CERTILLUS™

Powered By Microbial Terroir

Product Specification Sheet

Manure Treatment

Contains a source of live (viable) naturally occurring microorganisms

Description:

CERTILLUS Manure Treatment contains scientifically selected strains of *Bacillus subtilis*, *Bacillus licheniformis* and enzymes for the decomposition of stored dairy waste.

Recommended Use:

Treatment of stored dairy waste to enhance crust and solids digestion, odor reduction and nitrogen retention.

Ingredients:

Label Guarantee: ***Bacillus subtilis and Bacillus licheniformis*** 1.8×10^{10} cfu / gram

Active- Bacteria- Dried *B. subtilis* fermentation product and dried *B. licheniformis* fermentation product.
Enzymes- *Aspergillus niger* extract (source of enzyme), *Trichoderma reesei* extract (source of enzyme), *Bacillus subtilis* extract (source of enzyme), and *Trichoderma longibrachiatum* extract (source of enzyme).

Inert Carriers - sucrose, maltodextrin

Toxicity:

None- *Bacillus subtilis* is not genetically modified and is Generally Recognized as Safe (GRAS).

Application Rates:

Rehydrate the correct amount of **CERTILLUS Manure Treatment** in warm water prior to application to waste storage facility. Do not pour solution onto dried crust.

Stored waste- 500 grams / 100,000 gallons
Monthly dose- 500 grams / 200 head

Storage:

Store product in a cool, dry place.

Shelf Life:

Use product within 12 months of manufacturing.

Packing:

500 gram bags – 10 bags / box

Church & Dwight, Inc. ARM & HAMMER™
W227 N752 Westmound Dr
Waukesha, WI 53186

Chem-Star DAIRY SANITATION
www.chemstarworks.com

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Guaranteed Analysis:
1.8×10^{10} colony forming units (CFU) per gram

Ingredients:
Dried *Bacillus subtilis* fermentation product, dried *Bacillus licheniformis* fermentation product, dried *Aspergillus niger* extract (source of enzyme), dried *Trichoderma reesei* extract (souce of enzyme), dried *Bacillus subtilis* extract (source of enzyme), dried *Trichoderma longibrachiatum* extract (source of enzyme), sucrose, maltodextrin.

Usage:
Start Up Treatment to Currently Stored Waste: 500 grams (1 bag) to 100,000 gallons of manure.
Maintenance Treatment (monthly): 500 grams (1 bag) per 200 cows per month.

Application Directions:
1. Determine number of bags of product to add (see capacity calculation instructions below).
2. Rehydrate product in warm water (<120°F) at a rate of 1 package per 2 gallons of water, stir and let product sit for 10 minutes.
3. For best results apply product away from milk house wash or sanitizing water.
4. For maximum efficiency, make sure solution is applied under crust (if present).
5. Apply by pouring product solution into the collection pit, manure pit, or through the floor slats.

Manure Storage Structure Capacity Calculations
Square or Rectangular Storage Structure:
1. Measure the cubic feet of stored manure (length x width x depth).
2. Convert to gallons (cubic feet of manure x 7.5).
3. Total gallons of stored manure/100,000 gallons = number of bags of product to use.

Round Storage Structure:
1. Measure the radius (½ diameter) in feet
2. Measure depth (in feet) of stored manure
3. Calculate the surface area (3.14 x radius x radius)
4. Determine cubic feet of stored manure (surface area x depth)
5. Convert to gallons (cubic feet x 7.5)
6. Total gallons of stored manure/100,000 = # of bags to use

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Net weight: 500 grams

Storage:
Store in a cool, dry area.

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ARM & HAMMER™ THE STANDARD OF PURITY™

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Chem-Star DAIRY SANITATION
www.chemstarworks.com

CERTILLUS™ Chem-Star DAIRY SANITATION Powered By Microbial Terroir

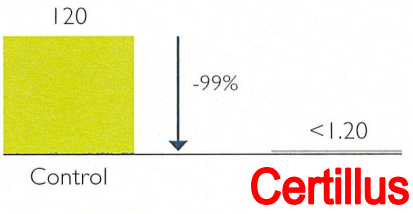
An effective part of a waste management plan for controlling solid, odors and ammonia emissions while retaining fertilizer value.

Certillus - Field Trial

Field trials

Location: Wisconsin Dairy Farm
Farm size: 425 cows
Storage structure: earthen pit

DECREASED VISCOSITY
(cps)



- Reduced viscosity by over 99%
- Easier pumping
- Increased fuel savings
- Decreased agitation time
- Maintain pit capacity

REDUCED ODORS

Volatile fatty acids are major odor compounds produced during anaerobic decomposition. Accelerator Dairy reduces the production of these odor compounds by altering the decomposition process.

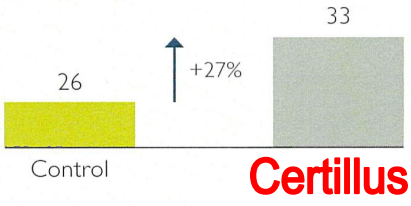
	Control	Certillus
Total Odor Compounds	5.9%	1.91%
	68% reduction	

Field trials

VISUAL BENEFITS

Observations at lagoon/pit	Explanations
Bubbling across the surface	Increased microbial activity
Slight scum	Increased microbial digestion
Decrease in odor intensity	Improved aerobic digestion
Solids float to surface to form a temporary crust	Increased digestion of solids results in increased CO_2 production which pushes solids to the top

RETAINED FERTILIZER VALUE
(Nitrogen (lb/1,000 gal))



- Decreased ammonia volatilization
- Decreased need for commercial fertilizer
- Increased nitrogen retained by 27% compared to control

SUMMARY OF BENEFITS

- ✓ Lower viscosity
- ✓ Easier pumping
- ✓ Increased fuel savings
- ✓ Decreased agitation
- ✓ Reduced odors and ammonia
- ✓ Retained fertilizer value

Ingredients:
Bacillus fermentation product, enzymes,organic maltodextrin and organic sugar