

**Test report on measurement of antibacterial activity of materials No.
2.2/20/4**

Customer: Fatra, a.s., Třída T. Bati 1541, 763 61 Napajedla., Česká republika
Reg. No.: 10419/15.9.20 **Date of sample delivery:** 15. 9.2020
Method: SOP 7/2.2 (ISO 22196)

Test specimens:

- 1) Control specimen (Lab. No.: 854): Novoflor Extra standard
- 2) Test specimen (Lab. No.: 855): Novoflor Extra treated material

The species of test bacteria	<i>Escherichia coli</i>	<i>Staphylococcus aureus</i>
Strain number	CCM 4517	CCM 2022
The number of viable bacteria in the test inoculum* 2,5 x 10 ⁵ - 1,0 x 10 ⁶ KTJ/ml	6,75x10 ⁵	6,60x10 ⁵
Conditions for a valid test 1: (L _{max} - L _{min}) / L _{mean} ≤ 0,2	0,04	0,03
Conditions for a valid test 2* 6,2x10 ³ ≤ N _{mean} ≤ 2,5x10 ⁴	1,36x10 ⁴	1,20x10 ⁴
Conditions for a valid test 3 N ≥ 6,2x10 ¹	1,06x10 ⁶	5,81x10 ⁴
Novoflor Extra standard (Lab. No. 854)	U ₀	4,1
	U _t	6,1
Novoflor Extra treated material (Lab. No. 855)	A _t	0,5
	R	5,6

* we consider the tolerance of 0,5 logarithm from the given criteria to be acceptable

Condition 1:

L_{max} ... the logarithm of the maximum number of viable bacteria found on a control specimen;
L_{min} ... the logarithm of the minimum number of viable bacteria found on a control specimen;
L_{mean} ... the logarithm of the mean number of viable bacteria found on the control specimens.

Condition 2:

The average number of viable bacteria recovered immediately after inoculation from the control specimens.

Condition 3:

The number of viable bacteria recovered from each control specimen after incubation for 24 h.

R ... the antibacterial activity, U₀ ... the average of the logarithm of the number of viable bacteria, in cells/cm², recovered from the control specimens immediately after inoculation, U_t ... the average of the logarithm of the number of viable bacteria, in cells/cm², recovered from the control specimens after 24 h,
A_t ... the average of the logarithm of the number of viable bacteria, in cells/cm², recovered from the test specimens after 24 h.



EVALUATION OF RESULTS:

The values of antibacterial activity used to characterize the effectiveness of the antibacterial agent shall be agreed upon by all interested parties. Since the error in methods for determining the number of bacteria is $\pm 0,5$ logarithmic order, we can consider the antibacterial agent as effective if $R > 1$. We propose to evaluate the antibacterial effect according to Table 1, which is based on the standard ČSN EN ISO 20743 Textiles - Detection of the antibacterial effect of textile products.

Table 1: The effectiveness of an antibacterial properties

Effectiveness of antibacterial properties	The value of antibacterial activity R
Weak	$1 < R < 2$
Significant*	$2 \leq R < 3$
Strong*	$R \geq 3$

* The values and effectiveness taken from the standard ČSN EN ISO 20743

The test carried out according to ISO 22196 demonstrated

- the test specimen Novoflor Extra treated material (sample no. 855) showed strong antibacterial activity against *Escherichia coli* CCM 4517 and *Staphylococcus aureus* CCM 2022.

Note: The conclusions drawn from this protocol can be applied to other floorings only if they have been treated with the same type of surface treatment and under the same technological conditions as for the tested specimen Novoflor Extra (sample no. 855), in this case for Novoflor Standard, Dual, Domo and Modul flooring.

The tests were performed at the address of the laboratory. Test results apply on tested samples as they have been received from the customer. The protocol may be reproduced only as a whole, its part only with written agreement of the head of the laboratory.

Testing carried out by:

Ing. J. Vrkoslavová, Ph.D.; K. Němcová

Testing duration:

29. 9. – 15. 10. 2020

Date of issue: 20. 10. 20120

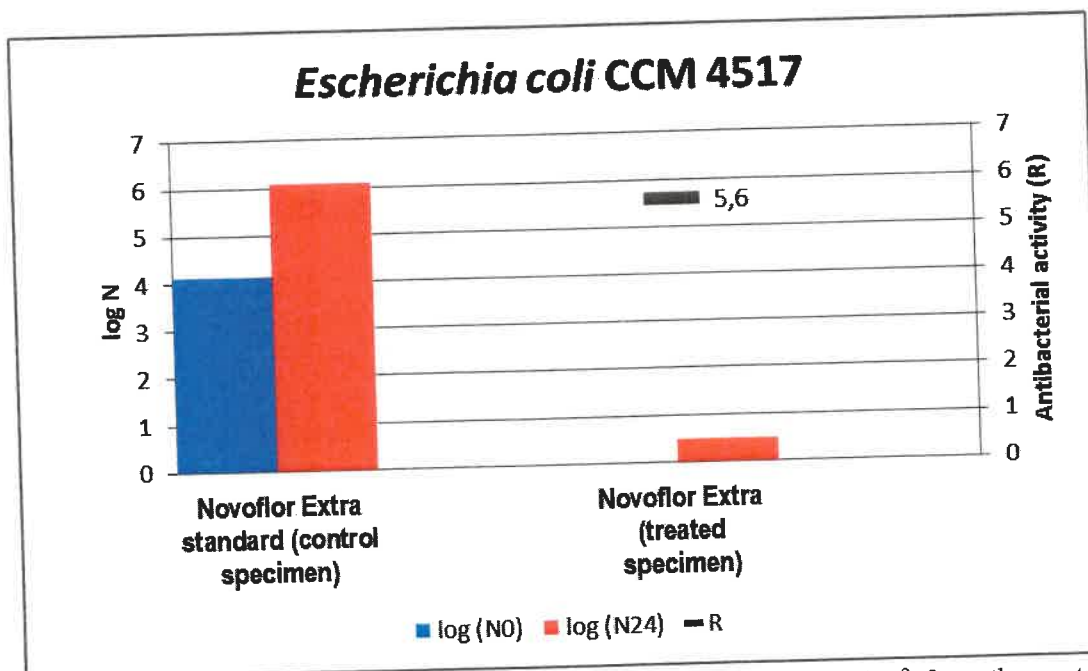
Technical manager: Ing. Jana Vrkoslavová, Ph.D.



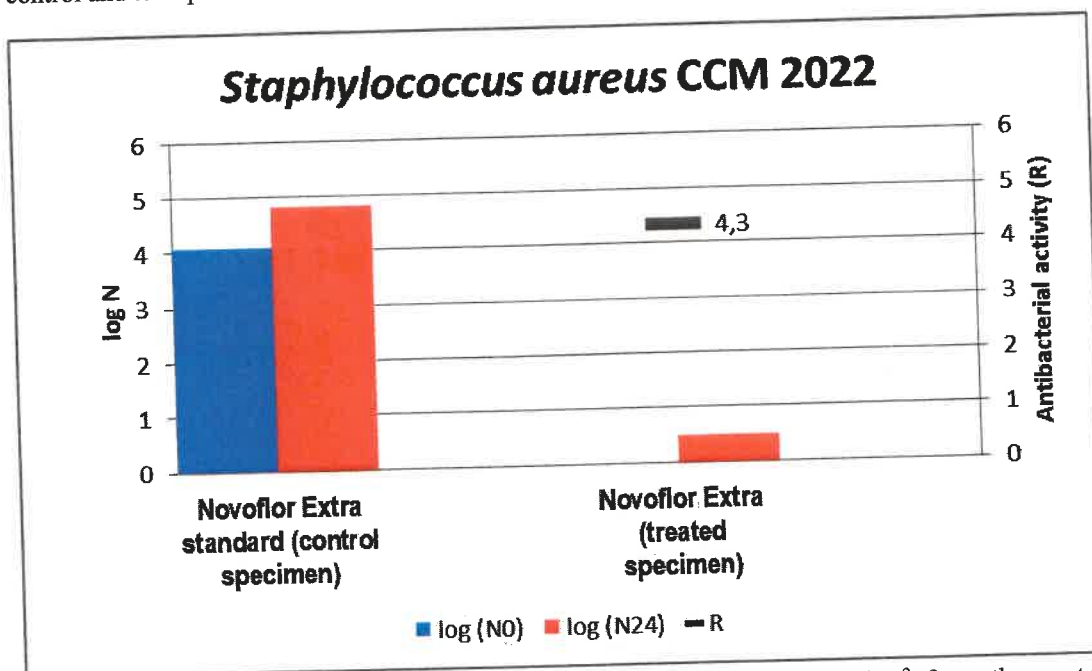
Vrkoslavová

The end of the protocol

Attachment: Graphical representation of the results of the expertise



Note: log (N0) ... the logarithm of the mean number of viable bacteria/cm² from the control specimens immediately after inoculation; log (N24) ... the logarithm of the mean number of viable bacteria/cm² from the control and test specimens after incubation for 24 hours; R ... antibacterial activity



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