

# ***EPIZYM<sup>®</sup>-AW and EPIZYM-PIGS***

## **Animal Manure Liquefier & Deodorizers**

### **PRODUCT DESCRIPTION**

EPIZYM-AW and EPIZYM-PIGS animal manure bacterial inoculants are balanced microbial and enzyme ecosystems designed to liquefy and deodorize animal waste. The microbes in EPIZYM-AW and EPIZYM-PIGS grow in the waste to dominate the existing microbial flora. These microorganisms are very effective at digesting manure to yield more fluid and less odoriferous slurry in channels, holding tanks and lagoons. By digesting manure components that cause thickening of the slurry, EPIZYM-AW and EPIZYM-PIGS improve pumpability and reduce crust formation. These microbes and the enzymes they secrete work directly on the manure to change the molecular structure of odor causing ammonia, amines, indole and skatole.

EPIZYM-AW is Epicore's original manure digester and is the preferred product for cattle manure. EPIZYM-PIGS is a specially formulated version that is recommended for swine manure. It also is the preferred product for chicken waste.

EPIZYM-AW and EPIZYM-PIGS contain more aerobic, facultative anaerobic and anaerobic microorganisms than any similar product tested in our laboratories. They offer broader spectrum enzyme and bacterial activity than competitive slurry digesters. The activity of EPIZYM-AW has been scientifically proven in independent performance tests. More importantly, EPIZYM-AW and EPIZYM-PIGS have found wide acceptance among pig and dairy farmers. This is why Epicore claims,

**At last, A Slurry Digester “That Does The Job!”**

### **PERFORMANCE**

- Digests and stabilizes animal manure.
- Liquefies solids for easier handling, greatly reducing slurry mixing time and costs.
- Liquefied slurry applies more uniformly to grassland and crops so more effectively utilizes slurry fertilizer value.
- Reduces sludge volume and increases effective manure storage capacity.
- Reduces ammonia emissions inside livestock barns for a healthier animal and work environment.
- Helps to reduce the number of flies in livestock barns and around slurry areas.
- Less odor when spreading slurry on land and pasture.
- Improves the performance of waste water lagoons and treatment plants receiving animal manure slurry.
- Contains no caustics, acids, solvents or other harsh chemicals so is not corrosive to metal, plastic or concrete tanks and equipment.

- Utilizes natural microorganisms so is ecologically safe.
- Harmless to humans, animals and plants.
- Easy to apply and use.

## **APPLICATION SUGGESTIONS**

### **LIQUID MANURE SYSTEMS: GENERAL**

EPIZYM-AW and EPIZYM-PIGS work progressively, digesting and converting manure into a more fluid, lower odor and ecologically safer liquid. For all types of manure, an initial purge is required to initiate a uniform microbial action. The initial purge is required for every slurry system not already on a regular EPIZYM-AW or EPIZYM-PIGS treatment program. The overriding principle is to establish an ecosystem that will dominate the natural bacterial load. If this is not achieved or if it is lost during the cycle, the benefits of EPIZYM-AW or PIGS may be negligible.

Manure storage tanks and lagoons should be treated when the manure level is less than 10% of capacity. This will create a seed inoculum of EPIZYM microorganisms that will digest manure added from the barn channels. Ensure that mainly slurry is going into the manure storage and not rainwater.

The ideal time to apply an initial purge is four to eight weeks before slurry is to be emptied. If slurry is to be emptied in only three weeks, increase initial purge dose by 50%. If slurry is to be held for 12 weeks, add a maintenance dose at six weeks.

Following the initial purge, an on-going maintenance schedule, using reduced rates of EPIZYM-AW or EPIZYM-PIGS, will ensure reduction of odor and solids. The number of animals and/or the volume of manure dictate treatment rates. Maintenance treatment timing is dictated by frequency of emptying the manure channels or tanks.

If there is a lengthy period (4 weeks for small systems and 2 months for large tanks) without fresh slurry being added, add a maintenance dose when filling recommences. In large systems where partial slurry removal is practiced, add a maintenance dose when 20-50% is removed. If less than 20% is removed, no additional treatment is required. If there is a large build-up of crust or sludge left behind from the previous emptying, increase maintenance dose by 20% and add EPIZYM-AW EMULSIFIER at a rate of 1 gallon per 10,000 gallons (or one liter per 10 cubic meter) of sludge. This biodegradable surfactant will aid in wetting and penetration of the crust.

### **PIG MANURE SYSTEMS: EPIZYM-PIGS**

#### **Initial Purge: Slurry Channels**

1) Apply purge when contents in the slurry channels are approximately 6 inches (15 cm) deep or when slurry tank or lagoon contents exceed 10% of capacity.

2) Calculate total channel volume, as indicated below:

$$\begin{aligned} \text{Total Channel Volume (cubic feet)} &= (\# \text{ channels}) \times (\text{length in ft}) \times (\text{width in ft}) \times (\text{depth in ft}) \\ \text{Total Channel Volume (gallons)} &= (\text{channel cubic ft}) \times (6.25) \end{aligned}$$

3) For every 2,000 gallons of channel volume, apply 1 pound EPIZYM-PIGS, as calculated below:

$$\text{EPIZYM-PIGS Purge Amount (lb.)} = (\text{channel gallons}) / (2,000)$$

4) For metric measurements, calculate as follows:

$$\begin{aligned} \text{Total Volume (cu. meters)} &= (\# \text{ channels}) \times (\text{length in m}) \times (\text{width in m}) \times (\text{depth in m}) \\ \text{EPIZYM-PIGS Purge Amount (kg)} &= (\text{cu. m}) / (20) \end{aligned}$$

5) To apply the EPIZYM-PIGS, stir into warm water (**not hot water**). Mix at a rate of 1 pound EPIZYM-PIGS per gallon water (1 kg per 8 liters). Allow mixture to hydrate for 20 - 30 minutes before using; stir occasionally. Use additional water if needed to get good coverage.

6) Apply the EPIZYM-PIGS solution to the slurry in the channels by dividing the treatment such that it can be added to spots about one meter apart. This approach creates "areas of dominance" from which the EPIZYM microorganisms can spread out over the entire channel. If the slurry has crusted, poke a hole in the crust before adding the EPIZYM-PIGS solution. The EPIZYM-PIGS needs to work on the slurry liquid phase.

7) A successful inoculation is recognized by a marked liquefaction of solid matter and odor reduction. This should occur within 2-3 weeks.

8) If this fails to occur, repeat the purge treatment.

### **Initial Purge: Circular Slurry Tanks and Lagoons**

1) Calculate total channel volume, as indicated below:

$$\begin{aligned} \text{Total Slurry Volume (cu feet)} &= (3.14) \times (\text{tank radius in ft})^2 \times (\text{depth of slurry in ft}) \\ \text{Total Slurry Volume (gallons)} &= (\text{slurry cubic ft}) \times (6.25) \end{aligned}$$

2) For every 2,000 gallons of slurry volume, apply 1 pound EPIZYM-PIGS, as calculated below:

$$\text{EPIZYM-PIGS Purge Amount (lb.)} = (\text{slurry gallons}) / (2,000)$$

3) For metric measurements, calculate as follows:

$$\begin{aligned} \text{Total Volume (cu. meters)} &= (3.14) \times (\text{tank radius in m})^2 \times (\text{depth of slurry in m}) \\ \text{EPIZYM-PIGS Purge Amount (kg)} &= (\text{cu. m}) / (20) \end{aligned}$$

4) To apply the EPIZYM-PIGS, stir into warm water (**not hot water**). Mix at a rate of 1 pound EPIZYM-PIGS per gallon water (1 kg per 8 liters). Allow mixture to hydrate for 20 - 30 minutes before using; stir occasionally. Use additional water if needed to get good coverage.

5) For circular tanks: add hydrated EPIZYM-PIGS to fresh slurry in the reception pit, mix and pump into circular tank, covering the surface as uniformly as possible.

6) For lagoons: follow the "areas of dominance" approach of section #6 above. A crop sprayer or powered pump can be used to obtain the necessary coverage of difficult to reach areas. To prevent plugging spray nozzles it may be necessary to sieve out the carrier used in EPIZYM microbial products. Filtration through paper, cloth or a coarse (10 mesh) screen prior to charging the sprayer will remove the carrier and leave the EPIZYM-PIGS microbes in the filtrate water. The organic carrier can be disposed of in the normal way.

6) A successful inoculation is recognized by a marked liquefaction of solid matter and odor reduction. This should occur within 2-3 weeks.

7) If this fails to occur, repeat the purge treatment.

### **Continuing Maintenance**

- 1) Each time the slurry channels or tanks are emptied, leave approximately 6 inches (15 cm) of treated slurry in the bottom.
- 2) For every 2,000 gallons of volume, apply 0.5 pound EPIZYM-PIGS, as calculated below:
  - EPIZYM-PIGS Maintenance Amount (lb.) = (channel or tank gallons)/(4,000)
  - EPIZYM-PIGS Maintenance Amount (kg) = (cu. m)/(40)
- 3) To apply the EPIZYM-PIGS, stir into warm water (**not hot water**). Mix at a rate of 1 pound EPIZYM-PIGS per gallon water (1 kg per 8 liters). Allow mixture to hydrate for 20 - 30 minutes before using; stir occasionally. Use additional water if needed to get good coverage.
- 4) Apply the EPIZYM-PIGS solution to the slurry as described above for the initial purge treatment.

## **CATTLE MANURE SYSTEMS: EPIZYM-AW**

In cattle slurry tanks, EPIZYM-AW works effectively to improve slurry fluidity for ease of handling. It also improves slurry quality for application to grassland and crops, promoting grass re-growth and making more effective use of the fertilizer value of slurry. The type of animal housing dictates EPIZYM-AW application rates. If animals are housed indoors on slated floors, follow the recommended application rates for pig systems. If the slurry is housed outdoors where rainwater enters the lagoon, the number of animals determines the EPIZYM-AW application rate. Frequency of application is determined by frequency of slurry emptying.

### **Winter Treatment (Store under 50% full and filling)**

- 1) Calculate the number of adult animal equivalents, as follows:
  - Adult Equivalents = (# cows housed) + (# young stock)/2
- 2) Apply an initial EPIZYM-AW dose when the slurry store is approximately 10% full and fresh slurry is being added regularly (in early winter when cows are housed).
- 3) Initial EPIZYM-AW treatment dose: (pounds) = (# adult equivalents)/9 or, in metric,
  - Initial EPIZYM-AW treatment dose (kg) = (# adult equivalents)/20
- 4) Apply a re-dose whenever slurry is partially emptied (more than 25%) or once no later than six weeks before emptying if no emptying is done. If the manure storage is emptied more than 85%, re-apply the initial purge dose.
- 5) EPIZYM-AW re-dose treatment: (pounds) = (# adult equivalents)/18 or, in metric,
  - EPIZYM-AW re-dose treatment (kg) = (# adult equivalents)/40
- 6) If more than one partial emptying is planned, split the re-dose treatment amount evenly between each emptying.
- 7) To apply the EPIZYM-AW, stir into warm water (**not hot water**). Mix at a rate of 1 pound EPIZYM-AW per gallon water (1 kg per 8 liters). Allow mixture to hydrate for 20 - 30 minutes before using; stir occasionally. Use additional water if needed to get good coverage.
- 8) For application in slurry tower systems, add the EPIZYM-AW water mixture to the

reception pit filled with slurry. Poke a hole in the crust and apply all the EPIZYM-AW solution through it so that it will reach the slurry liquid phase.

9) For application to lagoons, divide the EPIZYM-AW water mixture into even portions and distribute it every two or three yards around the edge of the lagoon. Additional water may be needed to get good coverage.

10) Allow six weeks for the full effect of EPIZYM-AW to take effect before emptying the tank.

### **Treating Full (over 50%) Slurry Stores**

If the manure store is over half full or has no fresh slurry, use the following treatment suggestions:

- 1) For non-problem stores: apply 2 pounds EPIZYM-AW per 40,000 gallons (1 kg per 150 cubic meters) of slurry.
- 2) For problem stores: apply 3 pounds EPIZYM-AW per 40,000 gallons (1.5 kg per 150 cubic meters) of slurry and apply EPIZYM-AW EMULSIFIER at a rate of 1 gallon per 10,000 gallons (or one liter per 10 cubic meter) of sludge. This biodegradable surfactant will aid in wetting and penetration of the crust.
- 3) Apply as described in sections 7 to 10 above.

### **Covered Slurry Systems – Slatted Stores**

These systems often contain very little added water and have high dry matter. This limits slurry movement and atmospheric oxygen exchange. A higher than normal dosage of EPIZYM-AW is required. Apply 10 pounds per 40,000 gallons (4.5 kg per 150 cubic meters) of slurry. Also apply EPIZYM-AW EMULSIFIER to improve wetting.

## **POULTRY MANURE**

When poultry manure degrades, high levels of ammonia and odors are produced. Degradation of manure in broiler house bedding material yields an unhealthy environment for broilers and farm workers. Ammonia at bird level causes browning of hock and breast, which reduces bird market value. EPIZYM-PIGS can be used as a preventative treatment to biologically maintain low ammonia levels and odors in manure contaminated bedding. It can be used to remediate contaminated bedding or collected manure. EPIZYM-PIGS provides a balanced biological system which will beneficially dominate the existing microbial flora.

### **Broiler Houses**

One EPIZYM-PIGS treatment applied directly to bedding should last the entire growth cycle. Application timing is important so that manure material will be present to support the EPIZYM-PIGS microbial growth. EPIZYM-PIGS should be applied after the birds have had full use of the house for several days (for example, for broiler poultry apply on day 15).

It is important to hydrate the EPIZYM-PIGS before application. Mix 1 pound EPIZYM-PIGS per gallon water (1 kg per 8 liters). Allow mixture to hydrate for 20-30 minutes before using; stir occasionally. Use additional water if needed to get good coverage. Application is best made by backpack sprayer. The hydration mixture should be filtered to prevent plugging the nozzle with carrier from the EPIZYM-PIGS. Filtration through paper, cloth or a coarse (10 mesh) screen prior to charging the sprayer will remove the carrier and leave the EPIZYM-PIGS microbes in the filtrate water. The organic carrier can be disposed of in the normal way.

The following treatment rate is suggested:

EPIZYM-PIGS Dose (lb.) = 1.0 pound per 1,000 square feet of bedding or, in metric,  
EPIZYM-PIGS Dose (kg) = 1.0 kg per 200 square meters

### **Collected Poultry Manure**

When treating collected poultry manure, EPIZYM-PIGS dosage depends on the weight of manure present. It should be applied as an aqueous mixture (1 lb./gallon or 1 kg/8 liters). When treating collected poultry manure, thorough hydration is imperative. Addition of a carbohydrate source (e.g. molasses or sugar) will facilitate the activity of EPIZYM-PIGS. The following treatment rates for collected manure are suggested:

Initial EPIZYM-PIGS Dose (lb.) = (1.0 lb.)/(2,000 gallons manure) or, in metric,  
Initial EPIZYM-PIGS Dose (kg) = (1.0 kg)/(20 cubic meters)

Carbohydrate Dose (lb.) = (2.0 lb.)/(2,000 gallons manure) or, in metric,  
Carbohydrate Dose (kg) = (2.0 kg)/(20 cubic meters)

Re-treat as required to maintain acceptable odor control.

### **FOR BEST RESULTS**

- Use EPIZYM-AW or EPIZYM-PIGS regularly. Increase or decrease the amount and frequency of application of EPIZYM-AW or EPIZYM-PIGS as required to achieve desired results.
- Avoid using strong caustics, detergents, bleach and other chemicals that inhibit biological activity.
- Clean sprayers prior to use to remove insecticide and herbicide residues, which retard biological activity.
- Spray nozzles may need to be removed to avoid plugging by the organic carrier in EPIZYM-AW and EPIZYM-PIGS.
- Apply when slurry temperatures are at 68°F (20°C) or above.
- Apply to slurry with a pH value in the range of 5.5 to 9.5.

**PACKAGING:** EPIZYM-AW and EPIZYM-PIGS are supplied in 40 kilogram (88 pound), net weight polyethylene lined fiber drums. EPIZYM-AW EMULSIFIER is supplied in 200 liter (55 gallon) plastic drums.

**PRODUCT STORAGE:** Biological products are unlike inert chemical products. They require special treatment during storage and handling. Therefore, for EPIZYM-AW and EPIZYM-PIGS,

- \* Do not store continuously at temperatures above 40°C (104°F).
- \* Store out of direct sunlight in a well-ventilated area.
- \* Keep products dry until ready to hydrate.
- \* Do not mix with any materials not recommended by Epicore, especially biocides and harsh chemicals.

**SAFETY:** All Epicore biological products are non-toxic. However, the user is advised to consult the Material Safety Data Sheet for further information and guidance.

**Keep out of reach of children.**

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**IMPORTANT NOTICE TO PURCHASER:**

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8/02

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