INSTITUT
FRESENIUS

Deutscher Akkreditierungs Rat
DAP-PA-2566.00

Nach DIN EN ISO/IEC 17025 durch die DAP Deutsches Akkreditierungssystem Prüfwesen GmbH akkreditiertes Prüflaboratorium

Von ZLG als Prüflaboratorium für Medizinprodukte unter ZLG-P-952.96.07 akkreditiert

Sample-No. 010/5155083-84
Order-No. 390744
Client-No. 10019827

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Competence Center
Consumer Testing Service

SGS INSTITUT FRESENIUS GmbH
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Taunusstein, 31. May 2005

Sample-Entry: 17.05.2005

Quantitative Determination of the antimicrobial effectiveness according to ASTM Standard E 2180.

Sample-Designation: ceramic tiles coated with Bacoban (Sa.-No. 5155083)
ceramic tiles non-coated (Reference) (Sa.-No. 5155084)

Testprocedure using 5 microorganisms at standard-temperatures

The testprocedure is suitable for the determination of antimicrobial effectiveness of surfaces. The testing-samples were coated with a defined number of microorganisms and counted after incubation times of 0 and 24 hours. As a reference non-coated, non-antimicrial treated samples were used.
Incubation-temperatures: Bacteria 36°C±2°C, Fungi 22,5°C±2,5°C
The testprocedure takes place after 72h of pre-treatment of the ceramic-tiles with the testing-substance.

Basis for Assessment:

Reduction after 24 h < 1 decimal power ≙ no significant bactericidal/fungicidal effectiveness

Reduction after 24 h ≥ 1 decimal power < 2 decimal powers ≙ low bactericidal/fungicidal effectiveness

Reduction after 24 h ≥ 2 decimal powers < 3 decimal powers ≙ significant bactericidal/fungicidal effectiveness

Reduction after 24 h ≥ 3 decimal powers ≙ strong bactericidal/fungicidal effectiveness

The basis of assessment is only valid if the reduction of the control/reference (starting from 0-value) is lower than 0,5 decimal powers within 24h.

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Test-Suspensions of the following microorganisms are used:

Escherichia coli	ATCC 8739	$3{,}4 \times 10^8$	cfu/ml
Pseudomonas aeruginosa	ATCC 15442	$2{,}8 \times 10^8$	cfu/ml
Staphylococcus aureus	ATCC 6538	$3{,}1 \times 10^8$	cfu/ml
Candida albicans	ATCC 10231	$3{,}3 \times 10^8$	cfu/ml
Aspergillus niger	ATCC 16404	$2{,}1 \times 10^8$	cfu/ml

Quantitative determination of antimicrobial effectiveness according to ASTM Standard E 2180.

Test-Microorganism	Sample-No.: 5155083 cfu*/test-sample			
	after 0h	Standard-deviation	after 24 h	Standard-deviation
Escherichia coli	< 100		< 100	
Pseudomonas aeruginosa	< 100		< 100	
Staphylococcus aureus	< 100		< 100	
Candida albicans	$1{,}2 \times 10^4$	$9{,}6 \times 10^2$	< 100	
Aspergillus niger	$9{,}3 \times 10^3$	$1{,}5 \times 10^3$	< 100	

*cfu: colony-forming units

Assessment:.

The product „ceramic tiles coated with Bacoban“ Sample-No. 5155083 has a strong bactericidal effectiveness against the test-microorganisms *Escherichia coli, Pseudomonas aeruginosa* and *Staphylococcus aureus*. The product has a strong fungicidal effectiveness against the test-microorganisms *Aspergillus niger* and *Candida albicans*.

Quantitative determination of antimicrobial effectiveness according to ASTM Standard E 2180.

Test-Microorganism	Sample-No.: 5155084 (Reference) cfu*/test-sample			
	after 0h	Standard-deviation	after 24h	Standard-deviation
Escherichia coli	$4{,}7 \times 10^5$	$3{,}2 \times 10^4$	$3{,}0 \times 10^5$	$4{,}5 \times 10^4$
Pseudomonas aeruginosa	$4{,}0 \times 10^5$	$2{,}0 \times 10^4$	$3{,}9 \times 10^5$	$2{,}2 \times 10^4$
Staphylococcus aureus	$4{,}4 \times 10^5$	$2{,}3 \times 10^4$	$3{,}5 \times 10^5$	$5{,}1 \times 10^4$
Candida albicans	$4{,}8 \times 10^5$	$2{,}6 \times 10^4$	$4{,}6 \times 10^5$	$2{,}1 \times 10^4$
Aspergillus niger	$2{,}8 \times 10^5$	$2{,}8 \times 10^4$	$2{,}7 \times 10^5$	$2{,}4 \times 10^4$

*cfu: colony forming units

You sincerely

SGS INSTITUT FRESENIUS GmbH

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