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Sample: 200679058  
Order: 5434588  
Client: 10089634



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Consumer and Retail  
Cosmetics, Personal Care & Household

SGS INSTITUT FRESENIUS GmbH  
Im Maisel 14  
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Taunusstein, 23.10.2020

## Report 5434588-07

### Quantitative suspension test of yeasticidal activity according to DIN EN 1650:2019

**Sample entry:** 09.07.2020

**Sample designation:** Bacoban WB  
LOT: 2005159

**Active substance:** 26.0 g benzalkonium chloride  
2.5 g sodium pyrithione

**Sample storage:** Room temperature

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**Test conditions:**

<b>EN 1650:</b>	Chemical disinfectant and antiseptics - Quantitative suspension test for the evaluation of fungicidal and yeasticidal activity of chemical disinfectants and antiseptics used in food, industrial, domestic and institutional areas – Test method and requirements (phase 2, step 1) – EN1650:2019
<b>Test organisms:</b>	<i>Candida albicans</i> ATCC 10231
<b>Test suspension:</b>	1.5 – 5.0 x 10 <sup>7</sup> cfu/mL
<b>Contact time:</b>	5 min
<b>Temperature:</b>	20 °C
<b>Product concentration:</b>	1% 0.5 % 0.05%
<b>Protein contamination:</b>	dirty (0.3% albumin)
<b>Test method:</b>	Dilution-Neutralization-Method Membrane filtration
<b>Neutralization:</b>	3% Polysorbate 80, 0.3% Lecithin, 0.1% Histidine, 0.5% Na-thiosulfate, 3% Saponin
<b>Incubation:</b>	Malt agar plates for 48 h at 36 ± 1 °C
<b>Test period:</b>	31.08.2020 – 03.09.2020 02.10.2020 – 05.10.2020
<b>Requirement:</b>	4-log (99.99%) reduction of fungi

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**Table 1: Test results using pour plate and membrane filtration method according to DIN EN 1650 (Sample number 200679058)**

Test organism	Validation				Fungi test suspension	Contact time: 5 min, Protein load: dirty			
	Fungi suspension	Experimental conditions	Control of neutralization	Process validation			1 % <sup>(1)</sup>	0.5 %	0.05 %
<b>Candida albicans (ATCC 10231)</b>	V <sub>c</sub> (10 <sup>-1</sup> ): 112/108 V <sub>c</sub> (10 <sup>-2</sup> ): 9/10 N <sub>v</sub> : 1.10 x 10 <sup>3</sup>	V <sub>c</sub> : 112/118 A = 115	V <sub>c</sub> : 135/148 B = 142	V <sub>c</sub> : 136/80 C = 108	10 <sup>-5</sup> : >330/>330 10 <sup>-6</sup> : 37/35 N: 3.60 x 10 <sup>7</sup>	V <sub>c</sub> (10 <sup>0</sup> ): V <sub>c</sub> (10 <sup>-1</sup> ): V <sub>c</sub> (10 <sup>-2</sup> ):	0/0 0/0 0/0	n.a. 38/41 3/4	>330/>330 >330/>330 >330/>330
	V <sub>c</sub> (10 <sup>-1</sup> ): 100/112 V <sub>c</sub> (10 <sup>-2</sup> ): 12/17 N <sub>v</sub> : 1.26 x 10 <sup>3</sup>	V <sub>c</sub> : 126/120 A <sub>80%</sub> = 123	V <sub>c</sub> : 100/120 B <sub>80%</sub> = 110		10 <sup>-5</sup> : >165/>165 10 <sup>-6</sup> : 44/34 N: 3.90 x 10 <sup>7</sup>	N <sub>a</sub> : R: R (log):	<140 >2.79 x 10 <sup>4</sup> > <b>4.45</b>	3.95 x 10 <sup>3</sup> 9.11 x 10 <sup>2</sup> 2.96	>3.30 x 10 <sup>5</sup> <1.09 x 10 <sup>1</sup> <1.04
V <sub>c</sub>	Viable fungi count (colony forming units = cfu)		N <sub>v</sub> cfu per ml fungi suspension						
N	cfu per ml fungi test suspension		A cfu per ml (WSH control)						
R	Reduction of fungi count		B cfu per ml (method control)						
N <sub>a</sub>	cfu per ml test mixture		C cfu per ml (process validation)						

<sup>(1)</sup>The Dilution-Neutralization-Method was not suitable, therefore Membrane filtration was performed for 1% product concentration.

n.a.= not applicable

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### **Evaluation:**

The results show that the product **Bacoban WB** meets the required yeasticidal activity according to standard EN 1650 since a reduction of 4 log was achieved for *Candida albicans* at a contact time of 5 min under the given conditions:

**1 % product concentration – 5 min – dirty conditions**

### **SGS INSTITUT FRESENIUS GmbH**



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