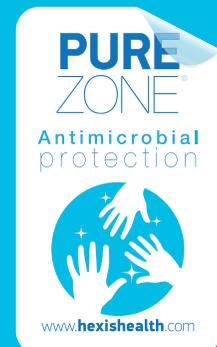


**NEW**

# MANAGEMENT OF ANTI-MICROBIAL PROTECTION ON YOUR PREMISES

**NEW HEXIS ANTI-MICROBIAL FILM**



.....HIGH PERFORMANCES IN ALL CIRCUMSTANCES.....

## → YOU RESPECT GOOD HEALTH AND SAFETY PRACTICES

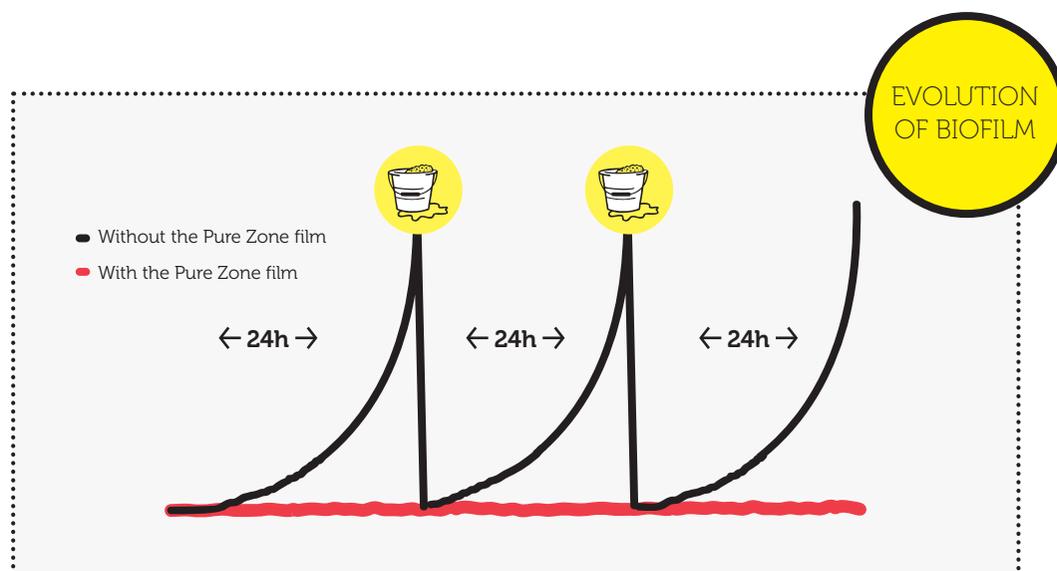


### AND YOU WANT YOUR PREMISES AND EQUIPMENT TO BE:

- Perfectly maintained
- Cleaned regularly
- Covered with smooth, waterproof materials that can be cleaned easily

### HOWEVER, IT IS BETWEEN 2 CLEANING PHASES THAT:

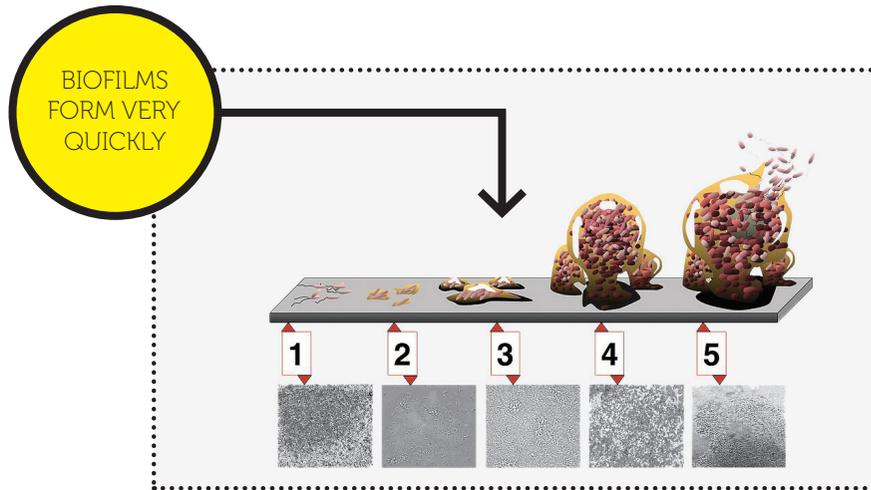
- Bacteria form a biofilm layer on the surface
- Germs can proliferate



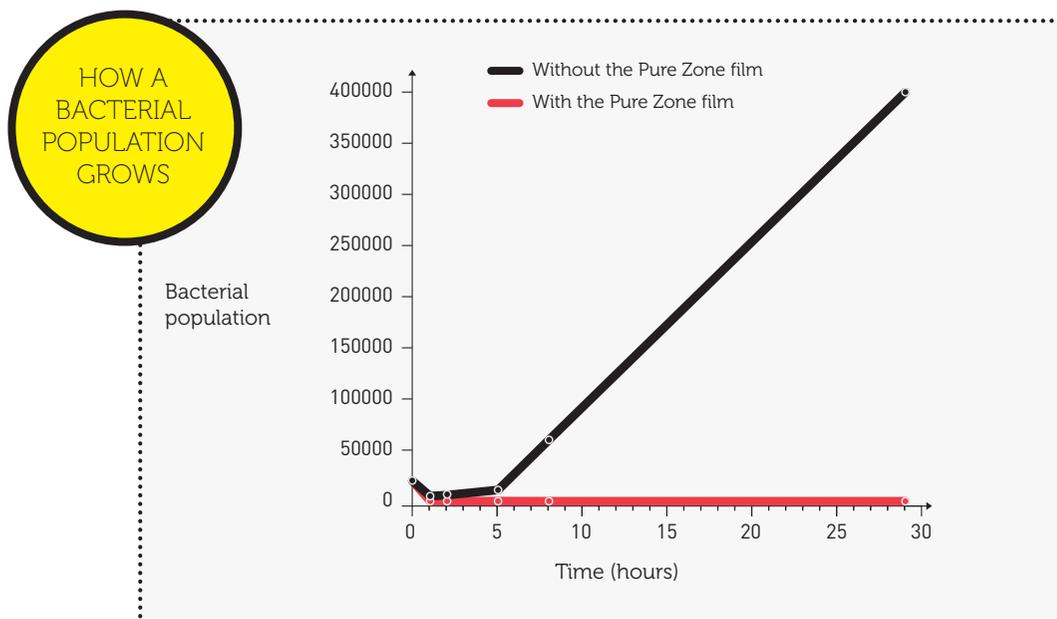
## → BIOFILM = DANGER

Biofilm is composed of micro-organisms and a mucous layer that requires a mechanical cleaning action.

This is where bacteria proliferate.



**THE NEW HEXIS FILM  
PROTECTS YOUR PREMISES  
24H A DAY, 7DAYS A WEEK**

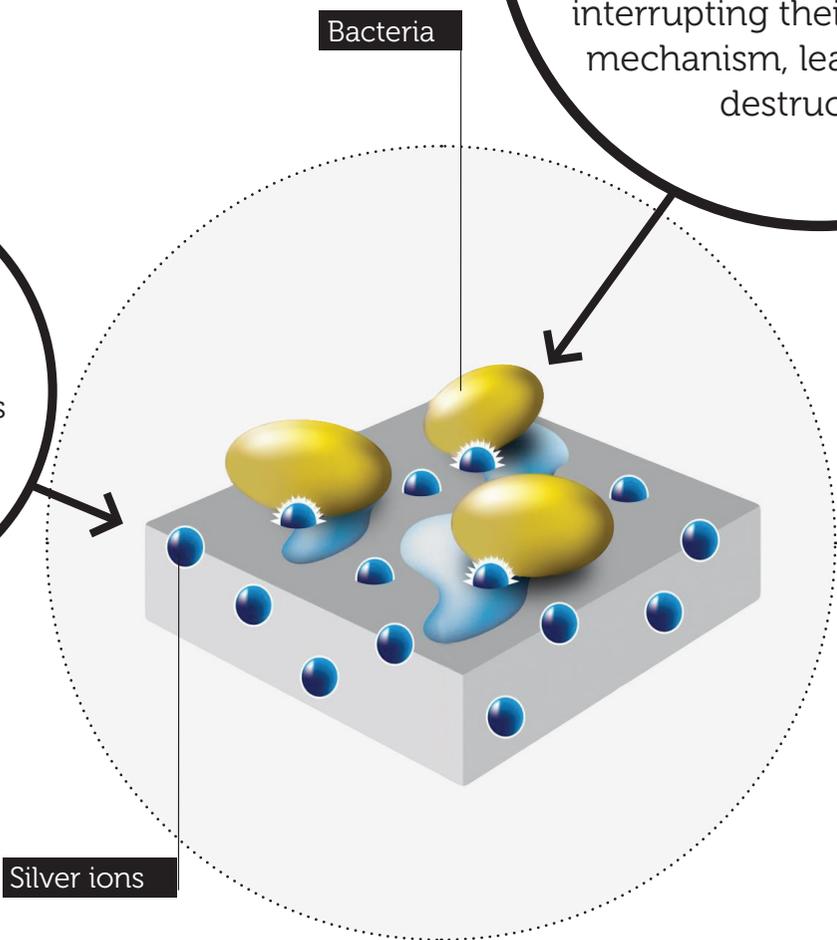


# → THE NEW HEXIS ANTI-MICROBIAL FILM

THIS IS A DECISIVE INNOVATION  
THE PRINCIPLE OF WHICH IS COVERED BY  
A WORLDWIDE PATENT.

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

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.

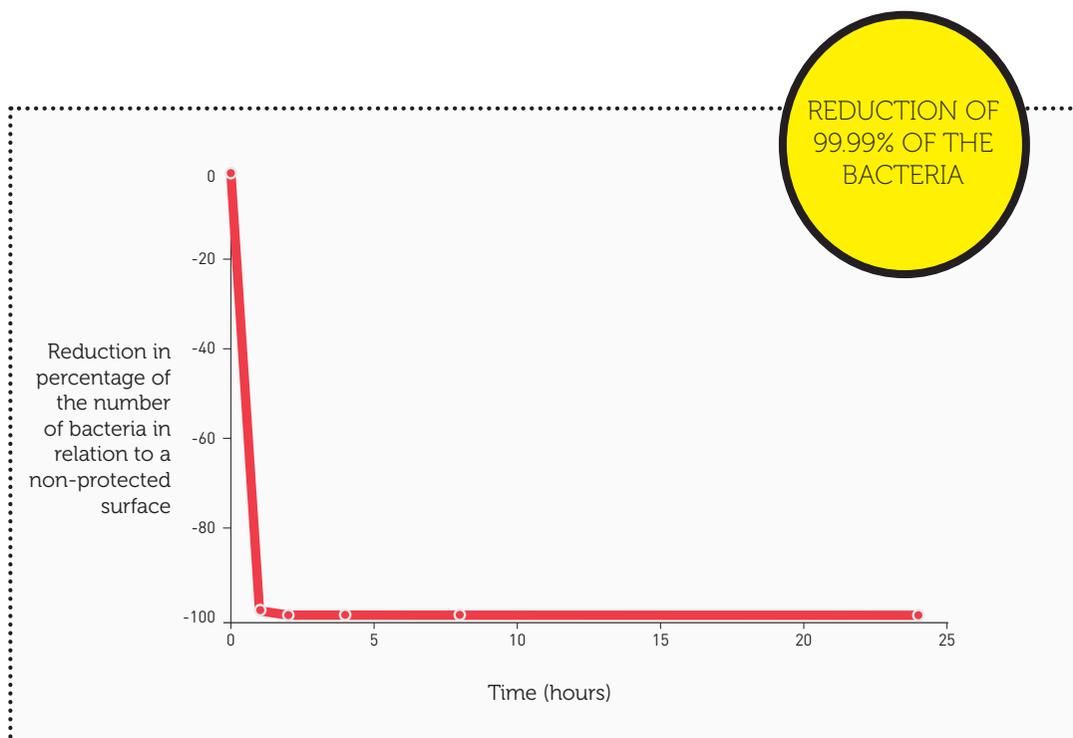


Germs need humidity to proliferate.  
The Hexis film is waterproof and forms a barrier against humidity.

# → THE ANTI-MICROBIAL EFFICIENCY OF SILVER IONS

WITHOUT  
HUMAN  
INTERVENTION

- Protects 24h a day, 7 days a week, and thus between 2 cleans
- 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 4.5 log
- Prevents the formation of biofilm
- Active for 5 years
- Perfectly ecological
- No nanoparticles



A  
FAST  
PROCESS

## → 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<sup>0</sup>) 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
- Studies have suggested that silver ions are capable of destabilising the matrix of biofilm<sup>(1)</sup>, of killing bacteria within the matrix, and of facilitating the action of cleaning products

Biofilm is a complex microbial community composed of bacteria and occasionally fungal species which are encrusted into a protective polysaccharide matrix.

Management of biofilm requires:

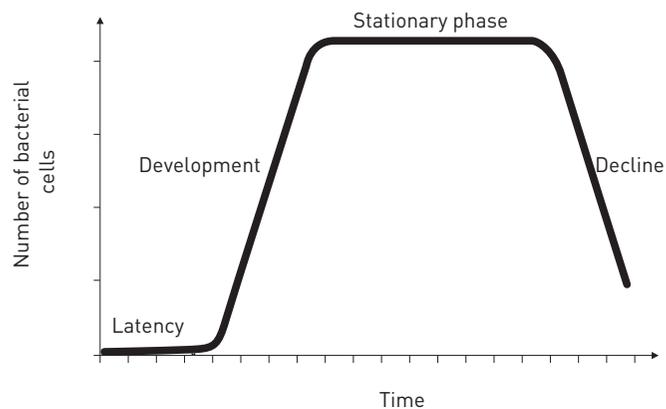
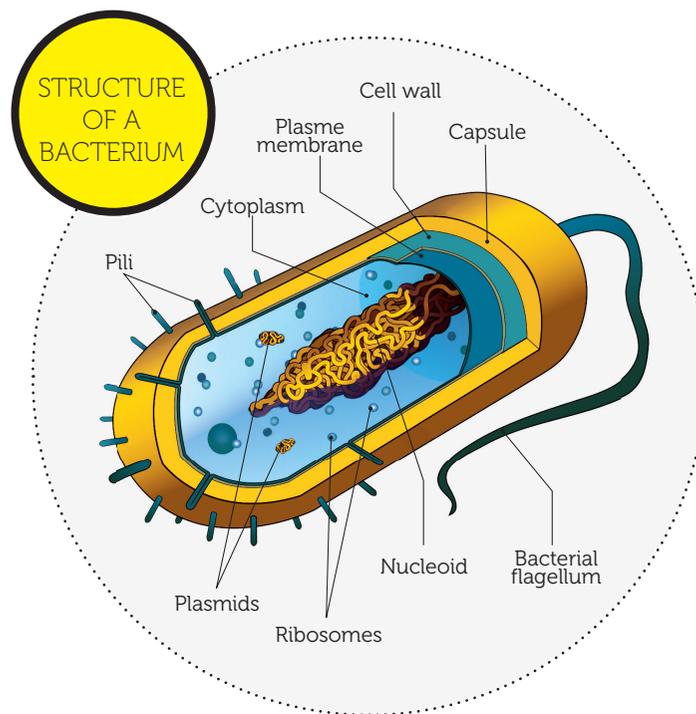
- Reducing the microbial load by means of vigorous cleaning in order to eliminate dormant bacteria
- Preventing biofilm from reforming (for example, by means of silver ions that destroy so-called solitary and free-floating planktonic bacteria)

<sup>(1)</sup> Chaw KC, Manimaran M, Tay FE. 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

→ UNCONTROLLED MICROBIAL DEVELOPMENT IS A MAJOR RISK, PARTICULARLY WITH CERTAIN GERMS SUCH AS Salmonella, Listeria, etc.

After a latent phase, development becomes exponential.

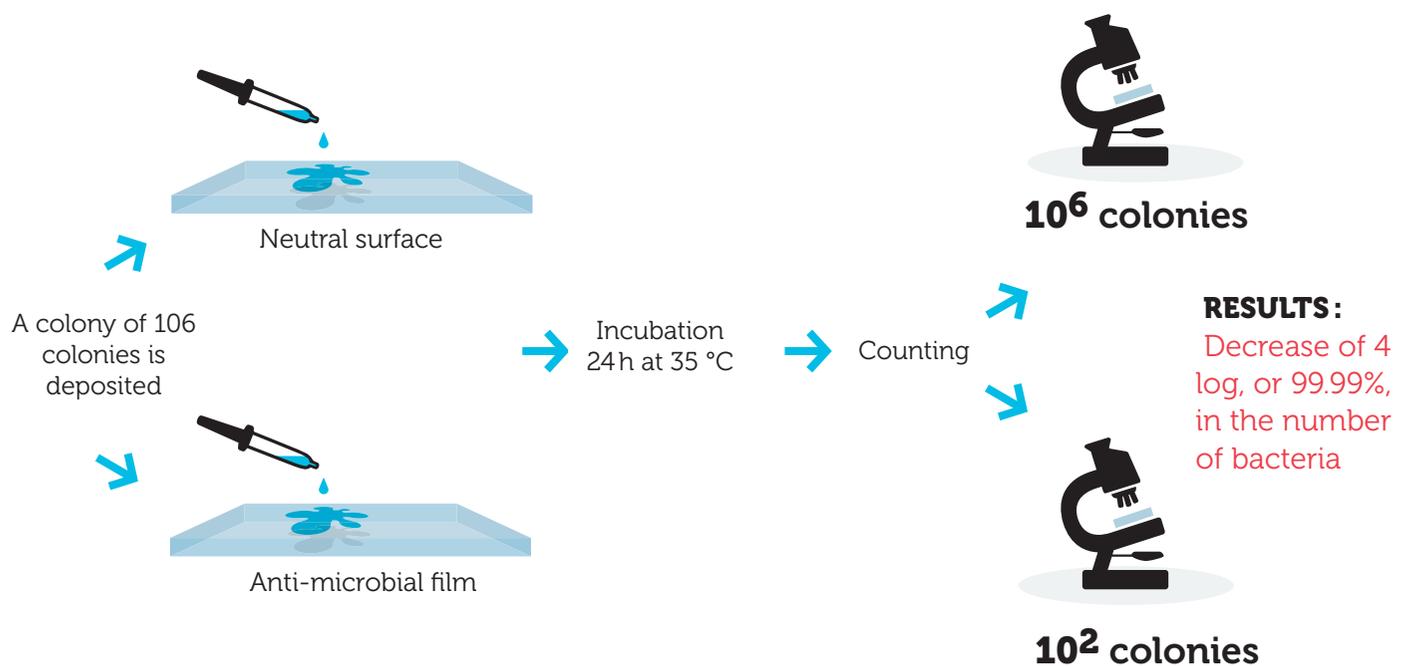
HEXIS ANTI-BACTERIAL FILM PREVENTS BACTERIAL DEVELOPMENT





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

Contact test (ISO 22196)



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

**Intertek**

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

Reference : CHL-R14-0815

## 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
Date of Sample Receipt:	September 1 <sup>st</sup> , 2014
Date of Sample Analysis:	September 10 <sup>th</sup> , 2014
Date of the Certificate of Analysis:	September 29 <sup>th</sup> , 2014

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
<i>Listeria monocytogenes</i>	R > 4.21
<i>Staphylococcus aureus</i>	R > 4.12
<i>Escherichia coli</i>	R = 4.54
MRSA	R > 3.51

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 activity of the Hexis anti-microbial film

Strain	Reduction in bacteria as a %	Logarithmic decrease
<i>Salmonella enteric supsp enteric</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

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.

### Anti-bacterial action :

**Fast:** Rapid penetration into the bacterial cell.

**Powerful:** Active even at very low concentrations.

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

**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

## → PROOF FROM TESTS

The Hexis film can be applied everywhere



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

- Strong adhesion
- Easy to clean
- Waterproof
- Conformable

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



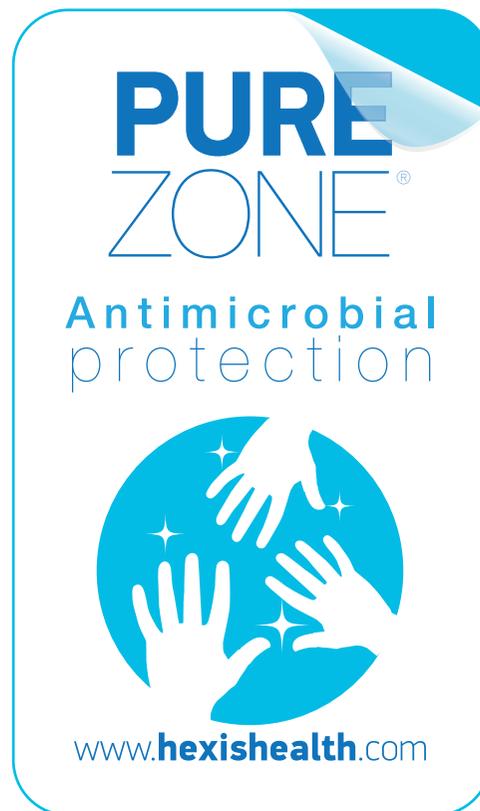
## → HEXIS PVC ADHESIVE FILMS

**YOUR CLEANING PROTOCOL  
IS RESPECTED**

- Smooth and sleek, so easy to clean
- Perfectly waterproof
- Easy to apply, without disrupting your organisation, to 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 has an acrylic adhesive which is pressure sensitive. Adhesion is immediate, and permanent after 24h of contact
- Manufactured in France at the Hexis factory
- Hexis international patent



## → THE PURE ZONE LABEL



To allow your clients, staff and partners to identify the areas protected with the anti-microbial film, Hexis has 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 852/2004

## 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

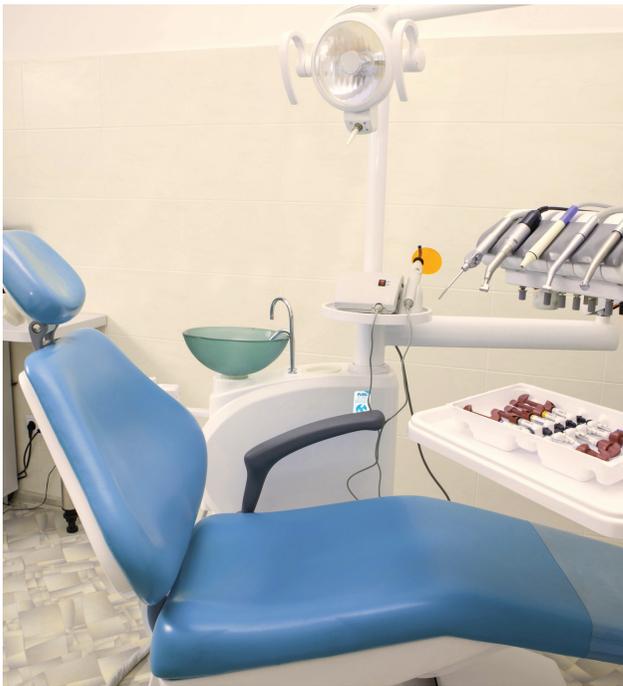
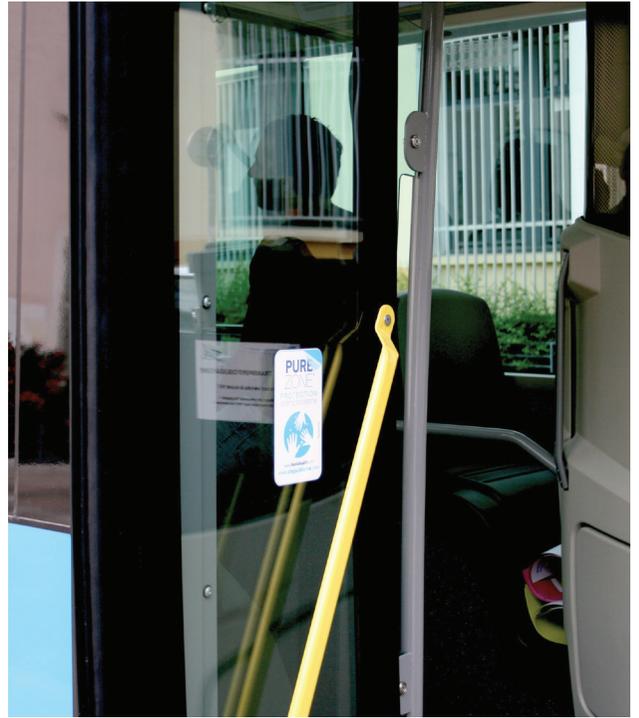
### 1. Equipment and materials:

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







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