

Convalida dei
Disinfettanti

Milano
12 aprile, 2022

Airborne surface disinfection

From regulatory to Orient Express

« Pr Edith Filaire » « Scientific Director »

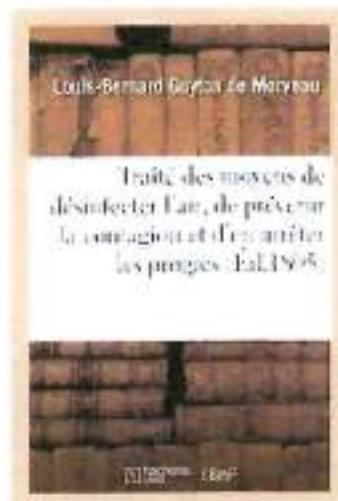
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A glance back at the history



Ulysses

« Old woman, bring the sulphur, remedy for evils,
bring also fire so that I purify the palace »



Guyton-Morveau

End of the 18th century



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What is airborne surface disinfection (DSVA)?

DSVA



- ✓ **Automated airborne disinfection process**
without the need for human intervention, targeting surfaces and not the air
- ✓ **Directed disinfection process**
operated by an operator present during the cycle



Room dedicated to DSVA evaluation efficacy in ICARE Group (42 m³)

Regulatory

❑ **Prior to October 2020: French standard NFT 72-281**

challenging test against a wide range of microbiological organisms (such as bacteria, viruses, fungi, yeasts, spores, mycobacteria, and bacteriophage) with soiling conditions relevant to the claimed use scenario

Automated processes for the disinfection of surfaces by air

Directed spray processes (manual)

❑ **EN 17272: 2020-04-08 « Chemical disinfectants and antiseptics. Methods of airborne room disinfection by automated process. Determination of bactericidal, mycobactericidal, sporicidal, fungicidal, yeasticidal, virucidal and phagocidal activities »**

Concern only automated processes for the disinfection of surfaces by air



What the EN 17272: 2020-04-08 involves

- to disinfect the surfaces of the overall area
- to prove efficacy against vegetative bacteria, mycobacteria, bacterial spores, yeasts, fungal spores, viruses, and bacteriophages.
- consists of two parts, testing both effectiveness and distribution

Efficacy test, each of the biocidal activities can be tested individually, but to comply with EN 17272, it must show at least bactericidal and yeasticidal activity

The distribution test, carried out under the same conditions as the efficacy test and is always carried out with Staphylococcus aureus



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The introduction of this new standard means that all airborne automated disinfection systems must now meet the new requirement

Microorganisms' logarithmic reduction NF EN 17272: 2020-04-08

Categories	Medical sector		Veterinary sector		Industrial Sector	
Bacteria			<i>Pseudomonas aeruginosa</i>	5 log	<i>Pseudomonas aeruginosa</i>	5 log
	<i>Staphylococcus aureus</i>	5 log	<i>Staphylococcus aureus</i>		<i>Staphylococcus aureus</i>	
	<i>Enterococcus hirae</i>		<i>Enterococcus hirae</i>		<i>Enterococcus hirae</i>	
	<i>Escherichia coli</i>			<i>Escherichia coli</i>		
	<i>Acinetobacter baumannii</i>					
		<i>Proteus hauseri</i>	5 log			
Bacterial spores	<i>Bacillus subtilis</i>	4 log	<i>Bacillus subtilis</i>	3 log	<i>Bacillus subtilis</i>	3 log
Mold and yeasts	<i>Candida albicans</i>	4 log	<i>Candida albicans</i>	4 log	<i>Candida albicans</i>	4 log
	<i>Aspergillus brasiliensis</i>		<i>Aspergillus brasiliensis</i>		<i>Aspergillus brasiliensis</i>	
Mycobacteria	<i>Mycobacterium avium</i>	4 log	<i>Mycobacterium avium</i>	4 log	<i>Mycobacterium avium</i>	4 log
	<i>Mycobacterium terrae</i>				<i>Mycobacterium terrae</i>	



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Case report

Spray for the disinfection of public transport (1)

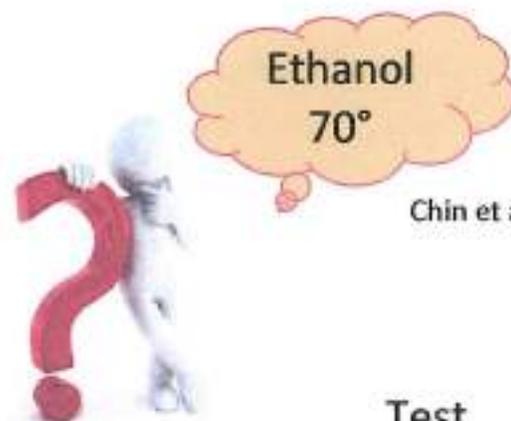
Following the Covid 19 pandemic context,

- formulation an innovative biocide solution called Sanikill® based on Ethanol

Tableau III : Spectre d'activités des principales familles de désinfectants

Familles	Spectre d'activité							
	GRUCI	GRUCM	Gruc. variés					
HALOGENES CHLORÉS (eau de Javel)	+	-	+	+	+	+	-	+
ALDEHYDES (formaldéhyde)	+	-	-	-	-	-	-	+
OXYDANTS (eau de peroxydase)	+	-	-	-	-	-	-	+
BIGUANIDES	+	-	+	-	-	+	-	-
ALCOOLS	+	-	+	+	+	+	+	-
PHENOLS	Activité variable selon les composés							
TRIOXYLATES AMMONIUMS QUATERNAIRES	+	+	-	-	+	+	-	+

Legende :
 + Produits actifs
 +- Produits incertainement actifs
 - Produits inactifs



Chin et al. (2020)

Test

NF EN 1040 - 2006
 NF EN1275 - 2006
 NF EN 14476 - 2019
 NF EN 13697+AC1



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Some Data (1)

Standards	Microorganisms	Contact Time	Ethanol 70° (diluted to 80%)	Sanikill (diluted to 80%)
			percentage of reduction in the number of microorganisms	
1040	<i>S. aureus</i>	1 min	100%	100%
		5 min	100%	100%
		15 min	100%	100%
	<i>Pseudomonas aeruginosa</i>	1 min	100%	100%
		5 min	100%	100%
		15 min	100%	100%
1275	<i>Candida albicans</i>	1 min	100%	100%
		5 min	100%	100%
		15 min	100%	100%

Standards	Microorganisms	Contact Time	Ethanol 70° (diluted to 80%)	Sanikill (diluted to 80%)
			Logarithmic reduction	
NF EN 1040	<i>Staphylococcus aureus</i>	6 sec	> 5 logs	> 5 logs
		15 sec	> 5 logs	> 5 logs
		30 sec	> 5 logs	> 5 logs
NF EN 1275	<i>Candida albicans</i>	6 sec	> 4 logs	> 4 logs
		15 sec	> 4 logs	> 4 logs
		30 sec	> 4 logs	> 4 logs



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12 aprile 2022
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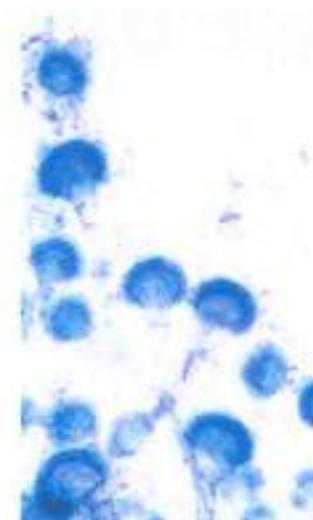
Some Data (2)

Sanikill®

versus

Ethanol 70°

*Aspergillus
brasiliensis*



**Qualification of the delivery solution system
in a controlled environment**



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Data not shown

Spray for the disinfection of public transport (2)

VALIDATION OF THE DISINFECTION PROCESS BY AIR – VALIDATION IN A WAGON

□ Sanikill® has been sprayed in a train in order to neutralize microorganisms

Process
validation

Efficacy of the disinfection

Candida albicans spores

Biocontamination Control

Microbial efficacy

74% versus 99.99% (NFT 72-281)

Real conditions

What about the temperature and the hygrometric rate ?



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Back to the future and Orient Express



Microbial efficacy

94.9% versus 99.99% (NFT 72-281)



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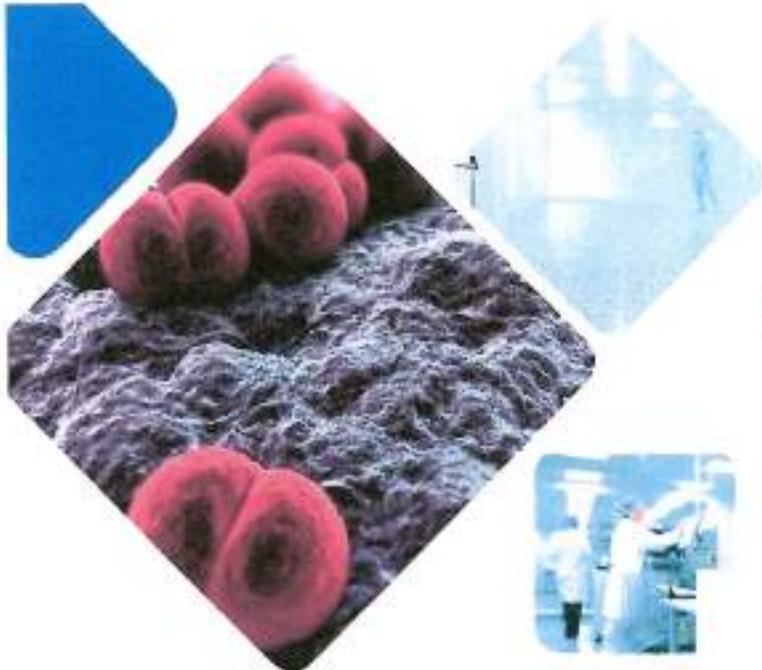
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Conclusion

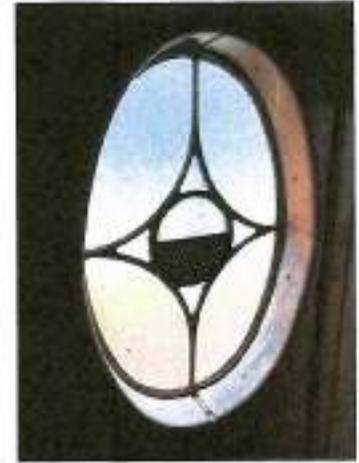


- Efficacy of biocidal disinfectant products must be demonstrated
Appropriate test program
- Regulatory monitoring
Are available efficacy data relevant?



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**Grazie mille
per la vostra attenzione**

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