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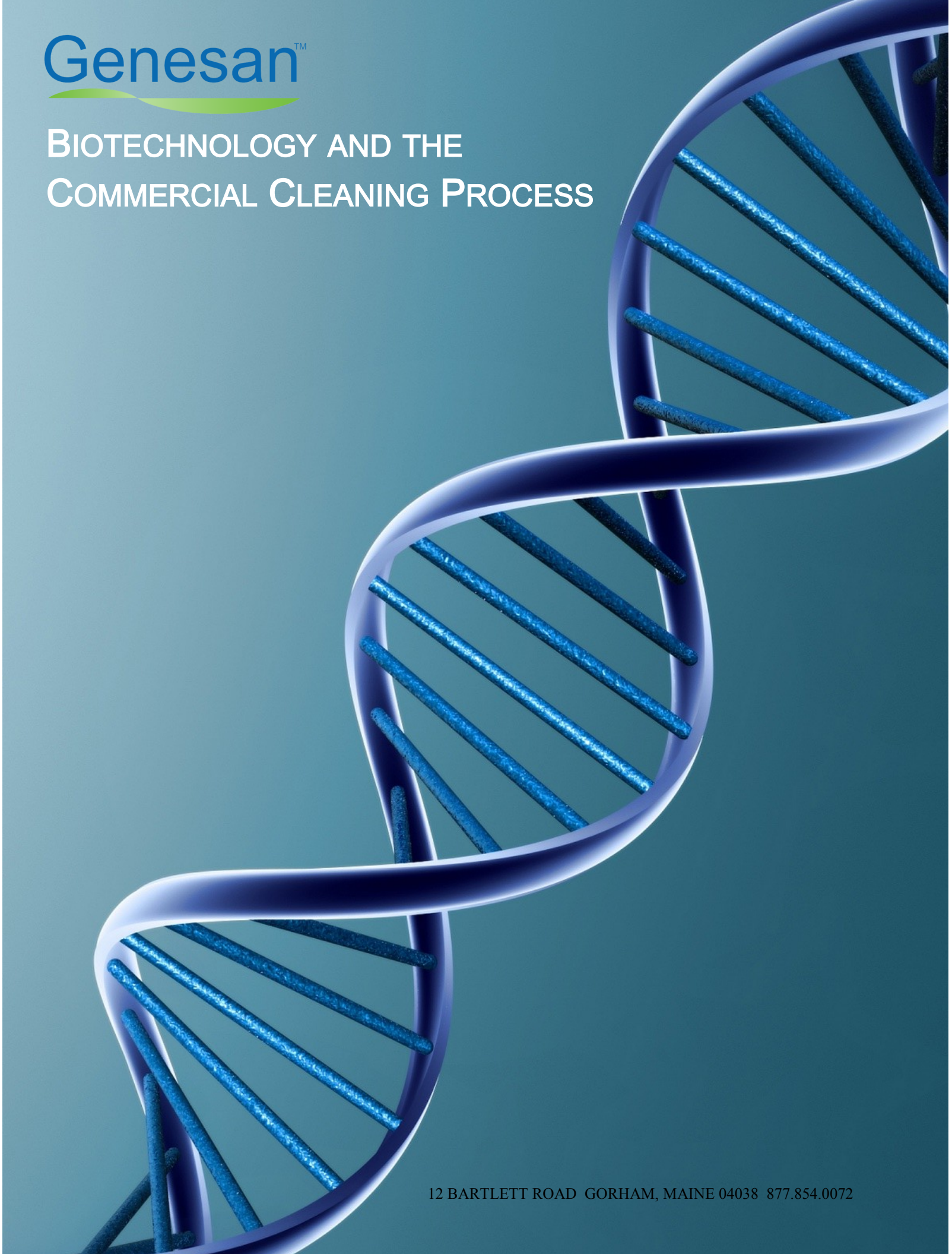
Biotechnology and the Commercial Cleaning Process



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BIOTECHNOLOGY: A Definition

A field of applied biology that involves the use of living organisms and bioprocesses in engineering, technology, medicine. Living organisms include bacteria, yeasts, etc. or parts of those organisms such as enzymes or DNA.

Industrial Biotechnology (also known as White Biotechnology) is biotechnology applied to industrial processes. An example, is the use of enzymes as industrial catalysts to either produce valuable chemicals or destroy hazardous pollutants. So-called, "White Biotechnology " tends to consume less resources than traditional processes used in the production of industrial goods. The investment and economic output of these types of applied biotechnologies is termed: Bioeconomy

BIOECONOMY: A Definition

Bioeconomy is an economy that is based on ecologically sensitive products and services produced by the use of biotechnology and renewable energy sources. An economy where the basic building blocks for industry and the raw materials for energy are derived from plant/crop-based (i.e. renewable) sources. The evolution of the biotech industry and its application to agriculture, health, chemical or energy industries is the best example of bioeconomic activity.

NATIONAL BIOECONOMY BLUEPRINT

On September 16, President Obama announced that his Administration will develop a National Bioeconomy Blueprint detailing Administration-wide steps to harness biological research innovations to address national challenges in health, food, energy, and the environment. Biological research underpins the foundation of a significant portion of the nation's economy. By better leveraging America 's national investments in biological research and development, the Administration aims to stimulate the growth of high-wage, high-skill jobs while improving the lives of all Americans. .

THE WHITE HOUSE
WASHINGTON

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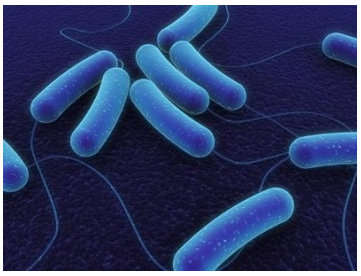
POLLET SA: The PolBio Program

In the late 1980's, the Pollet Company of Tournei, Belgium initiated a biotechnological product grouping named, PolBio Enzy. The focus was to develop effective biobased cleaning agents that utilized non-pathogenic and non-GMO bacteria and botanical surfactants to remove soils and malodors rather than employing harsh, petrochemical detergents. In business since 1788, Pollet was uniquely qualified to marry the new sophistications of biotechnology with the age-old traditions of European soap-making. This marriage has since resulted in a wide array of commercial cleaning products that offer end-users exceptional hygienic results without compromising their environmental concerns.

BACTERIA & ENZYMES

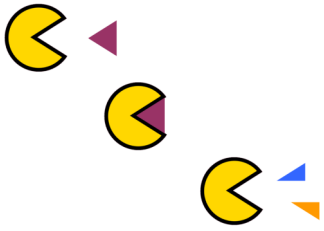
Bacteria are microscopic, single-cell living organisms. They are present virtually everywhere; in the air, on skin and in soil. Bacteria can often cause serious diseases in human beings. But there are many bacterial strains that are beneficial to human health (probiotics, metabolites, etc.) These are commonly referred to as non-pathogenic bacteria and they present no danger to the environment or health. .



Bacillus Subtilis: commonly found in soil

The four strains of Bacillus subtilis, the bacteria used in Enzysan2000, are considered non-pathogenic and have been approved for use by the US Environmental Protection Agency. Like all organisms, Bacillus Subtilis utilizes enzymes to rapidly digest a food source, providing it nourishment needed to replicate and survive.

Enzymes are proteins. They consist of long chains of amino acids that are held together by peptide bonds. They are present in all living cells (including bacteria) where they perform a vital function by controlling the metabolic processes whereby nutrients are converted into energy. Bacteria in cleaning products produce specific enzymes for specific types of soils. These enzymes speed up the cleaning process by breaking stubborn soils into smaller particles that are easily lifted and rinsed free.



In the illustration, the yellow spheres represent the enzyme; the purple triangular shape represents a specific type of soil (proteins, starch, fats or plant) and the smaller shapes represent the soil in the process of being removed.

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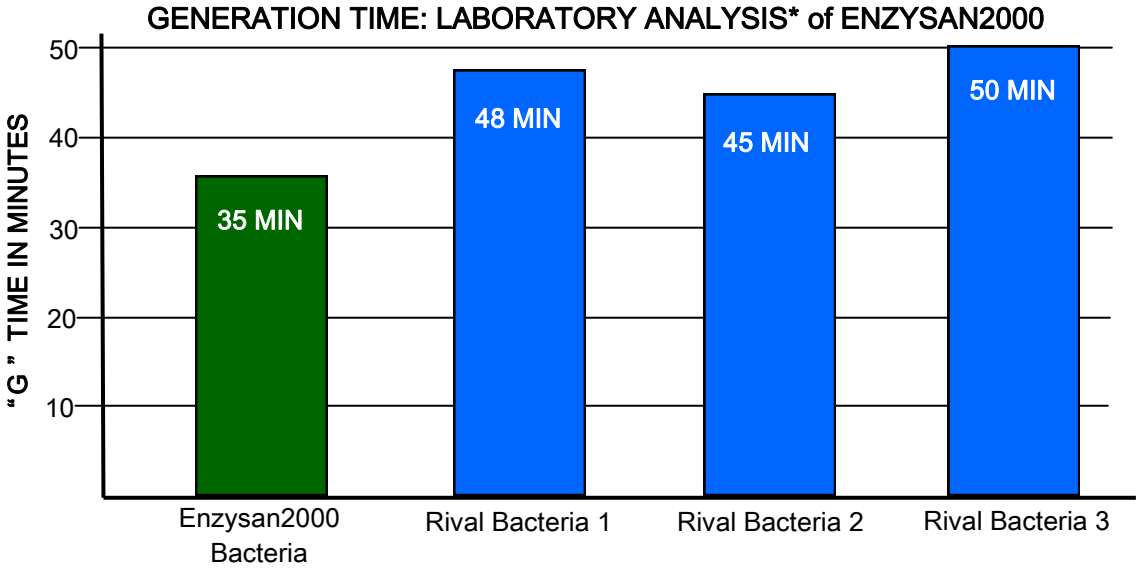
ENZYSAN2000: Biological Cleaner and Odor Eliminator

Enzysan2000 is a remarkable biological cleaner and odor eliminator originally developed to meet a request by the Belgian government for a product that could be used to clean the restroom facilities both aboard the trains as well as in the railway stations throughout the country. These facilities were often heavily used and difficult to maintain.

ENZYSAN2000 ~ 5 LITER

The bacterial strains used in Genesan's Enzysan2000 were developed by Pollet's scientists to reproduce rapidly and produce enzymes capable of digesting a wider range of organic soils than other enzymatic products available on the market.

The speed of growth in microbial activity is an important parameter for competition between different bacteria. This is known as "g" or generation time. Simply said, bacteria which can multiply, or generate, more quickly will dominate and leave little place for rival bacteria to thrive.



CONCLUSION: The Bacillus subtilis strains used in Enzysan2000 require significantly less time to fully reproduce than the three rival bacterial strains selected for this analysis. The accelerated rate of generation allows Enzysan2000 to virtually out consume the rival bacteria that are responsible for the malodors and effectively destroy them by starving them of nutrients. Once diluted, Enzysan2000 bacteria will remain viable against rival bacteria keeping the area free of malodor for a period of up to 21 days.

* Source: Dr. A Jabrane, PhD Microbiologist, Pollet SA

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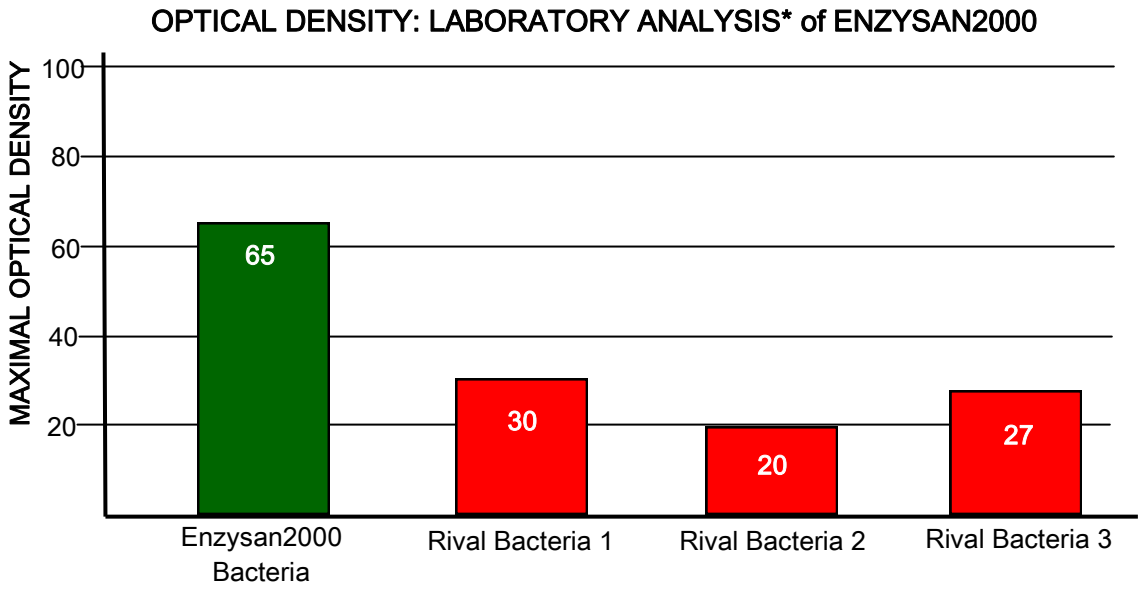
ENZYSAN2000: Biological Cleaner and Odor Eliminator

To confirm the results of the Generation Time analysis, an optical density test was also performed. Optical density provides a measure of the concentration of bacteria in a suspension: the higher the value, the greater the amount of bacteria present.



ENZYSAN2000: Four Mechanisms of Cleaning & Odor Elimination

Odors in the environment are the result of organic matter undergoing a process of fermentation in the presence of pathogenic (bad) bacteria. The most successful methodology of counteracting malodors will solve the problem both immediately *and* in the long-term.

The conventional approach has always been to eliminate the odor's source by applying a chemical agent called a biocide that penetrates the cell wall thus destroying the organism. Biocides, although very effective, can be dangerous to people and the environment. Also, biocides do not address the inevitable re-occurrence of the bacteria and the offensive odors.

Odor Control: Immediate

Enzysan2000 contains naturally-occurring fragrances and odor absorbers that disguise and then neutralize odors on contact providing immediate relief. This is accomplished

* Source: Dr. A Jabrane, PhD Microbiologist, Pollet SA

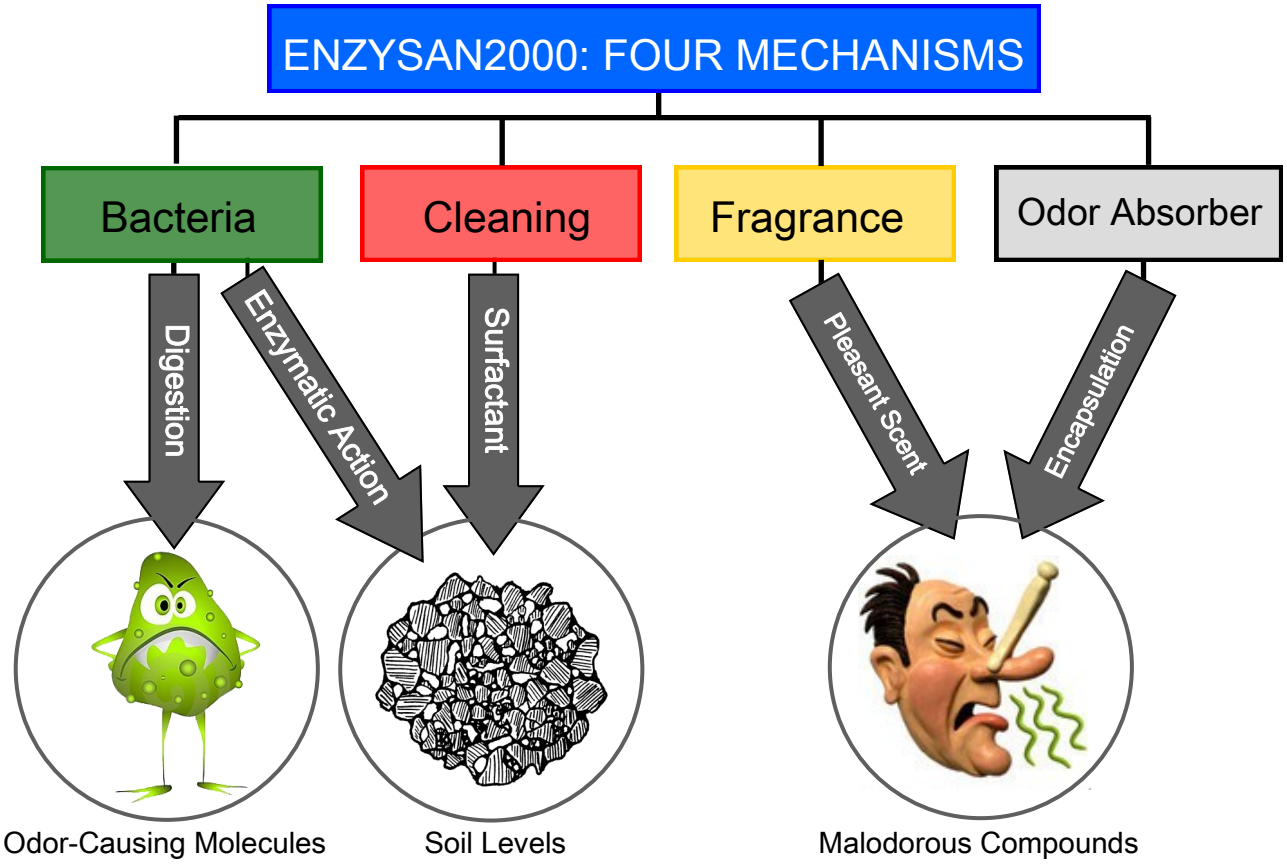
through their ability to capture, or encapsulate, the offending molecules which emit nitrogen and sulfurous compounds as they deteriorate.

Odor Control: Long-term

As previously noted, the four bacterial strains in Enzysan2000 reproduce at a significantly faster rate than those bacteria responsible for causing the odor problem. This unique ability to regenerate more rapidly assures Enzysan2000 bacteria of its food source and thereby, viability against the return of unpleasant odors for up to three weeks from the date of initial application. Enzysan2000 uses Ecologo Odor Control Certified Additives (CCD-115) as certified by the Environmental Choice Program

Cleaning: Biobased Surfactant

Biobased surfactants, unlike petrochemical-based surfactants, employ enzymes to accelerate the removal of soil by breaking the soil into smaller particles. By reducing the soil level, many potentially harmful bacteria are safely removed from the environment. An initial, thorough cleaning is often the first step in infection control. Logically, if bacterial loads are reduced, the need for the wide-spread use of harsh and often environmentally unfriendly detergents and disinfectants can be minimized.



The graphic above indicates the four separate mechanisms that Enzysan2000 uses to efficiently clean and control odors upon contact and over time.

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ENZYSAN2000: A Competitive Advantage Checklist

- **Stability:** Enzysan2000 bacterial strains will remain stable for at least 3 years from the date of manufacture. Bacterial and enzymatic agents are stabilized in concentrate form and they only become active when entered into solution.

- **Selection:** This is the principal difference between Genesan's bacterial cleaners and the competition's. Pollet's biochemists tediously select the right spores from their extensive library. Accurate and detailed information is available if needed.

- **Research:** Pollet has submitted its scientific process to rigorous academic review and evaluation. Pollet maintains a full research laboratory and their highly-skilled staff of biotech experts works in close co-operation with several prestigious universities.

- **Performance:** Enzysan2000 has been repeatedly selected in competitive bids by major end-users throughout Europe and the United States.

- **Support:** As the sole importer of Pollet's biotech products in the United States, Genesan is committed to bringing the newest and most innovative products to its distributors. We provide in-the-field professional support as well as a toll-free technical assistance phone line, full-color sales literature and an informative website resource. www.cleaneasier.com

- **Performance:** Enzysan2000 is recognized as a worldwide leading product for commercial cleaning and deodorizing. It combines powerful cleaning with extreme safety. It is one of only a few certified green products that has an accepted fragrance. It is safe to use on all surfaces, including glass and carpet. Enzysan2000 truly is a technologically advanced and multi-use product.

- **Certifications:** Enzysan2000 enjoys both the North American Ecologo Award and the USDA's BioPreferred Status.