

BioGenius GmbH, Biology
TechnologiePark, Campus 1
Friedrich-Ebert-Straße, 75
51429 Bergisch Gladbach, Germany

Study no. : BIO2022-019
Report no. : BIO045-22
Date : 2022-04-26
Study Director : Dr. F. Müller

Title:

Residual efficacy of Bacoban® DL 3 % on non-porous glazed tiles against Bed bugs, *Cimex lectularius*, tested fresh and 10 days aged

Introduction:

The aim of the study was to determine the residual efficacy of the product **Bacoban® DL 3%** on treated surfaces against Bed bugs, *Cimex lectularius*, when applied on non-porous glazed tiles (15 x 15 cm).

The application rate of the solution on each surface was 2.5 ml per tile. Each dilution was applied manually by pipette for each tile. Afterwards, the treated tiles were transferred to the ventilated and air-conditioned test room and dried for 24 hours.

The insects were exposed to the treated surfaces one day after treatment. The exposure time was 6 hours. After exposure to the treated tiles the insects were transferred into clean insecticide-free plastic beakers with a piece of paper. Mortality was determined after 24 hours and daily up to 72 hours.

The room temperature was 24 – 25 °C and the relative humidity 53 – 57 %, with artificial light turned on during hours of work. Additionally, some daylight was entering the room during day hours.

3 replicates were done. (control: 1)

Conclusion

In conclusion, the product Bacoban® DL 3 % showed good efficacy on non-porous glazed tiles against Bed bugs, *Cimex lectularius*, when tested fresh, with on average 100 % mortality after 24 hours. The efficacy decreased after 10 days of ageing with on average 33 % mortality after 24 hours, 60 % after 48 hours and 87 % after 72 hours.

For all data see table 1 - 2.

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Abridged Report

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Table 1

**Residual efficacy of Bacoban® DL 3 % on non-porous glazed tiles against
Bed bugs, *Cimex lectularius***

Study: BIO2022-019

5 insects per replicate

temperature: 24 - 25 °C

Method: BioG B 005-02 (modified)

rel. humidity: 53 - 57 %

Product	Surface	Age	Replicate	[%] mortality after:			
				24 hours	48 hours	72 hours	
Bacoban® DL 3 %	GT	fresh	1	100	100	100	
			2	100	100	100	
			3	100	100	100	
			Ø	100	100	100	
		10 days	1	40	80	80	
			2	20	60	80	
			3	40	40	100	
			Ø	33	60	87	
		Untreated control	-	1	0	0	0
				1	0	0	0

Note: All means are rounded to integers; GT = glazed tile

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Execution of Method BPD BioG B 005-02 (modified)

Test method is suitable for finding the residual efficacy of liquid formulations against flying insects.

Formulations: The method is suitable for liquid formulations.

Surfaces: Suitable are non-porous materials like glazed tiles (commonly sized 15 x 15 cm = 225 cm²).

Test insects: The test is suitable for crawling insects like Bed bugs, *Cimex lectularius*.

Treatment of surfaces: The liquid products are applied with an amount of 2.5 ml of undiluted product per tile. The product is applied manually by pipette for every tile. Afterwards, the treated tiles are transferred to the ventilated and air-conditioned test room and dried for 24 hours.

Insects and evaluation: 5 Bed bugs (adults) per replicate are kept on the surfaces inside talc-powdered glass rings (diameter 9.5 cm, height 5.5 cm). The insects are exposed to the surfaces for 6 hours. The evaluations for mortality are made after 1, 2 and 3 days. The insects are removed from the surfaces after the relevant contact time and transferred into clean beakers, provided with a piece of paper, for further evaluation. The insects are exposed to the surfaces on the following exposure days: 1 day and 10 days after treatment.

The temperature is 24 – 25 °C, the relative humidity 53 – 57 %, with artificial light during hours of work, additionally, some daylight is entering the room during day hours.

3 replicates are done (control: 1).

Study Director:

The biological results are only valid for the samples received in the laboratory. This report contains the unpublished results of biological work by BioGenius GmbH. These results may not be published, either wholly or in part, or reviewed or quoted in any other publication without the authorisation of the sponsor.