HEXIS NEW ANTIMICROBIAL FILM

PURE ZONE

Performance and protection anywhere, anytime

PURE ZONE®
Antimicrobial protection
www.hexishealth.com

PROTECT THE PEOPLE
Anti-Microbial Surface Technology

ProVinyl SOLUTIONS

480-410-WRAP
http://provinyl.solutions

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

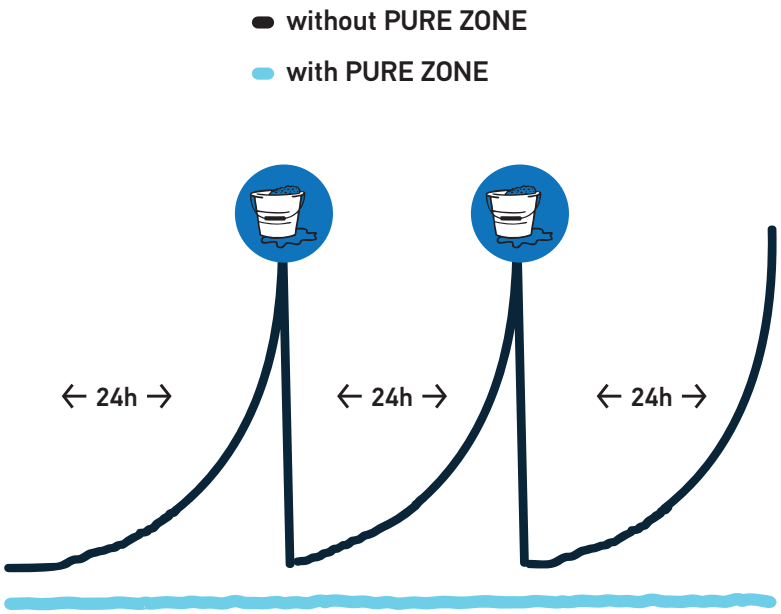
→ HOWEVER, HAZARD SHALL DEVELOP BETWEEN 2 CLEANING PHASES :

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

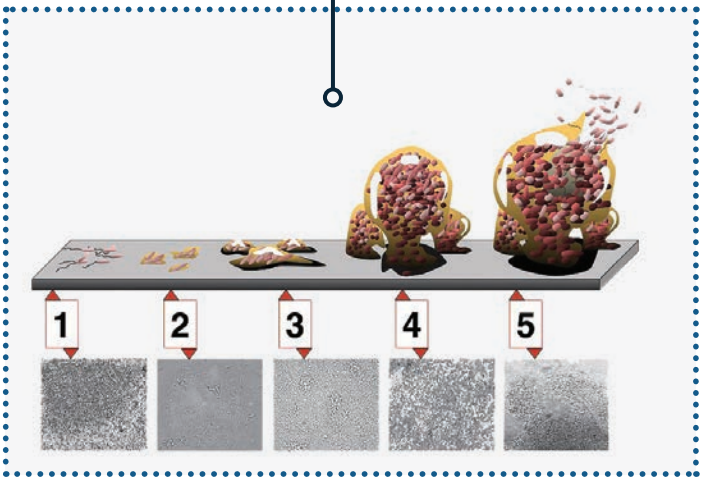


→ BIOFILM = DANGER

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** *Staphyloccus epidermidis* **biofilms.** *Antimicrob Agent chemother 2205;49(12):4853-59*

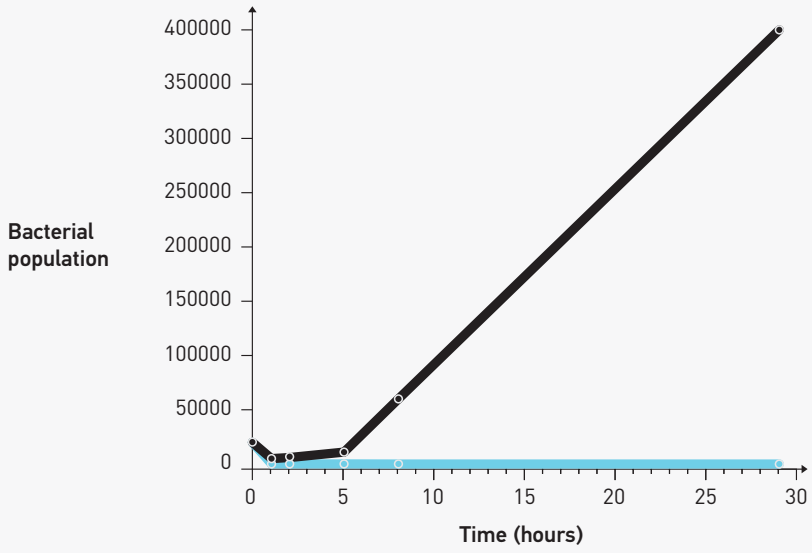
A biofilm is a complex microbial community, consisting of bacteria and, on occasion, fungal species embedded within a protective polysaccharide matrix.

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.

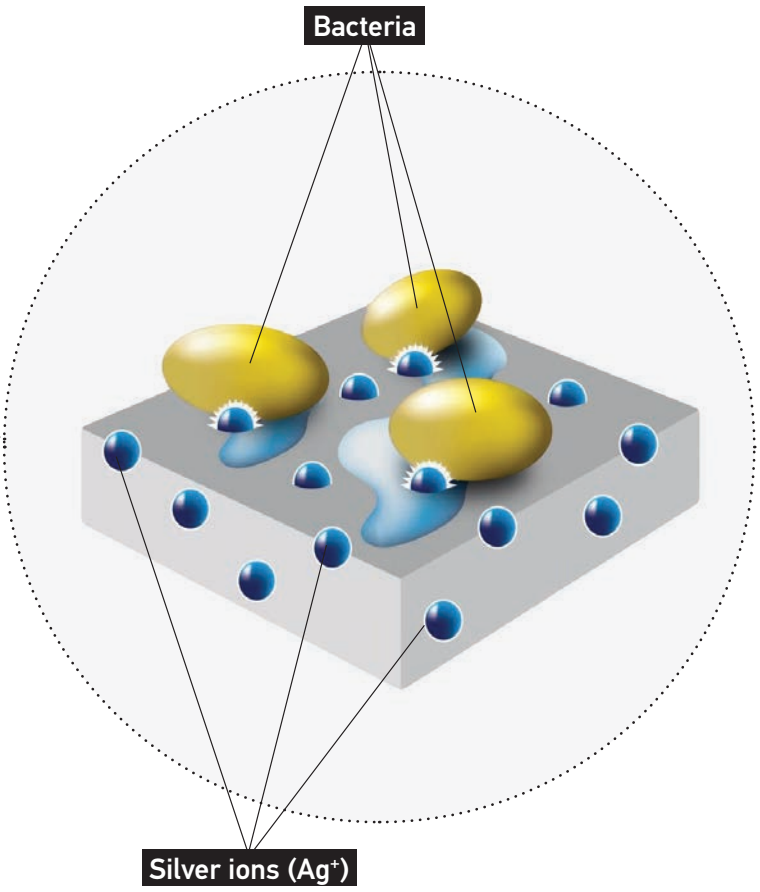
The Hexis film is waterproof and forms a barrier against humidity.

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.

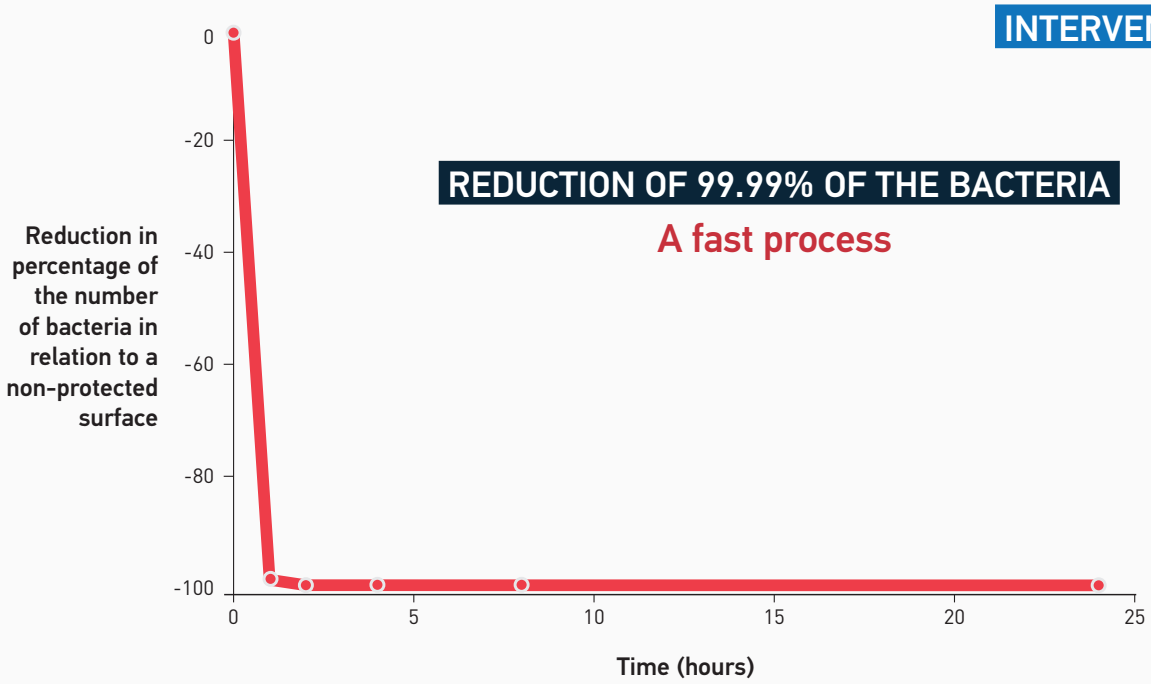


HEXIS new antimicrobial film - PURE ZONE

→ 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



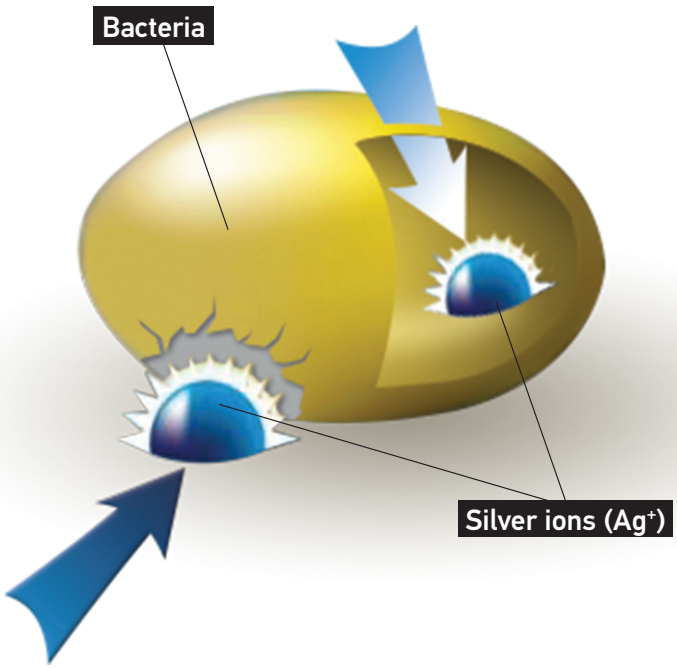
→ THE ANTI-MICROBIAL ACTION OF SILVER IONS

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

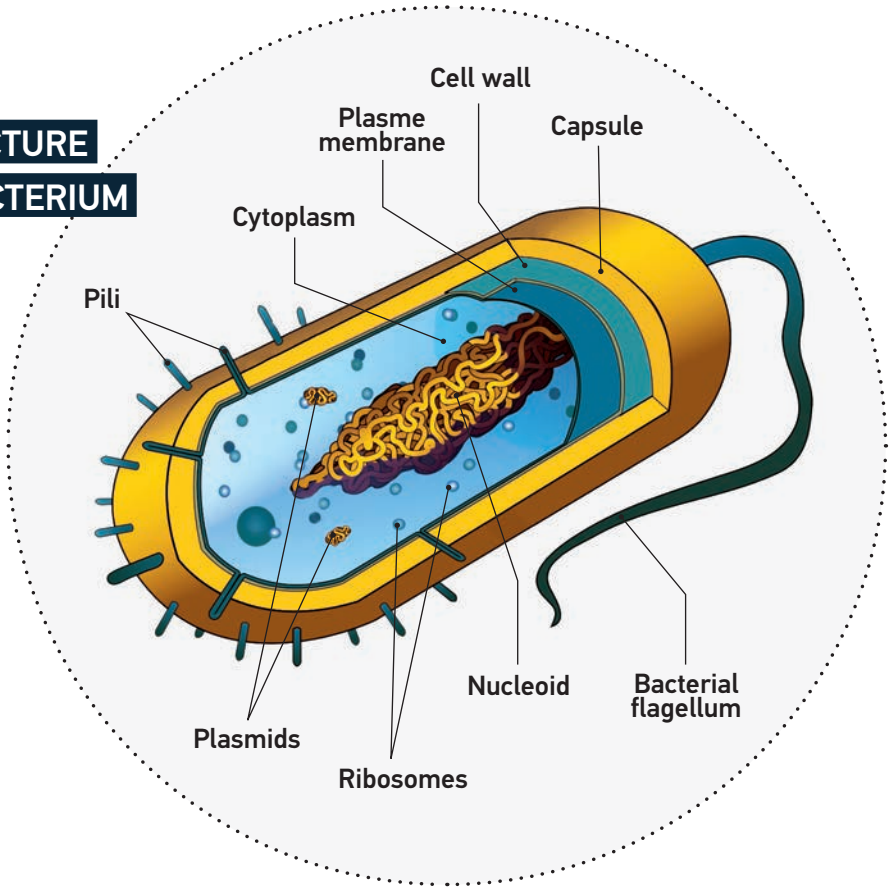


→ UNCONTROLLED MICROBIAL GROWTH IS THE MAJOR RISK

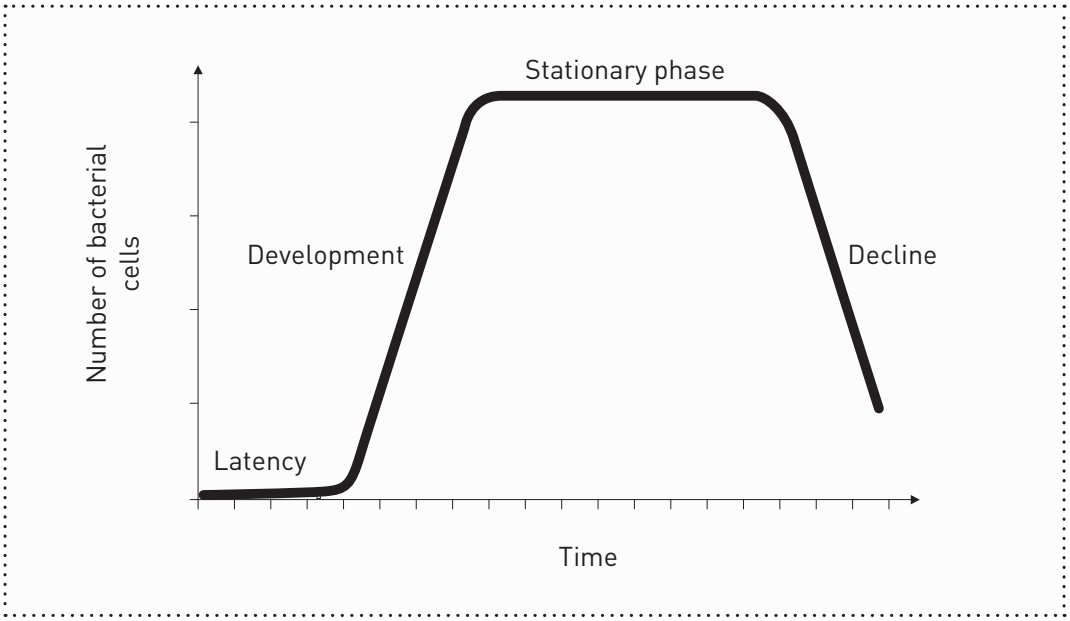
SUCH AS SALMONELLA, LISTERIA, ETC.

PROOF OF THE EFFICIENCY OF SILVER IONS ON LISTERIA

STRUCTURE OF A BACTERIUM



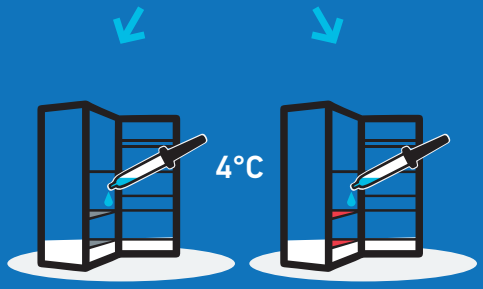
AFTER A LATENT PHASE, DEVELOPMENT BECOMES EXPONENTIAL



→ PROOF OF THE EFFICIENCY OF SILVER IONS ON LISTERIA

OPERATIVE PROCEDURE:

Seed the inside wall of a fridge with a Listeria colony

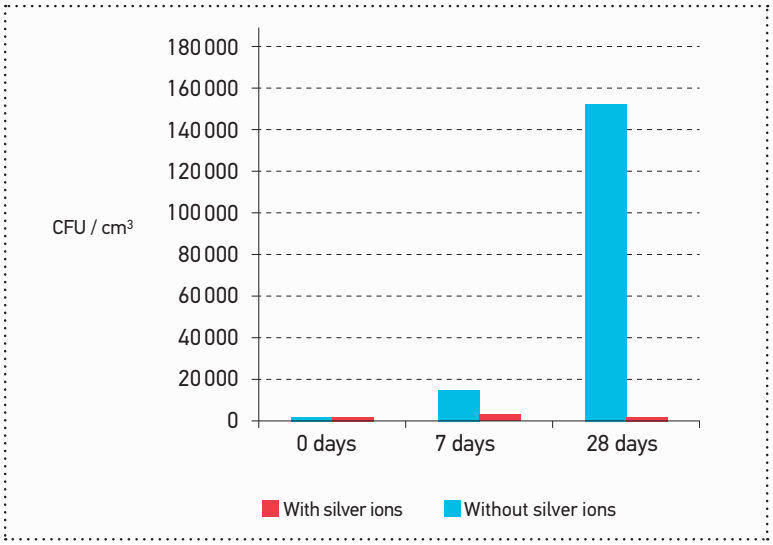


› Without silver ions › With silver ions

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

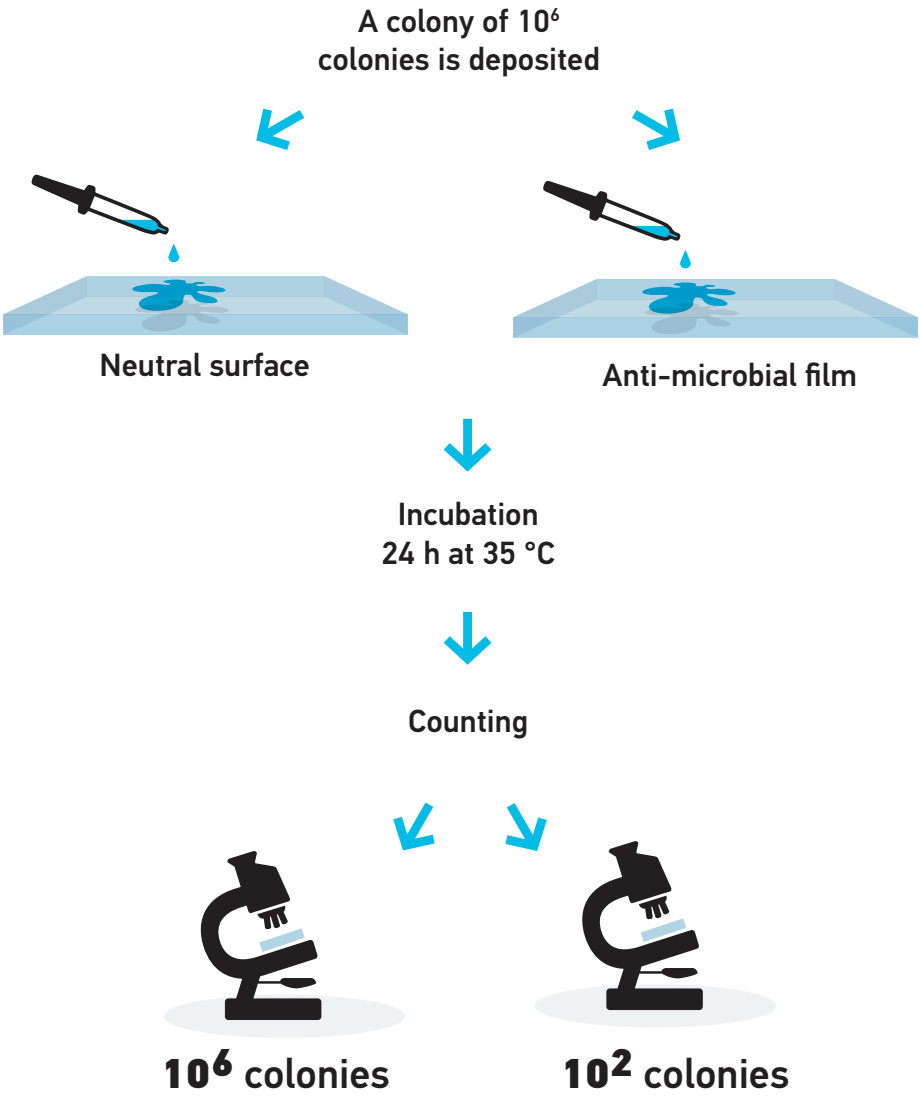
Counting the colonies of bacteria in terms of CFU/cm3 (Colony-Forming Units)

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

→ PROOF FROM TESTS

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
Salmonella enterica subsp enterica	99,99	> 4,6
Listeria monocytogenes	99,99	> 4,2
Staphylococcus aureus	99,99	> 4,1
Escherichia coli	99,99	> 4,5
MRSA	99,99	> 3,5
P.aeruginosa	99,99	> 5,7

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

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 1st, 2014
Date of Sample Analysis:	September 10th, 2014
Date of the Certificate of Analysis:	September 29th, 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.

Salmonella enterica subsp enterica	R > 4.56
Listeria monocytogenes	R > 4.21
Staphylococcus aureus	R > 4.12
Escherichia coli	R = 4.54
MRSA	R > 3.51

Certified by Sylvie LEBRAT
Laboratory Director

Intertek France – Etablissement de Chalon/Saône

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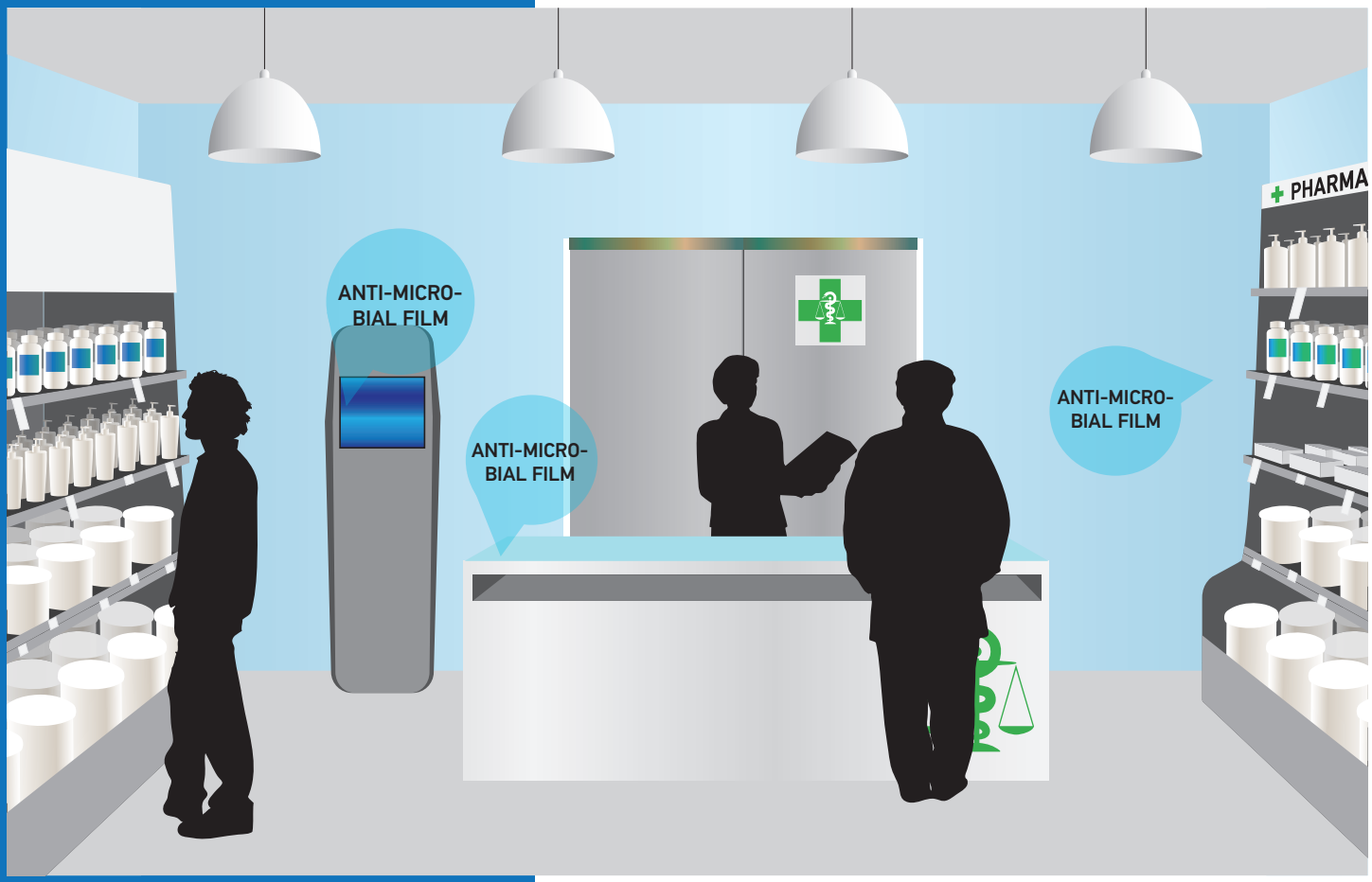
serviceclientschalon@intertek.com

THE HEXIS FILM CAN BE APPLIED EVERYWHERE

he 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.



intertek
Total Quality. Assured.

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

Certificat d'analyse

Société : HEXIS

Adresse : ZI Horizons sud
34110 FRONTIGNAN

A l'attention de Nathalie SIBOLD

Référence Client:	Film Antimicrobien Pure Zone
Référence échantillon Intertek:	14-CHL-0815-02 / 16-CHL-1301-01
Date réception échantillon:	1er Septembre 2014 / 28 Novembre 2016
Date analyse échantillon:	10 Septembre 2014 / 6 Décembre 2016
Date du Certificat d'analyse:	21 Juillet 2017

Test:
Evaluation de l'efficacité antimicrobienne inspirée de la norme ISO 22196

Résultats: Les résultats sont exprimés sous forme de réduction logarithmique R, qui correspond à la valeur de l'activité antimicrobienne

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

Certifié par Sylvie LEBRAT
Directrice du Laboratoire

Intertek France – Etablissement de Chalon/Saône

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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

Film antimicrobien HEXIS PURE ZONE

→ 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

HEXIS new antimicrobial film - PURE ZONE

→ 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.

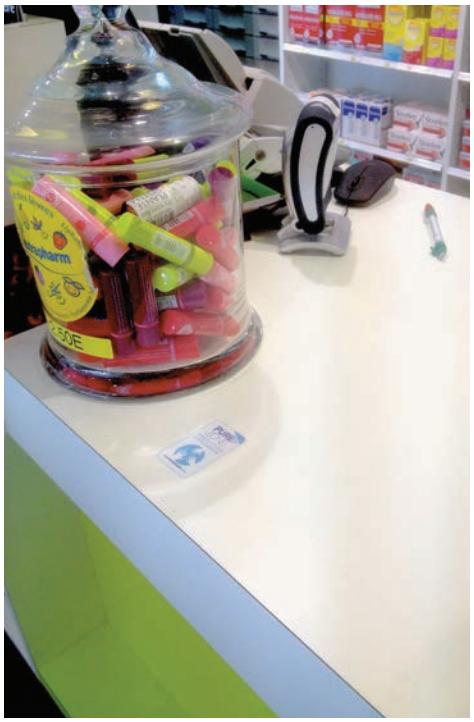
→ REQUIREMENTS APPLICABLE IN TERMS OF HYGIENE AS OF 01 JANUARY 2006

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.

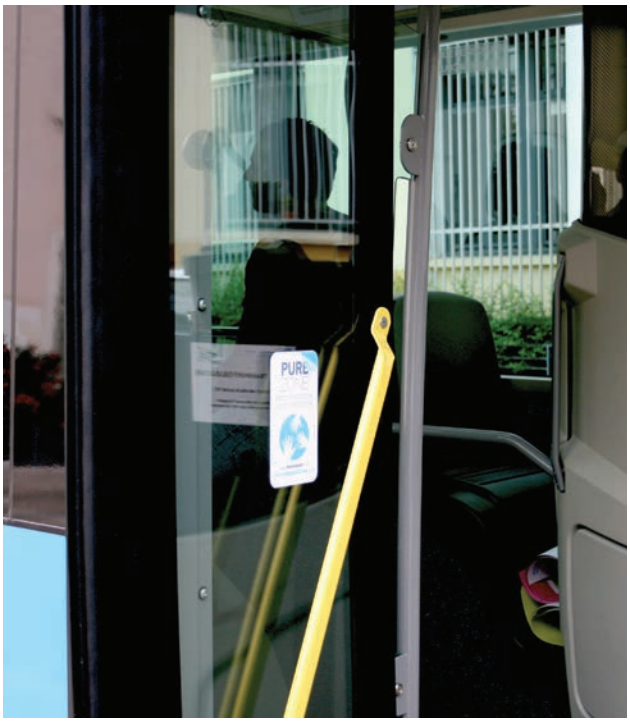
A few key points:

- 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



STITICHEZZA

COMMUNAUTÉ
COMMUNAU
D'AGGLOMERA
DRACENOIS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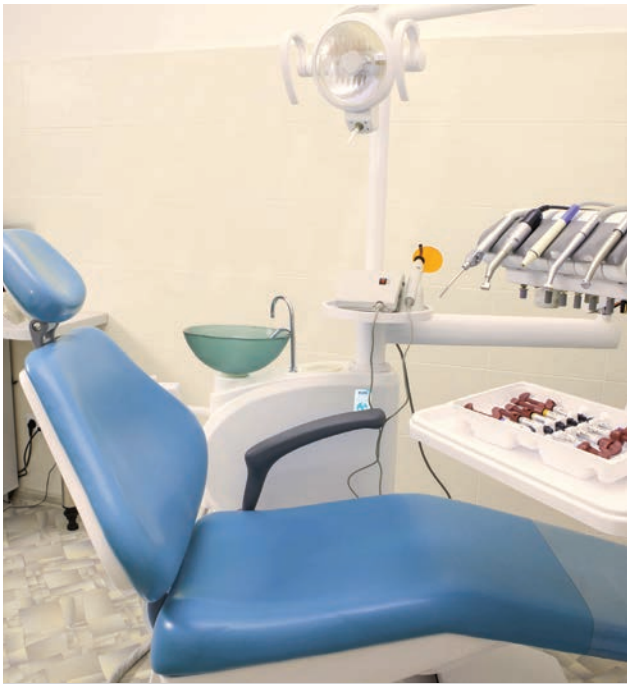

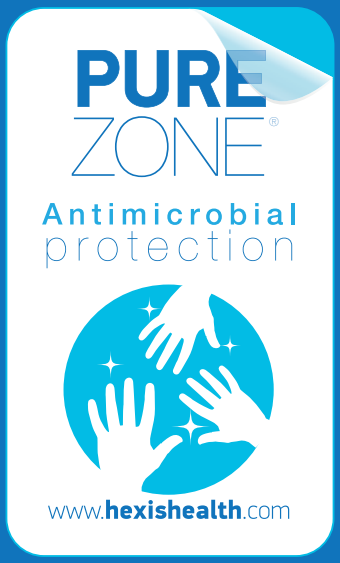

HEXIS - HEADQUARTERS
Z.I. Horizons Sud - CS970003
34118 FRONTIGNAN CEDEX
FRANCE
+33 - 4 67 18 66 86
+33 - 4 67 18 36 98
export@hexis.fr

www.**hexis-graphics**.com

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