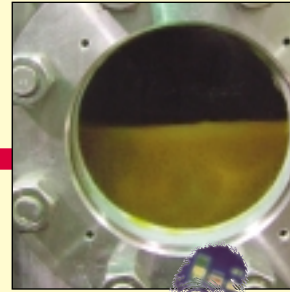
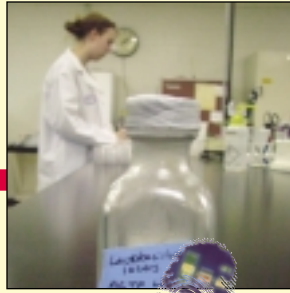
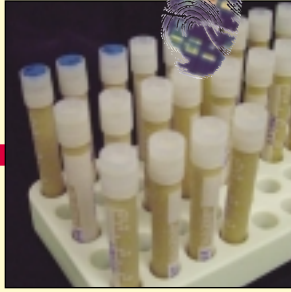


Stage 1 - Multiplication



KEY

These symbols indicate where multiple quality checks take place through the production process.

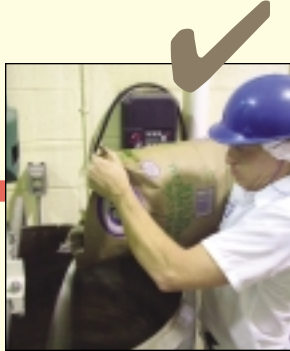


Exhaustive Quality Control checks, including DNA fingerprinting, allow us to confirm unequivocally that each lot of product contains the proper microorganism strain(s).

Stage 2 - Concentration & Drying



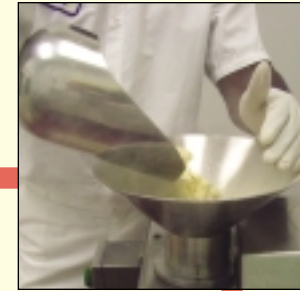
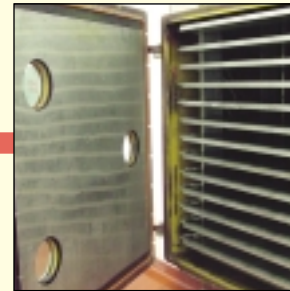
Centrifuge for concentration and cleaning.



Cryoprotectants added



Freezing for preservation and further concentration to guarantee microorganism counts



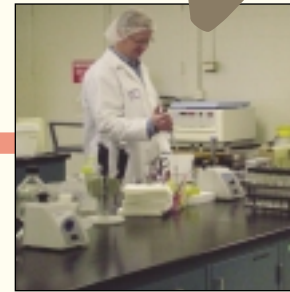
Granulation/ Milling

Stage 3 - Blending & Packaging

Water activity regulators added to soak up extra moisture and maintain bacteria legitimacy



Packaging in gas impermeable laminates



Product is then retested

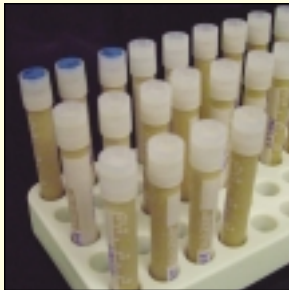


The condition of bacteria in the product is examined to ensure that it meets strict standards.

Total Quality Management System

Delivering quality to your bottom line

To deliver the highest quality product possible, Lallemand Animal Nutrition North America incorporates a Total Quality Management System. This system ensures that all steps — from laboratory generation of starter cultures to final product delivery — meet the highest standards. You can be confident that what you read on the product label is exactly what is delivered inside the package. Here's how the Total Quality Management System works:



Microorganism purity and performance

To ensure purity and consistency, all Lallemand production strains of yeast and bacteria are DNA fingerprinted.

DNA fingerprinting is an exact, proven science that confirms unequivocally that each product lot contains the proper microorganism strain(s). The identity of the strain is tested four times for strain purity and consistency before the product reaches full-scale production. During production, it is tested three more times.

Lallemand selects specific strains based on their performance in research and field trials. A significant percentage of Lallemand's revenue supports research and development to determine the most beneficial strains, and dosing levels, for agricultural application.

Manufacturing to food grade standards

All Lallemand production facilities are on target to meet human food grade standards. This means that Lallemand products achieve the same level of quality assurance as human food grade production facilities.

To accomplish food-grade certification, specific practices must be in place to monitor raw material receiving and storage; transferring and handling ingredients; operational appearance; and operational, delivery, and personnel practices. The plant must establish and implement a preventive maintenance program with documented maintenance reports and sanitary and hygienic design criteria for the building, equipment, and utensils to prevent contamination. Also required are scheduled cleaning of the building and grounds, equipment and utensils, along with maintenance cleaning associated with electrical and mechanical systems.

At each step in the production process, bacteria are examined according to strict standards including optimum cell condition and DNA testing. These checks help ensure that the end product is efficacious and pure. A flow chart on the reverse of this sheet gives more details on the manufacturing process.

Product protection in every package

The final step in Total Quality Management delivers a quality product in every package. Every Lallemand bacterial product is guaranteed to be packaged and delivered in optimal condition for its intended use.

Products are packaged in gas impermeable laminates — the same packaging used by the U.S. Military for long-term preservation of sensitive materials like rations. This packaging keeps out air, gasses, and moisture. Each pouch is "back filled" with nitrogen, an inert gas that displaces oxygen in the package to help keep the product strain(s) dormant.

Product can be shipped overnight from Lallemand manufacturing sites. Shipping by refrigerated trucks helps preserve product stability and viability.

The final product is designed to meet the needs of various application systems. Flow enhancers create easy mixability and good dispersibility to ensure optimum animal performance.

In addition, Lallemand's Technical Support Service retains samples of all products for validation of product performance and retesting.

These extra steps taken by Lallemand are your guarantee that "what's on the product label is exactly what is inside the package."



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