BI·OME

ANTIMICROBIAL TECHNOLOGY

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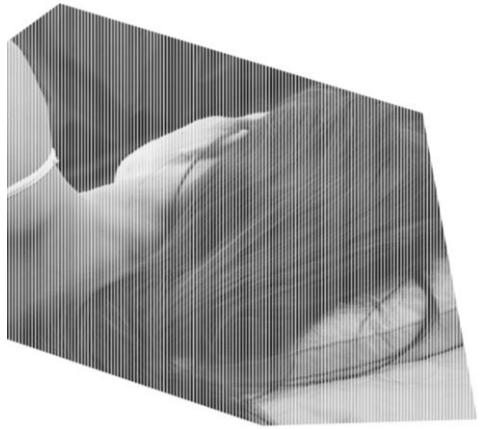
Antimicrobial technology

- **Non-migrating & durable** technology with a broad spectrum of activity against microbes
- No migration to the skin nor to the environment
- Quick and easy to verify
- Outstanding safety and registration profile



sleep tight, fresh night

/ make it heaven

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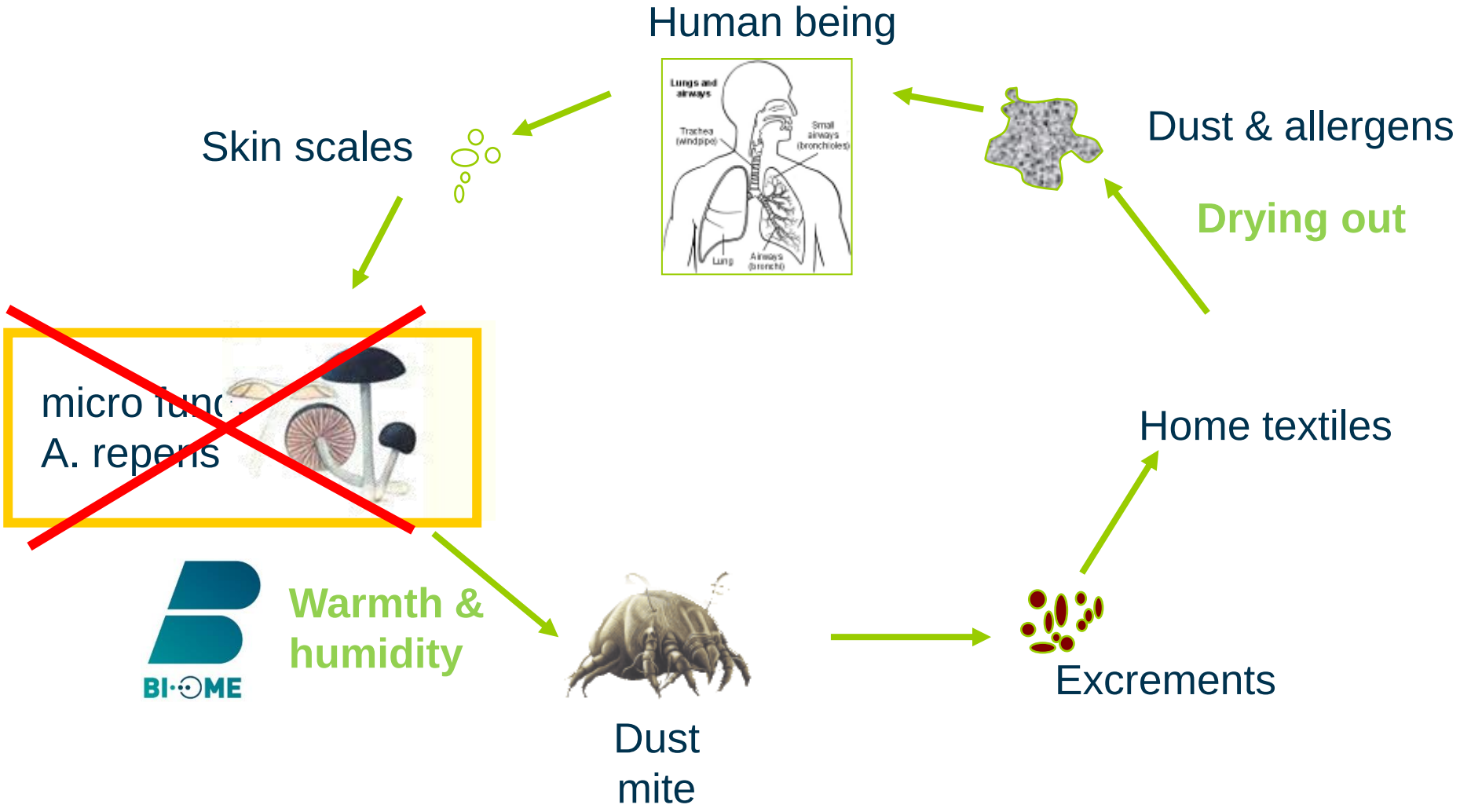
Dust mites

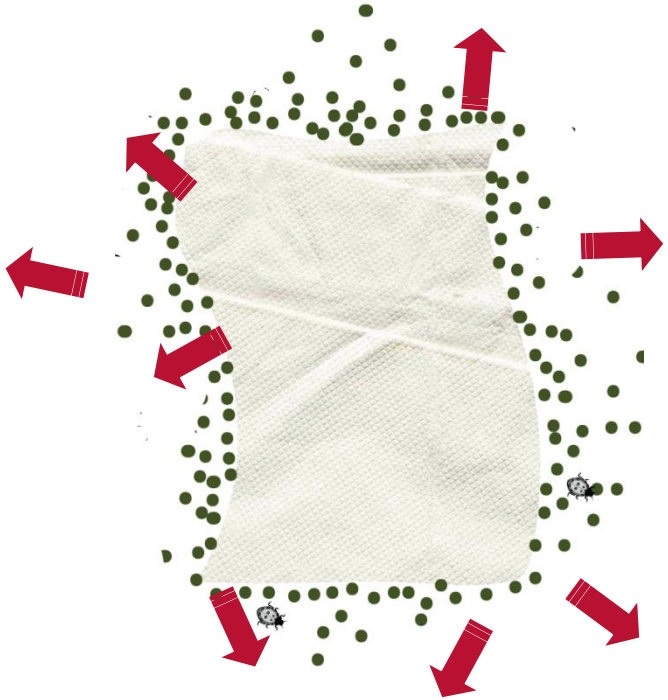

Human being
Lungs and airways
Trachea (windpipe)
Small airways (bronchioles)
Lung
Airways (branch)
Skin scales
Dust & allergens
Drying out
micro fun
A. repens
Home textiles
Warmth & humidity
BI·OME
Dust mite
Excrements

Benefits of the BI-OME technology

- Long-lasting freshness
- Eliminates the smells created by yeast, fungus and bacteria in the product
- Controls or eliminates microbial staining of the treated article

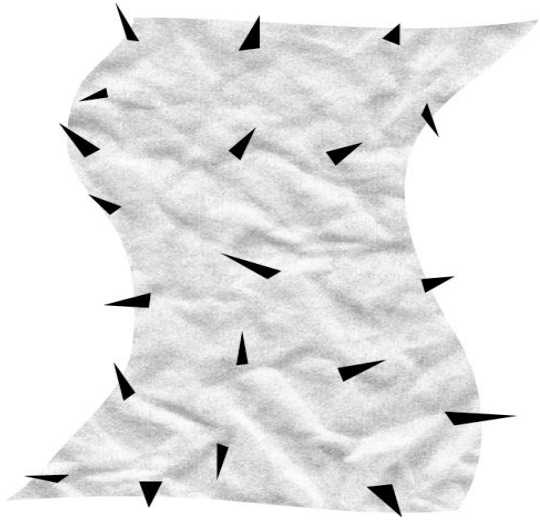
Antimicrobial agents - Mode of action

Migration
from substrate to bacteria
for antimicrobial action



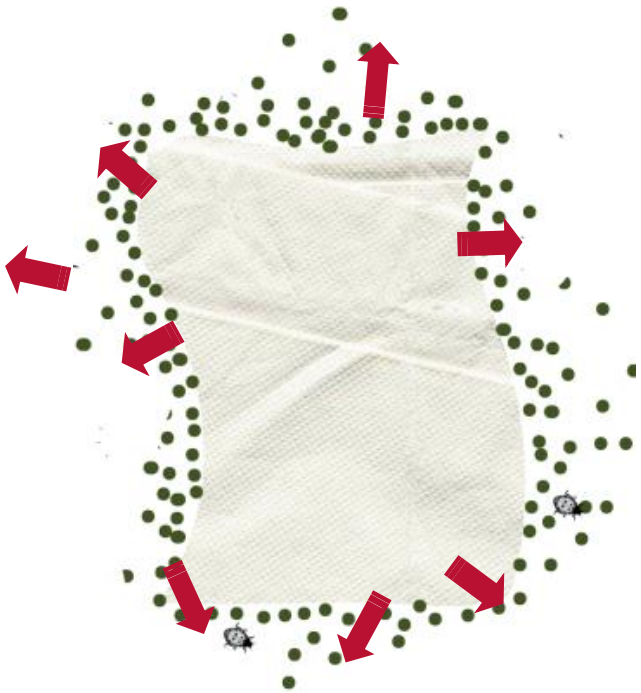
Conventional organic and
inorganic active substances

No migration
mechanical process
for antimicrobial action



Unconventional organo functional
silane active substances

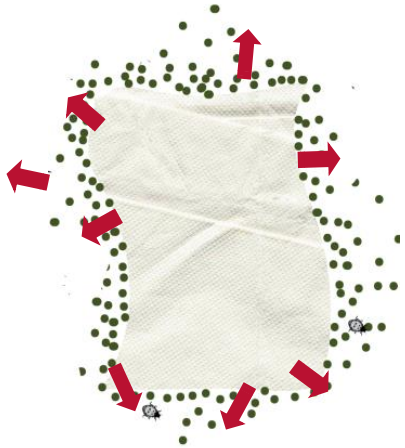
Migrating antimicrobials



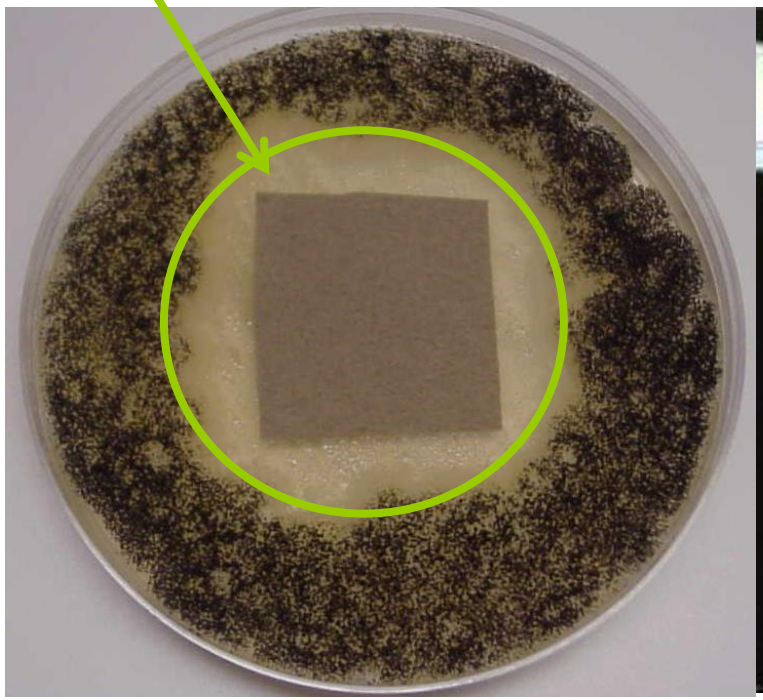
Diffuse from the substrate to the microbe:

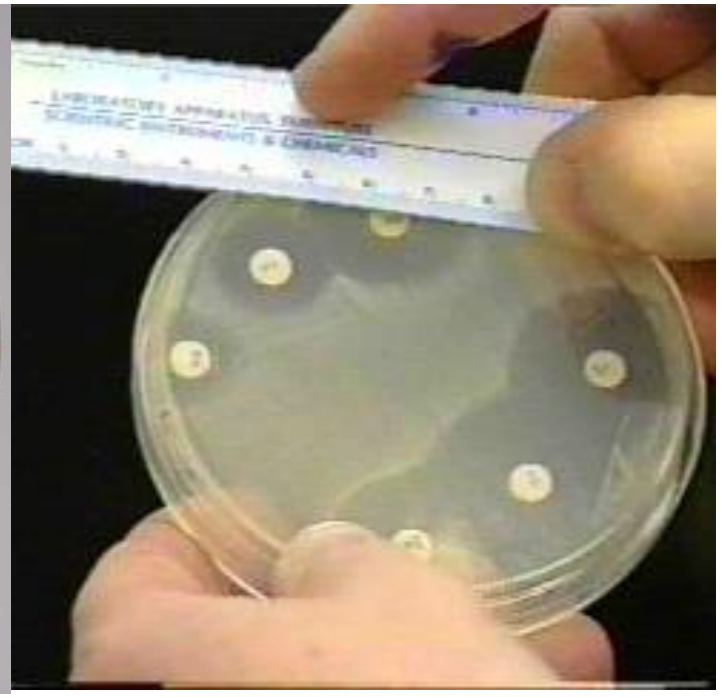
- Leach or migrate out of the substrate into the environment
- Are consumed by micro-organisms
- Chemically interrupt (poison) the cell
- May cause adaptive micro-organisms
- Leach out in contact with water or humid conditions

Migrating antimicrobials



Zone of inhibition in agar diffusion tests





Non migrating antimicrobials

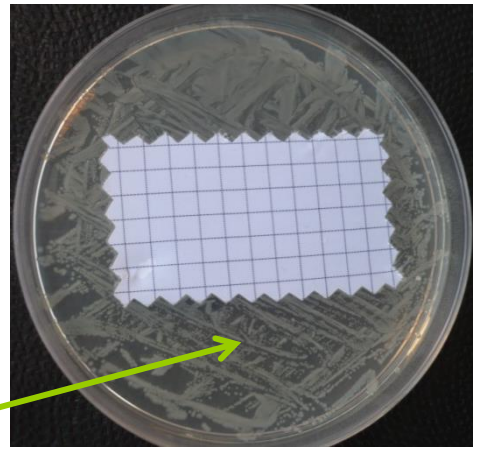
Are bounded to the substrate and require a contact by the microbe:

- Are bonded to the product surface
- Are not consumed by micro-organisms
- Mechanically interrupts (stabs) the cell wall
- Remain functional for the life of the product
- Will not cause adaptive micro-organisms

Non migrating antimicrobials

Antimicrobial active substances that **do not migrate** in order to be active are for example:

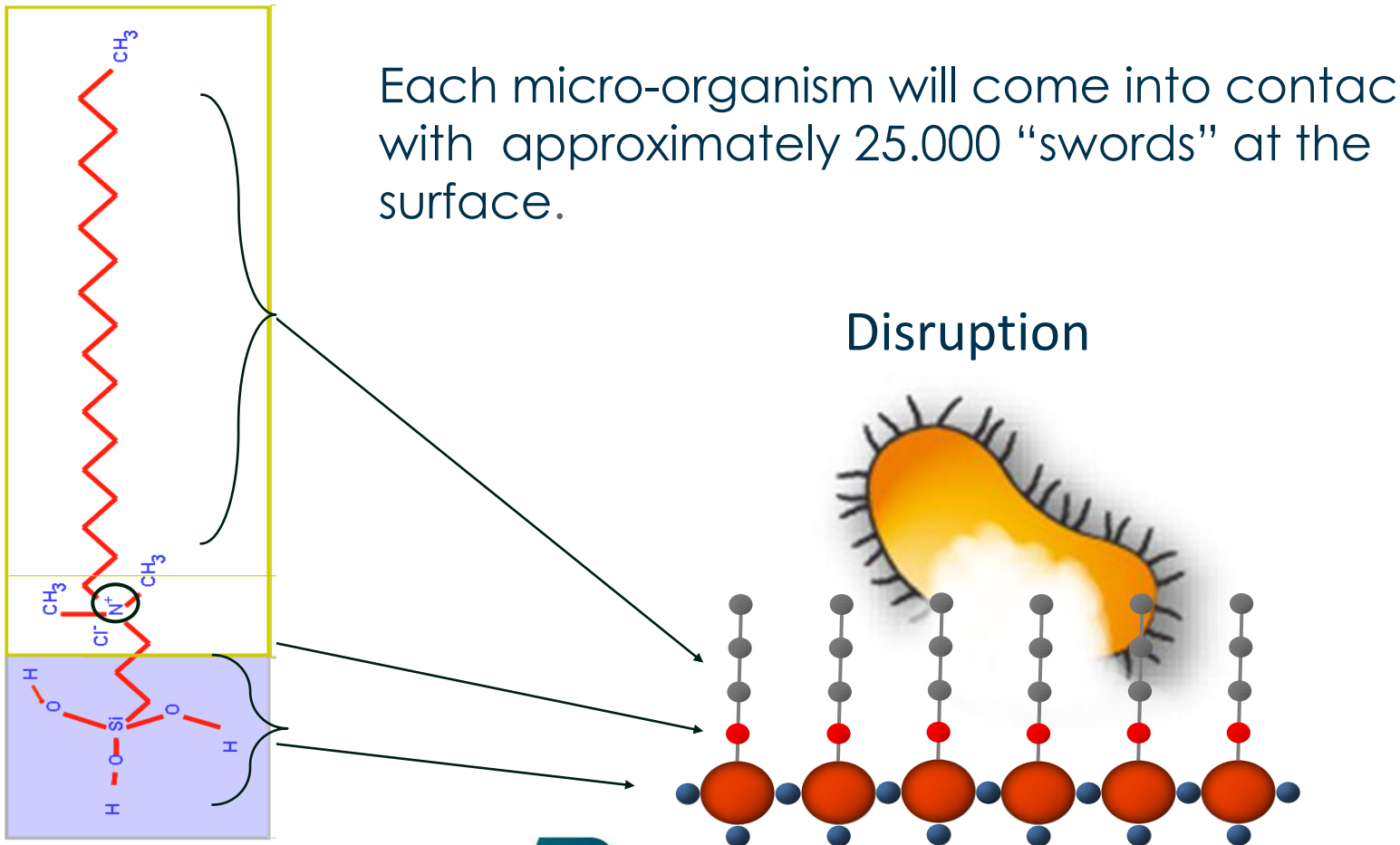
- Organo functional silanes
- N-halamines
- Grafting by irradiation



No zone of inhibition => no sub lethal concentration => no adaptation

The **BI-OME technology**: disruption

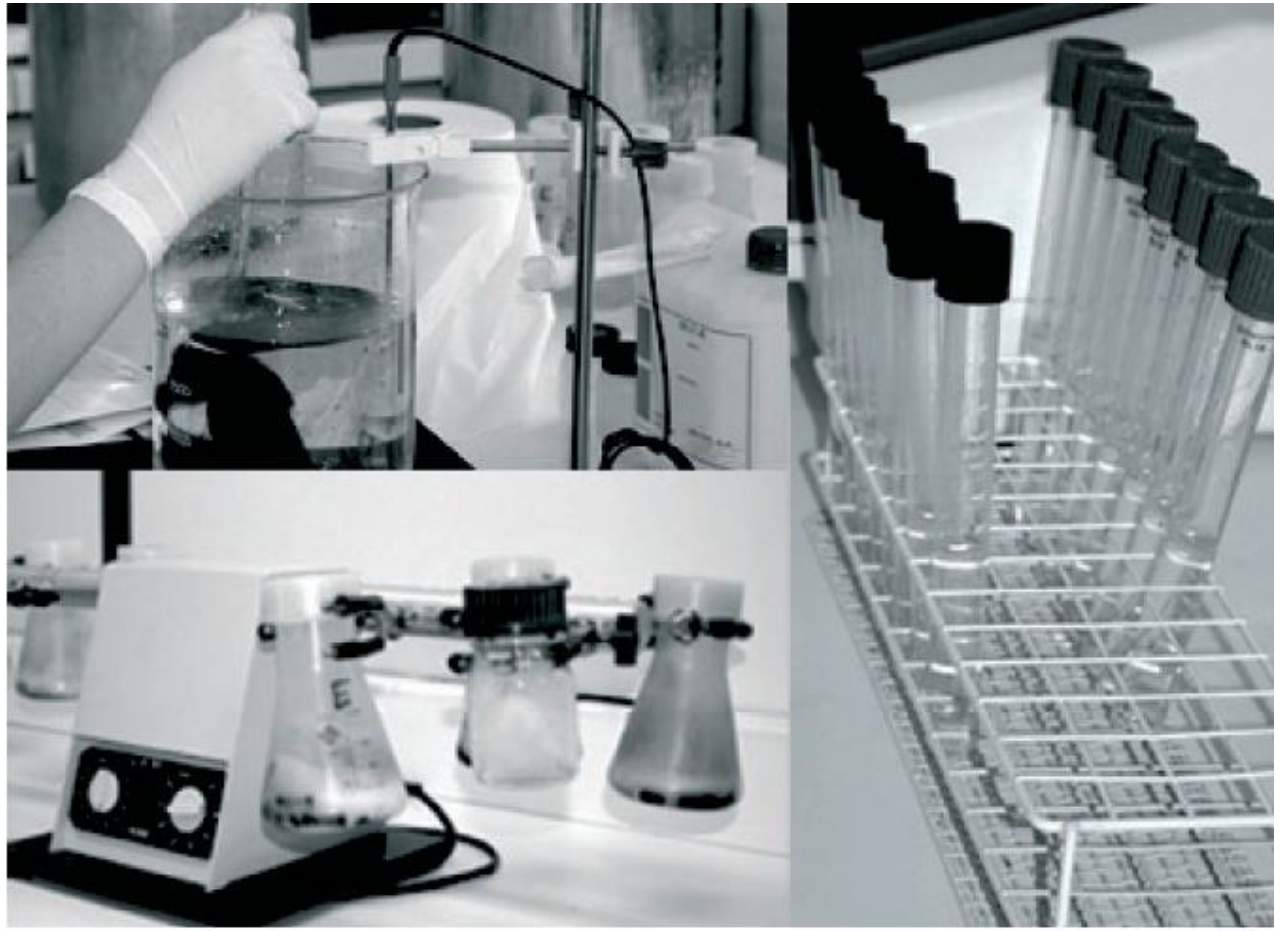
Cell disruption mechanism



Each micro-organism will come into contact with approximately 25.000 “swords” at the surface.

Disruption

Microbiology lab



International tests

Overview of the most important antimicrobial tests world wide								
Regions	Micro Organisms	Agar Diffusion	Parallel Streak	Shake Flask	Count Test	Mould & Mildew Resistance	Soil Burial / Rot proof	Saturated atmosphere
General	Bacteria Fungi	SN 195 920 SN 195 921				EMPA 223-10 ASTM G 21-96	EMPA 223-11 EN ISO 11721-1	BS 6508 Part V
USA	Bacteria Fungi	AATCC 30 Part III	AATCC 147	Shake Flask ASTM E 21-49	AATCC 100		AATCC 30 Part I	AATCC 30 Part IV
Japan	Bacteria Fungi	JIS L 1902 qualitative		Shake Flask SEK	JIS L 1902 quantitative			

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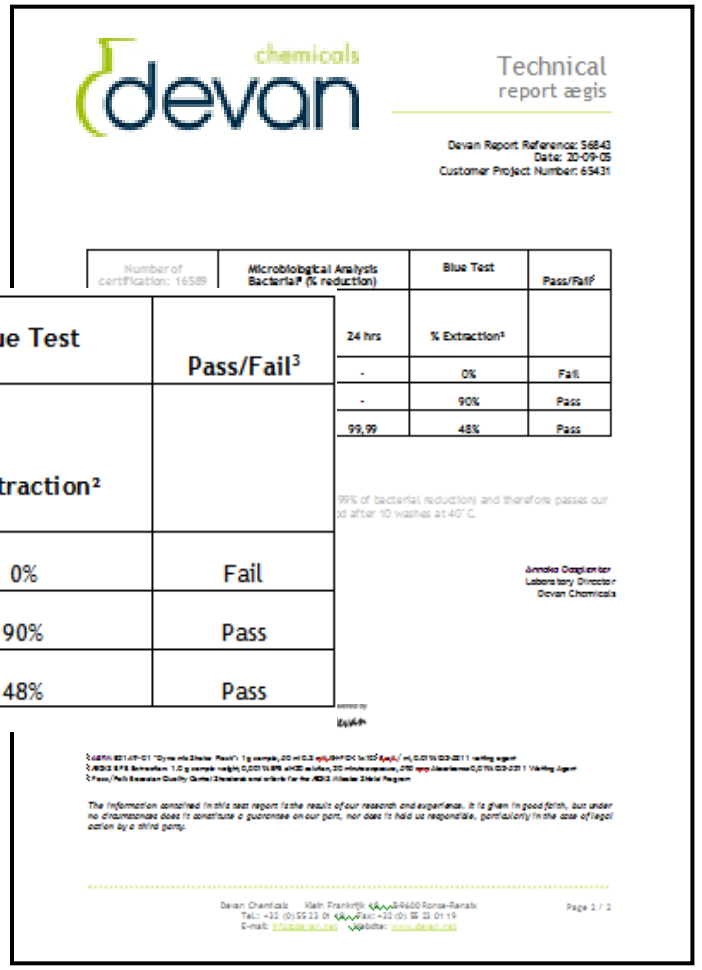
Test certificate

Number of certification: 16589	Microbiological Analysis Bacterial[1] (% reduction)		Blue Test	Pass/Fail[3]
CO/PES Fabric Ts/Rose; 44/9004/2005	1hr	24 hrs	% Extraction[2]	
Untreated	0	-	0%	Fail
Sample 1	99,99	-	90%	Pass
Sample 1, 10 * 40°C	-	99,99	48%	Pass



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Technical report ægis

Devan Report Reference: 56843
Date: 20-09-05
Customer Project Number: 65431

Number of certification: 16589	Microbiological Analysis Bacterial[1] (% reduction)		Blue Test	Pass/Fail[3]
	1hr	24 hrs	% Extraction[2]	
	0	-	0%	Fail
	99,99	-	90%	Pass
	-	99,99	48%	Pass

99% of bacterial reduction) and therefore passes our
d after 10 washes at 40° C.

Annoke Dieplenter
Laboratory Director
Devan Chemicals

The information contained in this test report is the result of our research and experience. It is given in good faith, but under no circumstances does it constitute a guarantee on our part, nor does it hold us responsible, particularly in the case of legal action by a third party.

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Page 1 / 1