

HEXIS NEW ANTIMICROBIAL FILM

PURE ZONE

Performance and protection anywhere, anytime



PURE
ZONE
Antimicrobial
protection

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 :

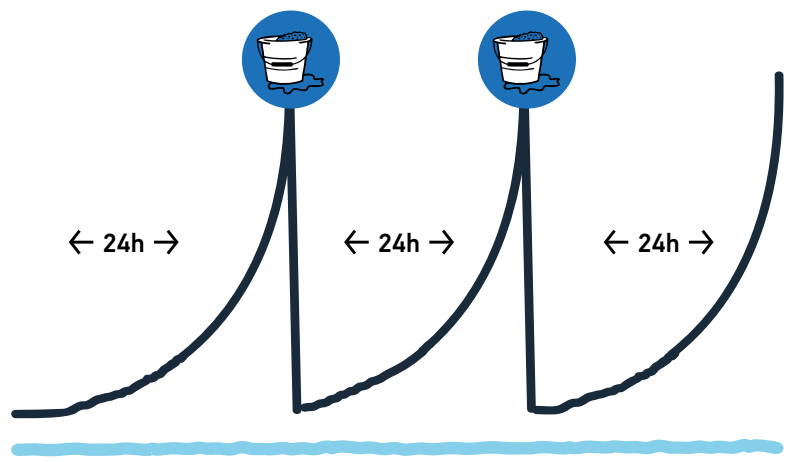
- A A biofilm may form
- B Germs may spread

*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

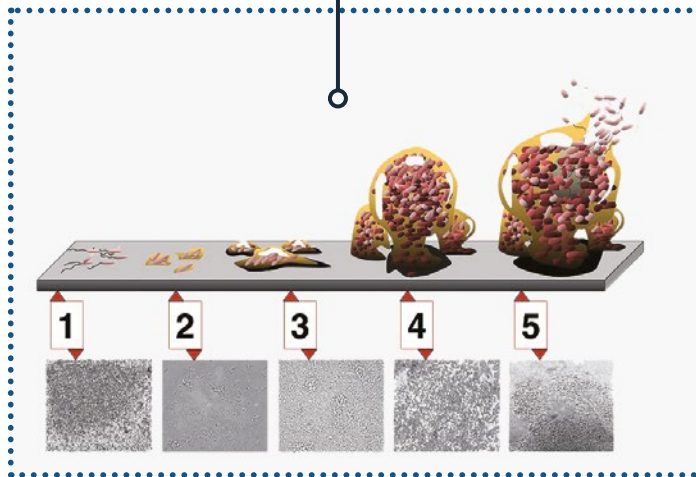


→ BIOFILM = DANGER

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.

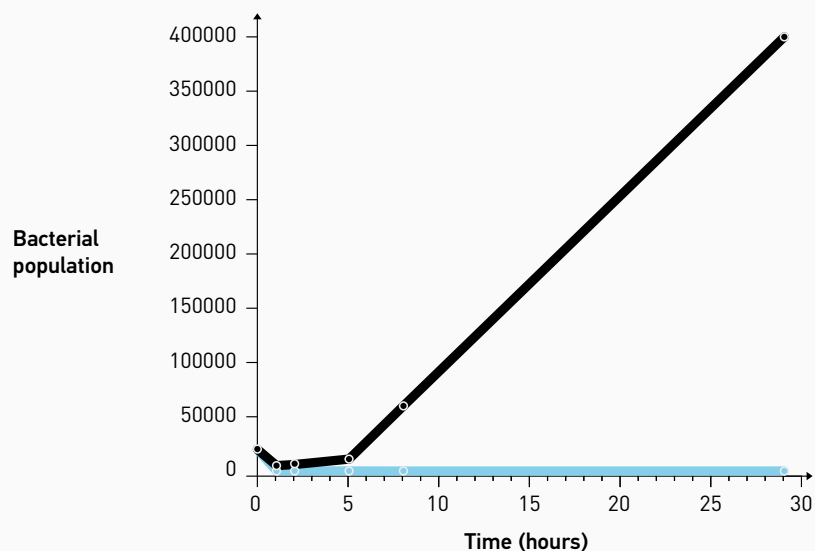
Managing biofilm requires:

- 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.

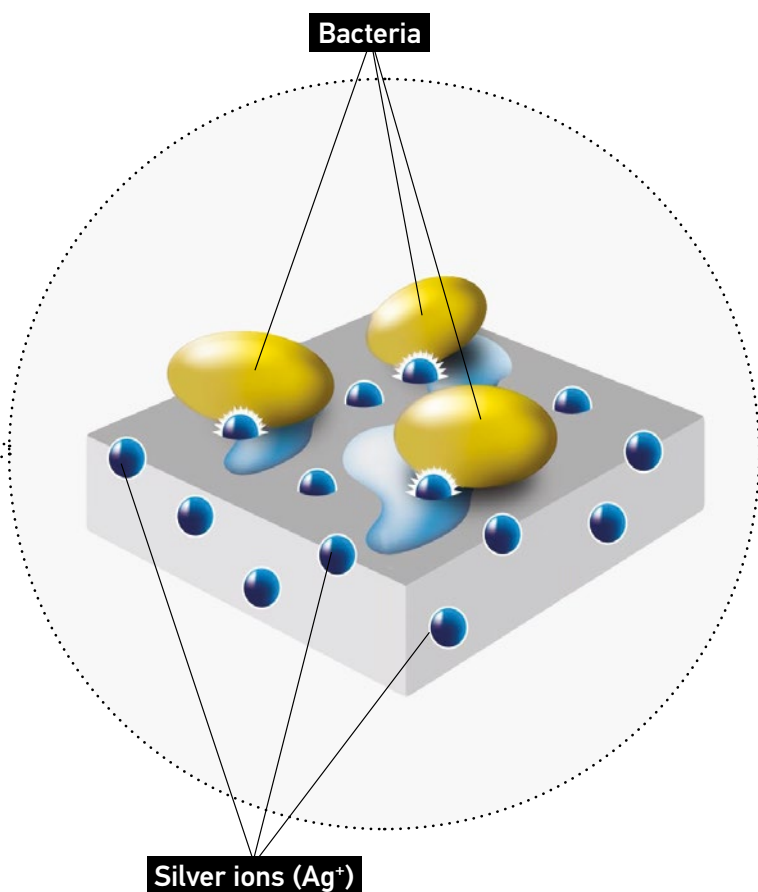


THIS IS A DECISIVE INNOVATION

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

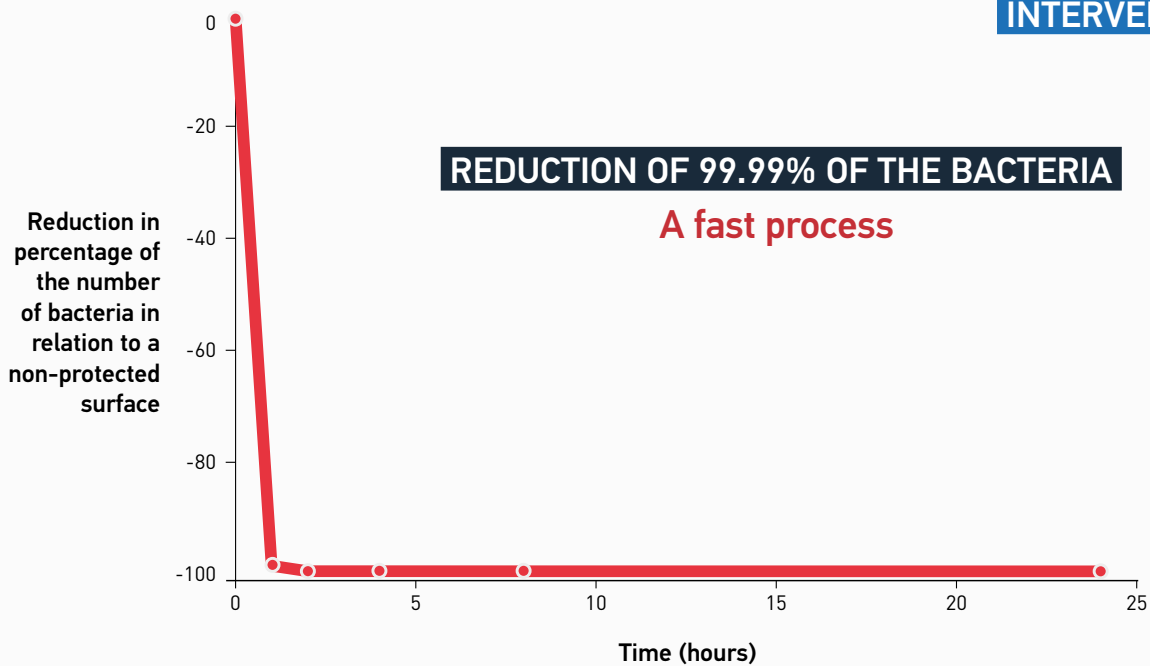
When the PVC film is manufactured by Hexis, silver ions encapsulated in a glass matrix are distributed over the film in a uniform manner.



→ 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

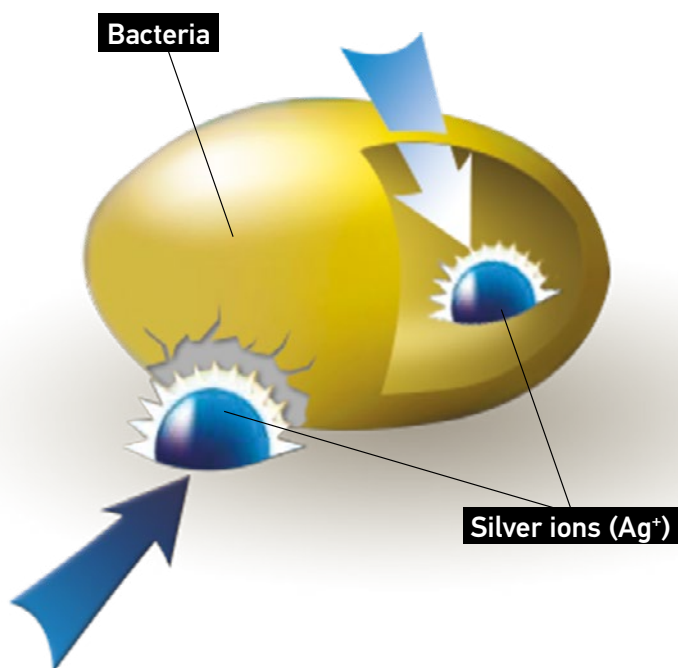
In its (elemental) metallic form, silver is inert and does not kill bacteria. Silver atoms (written as Ag or Ag₀) must lose an electron and become positively charged silver ions, Ag⁺. Silver is ionised in air, but above all in a humid environment.

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

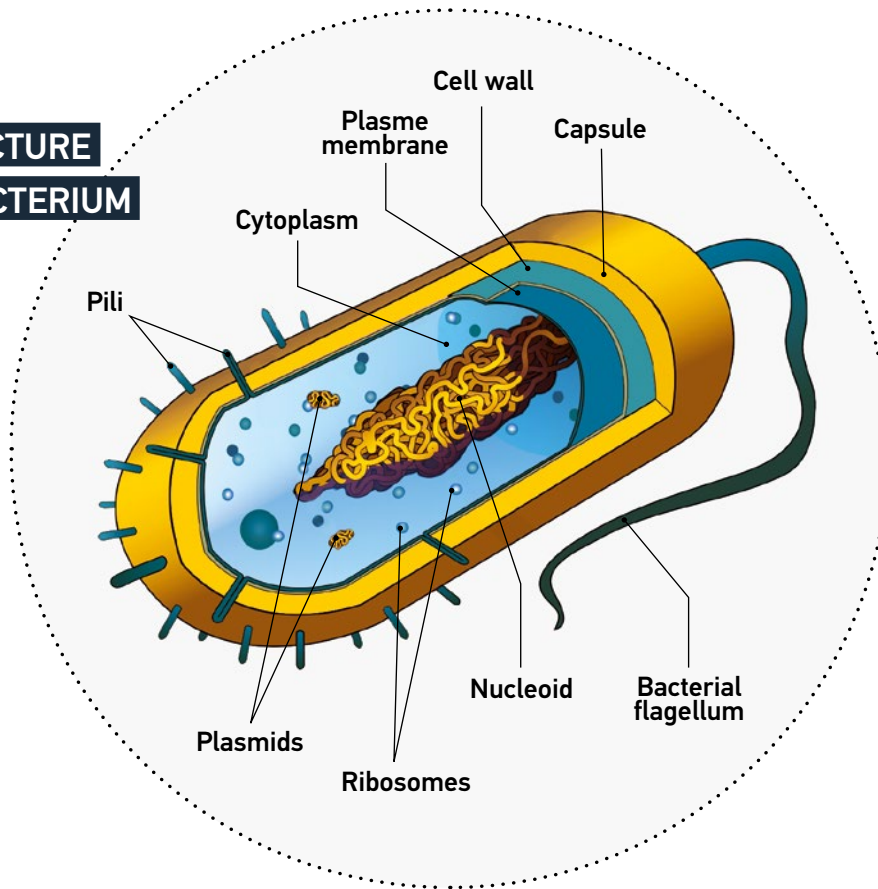


→ UNCONTROLLED MICROBIAL GROWTH IS THE MAJOR RISK

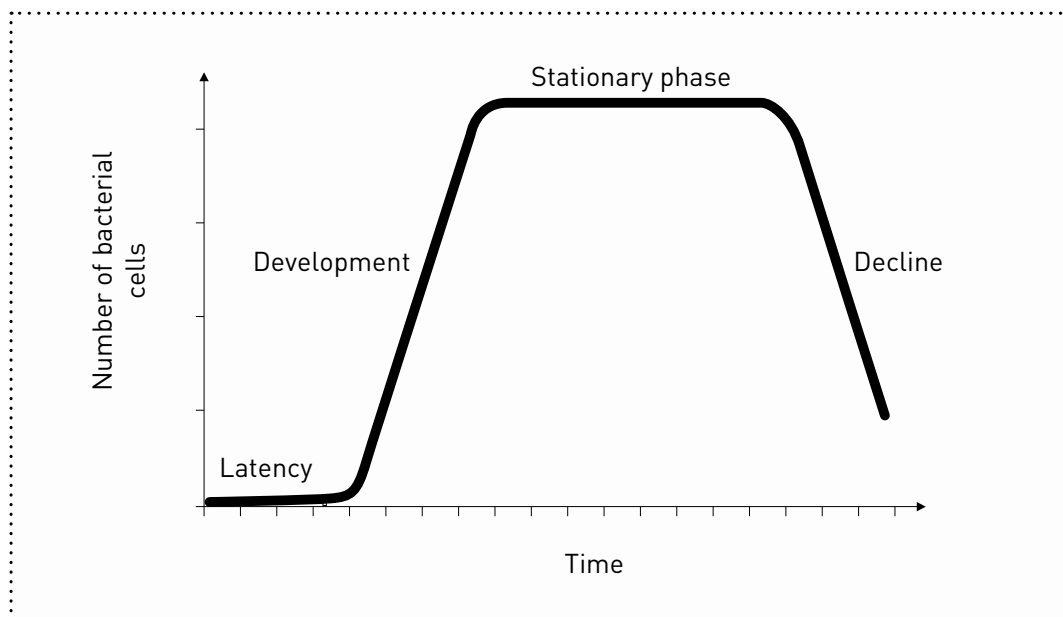
SUCH AS SALMONELLA, LISTERIA, ETC.

PROOF OF THE EFFICIENCY OF SILVER IONS ON LISTERIA

**STRUCTURE
OF A BACTERIUM**



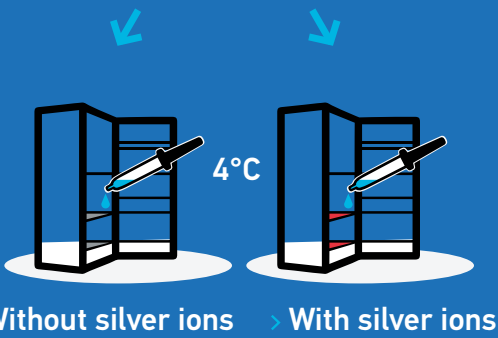
**AFTER A LATENT PHASE,
DEVELOPMENT BECOMES EXPONENTIAL**



→ PROOF OF THE EFFICIENCY OF SILVER IONS ON LISTERIA

OPERATIVE PROCEDURE:

Seed the inside wall of a fridge with a Listeria colony



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

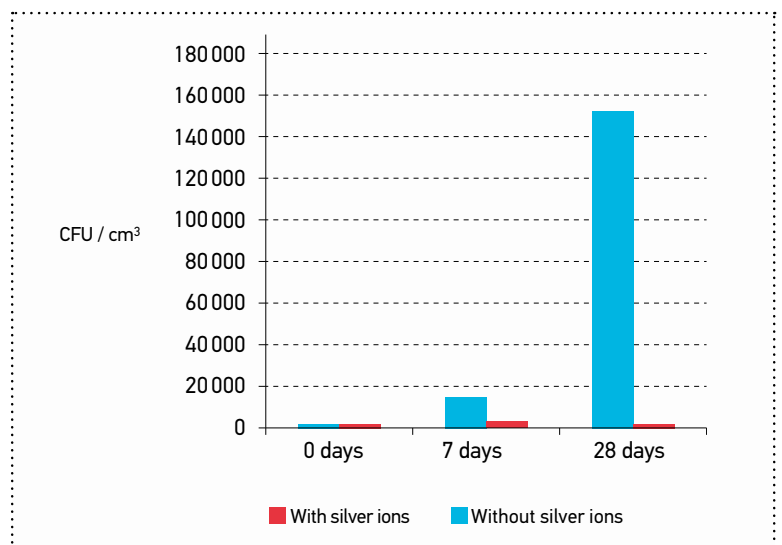


Counting the colonies of bacteria in terms of CFU/cm³ (Colony-Forming Units)



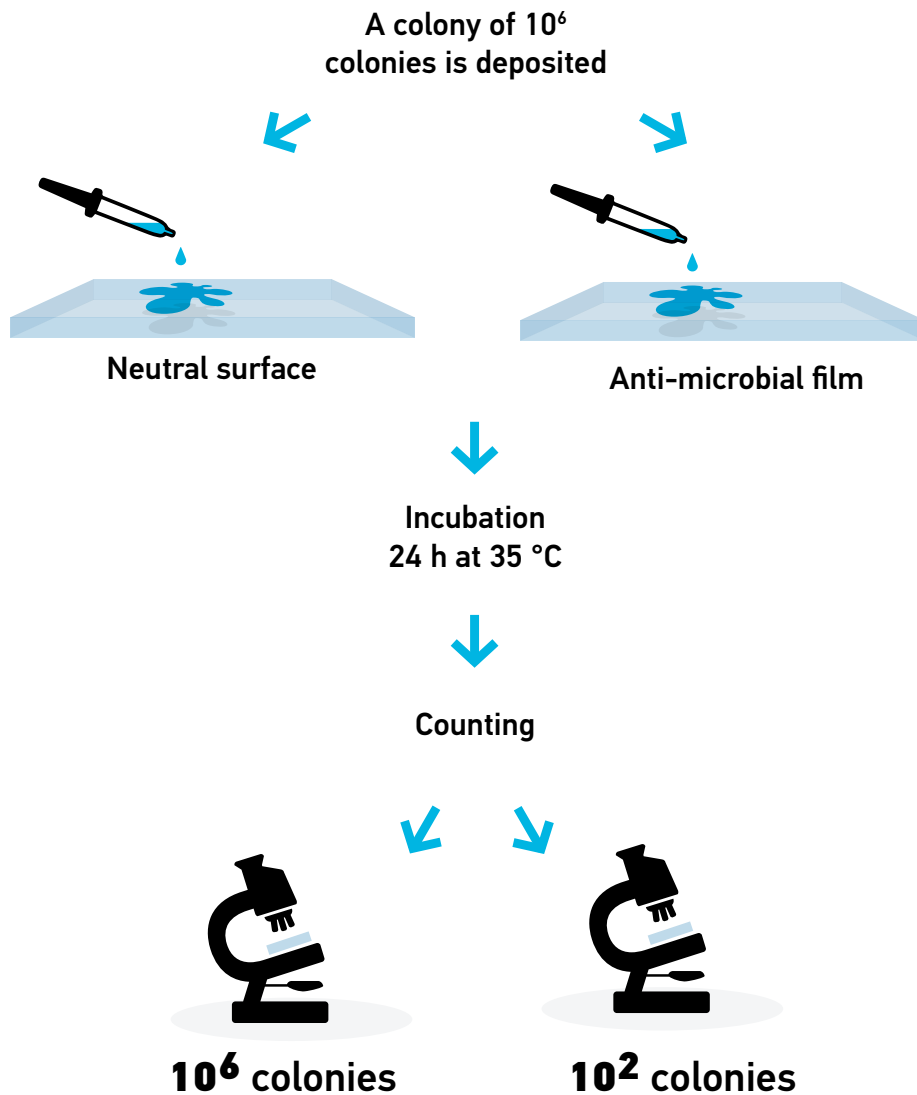
IF UNPROTECTED:

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>	99,99	> 4,6
<i>Listeria monocytogenes</i>	99,99	> 4,2
<i>Staphylococcus aureus</i>	99,99	> 4,1
<i>Escherichia coli</i>	99,99	> 4,5
MRSA	99,99	> 3,5
<i>P.aeruginosa</i>	99,99	> 5,7

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 st , 2014 / November 28 th , 2016
Date of Sample Analysis:	September 10 th , 2014 / December 6 th , 2016
Date of the Certificate of Analysis:	July 21 st , 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)
MRSA	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
General Conditions of Services information available upon request. You can send your comments on this report in two months by email
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

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

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:

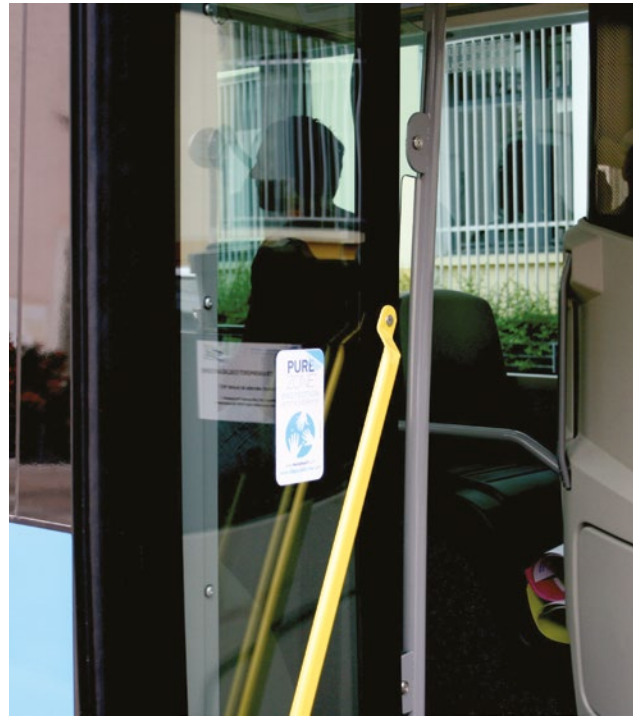
In general terms, these requirements come from the principle of an **obligation for results** rather than of means (with the exception of toilets, hand-washing stations and changing rooms). The principle of **making progress in time and space has been retained**.

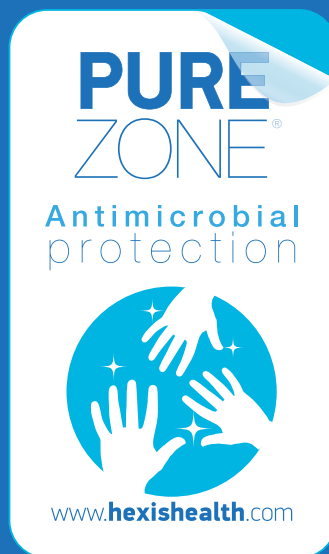
A few key points:

- 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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