


HEXIS NEW ANTIMICROBIAL FILM

# PURE ZONE

Performance and protection anywhere, anytime



**PURE  
ZONE**  
Antimicrobial  
protection



[www.hexishealth.com](http://www.hexishealth.com)

ANTIMICROBIAL PROTECTION  
AT YOUR PREMISES



24/24H  
7/7H

**THE NEW ANTIMICROBIAL  
FILM BY HEXIS PROTECTS  
YOUR PREMISES 24/7**

→ YOU COMPLY WITH THE  
GOOD HYGIENE PRACTICE  
(GHP) AND YOU WISH YOUR  
ENVIRONMENT TO BE :

- 1 Perfectly maintained
- 2 Regularly cleaned
- 3 Covered with waterproof,  
smooth and easy to wash  
materials

→ HOWEVER, HAZARD  
SHALL DEVELOP BETWEEN  
2 CLEANING PHASES :

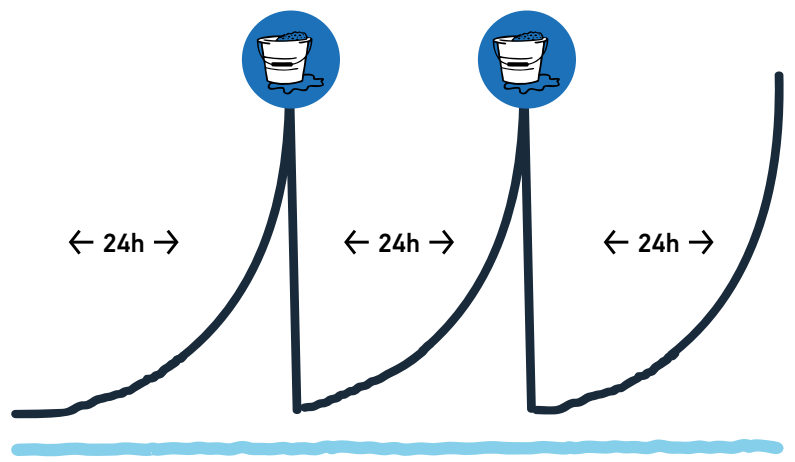
- A A biofilm may form
- B Germs may spread

\*See page 17 Regulation [EC] No 852/2004 of  
the European Parliament on the hygiene of foodstuffs



**EVOLUTION OF BIOFILM**

- without PURE ZONE
- with PURE ZONE

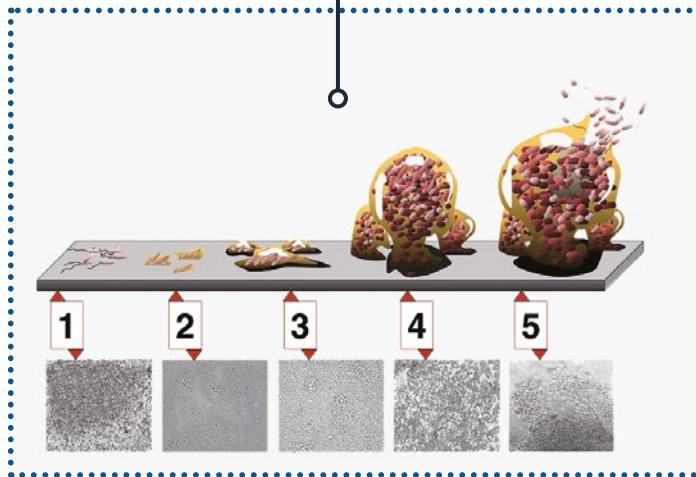


## → BIOFILM = DANGER

**BIOFILM IS COMPOSED OF MICRO-ORGANISMS AND A MUCOUS LAYER THAT REQUIRES A MECHANICAL CLEANING ACTION.**

**THIS IS WHERE BACTERIA PROLIFERATE.**

### BIOFILMS FORM VERY QUICKLY



Studies suggest that silver ions are capable of destabilising the biofilm matrix (1), preventing the spread of germs within the matrix and enabling the cleaning products to be effective.

(1) Chaw KC, Manimaran M, tay FEH. Role of silver ions in destabilization of intermolecular adhesion forces measured by atomic force microscopy in *Staphylococcus epidermidis* biofilms. *Antimicrob Agent chemother* 2205;49(12):4853-59

**A biofilm is a complex microbial community, consisting of bacteria and, on occasion, fungal species embedded within a protective polysaccharide matrix.**

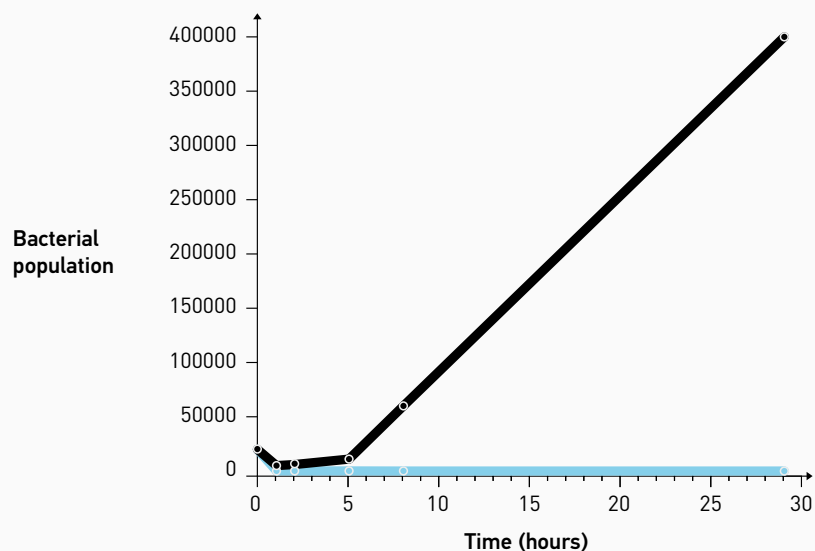
Managing biofilm requires:

- Reducing the microbial load through intensive cleaning in order to eliminate dormant bacteria
- Preventing the biofilm from reforming (with silver ions that destroy the so-called solitary, free-floating planktonic bacteria, for instance)

### HOW A BACTERIAL POPULATION GROWS

● without PURE ZONE

● with PURE ZONE





## → THE NEW HEXIS ANTI-MICROBIAL FILM

Germs need humidity to proliferate.

The Hexis film is waterproof and forms a barrier against humidity.

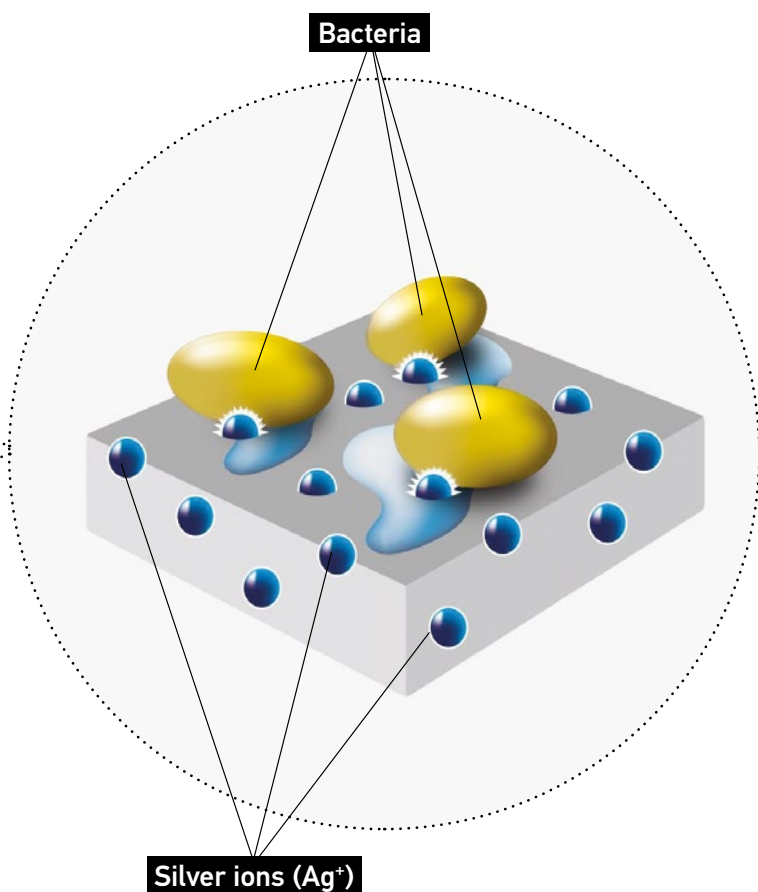


### THIS IS A DECISIVE INNOVATION

During cleaning operations, as well as in the presence of humidity, silver ions are released from the top layer of the film.

These ions come into contact with the bacteria, blocking their metabolism and/or interrupting their proliferation mechanism, leading to their destruction

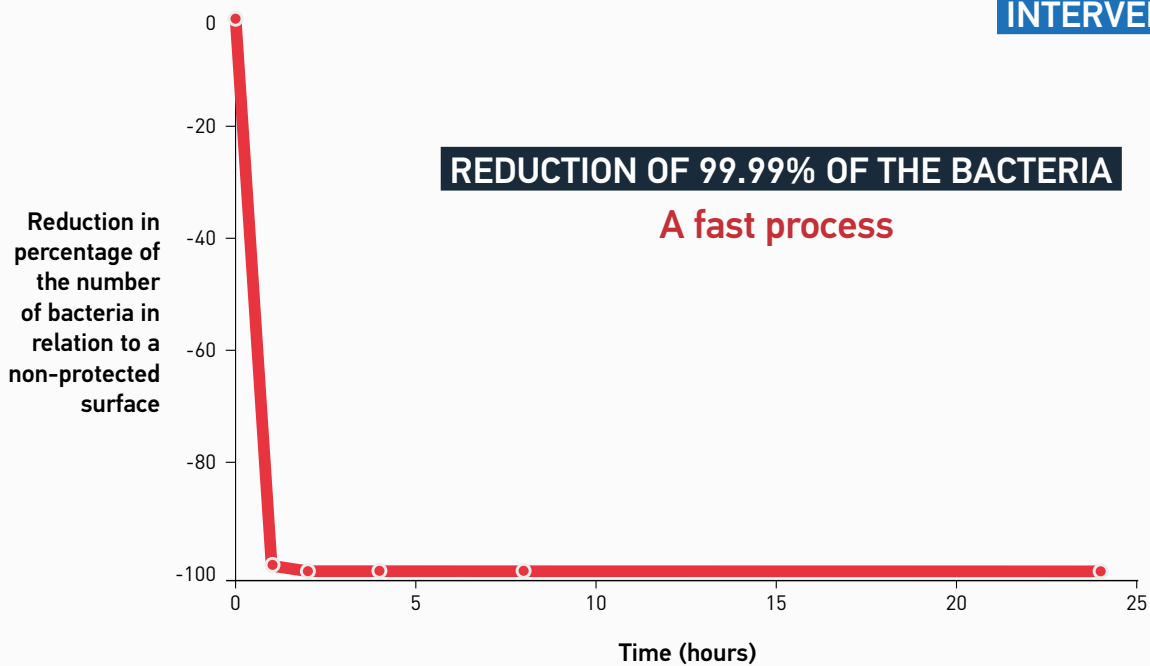
When the PVC film is manufactured by Hexis, silver ions encapsulated in a glass matrix are distributed over the film in a uniform manner.



## → THE ANTI-MICROBIAL EFFICIENCY OF SILVER IONS

- Protects 24h a day, 7 days a week, and thus between 2 cleaning phases
- Protects inaccessible areas
- Inhibits the development of 99.99% of the germs tested (tests in conformity with the ISO 22196 standard)
- Reduces a bacterial population by 4 logs
- Prevents the formation of biofilm
- Active for 5 years
- Perfectly ecological
- No nanoparticles

**WITHOUT  
HUMAN  
INTERVENTION**





## → THE ANTI-MICROBIAL ACTION OF SILVER IONS

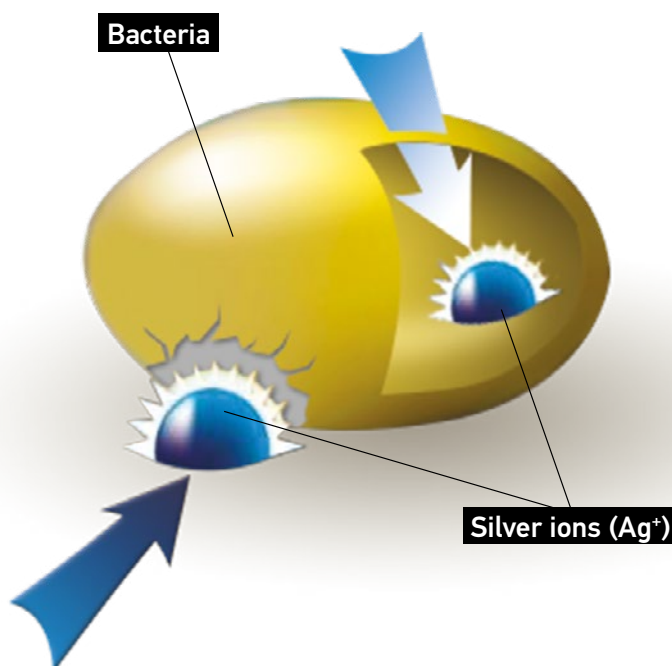
In its (elemental) metallic form, silver is inert and does not kill bacteria. Silver atoms (written as Ag or Ag<sub>0</sub>) must lose an electron and become positively charged silver ions, Ag<sup>+</sup>. Silver is ionised in air, but above all in a humid environment.

Silver ions are highly reactive and affect multiple sites in bacterial cells, guaranteeing their destruction.



### SILVER IONS :

- Produce alterations to the cell wall
- When transported into the cell, bind with proteins and interfere with the production of energy, enzyme function and cell replication
- Silver ions are active on a broad spectrum of bacteria

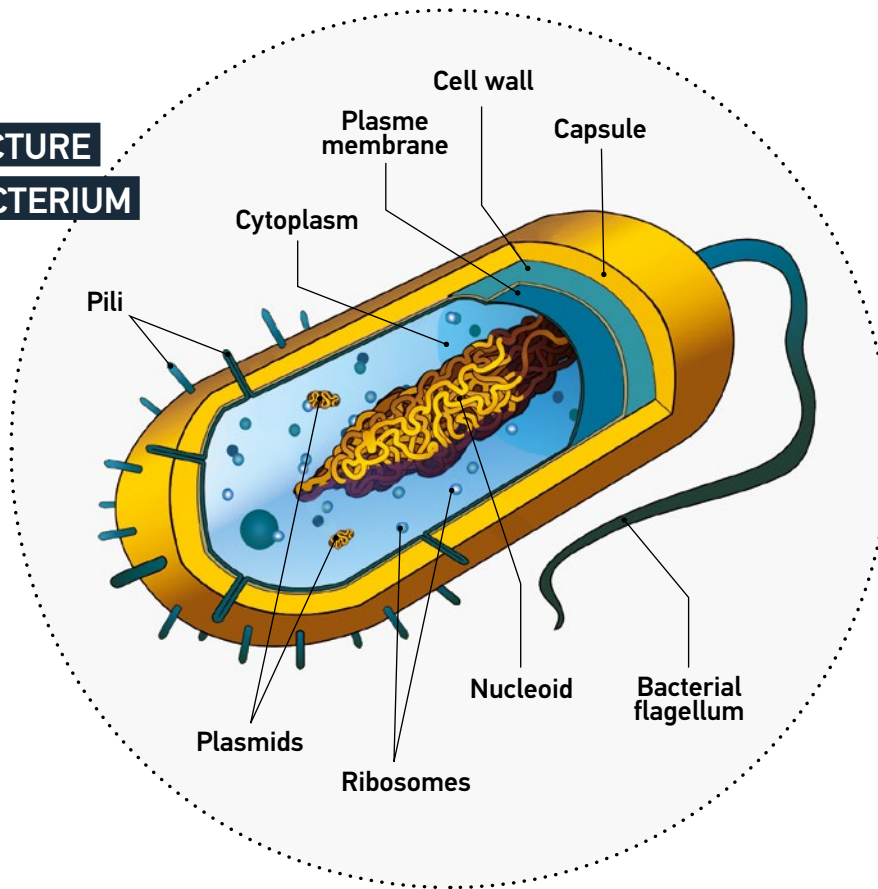


→ UNCONTROLLED MICROBIAL GROWTH IS THE MAJOR RISK

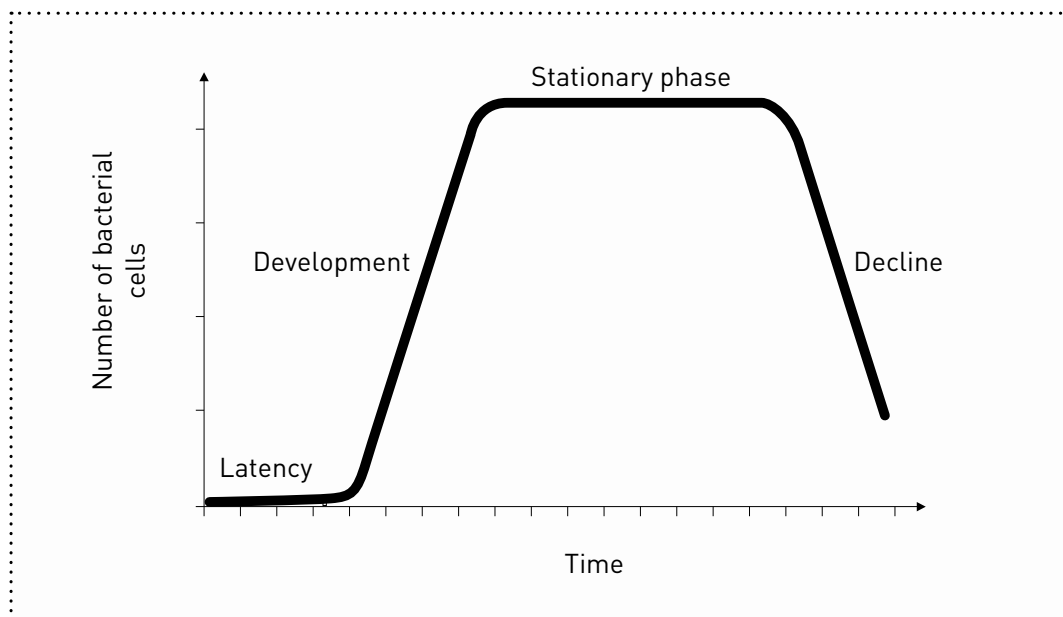
SUCH AS SALMONELLA, LISTERIA, ETC.

PROOF OF THE EFFICIENCY OF SILVER IONS ON LISTERIA

**STRUCTURE  
OF A BACTERIUM**



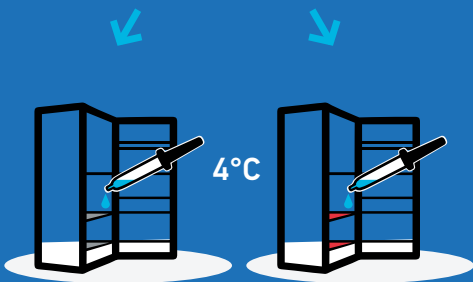
**AFTER A LATENT PHASE,  
DEVELOPMENT BECOMES EXPONENTIAL**



→ PROOF OF THE EFFICIENCY OF SILVER IONS ON LISTERIA

**OPERATIVE PROCEDURE:**

Seed the inside wall of a fridge with a Listeria colony



> Without silver ions    > With silver ions

Sampling  
Dilution  
Counting (D 0, D 7, D 28)

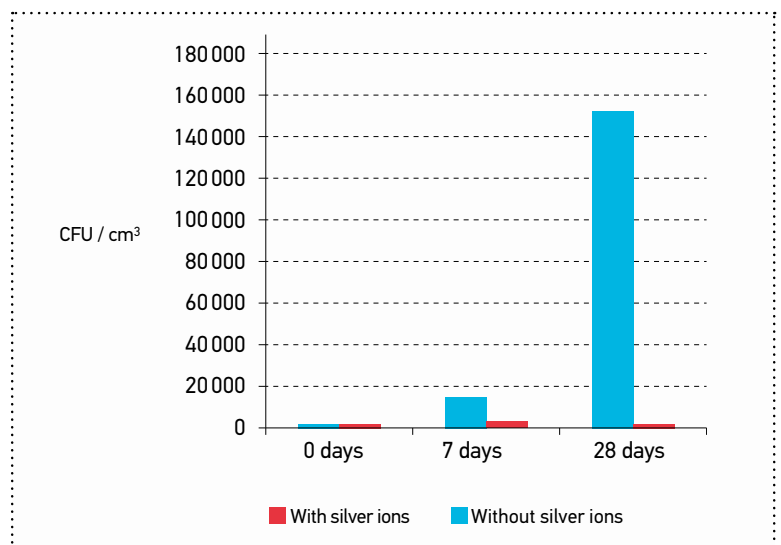


Counting the colonies of bacteria in terms of CFU/cm<sup>3</sup> (Colony-Forming Units)



**IF UNPROTECTED:**

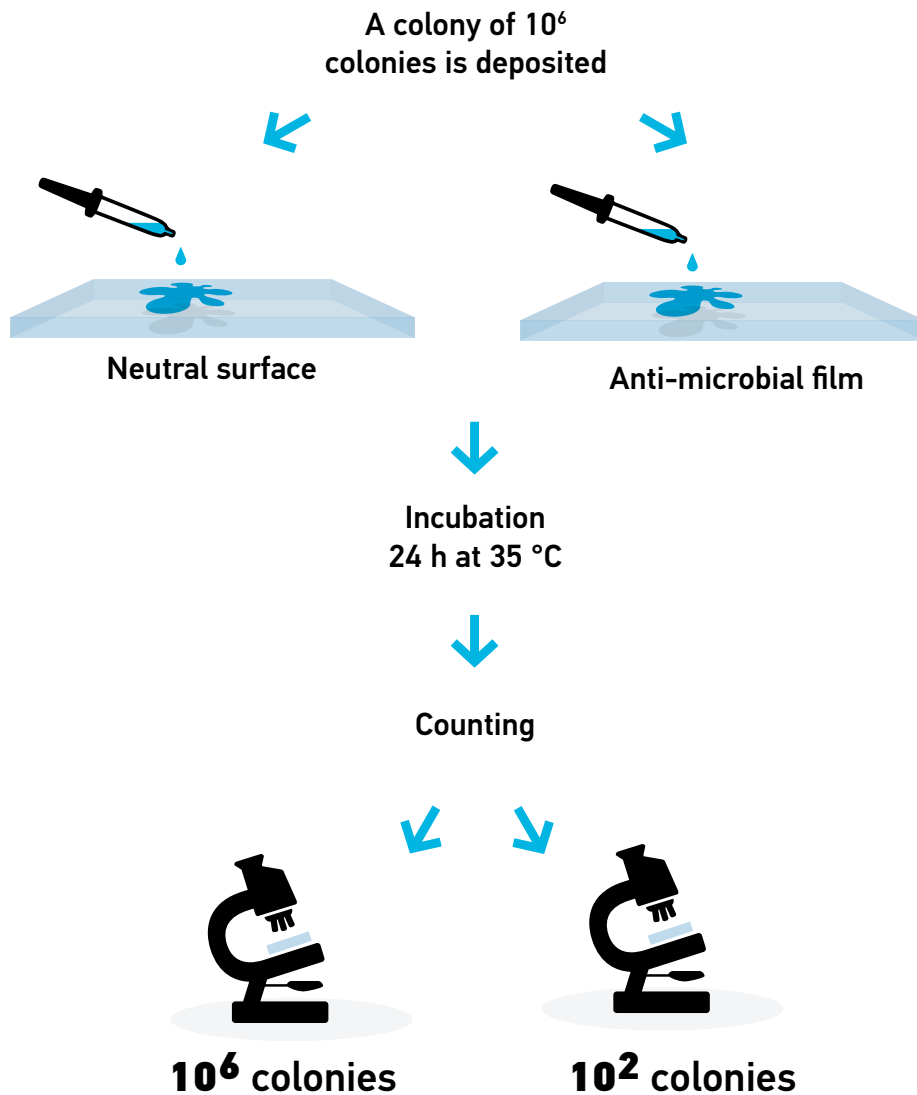
**PROLIFERATION OF THE GERMS**





## → HOW TO MEASURE THE ACTIVITY OF ANTI-MICROBIAL FILMS

### CONTACT TEST (ISO 22196)



#### RESULTS:

Decrease of 4 log, or 99.99%, in the number of bacteria

There is a correlation between the logarithmic reduction and the percentage of reduction in the bacteria.

- Decrease of 1 Log: → Reduction of 90% in the number of bacteria
- Decrease of 2 Logs: → Reduction of 99% in the number of bacteria
- Decrease of 3 Logs: → Reduction of 99,9% in the number of bacteria
- Decrease of 4 Logs: → Reduction of 99,99% in the number of bacteria

**ANTI-BACTERIAL  
ACTION**

**Fast**

Rapid penetration  
into the bacterial cell.

**Powerfull**

Active even at very  
low concentrations.

**Prolonged**

24h a day, 7 days a week  
for several years.



**The activity of the Hexis anti-microbial film**

Strain	Reduction in bacteria as a %	Logarithmic decrease
<i>Salmonella enterica subsp enterica</i>	<b>99,99</b>	<b>&gt; 4,6</b>
<i>Listeria monocytogenes</i>	<b>99,99</b>	<b>&gt; 4,2</b>
<i>Staphylococcus aureus</i>	<b>99,99</b>	<b>&gt; 4,1</b>
<i>Escherichia coli</i>	<b>99,99</b>	<b>&gt; 4,5</b>
<b>MRSA</b>	<b>99,99</b>	<b>&gt; 3,5</b>
<i>P.aeruginosa</i>	<b>99,99</b>	<b>&gt; 5,7</b>

N.B. The logarithmic reductions obtained with silver ions may differ depending on the techniques used and in relation to the incubation periods and milieus used.



Total Quality. Assured.

Intertek France - Etablissement de Chalon/Saône  
12 rue Alfred Kastler – Boite N° 7  
71530 FRAGNES  
www.intertek-france.com

Reference : CHL-R14-0815  
CHL-R16-1301

## Certificate of analysis

**Society** : HEXIS  
**Address** : ZI Horizons sud  
34110 FRONTIGNAN

**To the attention of:** Nathalie SIBOLD

Customer Reference:	Film Antimicrobien Pure Zone
Intertek Sample Reference:	14-CHL-0815-02 / 16-CHL-1301-01
Date of Sample Receipt:	September 1 <sup>st</sup> , 2014 / November 28 <sup>th</sup> , 2016
Date of Sample Analysis:	September 10 <sup>th</sup> , 2014 / December 6 <sup>th</sup> , 2016
Date of the Certificate of Analysis:	July 21 <sup>st</sup> , 2017

**Test:**  
Evaluation of antimicrobial efficiency based on ISO 22196

**Results:** The results are given as log reduction R, corresponding to the value of antimicrobial activity.

<i>Salmonella enterica subsp enterica</i>	R > 4.56 (for sample 14-CHL-0815-02)
<i>Listeria monocytogenes</i>	R > 4.21 (for sample 14-CHL-0815-02)
<i>Staphylococcus aureus</i>	R > 4.12 (for sample 14-CHL-0815-02)
<i>Escherichia coli</i>	R = 4.54 (for sample 14-CHL-0815-02)
<i>MRSA</i>	R > 3.51 (for sample 14-CHL-0815-02)
<i>Pseudomonas aeruginosa</i>	R > 5.37 (for sample 16-CHL-1301-01)

Certified by Sylvie LEBRAT  
Laboratory Director

Intertek France – Etablissement de Chalon/Saône

This report only concerns samples submitted for testing. This report must not be reproduced, if not in entirety, without the written authorization of the laboratory  
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[serviceclientschalon@intertek.com](mailto:serviceclientschalon@intertek.com)





## → PROOF FROM TESTS

### THE HEXIS FILM CAN BE APPLIED EVERYWHERE

The tested product is  
**“NON-IRRITANT”**

Safe for use on human skin.

Assessment and analysis  
of the irritant effect do not  
reveal any irritant effect,  
which demonstrates good skin  
compatibility of the product,  
**PURE ZONE ANTIMICROBIAL FILM.**



**RAPPORT ETUDE**  
Réf : 832/0914-2302

**Promoteur de l'étude**  
**HEXIS**  
Z.I. Horizons Sud  
34110 FRONTIGNAN  
France

**Investigateur responsable**  
**BIOPHYDERM S.A.S.**  
PARC 2000  
244, rue Claude François  
34080 – MONTPELLIER

**But de l'étude**

Sous strict contrôle dermatologique,  
vérifier la compatibilité cutanée d'un produit  
destiné à être mis en contact avec la peau  
par tests épicutanés semi-occlusifs

**Produit**

**FILM ANTI-MICROBIEN PURE ZONE**  
**Lot B416324CE produit testé pur**  
**HEXIS N° de test 2302**

**Méthodologie**

**Volontaires :** 15 sujets sains, âgés de 18 à 65 ans

**Inclusion :** peau à tendance réactive sans origine  
pathologique

**Exclusion :** terrain allergique médicalement  
validé évolutif

**Méthode :** application directe semi-occlusive  
temps d'application : 6 heures  
lecture immédiatement après le retrait, puis à 30  
minutes et à 24 heures

**Résultats**

L'indice d'irritation cutanée pour le produit  
**FILM ANTI-MICROBIEN PURE ZONE –**  
**Lot B416324CE – HEXIS - N° de test 2302,**  
avec un temps d'application de 6 heures est  
de : **0,27.**

**Conclusions**

Le produit testé est "**NON IRRITANT**"  
**Sans danger pour l'emploi sur peau humaine.**  
L'évaluation et l'analyse de l'effet irritant n'ont  
pas mis en évidence d'effet irritant, indiquant une  
compatibilité cutanée **satisfaisante** pour le  
produit **FILM ANTI-MICROBIEN PURE**  
**ZONE.**

Etude 832/0914 - Produit n°2302

**Biophyderm S.A.S.**  
PARC 2000 - 244, rue Claude François - 34080 MONTPELLIER  
Téléphone 33 (0)4 67 16 47 63 - Site [www.biophyderm.net](http://www.biophyderm.net)

**STUDY REPORT**  
Ref: 832/0914-2302

**Study Sponsor**  
**HEXIS**  
Z.I. Horizons Sud  
34110 FRONTIGNAN  
France

**Investigator in charge**  
**BIOPHYDERM S.A.S.**  
PARC 2000  
244, rue Claude François  
34080 – MONTPELLIER

**Aim of the study**

To assess the cutaneous compatibility by means  
of semi-occlusive cutaneous tests  
under strict dermatological control of a product  
intended to be in contact with the skin

**Product**

**FILM ANTI-MICROBIEN PURE ZONE**  
**Batch B416324CE product tested pure**  
**HEXIS Tested under No 2302**

**Methodology**

**Volunteers:** 15 healthy subjects, aged between  
18 and 65

**Inclusion criteria:** reactive tendency non  
pathological skin

**Exclusion criteria:** confirmed evolutive allergic  
background

**Method:** semi-occlusive direct application  
application time: 6 hours  
reading immediately after removal, then 30  
minutes and 24 hours after

**Results**

The **cutaneous irritation index** for the product  
**FILM ANTI-MICROBIEN PURE ZONE –**  
**Batch B416324CE – HEXIS - test No 2302,**  
with an application time of 6 hours is: **0.27.**

**Conclusions**

The tested product is "**NON IRRITANT**"  
**Safe for use on human skin.**  
**The assessment and the analysis of the irritant**  
**effect** don't reveal any irritant effect, which  
demonstrates a **good cutaneous compatibility** of  
the product **FILM ANTI-MICROBIEN PURE**  
**ZONE.**

Study 832/0914 - Product n°2302



**IN YOUR PREMISES,  
THE SAME TECHNIQUE,  
THE SAME ADVANTAGES**

**→ HEXIS ADHESIVE FILMS  
ARE USED ON TRAINS,  
UNDERGROUNDS,  
PLANES, AND ARE THUS  
EXPOSED TO SIGNIFICANT  
CONSTRAINTS**

**Strong  
adhesion**

**Easy to  
clean**

**Waterproof**

**Conformable**





## → HEXIS PVC ADHESIVE FILMS

## YOUR CLEANING PROTOCOL IS RESPECTED

- Smooth and sleek, so easy to clean
- Perfectly waterproof
- Easy to apply, without disrupting your organisation, all substrates, constructions, insulated panels, sandwich panels, etc.
- In all areas subject to health constraints: clean rooms, white rooms, cold stores
- Compatible with your cleaning protocols. Resistant to most chemical agents, alcohol, diluted acids, oils
- The films have an acrylic adhesive which is pressuresensitive. Adhesion is immediate, and permanent after 24h of contact
- Manufactured in France at the Hexis factory
- Hexis international patent



## → THE PURE ZONE LABEL

**PURE**  
ZONE®

Antimicrobial  
protection



[www.hexishealth.com](http://www.hexishealth.com)

To allow your clients, staff and partners to identify the areas protected with the anti-microbial film, Hexis have created the PURE ZONE label which can be applied to doors, counters, windows, tables, etc., thus indicating

**MANAGEMENT  
OF ANTI-MICROBIAL  
PROTECTION ON  
YOUR PREMISES**





## → EUROPEAN REGULATIONS ON FOOD HYGIENE 852/20

### OBLIGATIONS IN TERMS OF REGISTRATION:

Establishments that produce foodstuffs of animal origin may be authorised under certain conditions (see regulation 853/2004).

The concept of cooperation with the control administrations is clearly defined in the regulations. This is new.

## → REQUIREMENTS APPLICABLE IN TERMS OF HYGIENE AS OF 01 JANUARY 2006

### 1. Equipment and materials:

In general terms, these requirements come from the principle of an **obligation for results** rather than of means (with the exception of toilets, hand-washing stations and changing rooms). The principle of **making progress in time and space has been retained**.

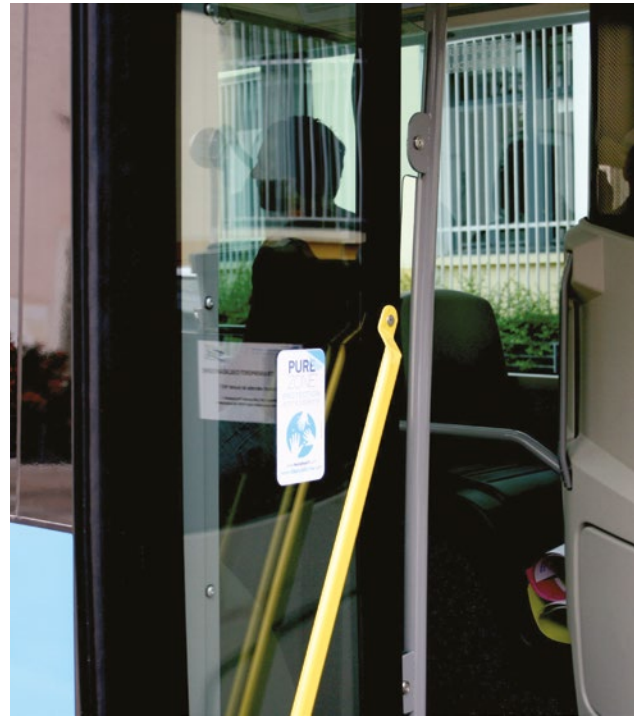
#### A few key points:

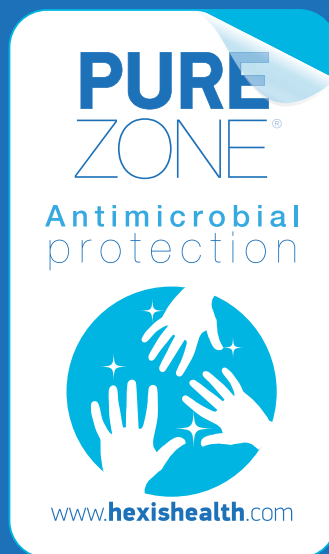
- Clean premises in a good state of upkeep
- Sufficient, ventilated work areas to prevent any condensation phenomena
- Avoid all risk of contamination and cross-contamination
- Control the cold chain
- Have surfaces (floor, wall, ceiling, doors, windows) and equipment surfaces that are smooth and easy to maintain
- Have waterproof, non-corrosive materials and equipment
- Have adequate systems for cleaning and disinfecting tools, materials, etc.
- Fight against pests
- Good lighting, cleanliness and a good state of upkeep of the premises: cleaned and disinfected
- Specific provisions for cars, shops and transport are also set out in the regulation











**HEXIS - HEADQUARTERS**

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