LAB N° 1165

Test report n°: **16LA11061** of **29/07/2016**

Spett.
Tarkett
Via S.Anna, 6
05035 Nardi Scalo (TR)

Sample Information

Test subject: **Polymers**

Description: **Linowall - Determinazione dell'attività antibatterica secondo ISO 22196 - Mix di Batteri (EColi e MRSA)**

Registration date: **21/07/2016**

Date of arrival: **21/07/2016** Hour of arrival: **11.00.00**

Date analysis commenced: **21/07/2016** Date analysis completed: **28/07/2016**

Sampling data

Date: **20/07/2016**

Sample supplied by: **Cliente**

Transport: **Cliente**

Parameter - Note *Method - Note*	U.M.	Result Note	LoQ
Determination of antibacterial activity (R) - R=(Ut-Uo)-(At-Uo) *ISO 22196:2011*		**> 5.96**	0.6
Size of test specimens (H x L)	mm	**50x50**	
Thickness of test specimens	mm	**2,0**	
Type of polymer used for the cover film		**polypropylene**	
Size of the cover film (H x L)	mm	**40x40**	
Thickness of the cover film	mm	**0,10**	
Type of Gram-negative strain		**E.coli - ATCC 25922**	
Type of Gram-positive strain		**Staphylococcus aureus Methicillin resistant -**	
Volume of test inoculum	ml	**0,4**	
Number of viable bacteria in the test inoculum	n°	**280000**	
Uo - N° of viable bacteria recovered from the untreated test specimens after	log	**4,3**	0.4
Ut - N° of viable bacteria recovered from the untreated test specimens after 24	log	**6,0**	0.4
At - Count bacteria recovered from the treated samples 24 hours post	log	**< 0.4**	0.4

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follows Test report n°: **16LA11061** of **29/07/2016**

LEGEND: **U.M.** = Unit of measurement; **(Sup)** = upper limit; **(Inf)** = Lower Limit ;; **x ÷ y** = acceptable range; **LoQ** = limit of quantification, the threshold value below which you choose not to bring any numerical result for the parameter in question; this limit is provided directly by the method, or is chosen on the basis of the experimental detection limits (LoQ or LoD) so as not to be changed over time or according to the chemical-physical or microbiological single sample**LOD** = limit of detection; **NQ** = unquantifiable, indicates a value less than LoQ
"**<x**" or "**>x**" respectively indicate a value lower or higher than the measuring range of the test

UNLESS OTHERWISE SPECIFIED: Quantitative microbiological tests are performed on single replica and two consecutive dilutions in accordance with UNI EN ISO 7218: 2013 (with the exception of the analysis of water and MPN); the results of this test report are not correct for recovery factors (R) as the values of recovery are in the tolerance specified in the test method; summations are calculated using the criterion of the lower bound (LB)

The results marked in red indicate a exceeding the defined limits.

If the sampling isn't the responsibility of 3ALaboratori Ltd., the test results were obtained on the basis of the data declared.

Note:
A polypropylene sample of the same size of test specimen was used as untreated test material.

Opinion of compliance :

This International Standard specifies a method of evaluating the antibacterial activity of non- porous materials.

The method consist in prepared the test microorganism by growth in a liquid culture medium; then the suspension of test microorganism is standardized by dilution in a nutritive broth. Control and test surfaces are inoculated with microorganisms, in triplicate, and then the microbial inoculum is covered with a thin, sterile film. Covering the inoculum spreads it, prevents it from evaporating, and ensures close contact with the antimicrobial surface. Microbial concentrations are determined at "time zero" by elution followed by dilution and plating.
A control is run to verify that the neutralization/elution method effectively neutralizes the antimicrobial activity in the antimicrobial surface being tested. Inoculated, covered control and antimicrobial test surfaces are allowed to incubate undisturbed in a humid environment for 24 hours. After incubation, microbial concentrations on are determined. Reduction of microorganisms relative to initial concentrations and the control surface is calculated.
The microorganism used for this test are Escherichia coli (Gram-) and Staphylococcus Aureus (Gram+) to represent the two main groups in which bacteria are traditionally divided.
In particulary, the strain of Staphylococcus used for the test is a MRSA strain (Methicillin-resistant Staphylococcus aureus) that is a bacterium which causes infections in different parts of the body and it's resistant to some commonly used antibiotics.
MRSA is especially troublesome in hospitals where patients with open wounds, invasive devices, and weakened immune systems are at greater risk of infection than the general public.

The test results obtained show that after 24 hours of incubation the test material reduce the overall growth a bacteria on it's surfaces by 99.999%, so we can be concluded that it possess high bactericidal properties in respect to the bacterium tested.

Technical Director

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Laboratory management system certified UNI EN ISO 9001: 2008 by CSQA with the No. 14270. Inclusion in the list of regional laboratories carrying out analysis in the context of self-control procedures for Food Industries No. 52. Recommended by AIC for the analysis of quantification of gluten in food matrices. Registrated laboratory for the analysis of food contact materials intended for export to Japan.

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