managers to develop a customized evaluation and protection protocol.

Kemin CLS uses the latest equipment and techniques to deliver one of the most comprehensive laboratory analysis programs in the livestock feeding industry.



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## Customer Laboratory Services (CLS)

The mission of the Kemin Customer Laboratory Services (CLS) Department is to partner with our customers to help maintain the quality and stability of your feed and feed ingredients. CLS provides the laboratory support services necessary to evaluate your product needs and to develop and recommend corrective actions.

Our scientific staff provides technical expertise and equipment in the critical areas in livestock feed manufacturing.

- Advanced laboratory techniques for accelerated shelf-life studies (microbial or oxidative spoilage).
- Measurement of both antioxidant and mold inhibitor content.
- Application levels specific to your needs.
- Presence of pathogens and spoilage organisms in feed and feed ingredients.

The Kemin CLS program can help you determine:

- Raw material quality
- Application verification
- Equipment calibration
- Efficacy verification
- End product stability
- Antioxidant survival measurement
- Microbial and pathogen control solutions

*(more details on the following page)*



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# Customer Laboratory Services (CLS)

*(continued from previous page)*

Your Kemin technical support team includes a key account manager; a technical services manager; application equipment experts to help you design and monitor product use, and a dedicated team of CLS scientists working at the Kemin CLS laboratory in Des Moines, Iowa.

High quality feedstuffs are an integral and important part of the TOTAL NUTRITION™ program. If you would like more information about the Kemin Customer Laboratory Services program and the benefits it can bring to your feeding program, **please call your Kemin representative or contact the Kemin Customer Service Department at 800-752-2864.**



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# The Kemin Product Application Department

The mission of the Kemin Product Application Department is to provide and support state-of-the-art product application systems for our customers.

## Custom Equipment

Since 1961, Kemin has provided feed stability and animal performance products to American agriculture. A critical part of making our products work correctly is accurate dosage through precise application of our liquid micro-ingredients. Our products and applicators work hand-in-hand to deliver the TOTAL NUTRITION™ performance we promise our customers. Today, we offer a mature, experienced engineering team dedicated to designing liquid application systems and overseeing their fabrication, installation and maintenance.

## Design

We design each liquid micro-ingredient applicator system to satisfy the unique characteristics of each customer site. It starts with a facility site survey by an experienced Kemin equipment engineer. The information gathered from the survey is integrated into a design that takes into account the layout, control systems, production flow and existing equipment at the site. Because we know what it takes to apply Kemin products properly, we tailor-make a system that complements your existing operation. Based on customer needs, equipment options can range from a simple, single, manually-controlled pump dispenser to a more integrated multiple pump system, with several options in between.

## Installation

There's no guesswork during installation. Kemin equipment installers arrive at your site with a system that's ready to install. Even with complicated installations, we typically have a system up and running in less than two working days. Disruption to a plant's daily workflow is minimal. Yet we encourage involvement of on-site staff during the installation process for both the educational and future support value it affords.

## Ongoing Support

After installation, the Kemin Product Application Department provides continued support to optimize our customer's investment in Kemin-designed equipment and the Kemin branded products it applies. All industrial equipment experiences wear and tear. So we continue to be available to counsel local staff in their process of maintenance and troubleshooting.

You get more value from the Kemin products you buy when Kemin-designed equipment applies them.



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# The Kemin Quality Program

Delivering quality products and services to customers is paramount at Kemin. But what do we really mean by that, and how do we measure our success?

Primarily, we continue to successfully maintain the ISO 9001:2008 certification that Kemin U.S. manufacturing facilities first achieved in 2001. The Kemin management system requires our manufacturing, quality control, CLS, research and development and others to follow a strict set of procedures in their daily activities. Following those procedures assures customers that the products they buy are of the same top quality every time they order. We have dedicated staff who measure, track and report to company management on a series of "Quality Objectives." The report covers such measurements as customer complaints, product recalls, production batch rejections, on-time shipments, Customer Laboratory Services (CLS) test results turnaround times, and others. In every case, the report shows actual performance against targets.

Kemin facilities are assessed by organizations including Lloyd's Register Quality Assurance, FAMI-QS/AFIA International Safe Feed/Safe Food, AFIA Domestic Safe Feed/Safe Food, Facility Certification Institute HACCP, Grocery Manufacturer Association Supplier Audits for Food Excellence, the Orthodox Union, and the Islamic Food and Nutrition Council of America. Among the measures audited during these certifications are:

- Following documented manufacturing procedures
- Control of documents and records
- Overall quality system
- Food / feed safety plans
- Equipment maintenance plans
- Appropriate and documented training for employees
- Identification and control of food safety hazards
- Inspection of raw materials and finished products
- Building, grounds and equipment
- Ingredient purchasing procedures
- Identification and traceability of all ingredients and finished products
- Product specifications
- Customer complaints and feedback
- Control of non-conforming product



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# Be Safe.

**Be Safe:** Safe, contaminant-free food starts with the reduction of pathogens in animal feed. **TOTAL NUTRITION™** recognizes safe animal feed is a prerequisite for safe food and considers the complete food quality chain from raw materials to the final human food items.

# KEM SAN<sup>®</sup> brand liquid antimicrobial

KEM SAN<sup>®</sup> liquid antimicrobial is an EPA-registered proprietary formulation of propionic, acetic, benzoic and other organic acids designed for the control of bacteria in drinking water for livestock and poultry.

## Features

- Mixes quickly and completely with water to provide a constant, reliable concentration throughout the drinking water system.
- A blend of organic acids proven to provide superior control of water-borne microbial pathogens.
- Buffered to a pH of 4.7 - 5.7, which when used at the recommended level in drinking water, will maintain pH in the range necessary to optimize the effectiveness of chlorine.
- EPA registered in the U.S.

## Benefits

- Provides proven biocidal activity against a broad spectrum of pathogenic bacteria apart from chlorine.
- Fits into pre-harvest pathogen reduction strategies, reducing potential for cross-contamination in the processing plant.
- Proven to reduce plant condemnations, promote food safety and increase profitability.
- Works well with chlorine in livestock drinking water systems to provide superior bacterial control.
- Maintains clean water lines.
- Compliant with state and federal regulations.

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## Description

For the control of non-public health bacteria in livestock and poultry drinking water, high moisture grains (oats, corn, barley, wheat, and sorghum), hay (alfalfa, clover, timothy, vetch, cowpeas, sudan grass, peavine, rye grass, peanut, orchard grass, lespedeza, fescue, brome grass, lupines, soybean, Bermuda grass and bluegrass), storage areas for silage and grain, and poultry litter.

## Ingredients

Propionic acid: 70.5%; other ingredients: 29.5%

*(more details on the following page)*



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# KEM SAN<sup>®</sup> brand liquid antimicrobial

*(continued from previous page)*

## Directions

**Drinking Water:** Use as an aid in the reduction of bacteria in processed drinking water for livestock and poultry. Use 1/3 to 1-1/2 fluid ounces per gallon of water. Use 1/3 fluid ounce under normal conditions. Use 1-1/2 fluid ounces when water contains high bacterial contamination.

**Poultry Litter:** Use 6 fluid ounces in one gallon of water. Apply this solution to 1000 square feet of litter.

**Feed and Hay:** Use 28.75 fluid ounces (2 pounds) per ton. When used in feed, do not dilute.

**Silage Storage:** Remove all old silage and dirt from all interior surfaces of the storage areas. Mix 6 fluid ounces in one gallon of water.

**Grain Storage:** Remove all old grain and dirt from all interior surfaces of the storage areas. Mix 6 fluid ounces in one gallon of water. Apply this solution to 1000 square feet of storage areas.

## Storage

Store in a warm, dry place above 40° F to prevent freezing.  
EPA Registration No. 8596-31. EPA Est. 8596-IA-001.

## Packaging

50 lb pail, 450 lb drum, 2,000 lb tote and bulk.



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# ENDOX<sup>®</sup> brand dry antioxidant

ENDOX<sup>®</sup> dry antioxidant is a complete antioxidant system designed to stabilize high fat feeds and protect fat-soluble vitamins in concentrated mineral premixes.

## Features

- Formulated to provide activity equal to ethoxyquin and greater than BHT.
- Effectively controls lipid oxidation.
- Dry flowable formulation.
- Three-part antioxidant system.
- Laboratory support services.

## Benefits

- Retards oxidative degradation of fat-soluble vitamins such as Vitamin A and E.
- ENDOX<sup>®</sup> is a more cost-effective alternative to dry ethoxyquin or BHT.
- Full nutritive value of lipid based ingredients is available to animal.
- Easy to incorporate into premixed feed.

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## Description

A dry antioxidant for all processed animal feeds.

## Ingredients

Calcium carbonate, ground corn cob, amorphous silicon dioxide, citric acid, soybean oil, ethoxyquin, butylated hydroxytoluene, phosphoric acid, butylated hydroxyanisole and mono- and di-glycerides

## Directions

For feed, use 0.25 lb per ton; for meat meal, use 0.25 – 0.50 lb per ton; for feather meal, use 0.50 lb per ton; for feed vitamin premixes, add to premix at a level such that the feed contains 0.25 lb per ton of finished feed. The actual inclusion rate will depend upon formulation, storage conditions and desired storage time of complete feed.

## Storage

Store in a cool, dry place. Keep container closed when not in use.

## Packaging

50 lb bag



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# ENDOX<sup>®</sup> brand 5X Concentrate dry antioxidant

ENDOX<sup>®</sup> 5X dry is a concentrated, complete antioxidant system for use in stabilizing fat in processed animal feeds and to protect fat-soluble vitamins in concentrated premixes.

## Features

- Well-balanced dry antioxidant system with protection against pro-oxidants.
- Blend of antioxidants and chelators for superior chemistry.
- Small particle size for better distribution and contact with feed ingredients.
- Unique and standardized production process – every particle is active and coated with antioxidants.
- Allows homogenous distribution in premix and feed.

## Benefits

- Retards oxidative degradation of fat-soluble vitamins such as Vitamin A and E.
- Outperforms single antioxidants and other blends.
- Helps secure optimal feed stability for better animal performance.
- Requires 5 times less transportation, logistics, warehouse space and administration.
- Easy application in premix.
- Proven efficacy.

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## Description

A dry antioxidant for all processed animal feeds.

## Ingredients

Soybean oil, amorphous silicon dioxide, ethoxyquin (a preservative up to 12.0%), butylated hydroxyanisole (a preservative), citric acid (a preservative) and phosphoric acid

## Directions

Use at a rate of 30 ppm (parts per million) in feed. For vitamin premixes, add at a level such that there will be 30 ppm of product in the final feed.

## Storage

Store in a cool, dry place. Keep container closed when not in use.

## Packaging

50 lb bag



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# RENDOX<sup>®</sup> brand AET liquid antioxidant

RENDOX<sup>®</sup> AET is a blended liquid antioxidant system used to stabilize animal fats, vegetable oils and meat meal. It can deliver ethoxyquin-like results but takes advantage of a synergistic blend of ingredients to reduce the overall inclusion rate of ethoxyquin.

## Features

- Contains a complete antioxidant system of blended synthetic antioxidants, surfactants and chelators.
- Effectively controls lipid oxidation.
- A trustworthy, superior alternative to ethoxyquin.
- Laboratory support services.

## Benefits

- Maintains optimal nutritional value and palatability of the fat.
- Ability to reduce the overall usage of ethoxyquin.
- Enables the user to achieve targeted storage period.
- Maintains ingredient freshness in feed to deliver targeted consumption and full nutritive value.

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## Description

A liquid antioxidant for fats, oils and meat meal.

## Ingredients

Soybean oil, butylated hydroxytoluene, lecithin, ethoxyquin, vegetable fatty acids of methyl ester, butylated hydroxyanisole and mono- and diglycerides

## Directions

Use at a rate of 1 - 2 lbs per ton for animal fats and oils. Use 2 lbs per ton for meat meal. The actual inclusion rate will depend upon formulation, storage conditions and desired storage time of the complete feed. Recommend product use with a Kemin approved application system.

## Storage

Store in a cool, dry place. Keep container closed when not in use.

## Packaging

40 lb pail, 400 lb drum and 2,000 lb tote.



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# RENDOX<sup>®</sup> brand AT20 liquid antioxidant

RENDOX<sup>®</sup> AT20 is a blended liquid antioxidant formulated to stabilize animal fats, vegetable oils and meat meal. It takes advantage of a synergistic blend of ingredients that completely eliminates the inclusion of ethoxyquin.

## Features

- An ethoxyquin-free option for controlling lipid oxidation.
- Superior efficacy to pure ethoxyquin.
- High potency formulation.
- Laboratory support services.

## Benefits

- Maintains optimal nutritional value and palatability of the fat.
- Provides ability to eliminate the usage of ethoxyquin.
- Enables the user to achieve targeted storage period.
- Maintains ingredient freshness and nutritive value.

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## Description

A liquid antioxidant for animal fats, meals and feeds.

## Ingredients

Vegetable oil, butylated hydroxyanisole and butylated hydroxytoluene

## Directions

Use at a rate of 1 lb per ton. The actual inclusion rate will depend upon formulation, storage conditions and desired storage time of the complete feed. Recommend product use with a Kemin approved application system.

## Storage

Store in a cool, dark place. Use within 12 months of manufacturing date. Keep container closed when not in use. Maintain the temperature of the product and delivery lines between 65° and 90° F (18° -32° C) during use.

## Packaging

40 lb pail, 400 lb drum and 2,000 lb tote.



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# RENDOX<sup>®</sup> brand CQ liquid antioxidant

RENDOX<sup>®</sup> CQ is a blended liquid antioxidant system formulated with tertiary butyl hydroquinone (TBHQ) to stabilize vegetable oils and meat meals.

## Features

- Contains a complete antioxidant system of a synthetic antioxidant, surfactant and chelator.
- Effectively controls lipid oxidation.
- Designed specifically for difficult to stabilize oils and fats.
- Laboratory support services.

## Benefits

- Maintains optimal nutritional value and palatability of the fat.
- Ability to eliminate the usage of ethoxyquin, BHA and BHT.
- Enables the user to achieve targeted storage period.

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## Description

A liquid product containing tertiary butyl hydroquinone, which is designed to protect ingredients from autoxidative deterioration. Does not contain ethoxyquin, butylated hydroxyanisole or butylated hydroxytoluene.

## Ingredients

Mono- and di-glycerides, soybean oil, tertiary butyl hydroquinone, propylene glycol and citric acid

## Directions

Use 1 - 2 lbs per ton for fats and oils. The actual inclusion rate will depend upon formulation, storage conditions and desired storage time of the complete feed. Recommend product use with a Kemin approved application system.

## Storage

For best results, do not store continuously at freezing temperatures or near direct heat. Use within 12 months of the manufacturing date. Keep container closed when not in use. Maintain the temperature of the product and delivery lines between 60° and 90° F (18 - 32° C) during use.

## Packaging

20 kg pail, 200 kg drum and 1,000 kg tote.



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# RENDOX<sup>®</sup> brand EQ liquid antioxidant

RENDOX<sup>®</sup> EQ is a pure liquid ethoxyquin used to stabilize rendered by-products from autoxidative deterioration in transit to the end user.

## Features

- An economical option for controlling lipid oxidation.
- Ethoxyquin-based antioxidant.
- Laboratory support services.

## Benefits

- Maintains freshness of fats and meals before further processing.
- Achieves targeted storage period with proper post pelleting application.

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## Description

A liquid antioxidant that is designed to protect rendered by-products from autoxidative deterioration in transit to the end user.

## Ingredients

Ethoxyquin 95%, a preservative

## Directions

Use 1.6 lbs per ton for fishmeal. Use 0.25 – 2 lbs/ton for fats and oils. Use 0.106 - 0.210 lbs per ton for feedstuffs. The actual inclusion rate will depend upon formulation, storage conditions and desired storage time of the complete feed. Recommend product use with a Kemin approved application system.

## Storage

For best results, do not store continuously at freezing temperatures or near direct heat. Use within 12 months of the manufacturing date. Keep container closed and protected from light when not in use (may discolor on exposure to air or light). Maintain the temperature of the product and delivery lines between 60° and 90° F (15.5 - 32° C) during use.

## Packaging

20 kg pail, 200 kg drum and 1,000 kg tote.



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# NATUROX<sup>®</sup> brand Premium liquid antioxidant

NATUROX<sup>®</sup> Premium is a system of natural, botanical-based liquid antioxidants for fats, oils and meat meal.

## Features

- All-natural ingredients.
- High delta tocopherol activity level.

## Benefits

- Antioxidant choice for the all-natural feed market.
- Maintains optimal nutritional value and palatability of the fat, oil and meat meal.

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## Description

A liquid product containing natural antioxidants, which is designed to protect fats, oils, meat meal and complete feed from autoxidative deterioration and preserve freshness.

## Ingredients

Vegetable oil, natural mixed tocopherols, lecithin and rosemary extract

## Directions

Use 0.5 lbs/ton for fats and oils. The actual inclusion rate will depend upon formulation, storage conditions and desired storage time of the complete feed. Maintain the temperature of the product and delivery lines between 65 and 90° F (18 - 32° C) during use. Recommend product use with a Kemin approved application system.

## Storage

For best results, do not store continuously at freezing temperatures or near direct heat. Use within 24 months of the manufacturing date. Keep container closed when not in use.

## Packaging

20 kg pail, 25 kg pail, 900 kg tote and bulk.



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# NATUROX<sup>®</sup> brand Plus dry antioxidant

NATUROX<sup>®</sup> Plus is a system of natural, botanical-based dry antioxidants for fats, oils and meat meal.

## Features

- All-natural ingredients.
- High delta tocopherol activity level.

## Benefits

- Antioxidant choice for the all-natural feed market.
- Maintains optimal nutritional value and palatability of the fat, oil and meat meal.

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## Description

A dry, free-flowing product containing natural antioxidants, which is designed to protect fats, oils, meat meal and complete feed from autoxidative deterioration and preserve freshness.

## Ingredients

Amorphous silicon dioxide, citric acid, natural mixed tocopherols, vegetable oil and rosemary extract

## Directions

Use 0.3 - 0.6 lbs/ton for dry mixes. The actual inclusion rate will depend upon formulation, storage conditions and desired storage time of the feedstuff. Recommend product use with a Kemin approved application system.

## Storage

For best results, do not store continuously at freezing temperatures or near direct heat. Use within 9 months of the manufacturing date. Keep container closed when not in use.

## Packaging

20 kg bag



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# FRESH CUT<sup>®</sup> brand

## Plus liquid hay preservative

FRESH CUT<sup>®</sup> Plus liquid hay preservative is a mold inhibitor for hay harvested and baled at higher moisture levels.

## Features

- Contains a blend of organic acids effective on a wide variety of mold strains.
- Compatible with other feed ingredients.
- Liquid formulation allows for more complete distribution and improved penetration into the hay bale.
- EPA registered.

## Benefits

- Helps reduce leaf shattering and field losses by enabling the producer to bale at higher moistures.
- Putting up hay at higher moisture levels with FC+ treatment helps shorten curing time.
- Promotes higher dry matter digestibility and minimizes nutrient loss.
- Helps retain the natural color of the hay and improves palatability.

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## Description

A preservative for hay (alfalfa, clover, timothy, vetch, cowpeas, sudan grass, peavine, ryegrass, peanut, orchard grass, lespedeza, fescue, brome grass, lupines, soybean, Bermuda grass and bluegrass).

## Ingredients

**Active Ingredients:** Propionic acid

**Other Ingredients:** Water, acetic acid, ammonium hydroxide, polysorbate 80, benzoic acid, butylated hydroxytoluene, FD&C yellow no. 5 and FD&C blue no. 1

*(more details on the following page)*



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# FRESH CUT<sup>®</sup> brand

## Plus liquid hay preservative

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### Directions

This product may only be used during the baling process if appropriate baler equipment is used which prevents exposure of non-target organisms to this pesticide product. Do not apply to pre-harvest hay and straw, cut hay and straw in the field prior to baling, or to hay and straw after it has been baled. Apply product to the hay and straw as it is fed into the baler, using the rates on the label. The baler application equipment must prevent drippage and drift, and must function properly and be used/maintained in accordance with the manufacturer's written operation instructions.

#### Alfalfa Hay - Small Squares and Large Rounds

% Moisture	Lbs/Ton FRESH CUT PLUS
18 - 20	4
21 - 25	6 - 8
26 - 30	12 - 15

#### Alfalfa Hay - Large Rounds

% Moisture	Lbs/Ton FRESH CUT PLUS
15 - 20	8
21 - 24	12
24 - 27	14

EPA Registration No. 8596-35 EPA EST. 8596-IA-001 & 8596-TX-002

Recommend use with a Kemin approved application system.

#### Hay Management Recommendations:

- Do not store untreated hay near high moisture treated hay.
- Store hay off the ground, under a roof.
- If hay is stored in a barn, be certain there is good ventilation.
- Harvest all hay at the proper moisture and stage of maturity.

### Storage

Store in a warm, dry place above 40° F to prevent freezing.

**NOTE:** This product is regulated by the Environmental Protection Agency. Please refer to the product label for complete directions and precautionary statements.

### Packaging

50 lb pail, 450 lb drum and 2,000 lb tote and bulk.



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# SILAGE SAVOR<sup>®</sup> brand

## Plus liquid silage preservative

Silage SAVOR<sup>®</sup> Plus liquid is part of a unique, premium organic acid-based silage stabilizer product line. Silage SAVOR Plus, available in a convenient liquid form, is designed to assist in the fermentation of silages by providing an environment that is optimal for epiphytic lactic acid-producing bacteria to grow, resulting in a rapid drop in pH to provide a stable silage.

## Features

- A blend of several organic acids effective on a wide variety of mold strains.
- Buffered for improved equipment and employee safety.
- Available in several container sizes to meet your volume needs.

## Benefits

- Provides an alternative under difficult harvest conditions to establish a better environment for beneficial bacteria to grow.
- Promotes more uniform fermentation to help maintain nutrient value by reducing heating and dry matter losses.
- Can be used on forage crops and on high moisture corn.
- Delivers production efficiencies by maintaining nutrient values of ensiled forages.

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## Description

A liquid preservative that assists in reducing the time normally needed for the fermentation process. Fewer nutrients are lost and silage quality is improved. May be used as a mold inhibitor for processed feed ingredients and animal feeds.

## Ingredients

Propionic acid, water, acetic acid, ammonium hydroxide, mono- and di-glycerides, benzoic acid, butylated hydroxytoluene and FD&C yellow #5

*(more details on the following page)*



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# SILAGE SAVOR<sup>®</sup> brand

## Plus liquid silage preservative

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### Directions

Apply Silage SAVOR Plus liquid preservative with an approved applicator. Recommend product use with a Kemin approved application system.

Crop/Application	Moisture	Lbs/Ton
Alfalfa and Other Legumes (ensiled)	50 - 65%	1
Grass (ensiled)	60 - 70%	1
Corn Silage	60 - 65%	1
Oatlage and other Small Grain Silage	55 - 70%	1
High Moisture Grain (ensiled) (ground) (shelled)	20 - 32%	2 - 4
Baled Silage or Balage	55 - 65%	1
Bunk Life Extension		2
Animal Feed		1 - 2
Processed Feed Ingredients		1 - 4

**Apply Top SAVOR<sup>®</sup> brand liquid preservative to stop top layer spoilage.  
ENSILE ONLY AT RECOMMENDED MOISTURE LEVELS.**

### Storage

**In cool weather**, store in a warm, dry place above 35° F. Do not use or store near heat or an open flame.

**In warm weather**, store in dark or deep shade.

### Packaging

50 lb pail, 450 lb drum and 2,000 lb tote and bulk.



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# SILAGE SAVOR<sup>®</sup> brand

## dry silage preservative

Silage SAVOR<sup>®</sup> dry silage preservative is part of a unique, premium organic acid-based silage stabilizer product line. Silage SAVOR dry is designed to assist in the fermentation of silages by providing an environment that is optimal for epiphytic lactic acid-producing bacteria to grow, resulting in a rapid drop in pH to provide stable silage.

## Features

- A blend of several organic acids effective on a wide variety of mold strains.
- Buffered for improved equipment and employee safety.

## Benefits

- Provides an alternative under difficult harvest conditions to establish a better environment for beneficial bacteria to grow.
- Promotes more uniform fermentation to help maintain nutrient value by reducing heating and dry matter losses.
- Can be used on forage crops and on high moisture ground corn.
- Delivers production efficiencies by maintaining nutrient values of ensiled forages.

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## Description

A dry preservative that assists in reducing the time normally needed for the fermentation process. Fewer nutrients are lost and silage quality is improved.

## Ingredients

Propionic acid, verxite, pumice, ammonium hydroxide, lactic acid, amorphous silicon dioxide, disodium EDTA, isopropyl alcohol, benzoic acid, butylated hydroxyanisole, propyl gallate, methylparaben, propylparaben, sorbic acid, and natural and artificial flavors

*(more details on the following page)*



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# SILAGE SAVOR<sup>®</sup> brand

## dry silage preservative

*(continued from previous page)*

### Directions

Apply over each load, or each 4" layer in the silo.

Crop/Application	Moisture	Lbs/Ton
Alfalfa and Other Legumes (ensiled)	50 - 65%	1
Grass (ensiled)	60 - 70%	1
Corn Silage	60 - 65%	1
Oatlage and other Small Grain Silage	55 - 70%	1
High Moisture Grain (ensiled) (ground) (shelled)	26 - 32%	2 - 4
Baled Silage or Balage	55 - 65%	1
Bunk Life Extension		2

**Apply Top SAVOR<sup>®</sup> brand liquid preservative to stop top layer spoilage.  
ENILE ONLY AT RECOMMENDED MOISTURE LEVELS.**

### Storage

Store in a cool, dry place. Keep container closed when not in use.

### Packaging

50 lb bag



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# SILAGE SAVOR<sup>®</sup> brand

## dry flowable silage preservative

Silage SAVOR<sup>®</sup> dry flowable silage preservative is part of a unique, premium organic acid based silage stabilizer product line. Silage SAVOR dry flowable is compatible with dry granular applicators. It is designed to assist in the fermentation of silages by providing an environment that is optimal for epiphytic lactic acid-producing bacteria to grow, resulting in a rapid drop in pH to provide stable silage.

## Features

- A blend of several organic acids effective on a wide variety of mold strains.
- Buffered for improved equipment and employee safety.
- Available in 50 lb bags.

## Benefits

- Provides an alternative under difficult harvest conditions to establish a better environment for beneficial bacteria to grow.
- Promotes more uniform fermentation to help maintain nutrient value by reducing heating and dry matter losses
- Can be used on forage crops and on high moisture ground corn.
- Delivers production efficiencies by maintaining nutrient values of ensiled forages.

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## Description

A dry, flowable preservative for use in applicators to assist in reducing the time normally needed for the fermentation process. Fewer nutrients are lost and silage quality is improved.

## Ingredients

Propionic acid, calcium carbonate, amorphous silicon dioxide, ammonia hydroxide, lactic acid, water, isopropyl alcohol, disodium EDTA, benzoic acid, propyl gallate, methylparaben, propylparaben, sorbic acid, and natural and artificial flavors

*(more details on the following page)*



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# SILAGE SAVOR<sup>®</sup> brand

## dry flowable silage preservative

*(continued from previous page)*

### Directions

For use with Gandy<sup>®</sup> brand or other dry applicators. Calibrate according to manufacturer's instructions.

Crop/Application	Moisture	Lbs/Ton
Alfalfa and Other Legumes (ensiled)	50 - 65%	1
Grass (ensiled)	60 - 70%	1
Corn Silage	60 - 65%	1
Oatlage and other Small Grain Silage	55 - 70%	1
High Moisture Grain (ensiled) (ground) (shelled)	26 - 32%	2 - 4
Baled Silage or Balage	55 - 65%	1
Bunk Life Extension		2

*Gandy<sup>®</sup> brand is a registered trademark of the Gandy Company, Owatonna, MN.*

**Apply Top SAVOR<sup>®</sup> brand liquid preservative to stop top layer spoilage.  
ENSILE ONLY AT RECOMMENDED MOISTURE LEVELS.**

### Storage

Store in a cool, dry place. Keep container closed when not in use.

### Packaging

50 lb bag



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# TMR SAVOR<sup>®</sup> brand dry mold inhibitor

A specially formulated dry mold inhibitor/antioxidant for dairy and beef total mixed rations (TMR) designed to extend bunk life by inhibiting mold growth and protecting rations with high fat contents.

## Features

- Formulated with a blend of mold inhibitors to prevent mold in the TMR up to 12 hours.
- Contains feed grade antioxidants to prevent fat rancidity.
- Dry formula for easy dispersion in the TMR mixer.

## Benefits

- Prevents mold growth as silage is exposed to oxygen and mixed with other feed ingredients in the TMR and then exposed to environmental temperatures in the bunk.
- Stops mold growth in silages or contaminated feed not treated during or prior to storage.
- Slows rancidity in high fat ingredients used in commercial feed formulations or in on-farm mixed TMR as feed in the bunk is exposed to humidity, oxygen and high temperatures.
- Reduces off-flavor feed rejections due to mold growth or fat rancidity.
- Allows maximum performance of the formulated ration.

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## Description

A dry mold inhibitor/antioxidant for dairy and beef feeds. Provides antioxidant protection for rations with added fat.

## Ingredients

Calcium propionate, amorphous silicon dioxide, soybean oil, ethoxyquin, butylated hydroxytoluene and butylated hydroxyanisole

## Directions

Add to mixer wagon at 2 lbs per ton. Designed to stabilize a TMR up to 12 hours. A higher dosage may be required in hot weather or with poor quality ingredients. When initially starting this program, use 4 - 6 lbs per ton for 5 days as a "clean out."

## Storage

Store in a cool, dry place. Keep container closed when not in use.

## Packaging

50 lb bag



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# Top SAVOR<sup>®</sup> brand liquid preservative

This high acid content liquid mold preservative helps reduce the dry matter loss that can occur in the top 36 inches of silage bunkers or towers.

## Features

- A blend of several organic acids effective on a wide variety of mold strains.
- Buffered, organic acid blend for improved employee safety and low corrosivity.
- Liquid allows for more complete distribution and improved penetration of the forage.
- Can be used with other acid or biological preservatives.

## Benefits

- Helps reduce overall silage top layer loss or shrinkage.
- Helps reduce mold inoculation to finished feeds.
- Eliminates feed rejection at the bunk created by feeding contaminated feed.

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## Description

A liquid preservative that reduces dry matter loss normally associated with the top 36 inches of silage bunkers or tower silos. Application just before sealing ensures that dry matter loss and spoilage are reduced.

## Ingredients

Propionic acid, water, acetic acid, sodium hydroxide, ammonium hydroxide, benzoic acid, sorbic acid, methylparaben, propylparaben and FD&C red no. 40

## Directions

**Bunker Silos:** Apply with an approved applicator. After completion of compaction of a bunker silo, spray the top of the silage with 1 lb for each 10 square feet of silage. Cover silage with weighted plastic covering.

**Tower Silos:** Immediately after the last load of forage is placed in the silo, use "Good Silo Entry Practices" to enter the silo and pack the loose forage. Using an approved hand applicator, sprinkle Top SAVOR preservative on forage at the rate of 1 lb for each 10 square feet. Double the levels near the outside top edge of the tower silo.

*(more details on the following page)*



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# Top SAVOR<sup>®</sup> brand liquid preservative

*(continued from previous page)*

*Top SAVOR<sup>®</sup> brand liquid preservative can be used in conjunction with Silage SAVOR<sup>®</sup> brand preservative or Kem LAC<sup>®</sup> brand water soluble silage inoculant, a lactobacillus based inoculant.*

Recommend product use with a Kemin approved application system.

**IMPORTANT:** It is recommended that silage be covered with plastic when Top SAVOR preservative is used in a bunker silo or tower site.

**NOTE:** Top SAVOR preservative is not a substitute for good management.

## Storage

Store in a warm location. Keep container closed when not in use.

## Packaging

50 lb pail, 450 lb drum and bulk



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# Kem LAC<sup>®</sup> brand

## HD water soluble silage inoculant

Kem LAC<sup>®</sup> HD (for high density) is water soluble and contains a mixture of live, viable *Lactobacillus* *sp.* organisms to be used in freshly chopped forage at silo filling time. It helps speed fermentation, reduce dry matter loss, and preserve nutrient availability and optimize the nutritional quality of your crop.

## Features

- Contains a mixture of three lactic acid-producing bacteria to help speed fermentation.
- Guaranteed analysis of 136 billion cfu/g (61 trillion cfu/lb).
- This high density formula provides more bacteria (a 500 gram canister treats 500 tons of forage) than other products in the market, which helps limit the amount of refilling of applicators each day.
- Highly soluble in water.

## Benefits

- Helps speed the rate of lactic acid fermentation.
- Helps retain more digestible protein.
- Helps control silage temperatures in the silo.
- Helps reduce silage loss or shrinkage.

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## Description

A concentrated source of microorganisms beneficial to silage fermentation.

## Ingredients

Maltodextrin, *Lactobacillus plantarum*, *Lactobacillus acidophilus*, *Lactobacillus bulgaricus*, sodium silico aluminate, sodium thiosulfate, and FD&C blue no. 1

## Directions

Mix one 500 gram canister into the appropriate amount of water for your applicator. One canister treats 500 tons (450 tonnes) of silage at 150,000 cfu/g of silage or 335 tons of whole grain silage or earlage at 225,000 cfu/g. Small grain silage or high moisture grain may require a 1.5 times application rate. Ensile only at recommended moisture levels.

For best results, prepare mixture 2 to 3 hours before use. Apply solution evenly over silage as it is harvested or ensiled. Always add Kem LAC HD to at least one-half tank of fresh water while filling. It will be helpful to pre-mix the product into a portion of water in a separate container and shake vigorously to make sure it is completely dissolved.

(more details on the following page)



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# Kem LAC<sup>®</sup> brand

## HD water soluble silage inoculant

*(continued from previous page)*

Crop	Ensiling Moisture
Alfalfa and Other Legumes (ensiled)	50 - 65%*
Grass	60 - 70%
Whole plant corn	60 - 65%
Whole plant sorghum	60 - 65%
Oatlage**	55 - 70%*
Small grains**	55 - 70%*
Ground shelled corn**	26 - 32%
Ground ear corn**	26 - 32%
Ground milo**	26 - 32%

\* Below 60% moisture, additional Kem LAC may be required.

\*\*Use 50% more Kem LAC mixture.

### Storage

For best results, use this product by the "Best Used By" date found on the lid. Store in a cool, dry place for maximum stability. Keep container closed when not in use. Contaminated mixing or applicator containers may kill the *Lactobacillus* organisms.

### Packaging

500 g bottles/12 per case or other package sizes available for smaller silos.



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# Ammo CURB<sup>®</sup> brand liquid mold inhibitor

Ammo CURB<sup>®</sup> mold inhibitor is a cost-effective, liquid propionic acid-based mold inhibitor for processed feed ingredients, complete feeds and total mixed rations.

## Features

- Inhibits the typical mold growth found in processed corn in storage, handling and complete feeds.
- Buffered for improved equipment and employee safety.

## Benefits

- Helps maintain stability of complete feeds during relatively short-term storage.
- Can be added directly to TMR.
- Convenient and cost effective to use.

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## Ammo CURB<sup>®</sup> brand 55 liquid mold inhibitor

### Description

A liquid mold inhibitor for processed feed ingredients and animal feeds.

### Ingredients

Propionic acid, water, ammonium hydroxide and propylene glycol

### Directions

Use 2 to 3 lbs per ton of feed, or 3 to 4 lbs on processed feed ingredients.  
Recommend product use with a Kemin approved application system.

### Storage

Store in a cool, dry place. Keep container closed when not in use.

### Packaging

Bulk

*(more details on the following page)*



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# Ammo CURB<sup>®</sup> brand liquid mold inhibitor

*(continued from previous page)*

## Ammo CURB<sup>®</sup> brand 65 liquid mold inhibitor

### Description

A liquid mold inhibitor for processed feed ingredients and animal feeds.

### Ingredients

Propionic acid, water, ammonium hydroxide, tertiary butyl hydroquinone and phosphoric acid

### Directions

Use 1 to 2 lbs per ton of feed, or 1 to 4 lbs on processed feed ingredients or complete feed. Recommend product use with a Kemin approved application system.

\*Also available in 75% concentration.

### Storage

Store in a cool, dry place. Keep container closed when not in use.

### Packaging

450 lb drum, 2,000 lb tote and bulk



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# Ammo CURB<sup>®</sup> brand dry mold inhibitor

Ammo CURB<sup>®</sup> mold inhibitor is a cost-effective dry propionic acid-based mold inhibitor for processed feed ingredients, complete feed and total mixed rations.

## Features

- Inhibits the typical mold growth found in processed corn in storage, handling and complete feeds.
- Buffered for improved equipment and employee safety.

## Benefits

- Helps maintain stability of complete feeds during relatively short-term storage.
- Can be added directly to TMR.
- Convenient and cost effective to use.

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## Description

A dry mold inhibitor for processed feed ingredients, complete animal feeds and total mixed rations.

## Ingredients

Propionic acid, amorphous silicon dioxide, verxite, hydrated sodium calcium aluminosilicate, water and ammonium hydroxide

## Directions

Use at the rate of 2 lbs per ton on feed ingredients, total mixed rations or in the finished feed.

## Storage

Store in a cool, dry place. Keep container closed when not in use.

## Packaging

50 lb bag and 1,000 lb sack



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# Grain SHIELD<sup>®</sup> brand liquid mold inhibitor

Grain SHIELD<sup>®</sup> liquid mold inhibitor is an EPA-registered fungicide containing a guaranteed minimum of 70.5% propionic acid combined with acetic, benzoic, and sorbic acids for the control of molds and fungi in high-moisture grains.

## Features

- Guaranteed minimum of 70.5% propionic acid.
- Inhibits the typical yeast and mold growth of high moisture grains during storage.
- EPA registered for use on multiple grains including corn, oats, barley, wheat and sorghum.

## Benefits

- Maintains nutritive and quality value of corn through either covered or open storage.
- Reduces processing costs by eliminating the need for drying grains for storage.
- Helps maintain nutrient value of grain over time.

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## Description

Grain SHIELD is a fungicide for the control of molds and fungi in high-moisture grain (oats, corn, barley, wheat and sorghum) that will be used as animal feed.

## Ingredients

**Active Ingredients:** Propionic Acid – 72.0%

**Other Ingredients:** 28.0%

## Directions

Use on corn, oats, barley, wheat and sorghum. Do not use on grain that may be used for seed, human food, or malting. Determine the moisture content of grain and treat within 4 hours of harvest for on-farm storage and/or prior to transport and storage. Apply in the form of a spray. Properly calibrate the applicator equipment compatible with propionic acid usage before applying product. Apply this product at the specified application rates.

*(more details on the following page)*



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# Grain SHIELD<sup>®</sup> brand liquid mold inhibitor

*(continued from previous page)*

APPLICATION RATE OF Grain SHIELD PER TON OF MOIST CORN, SORGHUM, WHEAT, OATS OR BARLEY IN COVERED STORAGE\*

## RECOMMENDED RATE for CLOSED Storage

Moisture Content, Percent by Weight			
Duration	Below 15.5%	15.5 - 20%	21 - 30%
Up to 4 weeks*	2 lbs/tons	4 lbs/tons	8 lbs/tons
Up to 6 months*	4 lbs/tons	8 lbs/tons	12 lbs/tons
Up to 12 months	6 lbs/tons	12 lbs/tons	16 lbs/tons

\*Not recommended if grain is to be kept in storage beyond May 1 of the spring following harvest.

Wood and concrete structures are ideal covered storage facilities for Grain SHIELD-treated grain. Do not store in upright tile, stave, or concrete bunker silos, or on the ground in plastic covered piles. Protect metal and concrete surfaces against corrosion. Be sure all concrete or dirt floors are covered with plastic (4-6 mil thickness). Seal and construct pit or trench storage areas to prevent water entry.

EPA REGISTRATION NO. 8596-33 EPA EST. 8596-IA-001

## RECOMMENDED RATE for OPEN Storage

Moisture Content, Percent by Weight			
Duration	Below 15.5%	15.5 - 20%	21 - 30%
Up to 4 weeks*	4 lbs/tons	6 lbs/tons	10 lbs/tons
Up to 6 months*	8 lbs/tons	12 lbs/tons	16 lbs/tons
Up to 12 months	12 lbs/tons	18 lbs/tons	24 lbs/tons

\*\* It is recommended that open storage be limited to the following areas of low precipitation: Nebraska (excluding S.E. corner), Western Kansas, Western Oklahoma, Texas Panhandle, Eastern New Mexico, Eastern Colorado and S.E. Wyoming. All such grain must be fed out before May 1 of the following spring. Acceptable outdoor storage areas are bunkers, pits or slabs with concrete or asphalt floors. Do not store grain on dirt surfaces. Dirt or wooden walls must be lined with plastic. Do not cover grain surface. Seal and construct storage areas to prevent water entry and slope floor area for drainage. Store in long, rounded piles.

## Storage

Store in a warm, dry place above 40°F to prevent freezing.

## Packaging

450 lb drum, 2,000 lb tote and bulk

**NOTE:** This product is regulated by the U.S. Environmental Protection Agency. Please refer to the product label for complete directions and precautionary statements prior to use.



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# Myco CURB<sup>®</sup> brand mold inhibitor

Myco CURB<sup>®</sup> mold inhibitor is a blend of organic acids formulated to inhibit mold growth in processed feed ingredients, complete feed and total mixed rations.

## Features

- Contains 65% propionic acid blended with sorbic and benzoic acids.
- Inhibits the typical mold growth found in feed ingredients or processed feed ingredients during storage, handling and export shipments.
- Buffered for improved equipment and employee safety.

## Benefits

- Maintains nutritive and quality value of feed ingredients through short or long-term storage and transportation and for export.
- Reduces mold contamination from whole grain into complete feeds.
- An effective and safer alternative to corrosive, unbuffered propionic acid alone.

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## Myco CURB<sup>®</sup> brand liquid mold inhibitor

### Description

A liquid mold inhibitor for processed feed ingredients and animal feeds.

### Ingredients

Propionic acid, water, ammonium hydroxide, sorbic acid, benzoic acid, phosphoric acid, propylparaben, methylparaben and butylated hydroxyanisole

### Directions

Use 1 to 2 lbs per ton of feed, or 1 to 4 lbs on processed feed ingredients. Spray on ingredients or complete feed using an approved Kemin applicator.

### Storage

Store in a cool, dry place. Keep container closed when not in use.

### Packaging

50 lb pail, 450 lb drum, 2,000 lb tote and bulk

*(more details on the following page)*



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# Myco CURB<sup>®</sup> brand mold inhibitor

*(continued from previous page)*

## Myco CURB<sup>®</sup> brand dry mold inhibitor

### Description

A dry mold inhibitor for processed feed ingredients and animal feeds.

### Ingredients

Propionic acid, sodium carbonate, calcium hydroxide, amorphous silicon dioxide, lemon oil, ammonium hydroxide, benzoic acid, phosphoric acid, sorbic acid, propylparaben, methylparaben, butylated hydroxyanisole and tertiary butyl hydroquinone

### Directions

Use a minimum of 2 lbs per ton in swine and cattle starter feeds. Base mixes and concentrates should be made with enough product so that the final feed (grower or finisher) will include a minimum of 1 lb per ton; poultry feed, a minimum of 1 lb per ton; other feeds, a minimum of 2 lbs per ton.

### Storage

Store in a cool, dry place. Keep container closed when not in use. Highly hygroscopic - be certain to close bag tightly after each use.

### Packaging

50 lb bag



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# Ultra CURB<sup>®</sup> brand liquid mold inhibitor

Ultra CURB<sup>®</sup> liquid mold inhibitor is a highly concentrated, synergistic blend of multiple organic acids designed to target yeast growth in addition to mold growth. Ultra CURB can be used on processed feed ingredients, complete animal feeds and total mixed rations.

## Features

- Highly concentrated at 82% total acid content.
- High inclusion level of acetic, benzoic and sorbic acid effectively target yeast growth in addition to controlling molds.
- Buffered for improved equipment and employee safety.

## Benefits

- By preventing the proliferation of yeast growth, environmental conditions ideal for mold growth are delayed.
- Delays heating of total mixed rations caused by yeast and mold growth.
- Extends shelf life of complete feeds that contain a relatively high percentage of moisture.

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## Description

A liquid mold inhibitor/surfactant for processed feed ingredients and animal feeds.

## Ingredients

Total Acids – min. 82%. Propionic acid, acetic acid, ammonium hydroxide, benzoic acid, water, sorbic acid, methylparaben, propylparaben, calcium chloride and natural and Artificial flavors

## Directions

Use a minimum of 2 lbs per ton on processed feed ingredients and animal feeds. Recommend product use with a Kemin approved application system.

## Storage

Store in a warm, dry place above 50° F. Keep container closed when not in use.

## Packaging

50 lb pail, 450 lb drum, 2,000 lb tote and bulk.



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# KALLSIL<sup>™</sup> brand dry anti-caking aid

KALLSIL<sup>™</sup> is a dry anti-caking aid and non-nutritive carrier to be used for further manufacturing of animal feeds.

## Features

- Reduces caking and improves flowability of feed ingredients and complete feeds by helping to prevent material doming, bridging or piping and hanging to the sides of the container – a problem that is often caused by moisture in the feed.
- Compatible with other feed ingredients for optimum distribution and uniformity.
- Works in both high and low pH environments.
- Convenient package sizes for all operations.

## Benefits

- Reduces clumping and improves manufacturing efficiency.
- Helps ensure that nutrients are mixed thoroughly throughout the TMR or complete feed.

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## Description

A dry anti-caking aid and non-nutritive carrier to be used for further manufacturing of animal feeds.

## Ingredients

Hydrated calcium aluminosilicate, hydrated sodium aluminosilicate and mineral oil

## Directions

Use at the rate of 2-12 lbs per ton in total mixed rations or in the finished feed, not to exceed 2.0% in finished feed.

## Storage

Store in a cool, dry location. Keep container closed when not in use.

## Packaging

50 lb bag and 2,500 lb sack



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# ZeniPRO<sup>®</sup> brand liquid preservative

ZeniPRO<sup>®</sup> liquid preservative is formulated specifically for preserving high-moisture co-products of the ethanol industry. It contains a proprietary blend of organic acids and antioxidants that inhibit the proliferation of yeast and mold.

## Features

- A proprietary blend of propionic, acetic, benzoic and sorbic acids in conjunction with antioxidants to inhibit yeast and mold growth.
- Buffered for improved equipment and employee safety.
- Custom designed application system for treatment at the ethanol plant.

## Benefits

- Extends the shelf life of high moisture co-products.
- Ethanol plants can develop their local beef and dairy markets by marketing their co-products regionally.
- Allows small to mid-sized beef and dairy producers near an ethanol plant to utilize larger shipments of the stabilized co-product.
- Early treatment at the ethanol plant ensures the freshest co-product.

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## Description

A liquid preservative for use on distillers wet grains and wet corn gluten feed or meal.

## Ingredients

Propionic acid, acetic acid, water, ammonium hydroxide, sodium propionate, benzoic acid, sorbic acid, methylparaben, propylparaben and tertiary butyl hydroquinone

## Directions

Apply at the rate of 2 to 20 lbs per ton depending on moisture content and desired length of storage. Recommend product use with a Kemin approved application system.

**Note:** Consultation with your Kemin representative to design a program specific to your facility is strongly recommended.

## Storage

Store in a cool, dry place. Keep container closed when not in use.

## Packaging

50 lb pail, 450 lb drum, 2,000 lb tote and bulk.



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# Be Efficient.

**Be Efficient:** Digestion and absorption of feed ingredients is critical in maintaining the profitability of animal production and reducing environmental impact. The **TOTAL NUTRITION™** program recognizes feed is always a major expense and must be utilized as efficiently as possible.

# KEM WET<sup>®</sup> brand WS liquid surfactant

KEM WET<sup>®</sup> WS is a non-ionic surfactant that reduces the surface tension of molasses for addition into animal feeds.

## Features

- A water-soluble complex ester of fatty acids.
- Reduces surface tension of molasses.
- Will not cause soaping or gelling of molasses.

## Benefits

- Reduces build-up of material on mixing and conveying equipment.
- Reduces power required for handling and conveying molasses feed.
- Reduces the caking of molasses feeds in bags and storage bins.

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## Description

A liquid surfactant for molasses.

## Ingredients

Water, propyl alcohol and propylene glycol

## Directions

Use at the rate of 500 g per ton (1 lb per ton) of molasses for the first 90 days. After this period, use at the rate of 100 g per ton (0.25 lb per ton). When using, premix KEM WET<sup>®</sup> WS liquid surfactant with 1 liter (1 quart) of water and then add to molasses.

## Storage

Store in a cool, dry place. Keep container closed when not in use.

## Packaging

50 lb pail and 450 lb drum



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# MYCOFLAKE™ brand liquid surfactant

MYCOFLAKE™ is a liquid surfactant formulated to soften grain prior to flaking to maximize the efficiency of steam flaking and to ensure a good, quality flake with optimum moisture retention.

## Features

- Contains multiple organic acids and surfactants, including sarsaponin.
- Buffered for improved equipment and employee safety.

## Benefits

- Provides a good quality flake that has excellent moisture retention.
- Breaks down the protective outer layer of the kernel and softens the seed coat allowing moisture to penetrate the starch portion, which makes the starch more available.
- Aids in the production of a thinner, larger grain flake with increased surface area, increased weight after processing and fewer fines in the bunk.
- Helps to increase production, extend roller life and reduce energy use.
- The product component of the MoistureRite® system; an accurate moisture monitoring, application and control system that provides additional data for more accurate ration formulation, cost control and analysis.

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## Description

A liquid surfactant for treatment of grain intended as cattle feed. Grain should be treated prior to flaking.

## Ingredients

Water, propionic acid, ammonium hydroxide, yucca extract, ammonium chloride, n-propyl alcohol, sodium phosphate tri-basic, acetic acid and propylene glycol

## Directions

Use 4 to 6 ounces per ton of grain depending on grain being treated and application conditions.

**Caution:** *Use only as directed. For ruminants (cattle, sheep and goats) only.*

Manufactured under U.S. Patents 5,279,838; 5,240,727; and 5,139,779.

## Storage

Store in a cool, dry place. Keep container closed when not in use.

## Packaging

450 lb drum, 2,000 lb tote and bulk



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# KemTRACE<sup>®</sup> brand

## Chromium Propionate organic trace mineral

KemTRACE<sup>®</sup> Chromium Propionate is a highly bioavailable source of chromium for all phases of pork, dairy and beef production. Chromium propionate has been shown to affect the glucose tolerance factor (GTF) in animals.

## Features

- First available chromium supplement for use in cattle in the United States.
- Highly concentrated organic chromium source.
- Available in two concentrations: 0.04% and 0.4%.
- Highly bioavailable, safe, non-genotoxic and patented organic chromium source.
- Repeatable, consistent response due to its effective mode of action at the molecular level.

## Benefits

- Effective dissociation from the mineral at the most crucial locations, creating a highly bioavailable chromium source.
- The role of chromium is to potentiate the action of insulin.
- Used to support efficient energy utilization and to help maintain optimal nutritional status.
- May improve glucose uptake, providing more efficient energy utilization.
- Efficient and easy to incorporate with premixes and other feed ingredients.

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## Description

A chromium supplement for all classes of swine, dairy and beef cattle.

## Ingredients

Calcium carbonate, mineral oil, chromium propionate, propionic acid, and propylene glycol

## Directions

**Swine:** KemTRACE<sup>®</sup> brand Chromium Propionate 0.04% dry mineral supplement will deliver 200 ppb (parts per billion) chromium from chromium propionate when added and thoroughly mixed at the rate of one lb per ton of complete swine feed.

**Cattle:** KemTRACE<sup>®</sup> brand Chromium Propionate 0.04% dry mineral supplement will deliver 500 ppb (parts per billion) chromium (from chromium propionate) when added at the rate of 2.5 pounds per ton of complete cattle diets. Chromium propionate must be premixed with dry ingredients prior to adding to high moisture ingredients or forages. Chromium propionate must not be added to free choice supplements.

*(more details on the following page)*



INSPIRED MOLECULAR SOLUTIONS™



# KemTRACE<sup>®</sup> brand

## Chromium Propionate organic trace mineral

*(continued from previous page)*

### Handling and Storage

Store in a cool, dry place. Do not breathe pre-mix dust. Do not cross-contaminate unsupplemented feeds. Restrict use to responsible individuals. Follow label directions. Rotate inventory.

\*Please contact your Kemin Customer Service Representative if you are interested in mineral blends.

**Caution:** Dust from this product has been classified as nuisance. Consult MSDS for additional information.

U.S. Patents 5,591,878; 5,707,679; 5,846,581; 6,303,158; Canadian Patents 2,232,393, 2,256,486; Australian Patents 707,201; 734,959; European Union Patents 0902787; 0897267; New Zealand Patent 332; 280; Mexican patent 210038 and Patent Pending.

### Packaging

50 lb bag



INSPIRED MOLECULAR SOLUTIONS™



# KemTRACE<sup>®</sup> brand

## Zinc Propionate organic trace mineral

KemTRACE<sup>®</sup> organic trace minerals are a patented source of highly bioavailable micro-minerals for all phases of poultry and livestock production.

## Features

- Highly concentrated minerals allow for custom formulation, additional room in the diet, and reduced shipping and handling costs.
- A highly soluble form of organic trace minerals – critical for maximum mineral absorption.
- Performance results from the use of KemTRACE minerals are repeatable and predictable.
- Can be mixed and palletized safely with other feed ingredients.
- Patented source of organic minerals.

## Benefits

- Understanding bioavailability, solubility and mode of action enables Kemin to target the correct dosage and application.
- Dissociation of the metal ion allows for complete utilization of the organic mineral in target tissues.
- Research and field test data on file.

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## Description

A 27% zinc supplement for livestock and poultry feed.

## Ingredients

Calcium carbonate, zinc propionate, ground corn cob, amorphous silicon dioxide and mineral oil

## Directions

Blend with appropriate carrier to achieve desired dilution. 1 kg of KemTRACE Zn will provide 270,000 ppm (parts per million) of elemental zinc.

## Storage

Store in a cool, dry place. Keep container closed when not in use.

\*Please contact your Kemin Customer Service Representative if you are interested in mineral blends.

U.S. Patents 5,707,679; 5,795,615; Canadian Patent 2,201,300; Australian Patent 708,478; European Union Patent 0783477 and Mexican Patent 197, 648.

## Packaging

50 lb bag



INSPIRED MOLECULAR SOLUTIONS™



# KemTRACE<sup>®</sup> brand

## Manganese organic trace mineral

KemTRACE<sup>®</sup> organic trace minerals are a patented source of highly bioavailable micro-minerals for all phases of poultry and livestock production.

## Features

- Highly concentrated minerals allow for custom formulation, additional room in the diet, and reduced shipping and handling costs.
- A highly soluble form of organic trace minerals – critical for maximum mineral absorption.
- Performance results from the use of KemTRACE minerals are repeatable and predictable.
- Can be mixed and palletized safely with other feed ingredients.
- Patented source of organic minerals.

## Benefits

- Understanding bioavailability, solubility and mode of action enables Kemin to target the correct dosage and application.
- Dissociation of the metal ion allows for complete utilization of the organic mineral in target tissues.
- Research and field test data on file.

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## Description

A manganese supplement for livestock and poultry feed.

## Ingredients

Propionic acid, sodium hydroxide, manganese carbonate and water

## Directions

Feed according to nutritionist recommendations. 1 kg of KemTRACE Mn will provide 120,000 ppm (parts per million) elemental manganese.

## Storage

Store in a cool, dry place. Keep container closed when not in use.

\*Please contact your Kemin Customer Service Representative if you are interested in mineral blends.

U.S. Patents 5,591,878; 5,707,679, Canadian Patent 2,232,393, Australian Patent 707,201, European Union Patent 0902787, Mexican Patent 197,648 and Patent Pending.

## Packaging

50 lb bag



INSPIRED MOLECULAR SOLUTIONS™



# KemTRACE<sup>®</sup> brand

## Copper organic trace mineral

KemTRACE<sup>®</sup> organic trace minerals are a patented source of highly bioavailable micro-minerals for all phases of poultry and livestock production.

## Features

- Highly concentrated minerals allow for custom formulation, additional room in the diet, and reduced shipping and handling costs.
- A highly soluble form of organic trace minerals – critical for maximum mineral absorption.
- Performance results from the use of KemTRACE minerals are repeatable and predictable.
- Can be mixed and palletized safely with other feed ingredients.
- Patented source of organic minerals.

## Benefits

- Understanding bioavailability, solubility and mode of action enables Kemin to target the correct dosage and application.
- Dissociation of the metal ion allows for complete utilization of the organic mineral in target tissues.
- Research and field test data on file.

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## Description

A copper supplement for livestock and poultry feed.

## Ingredients

Propionic acid and copper carbonate (natural malachite)

## Directions

Feed according to nutritionist recommendations. 1 kg of KemTRACE Cu will provide 290,000 ppm (parts per million) elemental copper.

**WARNING:** Contains high levels of copper. **DO NOT FEED TO SHEEP OR RELATED SPECIES.**

## Storage

Store in a cool, dry place. Keep container closed when not in use.

\*Please contact your Kemin Customer Service Representative if you are interested in mineral blends.

U.S. Patents 5,591,878; 5,707,679; 5,795,615, Canadian Patent 2,201,300; 2,232,393, Australian Patents 707,201; 708,478, European Union Patents 0783477; 0902787, Mexican Patent 197,648.

## Packaging

50 lb bag



INSPIRED MOLECULAR SOLUTIONS™



# KemTRACE<sup>®</sup> brand Cobalt organic trace mineral

KemTRACE<sup>®</sup> organic trace minerals are a patented source of highly bioavailable micro-minerals for all phases of poultry and livestock production.

## Features

- Highly concentrated minerals allow for custom formulation, additional room in the diet, and reduced shipping and handling costs.
- A highly soluble form of organic trace minerals – critical for maximum mineral absorption.
- Performance results from the use of KemTRACE minerals are repeatable and predictable.
- Can be mixed and palletized safely with other feed ingredients.
- Patented source of organic minerals.

## Benefits

- Understanding bioavailability, solubility and mode of action enables Kemin to target the correct dosage and application.
- Dissociation of the metal ion allows for complete utilization of the organic mineral in target tissues.
- Research and field test data on file.

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## Description

A cobalt supplement for livestock and poultry feed.

## Ingredients

Propionic acid, cobalt carbonate, sodium hydroxide and water

## Directions

Feed according to a nutritionist recommendations. 1 kg of KemTRACE Co will provide 180,000 ppm (parts per million) elemental cobalt.

## Storage

Store in a cool, dry place. Keep container closed when not in use.

U.S. Patents 5,591,878; 5,707,679, Canadian Patent 2,232,393, Australian Patent 707,201, European Union Patent 0902787, Korean Patent 282109 and Patent Pending.

## Packaging

50 lb bag



INSPIRED MOLECULAR SOLUTIONS™



# LysiPEARL<sup>TM</sup> brand encapsulated source of lysine

LysiPEARL<sup>TM</sup> is a cost effective source of rumen bypass and intestinally released lysine for use in dairy cattle that gives nutritionists greater flexibility in ration formulation. Balancing for the limiting amino acid lysine can help optimize production and provide a positive return on investment.

## Features

- Allows for greater flexibility in balancing rations to a lysine specification.
- Protected from rumen degradation and highly released at the intestinal level.
- Encapsulated using unique MicroPEARLS<sup>®</sup> brand spray freezing process.

## Benefits

- Improved efficiency of metabolizable protein when rations are balanced for lysine.
- Reduced nitrogen excretion when rations are balanced for lysine.
- Greater flexibility in choosing ingredients to balance rations.
- MicroPEARLS<sup>®</sup> brand encapsulation allows product to be free flowing and resistant to physical damage with typical feeding processing (mixing and pelleting) while maintaining rumen bypass and intestinal release.

---

## Description

An encapsulated source of rumen bypass and intestinally released lysine for ruminant diets.

## Ingredients

L-lysine monohydrochloride and vegetable oil

## Directions

Mix carefully in complete feed. Use 20 – 100 grams/head/day. For more information, consult a Kemin representative.

## Storage

When stored in cool and dry place in the original package, this product is stable for 18 months.

## Packaging

25 kg bags



INSPIRED MOLECULAR SOLUTIONS<sup>TM</sup>





# MetiPEARL™ brand encapsulated source of methionine

MetiPEARL™ is a cost effective source of rumen bypass and intestinally released methionine for use in dairy cattle. Balancing for the amino acid methionine using a rumen protected form can help optimize production and allow for greater flexibility when formulating rations.

## Features

- Protected from rumen degradation and highly released at the intestinal level.
- Encapsulated using unique MicroPEARLS® brand spray freezing process.
- Allows for greater flexibility in balancing rations to a methionine specification.

## Benefits

- Improved efficiency of metabolizable protein when rations are balanced for methionine.
- Reduced nitrogen excretion when rations are balanced for methionine.
- Greater flexibility in balancing rations.
- MicroPEARLS® brand encapsulation allows product to be free flowing and resistant to physical damage with typical feeding processing (mixing and pelleting) while maintaining rumen bypass and intestinal release.

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## Description

An encapsulated source of rumen bypass and intestinally released methionine for ruminant diets.

## Ingredients

DL-methionine and vegetable oil

## Directions

Mix carefully in complete feed. Use 15 – 60 grams/head/day. For more information, consult a Kemin representative.

## Storage

When stored in cool and dry place in the original package, this product is stable for 18 months.

## Packaging

25 kg bags



INSPIRED MOLECULAR SOLUTIONS™



# CholiPEARL<sup>TM</sup> brand encapsulated source of choline

CholiPEARL<sup>TM</sup> is a cost effective source of rumen bypass and intestinally released choline chloride for use in dairy cattle. Providing supplemental choline that is intestinally available has been shown to improve energy balance.

## Features

- Choline is used to enhance the liver's ability to metabolize NEFA which can reduce fatty liver.
- Protected from rumen degradation and highly released at the intestinal level.
- Encapsulated using unique MicroPEARLS<sup>®</sup> brand spray freezing process.

## Benefits

- An established essential nutrient contributing to optimal animal health.
- Cost effective and competitive source of choline when cost per gram of intestinally available choline chloride is measured.
- MicroPEARLS<sup>®</sup> brand encapsulation allows product to be free flowing and resistant to physical damage in typical feed processing (mixing and pelleting) while maintaining rumen bypass and intestinal release.

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## Description

A source of rumen bypass and intestinally released choline chloride for use in cattle diets.

## Ingredients

Vegetable oil, choline chloride, silicon dioxide and water

## Directions

Mix carefully in complete feed. Use 50 g/head/day. For more information, consult a Kemin representative.

## Storage

When stored in cool and dry place in the original package, this product is stable for 18 months.

## Packaging

25 kg bags



INSPIRED MOLECULAR SOLUTIONS<sup>TM</sup>



# NutroCAL<sup>™</sup> brand 100 gluconeogenic

Dry Non-medicated

NutroCAL<sup>™</sup> 100 gluconeogenic is a product for transition cow programs to help prepare cows for healthy lactation. NutroCAL 100 primes cows with exceptional energy and the nutrition required to start productive lactation.

## Features

- A low-dust, low-odor dry source of calcium propionate.
- A highly soluble source of calcium for the cow.
- Extruded for better handling characteristics and delivery of nutrients.
- Safely mixes and palletizes with other feed ingredients.

## Benefits

- Provides a quick, readily available source of exceptional energy.
- Delivers a 6.5 to 1 return on investment based upon research forecasts.

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## Description

A dry calcium supplement and gluconeogenic source to assist in maintaining a transition cow in excellent condition.

## Ingredients

Calcium propionate (a preservative) and water

## Directions

Use at a rate of 0.25 lb per head per day. Feed three weeks prior to calving, and four to five weeks post-calving.

## Storage

Store in a cool, dry place. Keep container closed when not in use.

## Packaging

50 lb bag



INSPIRED MOLECULAR SOLUTIONS<sup>™</sup>



# Be Healthy.

**Be Healthy:** Managing and maintaining the quality of feed ingredients and minimizing animal exposure to pathogens are integral components to **TOTAL NUTRITION™**. Quality feed ingredients and healthy animals allow for maximum profitability.

# CLOSTAT<sup>®</sup> brand active microbial

CLOSTAT<sup>®</sup> dry active microbial is made from a proprietary, patented strain of *Bacillus subtilis* – PB6. This unique, spore-forming microorganism was identified in the gut of a healthy chicken by Kemin researchers. PB6 was selected by Kemin due to its uniqueness, activity and positive impact on helping to maintain the balance of microflora in the intestinal tract of poultry and livestock.

## Features

- Contains PB6, a unique strain of *Bacillus subtilis*.
- Stable during processing and packaging, when blended with other feed ingredients, and under normal commercial pelleting conditions.
- Proven efficacy in research studies.
- An active microbial from Kemin.

## Benefits

- CLOSTAT, formulated with PB6, provides consistent performance and value.
- Easily mixed into poultry and livestock diets to ensure that the proper dose is delivered through the feed to the bird or animal.
- Contributes to stable and healthy microflora in the gut.

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## Description

An active microbial to help support intestinal microbial balance in livestock and poultry.

## Ingredients

Calcium carbonate, maltodextrin, soybean oil, and *Bacillus subtilis*. Contains a source of live (viable), naturally occurring microorganisms

## Directions

Use 1 lb per ton in finished or complete feed.

## Storage

Store in a cool, dry place out of direct sunlight. Keep bag closed when not in use.

## Stability

12 months

U.S. Patent 7,247,299

## Packaging

55 lb bag



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