

PhibroPen®

PRODUCT GUIDELINES

PhibroPen® is a superior antimicrobial product containing Benzylpenicillin potassium, more commonly known as Penicillin G. *PhibroPen* is differentiated from other penicillin products in the market, as it contains a highly concentrated inclusion (100 percent activity strength) of Penicillin G. *PhibroPen* is fast acting and is effective immediately upon addition to treat Gram-positive bacteria. *PhibroPen* disrupts the formation of the bacteria cell wall, which makes the bacteria absorb water and literally split apart (cell lysis).

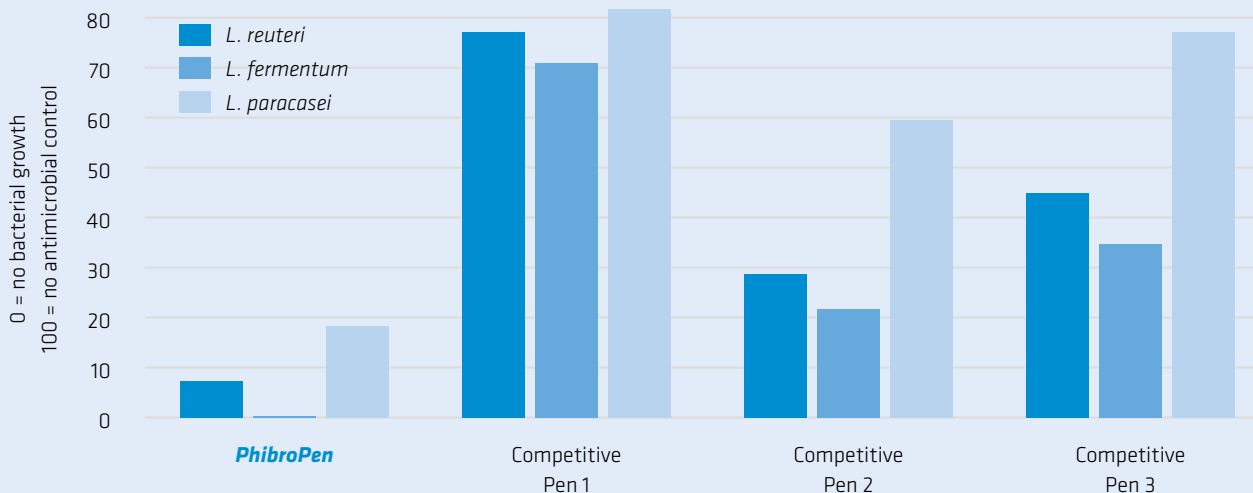
Demonstration of Performance

Bacterial strains were isolated from mash, which was collected from various ethanol plants. These bacterial strains were inoculated in growth media and exposed to industry-specific penicillin products.

- The antibiotic addition rate represented is 0.25 ppm product dosage.
- Performance was measured by the bacteria’s ability to grow in the presence of an antibiotic. The scale below shows that a reading of 0 equates to no bacterial growth; 100 represents no antimicrobial control.
- *PhibroPen* showed superior performance in controlling growth of bacteria compared to competitive penicillin products at an equivalent dose rate.

Lactobacillus sp. Isolated from Fuel Ethanol Plants

Antimicrobial dosed at 0.25 ppm



What is PhibroPen?

PhibroPen is an antimicrobial agent for fuel ethanol production. *PhibroPen* consists of Benzylpenicillin Potassium, more commonly known as Penicillin G. Penicillin is part of the β -lactam class of antibiotics.

How does PhibroPen work?

Penicillin acts by inhibiting a key enzyme (transpeptidase), which is responsible for catalyzing the final step in cell wall biosynthesis (the cross-linking of peptidoglycan). As a result, the bacteria can no longer cross-link components of its cell wall as it grows. This is important because an intact cell wall is essential for bacterial survival – it serves to maintain cellular integrity. Without this rigid envelope, the bacteria will absorb water from its surrounding environment until it literally splits apart (cell lysis).

Dosage and Direction for Use

PhibroPen is typically added to the yeast propagator and/or fermenter prior to or during fermentation for Gram-positive bacterial control. Normal recommended dosage rates are between 0.25 ppm to 2.0 ppm, dependent upon the level of bacteria present. Dosages as high as 3 ppm can be used in extreme contamination situations. The concentration is calculated using the ratio of 1 ppm equals 1 pound in 108,000 gallons of mash.

Regulatory

PhibroPen is Generally Recognized As Safe (GRAS) and therefore suitable for use under the Food Safety Modernization Act (FSMA).



Packaging

PhibroPen is available in 50-pound (22.7 kg) drums and 1/2- or 1-pound (227 or 454 g) water-soluble bags.

Shelf Life

The product has a shelf life of three years and must be stored dry and at room temperature.

Appearance

A white to off-white solid crystalline powder

Kosher Status

Certified Kosher Pareve.

Manufactured by

Phibro Animal Nutrition for Phibro Ethanol Performance Group, 299 Radio Road, Quincy, IL 62305

Solubility

Soluble in water

Safety and Handling

Hazard Statements

- May cause allergy or asthma symptoms or breathing difficulties if inhaled
- May cause an allergic skin reaction

Precautionary Statements – Prevention

- Refer to safety data sheet and product label

Precautionary Statements – Response

- Refer to safety data sheet and product label

Call your Phibro representative today to see if *PhibroPen*® is right for you.



Antimicrobials • Process Aids
Cleaning Products • Yeast

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