GERBALDO POLIMERI

bifree

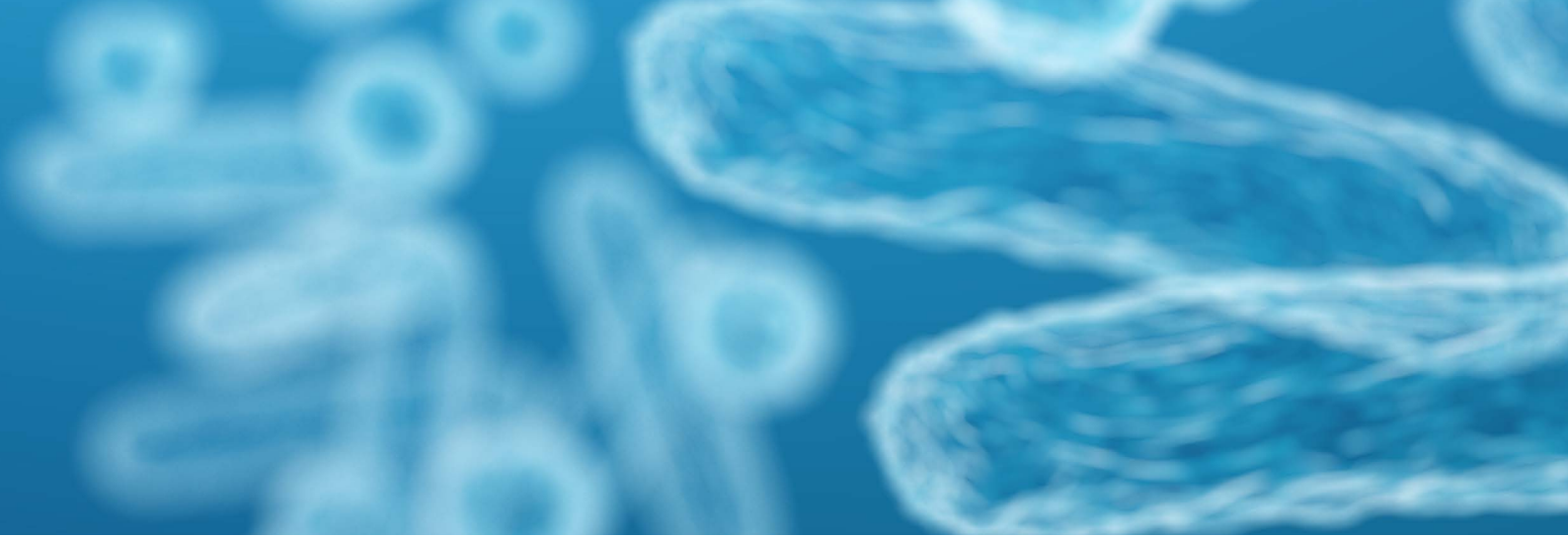
A NATURAL WAY FREE FROM BIOCIDES

MASTER & COMPOUND

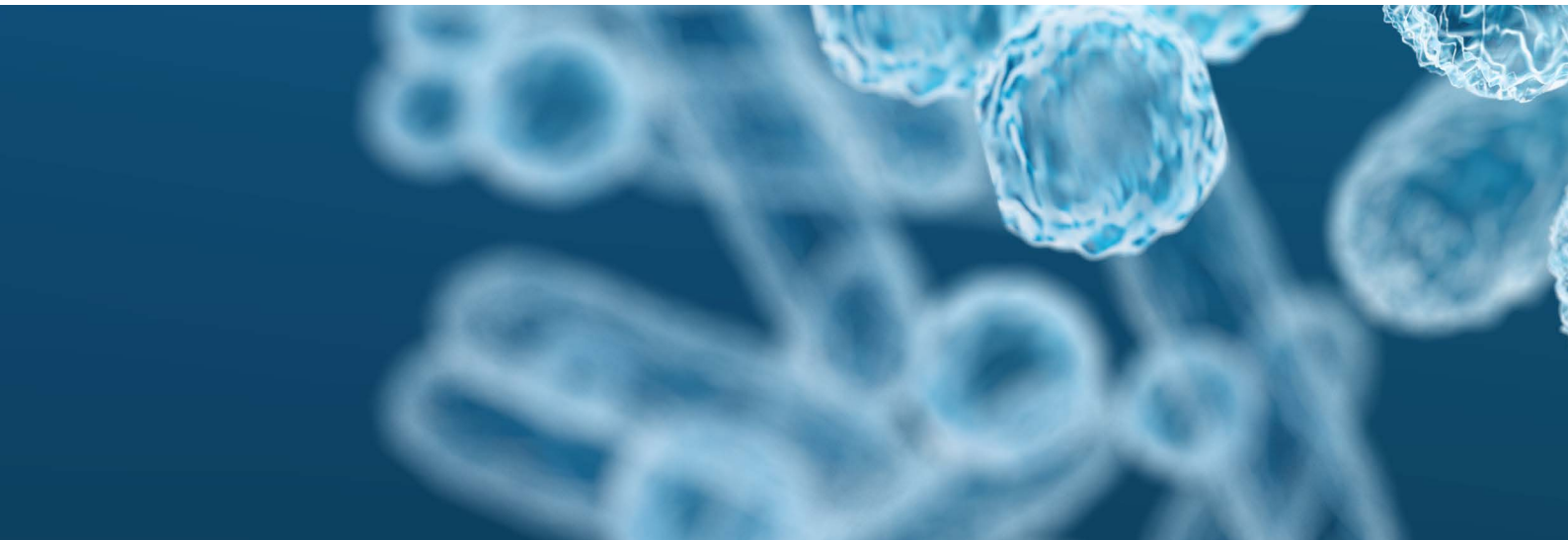
free to touch, to live, to share

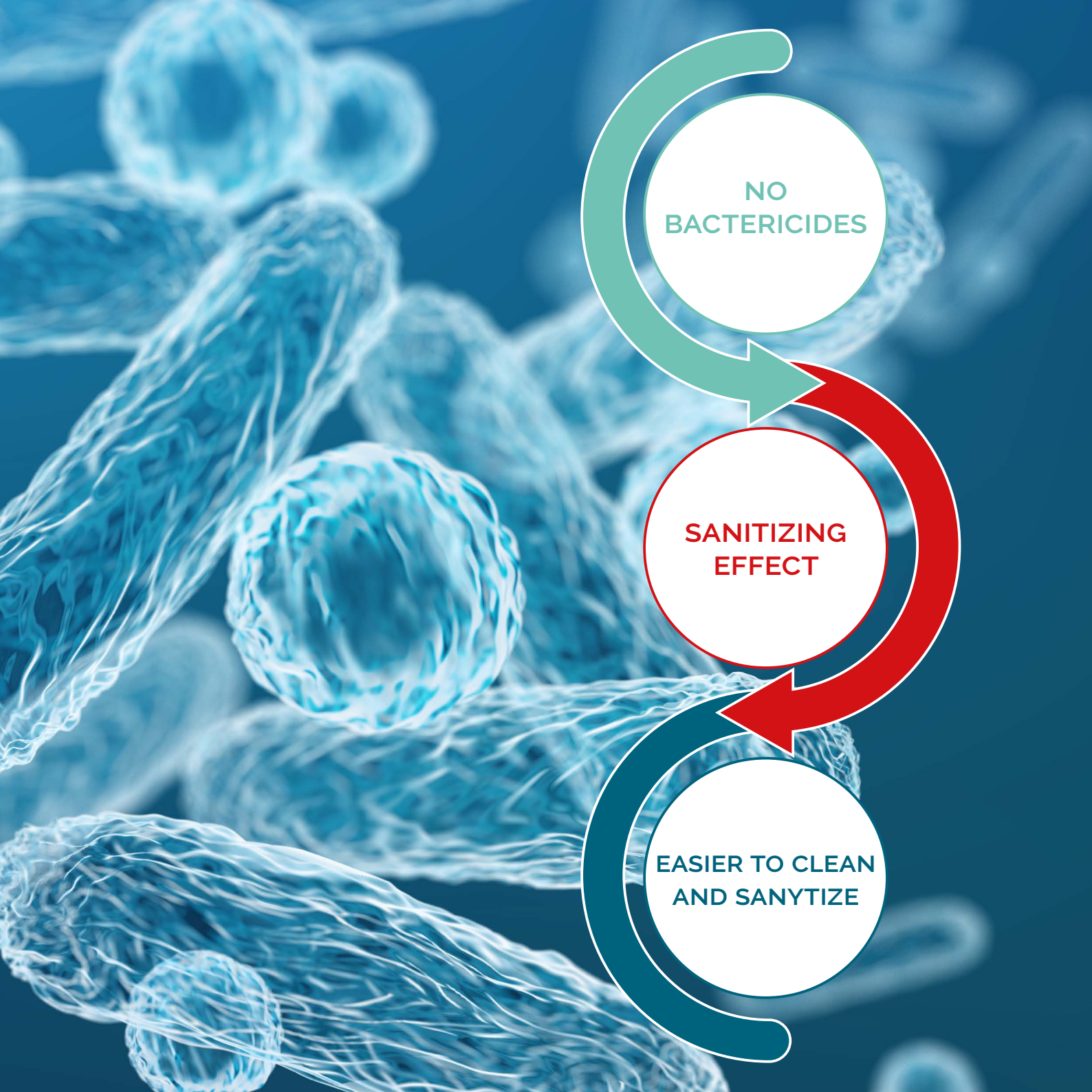
BIOCIDES FREE · ECOFRIENDLY · SILVER FREE

bifree.tech



bifree is an innovative technology applied to plastic materials that allows to obtain new smart materials able to guarantee **permanent protection** against bacterial contamination and proliferation.




NO
BACTERICIDES
SANITIZING
EFFECT
EASIER TO CLEAN
AND SANYTIZE

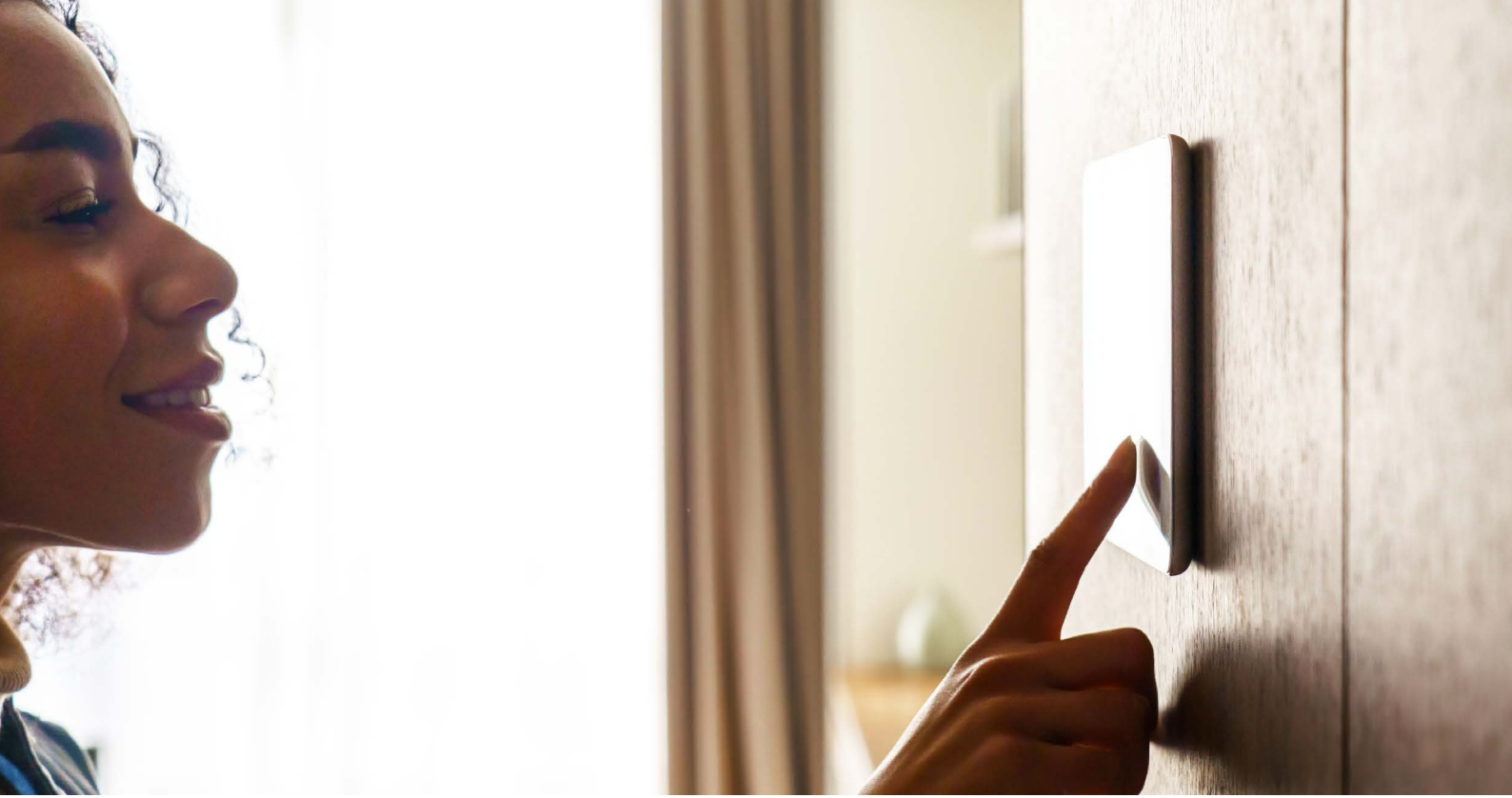
Why *bifree*

Today hygiene is a primary good. In the era of the sharing economy we are used to sharing objects, resources and spaces: it is increasingly necessary to handle safe objects avoiding bacterial contamination. ***bifree*** protects your plastic products and also preserves aesthetics by minimizing the presence of stains and odors due to the presence of bacteria.

Natural and safety

bifree does not use bactericides. The bioprotection mechanism is inspired by nature. For this reason the technology is safe, sustainable for the environment and is capable to guarantee high effectiveness against bacterial contamination without being subject to the BPR classification of biocides*.

*Certification conducted by Intertek HERS La. 2019-biocidal product regulation study.



Areas

bifree has many applications: switches and light plates, car dashboards, seats, kitchen utensils, water bottles, mobile phone covers, hospital accessories, medical devices, water tanks and filters, pipes, safety masks, textiles, TNT, floors.

HOME

DEVICES

TEXTILES

Food contact

bifree applied to polymers is a non-toxic technology, and meets the safety requirements for direct food contact. In accordance with EU Regulation 10/2011 MOCA TEST*, the *bifree Smart Materials* (if produced with certified polymeric bases for food) are suitable for food packaging applications.

*Test conducted by EPTA NORD Food Analysis Consulting - Accredia certification

FOOD PACK

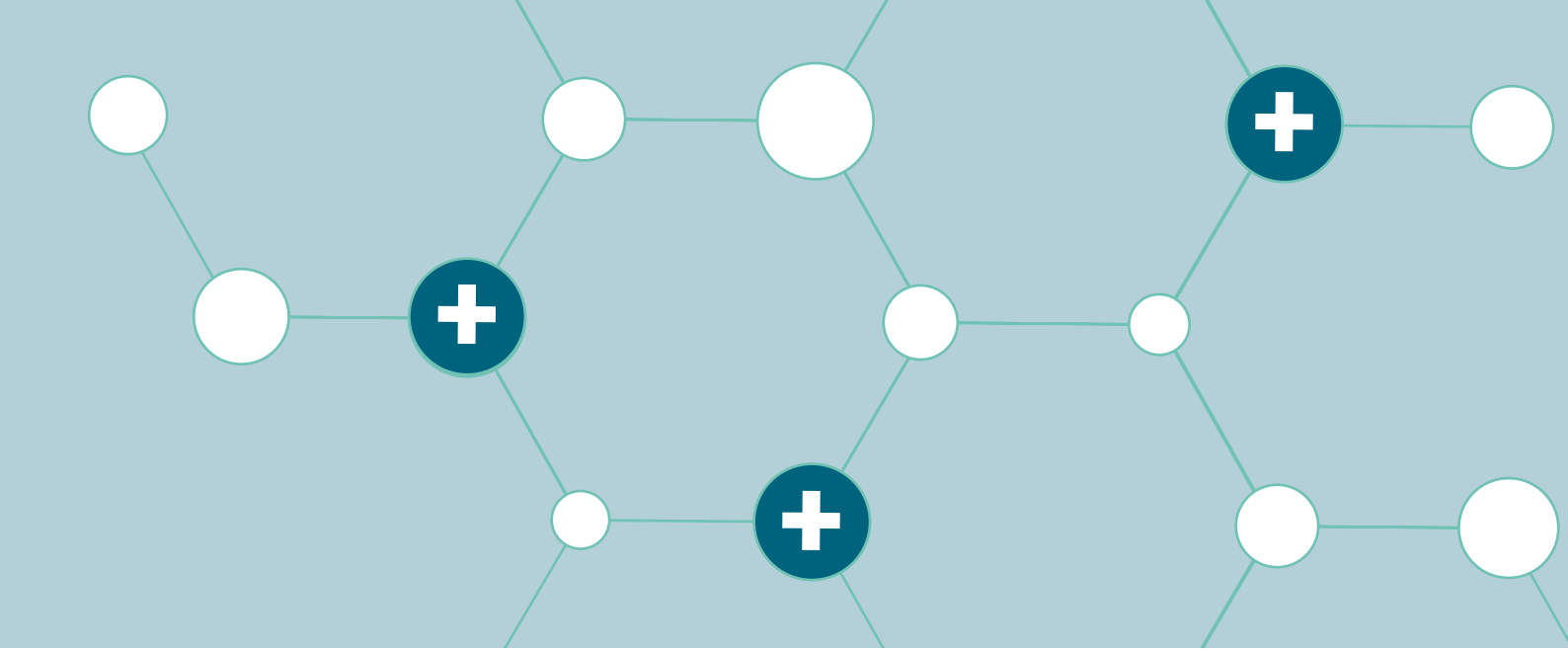
Plus

1. It helps the sanifcation procedure of the surfaces

2. The sanitizing effect makes us free from bacteria

3. Bactericides free

4. BPR labeling free on the final products



How does it work

bifree is a microtechnology which, due to a particular encapsulation - fixation process of electric charges, acts on the polymer by modifying its electric potential. The protection permanent effect is over time and ensures zero releases into the environment. The resulting physical effect gives the material a natural resistance to aggression and bacterial proliferation on surfaces. The effectiveness of *bifree* bioactive technology has been certified and tested for a long time by tests conducted by certified independent laboratories*.

The reference test available for measuring the self-sanitizing effectiveness is the ISO 22196:2011 standard. *bifree* is able to reach 99.9% effectiveness even if generally a material that reach a value ≥ 90% is already to be considered bioactive.

* Tests conducted at 3A Laboratories, Accredia Certification

bifree is...

SMART wide range of applications, no BPR labeling.

SUSTAINABLE non-toxic, recyclable, in accordance with the circular economy.

COMPLIANT to UE Regulations.

Applications

bifree technology is used on various polymers: PE - PP - PA - SAN - PVC - styrene and acrylic resins, acrylic paints too, and it is suitable for all processing, injection molding, rotational molding, blow molding, plastic drawing, thermoforming, filming.

Products

bifree Master used at 3% w/w with resins;

bifree Compound ready to use.

Material testing

Test ISO 22196-2011 Antibacterial activity*	**Staphylococcus Aureus Gram +**	**Escherichia Coli Gram -**
PE + ***bifree Master*** 3,0%	99,9%	99,9%
PVC + ***bifree Master*** 3,5%	92,4%	99,6%
PP + ***bifree Master*** 3,0%	99,5%	99,99%
SAN + ***bifree Master*** 3,0%	99,92%	99,98%
PA/FIBERGLASS + ***bifree Master*** 3,0%	99,5%	99,97%
Acrylic paint + ***bifree Tech***	99,987%	99,999%

Algae growth inhibition test **growth reduction after 120h incubation**	**Pseudokirchneriella subcapitata**
PE + ***bifree Master*** 3,0% - compound vessel	58,2%

*Test to prove the antibacterial efficacy, not directly declarable on the label as a claim, considering that the ***bifree*** is not classified BPR.

Aging test

Test ISO 22196-2011 **Antibacterial activity***	**Staphylococcus Aureus Gram +**	**Escherichia Coli Gram -**
bifree PE Compound	99,9%	99,9%
***bifree PE Compound* after aging test,** 2500 h ISO 4892-2-B1 Xenon lamp corresponding to 5 years environmental aging	99,9%	99,9%

*Test to prove the effectiveness in maintaining 99,9% antibacterial activity after the aging test.

Benefits

	bifree	Standard technology with bactericides
Bactericide (BPR) free Certification carried out by Intertek Lab, Analysis 11 March 2019	✓	✗
Labeling - absence of declarations on the label of the final product	✓	✗
Ag+ / slow-release dangerous organic substances absence	✓	✗
Compliance with MOCA TEST food contact regulation (EU) 10/2011	✓	✗
Compliance with ISO 14001	✓	✗
Permanent self-sanitizing effect	✓	✗
Eco-friendly materials	✓	✗

GERBALDO POLIMERI

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MADE IN ITALY

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