

CLEANING

ABSTRACT - Probiotics: the new integrated smart cleaning

KEYWORDS: Bacterial activity, sustainability, probiotic cleaning, green agents, biologic competition, positive colonization, cleaning.

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Starting with an overview of the industrial cleaning using beneficial microorganisms, throughout several application cases from floors to organic stains cleaning to effectively understanding the added value of Probiotic-cleansers.

Anything but a simple detergent! How to combine beneficial bacterial blends in cleaners and why. Large application fields for both household and professional market combining high performances, green eco-sustainability and a long-lasting deuration activity. Bacteria are the cleaning agents of the future, changing the concept of "fighting" the dirt to an innovative idea of "Living cleaning" that positively colonizes surfaces by creating an efficient bio-balanced environment, without having a negative environmental impact, but rather promoting a continuous deuration process.

Specific blends of bacteria are applied also in the waste treatment, involving all garbage processes from collection, to landfills treatments, composting processes, bio-filtering and also to the treatment of zootechnical manure, leachates and sludge.

Thereby the biodegradative activity of beneficial bacteria widely used in industrial fields can be calibrated to specific target applications and used in cleaning as a "living ingredient" for detergent formulas.

PROBIOTICS IN CLEANING FORMULAS

Blends of microorganisms to be inserted in cleaning formulas, are carefully selected for their skills of producing a broad range of enzymes which can degrade organic high molecular weight substances composing the dirt (soil) moreover. Through the degradation process they can either metabolize substances source of bad smells such as ammonia, H₂S and others. While they are applied to surfaces and through the colonization of the surface itself, they will start a long-term activity of "surface protection" and avoid the re-colonisation by uncontrolled microorganisms, potentially pathogenic.

The technical reason to additivate cleaning formulas with microorganisms is due to their capacity of enzymatically degrading target substances like organic dirt, food rests, FOG (fats – oils – grease) and other kinds of elements composing the "soil". The microbial activity will biodegrade organic substances by reducing and controlling bad smells and actively supporting the cleaning action of detergents. Microorganisms inserted in a cleaning formula combined with surfactant enhances its cleaning activity over surfaces. While the surfactant is entrapping superficial dirt, microorganisms will penetrate deeply in porous surfaces and joints and biodegrade also old organic stains deposited over time. The choice of adding bacteria in liquid detergents requires the use of spores, that can be stabilized and resist to a lot of external interventions (including also acid pH, lack of food and temperatures changes) and allow the survival of the spores over surfaces, so that they will be reactivated as soon as the user will spread water to wash the surface.

CURRENT USE OF BACTERIAL ACTIVITY

Almost all bacteria have a useful purpose, starting from supporting many forms of life and proceeding even in the use in industrial processes, they are the dominant living creatures on Earth and they have always been present for 4 billion years and are extremely adaptable to several kind of ecological habitats.

Main feature of bacteria is their metabolic capacity, they can use almost any organic compound as a food source, their skills of working in synergy in a consortium makes them beneficial ecological agents to be applied in several kinds of activities connected with many human endeavours and also the treatment of pollutants.

One of the most well know bacteria's activity is bioremediation, where microorganisms are used to metabolize polluting substances, bacteria, as natural bio-remediators working on oil spills and other organic pollutants and turning them into carbon dioxide and water or into more soluble molecules, that can be easily treated.

Bacteria are widely used for the treatment of wastewaters both effluents coming from industrial processes as well as from urban areas, starting with the treatment of sewages and septic tanks up to the biological wastewater treatment plants.

