



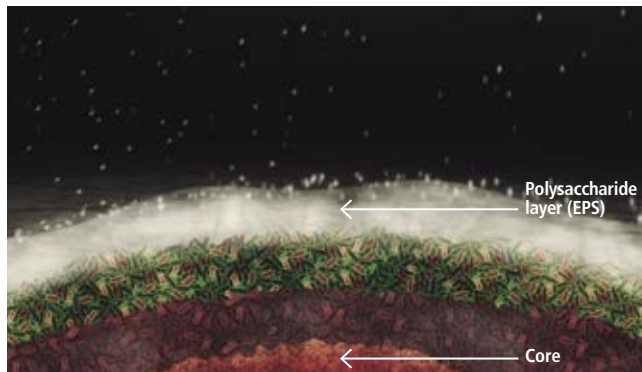
Cleaning and
sanitation
in one step



EnzyBac

REMOVAL OF BIOFILMS: SANITIZING ENZYMATIC DETERGENTS WITH NATURAL EXTRACTS

BIOFILMS



Biofilm section

Biofilms are complex communities of microorganisms able to colonize and adhere on most surfaces thanks to the production of extracellular polymeric substances (EPS) that facilitate its further development. A mature biofilm is a critical source of contamination, due to the protection conferred on the SPE, and it's difficult to remove as it has a high resistance to the cleaning and disinfection procedures.

Biofilms are a global problem that affect food and beverage industries. Biofilms can be a source of contamination of pathogenic microorganisms, what means a risk to the health of the consumer. Biofilms can also be an important cause of bacterial contamination alteration that can reduce the quality and the shelf life of the food. In addition to the economic impact associated with the loss of production lots, return and claims, the presence of biofilms may have a significant impact on food security.

→ Range of detergent products with enzymes and natural extracts for the sanitation of open surfaces OPC (open plant cleaning) and CIP systems (cleaning in place) to prevent and remove biofilms in a single step.

DESCRIPTION

“The natural is extraordinary”

The range of sanitizing enzymatic detergents ENZYBAC are specially formulated with natural extracts for the control and elimination of biofilms in the food industry in one step (detergent plus disinfection).

EnzyBac^{CIP}

Antibiofilm treatment to be applied in closed systems “CIP” (pipes, tanks, circuits) or by immersion/flood. It can be used alone or boosted with the concentrated blend of enzymes BIOJIP.

EnzyBac^{FOAM}

The antibiofilm treatment to be applied on open systems, it is applied on surfaces by foaming equipment. It can be used alone or boosted with the concentrated blend of enzymes BIOJET.

CHARACTERISTICS

Our enzyme treatment provides competitive advantages compared to classical chemical cleaning agents:








- Acts at neutral pH.
- It is not corrosive to the material surfaces.
- Low risk of exposure to the operator.
- Its composition is readily biodegradable.
- Efficiently eliminates biofilms.
- The product itself has very good bactericidal properties.
- It prevents undesirable and costly expensive contamination problems, both in public health and production.
- It activates the processes of water depuration, thanks to its continuous action at a later stages.
- Patented Enzyme Technology developed between Itram and the Autonomous University of Barcelona.
- Highly stable formula composed of plant extracts mixed with enzymes of last generation, which allows a high efficacy against different types of biofilms.
- 18 months of useful life



PRESENTATION

- 24 kg jerrycan









Description		Product		 min.	 °C	Application	
ENZYMATIC DETERGENT CLEANING	1	Rinsing	Water	-	-	-	
	2	Cleaning - Preventive treatment	ENZYBAC FOAM	3	15 - 30	* 45 - 55	
	3	Rinsing	Water	-	-	-	
4	We recommend avoiding water retention						

* < 25 °C very slow enzymatic activity | > 60 °C denaturalisation of enzymes

 To be determined according to the application type



Description		Product		 min.	 °C	Application	
ENZYMATIC DETERGENT CLEANING	1	Rinsing	Water	-	-	-	
	2	Anti-biofilm treatment	ENZYBAC CIP	1	30 - 60 - 120 Depending on system characteristics	* 45 - 55	
	3	Rinsing	Water	-	-	-	

* < 25 °C very slow enzymatic activity | > 60 °C denaturalisation of enzymes

 To be determined according to the application type



For customized protocols contact **Itram**

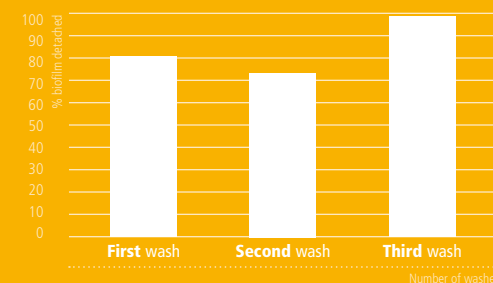
“Prevention the best strategy for the control of biofilms”

RECOMMENDATIONS

- Integrate Enzybac with conventional treatments periodically
- The best way to eliminate biofilms is prevention

EFFICACY RESULTS

Listeria monocytogenes cells detached from the biofilm after 3 treatments with Enzybac at 50°C and 15 minutes of contact.

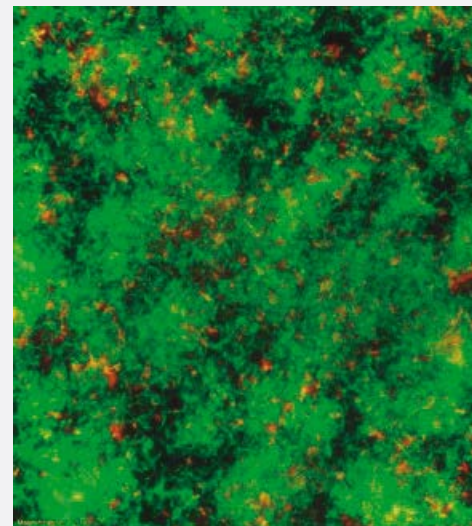


TREATMENT IMAGES

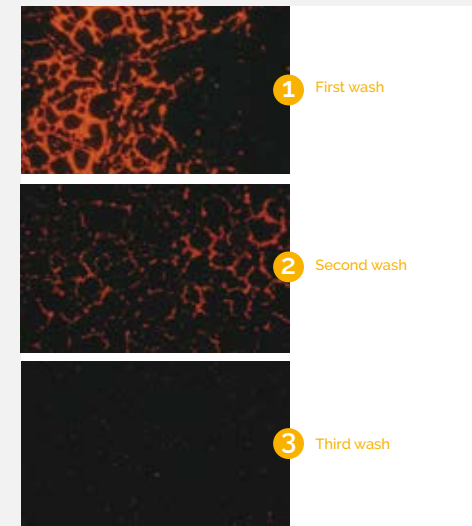
Listeria monocytogenes biofilm.

Digital images of Direct epifluorescent microscopy (DEM) with the LIVE / DEAD® BacLight™ L13152 kit. Augment: 40X

Before Enzybac treatment



After Enzybac treatment



Listeria monocytogenes biofilm grown during 48h at 37°C in a stainless steel surface.

Images of the same biofilm after 3 Enzybac washes (50°C, 15 min).

EnzyBac^{FOAM}

EnzyBac^{CIP}

Environmentally-friendly products



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