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Chemical and Microbiological Laboratory, Testing Laboratory No. 1273 certified by Czech Accreditation Institute according to ČSN EN ISO/IEC 17025.

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Copy No.: 1
Issue No.: 1

Test report No. D89-1/2017

**DETERMINATION OF BACTERICIDAL (EN 13727+A2, EN 14561),
YEASTICIDAL (EN 13624, EN 14562) AND TUBERCULOCIDAL
(EN 14348) ACTIVITY OF THE PRODUCT **GLOBACID SF 0.25%****

Sample ID: D89/2017

Sample name: **GLOBACID SF 0.25%**

Client: Goodpoint Chemicals Ltd, Urda tee 3, Jälgimäe, Saku vald, Harjumaa, Estonia 76404

Producer: Goodpoint Chemicals Ltd, Urda tee 3, Jälgimäe, Saku vald, Harjumaa, Estonia 76404

Sampling point: Goodpoint Chemicals Ltd, Urda tee 3, Jälgimäe, Saku vald, Harjumaa, Estonia 76404

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From pages: 15

Incoming date:

11.5.2017

Delivery date:

8.12.2017

Hodonín, 8.12.2017



Ing. Jana Šlitrová, Head of Laboratory

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Description: *Testing the efficacy of chemical disinfectants and antiseptics*

Sample ID: D89/2017

Rep No: 130

Sample name: **GLOBACID SF 0.25%**

Sampled: by client

Sampling point: Goodpoint Chemicals Ltd, Urda tee 3, Jälgimäe, Saku vald, Harjumaa, Estonia 76404

Client: Goodpoint Chemicals Ltd, Urda tee 3, Jälgimäe, Saku vald, Harjumaa, Estonia 76404

Batch No: 20042017

Sampling date: 5.5.2017

Sample delivered: 11.5.2017

Testing date: 20.7. – 13.9.2017

Delivered amount: 1 l

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Subject of testing:

Determination of bactericidal, yeasticidal and tuberculocidal activity of the product.

Identification of the sample:

Name of the product:

GLOBACID SF 0.25%

Batch number:

20042017

Date of manufacture:

20.04.2017

Expiry date:

19.04.2020

Manufacturer:

Goodpoint Chemicals Ltd, Urda tee 3, Jälgimäe, Saku vald, Harjumaa, Estonia 76404

Incoming date:

11.5.2017

Storage conditions:

stated by the manufacturer

Active compounds in 100 g:

N-(3-aminopropyl)-N-dodecyl propane-1,3-diamine <1%
DDAC <1%

Experimental conditions:

Testing of disinfecting efficiency of chemical disinfecting and antiseptic agents by suspension method

SOP-M-19-00 (EN 13727:2012+A2:2015)

Period of analysis:

6.9. – 7.9.2017

Test temperature:

20 °C ± 1 °C

Test method:

membrane filtration method

Filtration diluent:

rinsing liquid

Appearance of the product:

colourless liquid

Test concentration:

100% (concentrated)*

Contact time:

5, 15 and 30 min

Interfering substances:

0.3 g/l BSA (clean conditions)

Test organisms:

Pseudomonas aeruginosa

ATCC 15442

Staphylococcus aureus

ATCC 6538

Enterococcus hirae

ATCC 10541

Incubation conditions:

37 °C ± 1 °C, 24 hours

Test procedure:

1. Preparation of the test suspension
2. Preparation of the product test solutions
3. Quantitative suspension test
4. Incubation and calculation
5. Expression and interpretation of the results

Note:

Bactericidal activity – the capability of a product to produce a reduction in the number of viable bacterial cells of relevant organisms under defined conditions by at least 5 orders (10^5).

$R = N_0 / N_a$ = the reduction in viability, or $\lg R = \lg N_0 - \lg N_a$

* Product can only be tested at a concentration of 97% (RTU) or less, as some dilution is always produced by adding the test organisms and interfering substance.

The standard:

EN 13727:2012+A2:2015 Chemical disinfectants and antiseptics – Quantitative suspension test for the evaluation of bactericidal activity in the medical area – Test method and requirements (phase 2, step 1) October 2015

Description: Testing the efficacy of chemical disinfectants and antiseptics

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The Number of CFU in the tested product: 0 CFU/ml

1. Testing the efficacy of chemical disinfectant **GLOBACID SF 0.25%** on *Pseudomonas aeruginosa* ATCC 15442

Tab No. 1.1 Verification of methodology, clean conditions

Validation of suspension (N _{Vo})			Validation of selected experimental conditions (A)			Membrane filtration control (B)			Method validation (C) Product conc.: 100%*		
V _{c1}	42	Φ _{N_{Vo}} = 39.5	V _{c1}	26	Φ _A = 27.5	V _{c1}	20	Φ _B = 24	V _{c1}	32	Φ _C = 31.5
V _{c2}	37		V _{c2}	29		V _{c2}	28		V _{c2}	31	
30 ≤ Φ _{N_{Vo}} ≤ 160			Φ _A ≥ 0.5 Φ _{N_{Vo}}			Φ _B ≥ 0.5 Φ _{N_{Vo}}			Φ _C ≥ 0.5 Φ _{N_{Vo}}		
x	yes	no	x	yes	no	x	yes	no	x	yes	no
Validation of suspension (N _{VB})			V _{c1}	28	V _{c2}	35	Φ _{N_{VB}}	31.5	30 ≤ Φ _{N_{VB}} (N _{VB} /1000) ≤ 160		
									x	yes	no

Tab No. 1.2 Test suspension

Test suspension N	N	V _{c1}	V _{c1}	Test suspension N ₀ (time = 0)
Φ = 37.5 x 10 ⁸ = lg 9.57	10 ⁻⁷	>165	>165	lg N ₀ = lg N/100 = lg 7.57
9.17 ≤ lg N ≤ 9.70	10 ⁻⁸	36	39	7.17 ≤ lg N ₀ ≤ 7.70
				x
				yes
				no

Tab No. 1.3 Testing the efficacy of chemical disinfectant **GLOBACID SF 0.25%** on *Pseudomonas aeruginosa* ATCC 15442

Test concentration (%) / contact time (min) / conditions	Dilution after test procedure	V _{c1}	V _{c2}	lg N _a = lg (Φ _a x 10)	lg R (lg N ₀ = lg 7.57)
100*/5/clean	10 ⁰	<14	<14	<2.15	≥ 5.42
100*/15/clean	10 ⁰	<14	<14	<2.15	≥ 5.42
100*/30/clean	10 ⁰	<14	<14	<2.15	≥ 5.42

2. Testing the efficacy of chemical disinfectant **GLOBACID SF 0.25%** on *Staphylococcus aureus* ATCC 6538

Tab No. 2.1 Verification of methodology, clean conditions

Validation of suspension (N _{Vo})			Validation of selected experimental conditions (A)			Membrane filtration control (B)			Method validation (C) Product conc.: 100%*		
V _{c1}	52	Φ _{N_{Vo}} = 55.5	V _{c1}	55	Φ _A = 53.5	V _{c1}	44	Φ _B = 47.5	V _{c1}	48	Φ _C = 54
V _{c2}	59		V _{c2}	52		V _{c2}	51		V _{c2}	60	
30 ≤ Φ _{N_{Vo}} ≤ 160			Φ _A ≥ 0.5 Φ _{N_{Vo}}			Φ _B ≥ 0.5 Φ _{N_{Vo}}			Φ _C ≥ 0.5 Φ _{N_{Vo}}		
x	yes	no	x	yes	no	x	yes	no	x	yes	no
Validation of suspension (N _{VB})			V _{c1}	49	V _{c2}	54	Φ _{N_{VB}}	51.5	30 ≤ Φ _{N_{VB}} (N _{VB} /1000) ≤ 160		
									x	yes	no

Tab No. 2.2 Test suspension

Test suspension N	N	V _{c1}	V _{c1}	Test suspension N ₀ (time = 0)
Φ = 49 x 10 ⁸ = lg 9.69	10 ⁻⁷	>165	>165	lg N ₀ = lg N/100 = lg 7.69
9.17 ≤ lg N ≤ 9.70	10 ⁻⁸	54	44	7.17 ≤ lg N ₀ ≤ 7.70
				x
				yes
				no

Tab No. 2.3 Testing the efficacy of chemical disinfectant **GLOBACID SF 0.25%** on *Staphylococcus aureus* ATCC 6538

Test concentration (%) / contact time (min) / conditions	Dilution after test procedure	V _{c1}	V _{c2}	lg N _a = lg (Φ _a x 10)	lg R (lg N ₀ = lg 7.69)
100*/5/clean	10 ⁰	<14	<14	<2.15	≥ 5.54
100*/15/clean	10 ⁰	<14	<14	<2.15	≥ 5.54
100*/30/clean	10 ⁰	<14	<14	<2.15	≥ 5.54

Description: Testing the efficacy of chemical disinfectants and antiseptics

Sample ID: D89/2017

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Sample name: GLOBACID SF 0.25%

Sampled: by client

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Client: Goodpoint Chemicals Ltd, Urda tee 3, Jälgimäe, Saku vald, Harjumaa, Estonia 76404

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3. Testing the efficacy of chemical disinfectant GLOBACID SF 0.25% on *Enterococcus hirae* ATCC 10541

Tab No. 3.1 Verification of methodology, clean conditions

Validation of suspension (N _{v0})		Validation of selected experimental conditions (A)		Membrane filtration control (B)		Method validation (C) Product conc.: 100%*	
V _{c1}	32	V _{c1}	31	V _{c1}	19	V _{c1}	27
V _{c2}	31	V _{c2}	33	V _{c2}	26	V _{c2}	25
Φ _{Nv0} = 31.5		Φ _A = 32		Φ _B = 22.5		Φ _C = 26	
30 ≤ Φ _{Nv0} ≤ 160		Φ _A ≥ 0.5 Φ _{Nv0}		Φ _B ≥ 0.5 Φ _{Nv0}		Φ _C ≥ 0.5 Φ _{Nv0}	
x	yes	x	yes	x	yes	x	yes
	no		no		no		no
Validation of suspension (N _{vB})		V _{c1}	28	V _{c2}	24	Φ _{NvB}	26
						30 ≤ Φ _{NvB} (N _{vB} /1000) ≤ 160	
						x	yes
							no

Tab No. 3.2 Test suspension

Test suspension N	N	V _{c1}	V _{c2}	Test suspension N ₀ (time = 0)	
Φ = 33.5 × 10 ⁸ = lg 9.53	10 ⁻⁷	>165	>165	lg N ₀ = lg N/100 = lg 7.53	
9.17 ≤ lg N ≤ 9.70	10 ⁻⁸	32	35	7.17 ≤ lg N ₀ ≤ 7.70	
				x	yes
					no

Tab No. 3.3 Testing the efficacy of chemical disinfectant GLOBACID SF 0.25% on *Enterococcus hirae* ATCC 10541

Test concentration (%) / contact time (min) / conditions	Dilution after test procedure	V _{c1}	V _{c2}	lg N _a = lg (Φ _a × 10)	lg R (lg N ₀ = lg 7.53)
100*/5/clean	10 ⁰	23	30	2.42	5.11
100*/15/clean	10 ⁰	<14	<14	<2.15	≥ 5.38
100*/30/clean	10 ⁰	<14	<14	<2.15	≥ 5.38

4. Evaluation of bactericidal activity of the product GLOBACID SF 0.25%

Tab No. 4.1 The efficacy of chemical disinfectant GLOBACID SF 0.25% on test strains – bactericidal activity

Bactericidal activity of the product (EN 13727:2012+A2:2015)						
Strain	Test temperature [°C]	Contact time [min]	Product test concentrations [%]	Interfering substances - conditions	lg R EN 13727:2012 +A2:2015	lg R
<i>Pseudomonas aeruginosa</i> ATCC 15442	20	5	100*	clean	≥ 5	> 5
<i>Staphylococcus aureus</i> ATCC 6538	20	5	100*	clean	≥ 5	> 5
<i>Enterococcus hirae</i> ATCC 10541	20	5	100*	clean	≥ 5	> 5
<i>Pseudomonas aeruginosa</i> ATCC 15442	20	15	100*	clean	≥ 5	> 5
<i>Staphylococcus aureus</i> ATCC 6538	20	15	100*	clean	≥ 5	> 5
<i>Enterococcus hirae</i> ATCC 10541	20	15	100*	clean	≥ 5	> 5
<i>Pseudomonas aeruginosa</i> ATCC 15442	20	30	100*	clean	≥ 5	> 5
<i>Staphylococcus aureus</i> ATCC 6538	20	30	100*	clean	≥ 5	> 5
<i>Enterococcus hirae</i> ATCC 10541	20	30	100*	clean	≥ 5	> 5

Note: V_c = value is the number of cfu per ml, Φ = average V_{c1} a V_{c2} (1. + 2. duplicate V_c values), N = the number of cfu/ml of the test suspension, N₀ = the number of cfu/ml of the test suspension at the beginning of the contact time (time „0“), N_a = the number of survivors per ml in the test mixture at the end of the contact time and before the membrane filtration, N_v = the number of cfu/ml of the test suspension for validation, N_{v0} (A,C), N_{vB} (B) = the number of cfu/ml of the test suspensions for validation in the test mixture A, B, C at the beginning of the contact time „0“, A,B,C = the number of survivors per ml in control tests (A – experimental conditions control, B – membrane filtration validation, C – method validation), R = N₀ / N_a nebo lg R = lg N₀ – lg N_a the reduction in viability

* Product can only be tested at a concentration of 97% (RTU) or less, as some dilution is always produced by adding the test organisms and interfering substance.

Prepared by: Ing. Eva Kremlová, Lab Technician

Description: *Testing the efficacy of chemical disinfectants and antiseptics*

Sample ID: D89/2017

Rep No: 130

Sample name: **GLOBACID SF 0.25%**

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Client: Goodpoint Chemicals Ltd, Urda tee 3, Jälgimäe, Saku vald, Harjumaa, Estonia 76404

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Experimental conditions:

Testing of disinfecting efficiency of chemical disinfecting and antiseptic agents by suspension method

SOP-M-19-00 (EN 13624:2013)

Period of analysis:

11.9. – 13.9.2017

Test temperature:

20 °C ± 1 °C

Test method:

membrane filtration method

Filtration diluent:

rinsing liquid

Appearance of the product:

colourless liquid

Test concentration:

100% (concentrated)*

Contact time:

5, 15 and 30 min

Interfering substances:

0.3 g/l BSA (clean conditions)

Test organisms:

Candida albicans

ATCC 10231

Incubation conditions:

30 °C ± 1 °C, 48 hours and additional period of 24 or 48 hours

Test procedure:

1. Preparation of the test suspension
2. Preparation of the product test solutions
3. Quantitative suspension test
4. Incubation and calculation
5. Expression and interpretation of the results

Note:

Fungicidal activity – the capability of a product to produce a reduction in the number of viable fungi belonging to reference strains under defined conditions by at least 4 orders (10^4).

Yeasticidal activity – the capability of a product to produce a reduction in the number of viable yeast cells of relevant test organisms under defined conditions by at least 4 orders (10^4).

$R = N_0 / N_a$ = the reduction in viability, or $\lg R = \lg N_0 - \lg N_a$

* Product can only be tested at a concentration of 97% (RTU) or less, as some dilution is always produced by adding the test organisms and interfering substance.

The standard:

EN 13624:2013 Chemical disinfectants and antiseptics – Quantitative suspension test for the evaluation of fungicidal or yeasticidal activity in the medical area - Test method and requirements (phase 2, step 1) September 2013

Description: Testing the efficacy of chemical disinfectants and antiseptics

Sample ID: D89/2017

Rep No: 130

Sample name: **GLOBACID SF 0.25%**

Sampled: by client

Sampling point: Goodpoint Chemicals Ltd, Urda tee 3, Jälgimäe, Saku vald, Harjumaa, Estonia 76404

Client: Goodpoint Chemicals Ltd, Urda tee 3, Jälgimäe, Saku vald, Harjumaa, Estonia 76404

Batch No: 20042017

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5. Testing the efficacy of chemical disinfectant **GLOBACID SF 0.25%** on *Candida albicans* ATCC 10231
Tab No. 5.1 Verification of methodology, clean conditions

Validation of suspension (N _{v0})			Validation of selected experimental conditions (A)			Membrane filtration control (B)			Method validation (C) Product conc. 100%*		
V _{c1}	42	Φ _{Nv0} = 43	V _{c1}	39	Φ _A = 30.5	V _{c1}	39	Φ _B = 32	V _{c1}	26	Φ _C = 30
V _{c2}	44		V _{c2}	22		V _{c2}	25		V _{c2}	34	
30 ≤ Φ _{Nv0} ≤ 160			Φ _A ≥ 0.5 Φ _{Nv0}			Φ _B ≥ 0.5 Φ _{Nv0}			Φ _C ≥ 0.5 Φ _{Nv0}		
x	yes	no	x	yes	no	x	yes	no	x	yes	no
Validation of suspension (N _{vB})			V _{c1}	31	V _{c2}	37	Φ _{NvB}	34	30 ≤ Φ _{NvB} (N _{vB} /1000) ≤ 160		
									x	yes	no

Tab No. 5.2 Test suspension

Test suspension N	N	V _{c1}	V _{c2}	Test suspension N ₀ (time = 0)
Φ = 43 x 10 ⁷ = lg 8.63	10 ⁻⁶	>165	>165	lg N ₀ = lg N/100 = lg 6.63
8.17 ≤ lg N ≤ 8.70	10 ⁻⁷	37	49	6.17 ≤ lg N ₀ ≤ 6.70
				x
				yes
				no

Tab No. 5.3 Testing the efficacy of chemical disinfectant **GLOBACID SF 0.25%** on *Candida albicans* ATCC 10231

Test concentration (%) / contact time (min) / conditions	Dilution after test procedure	V _{c1}	V _{c2}	lg N _a = lg (Φ _a x 10)	lg R (lg N ₀ = lg 6.63)
100*/5/clean	10 ⁰	<14	<14	< 2.15	≥ 4.48
100*/15/clean	10 ⁰	<14	<14	< 2.15	≥ 4.48
100*/30/clean	10 ⁰	<14	<14	< 2.15	≥ 4.48

6. Evaluation of yeasticidal activity of the product **GLOBACID SF 0.25%**

Tab No. 6.1 The efficacy of chemical disinfectant **GLOBACID SF 0.25%** on test strains – yeasticidal activity

Strain	Fungicidal activity of the product (EN 13624:2013)					
	Test temperature [°C]	Contact time [min]	Product test concentrations [%]	Interfering substances - conditions	lg R EN 13624:2013	lg R
<i>Candida albicans</i> ATCC 10231	20	5	100*	clean	≥ 4	> 4
<i>Candida albicans</i> ATCC 10231	20	15	100*	clean	≥ 4	> 4
<i>Candida albicans</i> ATCC 10231	20	30	100*	clean	≥ 4	> 4

Note: V_c = value is the number of cfu per ml, Φ = average V_{c1} a V_{c2} (1. + 2. duplicate V_c values), N = the number of cfu/ml of the test suspension, N₀ = the number of cfu/ml of the test suspension at the beginning of the contact time (time „0“), N_a = the number of survivors per ml in the test mixture at the end of the contact time and before the membrane filtration, N_v = the number of cfu/ml of the test suspension for validation, N_{v0} (A,C), N_{vB} (B) = the number of cfu/ml of the test suspensions for validation in the test mixture A, B, C at the beginning of the contact time „0“, A,B,C = the number of survivors per ml in control tests (A – experimental conditions control, B – membrane filtration validation, C – method validation), R = N₀ / N_a nebo lg R = lg N₀ – lg N_a the reduction in viability

* Product can only be tested at a concentration of 97% (RTU) or less, as some dilution is always produced by adding the test organisms and interfering substance.

Prepared by: Ing. Eva Kremlová, Lab Technician

Description: ~~Testing the efficacy of chemical disinfectants and antiseptics~~

Sample ID: D89/2017

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Sample name: **GLOBACID SF 0.25%**

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Client: Goodpoint Chemicals Ltd, Urda tee 3, Jälgimäe, Saku vald, Harjumaa, Estonia 76404

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Sampling date: 5.5.2017

Sample delivered: 11.5.2017

Testing date: 20.7. – 13.9.2017

Delivered amount: 1 l

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Experimental conditions:

Testing of disinfecting efficiency of chemical disinfecting and antiseptic agents on carriers SOP-M-22-12 (EN 14561:2006)

Period of analysis:

6.9. – 7.9.2017

Test temperature:

20 °C ± 1 °C

Test method:

dilution neutralization method

Neutralization medium:

Dey-Engley Neutralizing Broth M 1062

Appearance of the product:

colourless liquid

Test concentration:

100% (concentrated)

Contact time:

5, 15 and 30 min

Interfering substances:

0.3 g/l BSA (clean conditions)

Test organisms:

Pseudomonas aeruginosa

ATCC 15442

Staphylococcus aureus

ATCC 6538

Enterococcus hirae

ATCC 10541

Incubation conditions:

37 °C ± 1 °C, 24 hours

Test procedure:

1. Preparation of the test suspension
2. Preparation of the product test solutions
3. Quantitative carrier test
4. Incubation and calculation
5. Expression and interpretation of the results

Note:

Bactericidal activity – the capability of a product to produce a reduction in the number of viable bacterial cells of relevant organisms on carriers under defined conditions by at least 5 orders (10^5). The drying time: 30-35 min

$R = N_w / N_a$ nebo $\lg R = \lg N_w - \lg N_a$ = the reduction in viability

The standard:

EN 14561:2006 Chemical disinfectants and antiseptics – Quantitative carrier test for the evaluation of bactericidal activity for instruments used in the medical area - Test method and requirements (phase 2, step 2) May 2006

Description: *Testing the efficacy of chemical disinfectants and antiseptics*

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Sample ID: D89/2017

Rep No: 130

Sample name: **GLOBACID SF 0.25%**

Sampled: by client

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7. Testing the efficacy of chemical disinfectant **GLOBACID SF 0.25%** on *Pseudomonas aeruginosa* ATCC 15442 on carriers

Tab No. 7.1 Verification of methodology, clean conditions

Validation of suspension (N_{v0})		Validation of selected experimental conditions (A)		Neutralizer toxicity control (B)		Method validation (C) Product conc.: 100%	
V_{c1}	123	V_{c1}	125	V_{c1}	108	V_{c1}	118
V_{c2}	139	V_{c2}	132	V_{c2}	133	V_{c2}	115
$30 \leq \Phi_{N_{v0}} \leq 160$		$\Phi_A \geq 0.5 \Phi_{N_{v0}}$		$\Phi_B \geq 0.5 \Phi_{N_{v0}}$		$\Phi_C \geq 0.5 \Phi_{N_{v0}}$	
x	yes	x	yes	x	yes	x	yes
	no		no		no		no

Tab No. 7.2 Test suspension

Test suspension (N)	N	V_{c1}	V_{c1}
	10^{-7}	208	236
	10^{-8}	21	24
$\Phi = 222 \times 10^7 = \lg 9.35$ $9.17 \leq \lg N \leq 9.70$			
	x	yes	no

Tab No. 7.2.1 The control test suspension, clean conditions

Test suspension (N_w)	N_w	V_{c1}	V_{c2}
	10^{-4}	138	162
$\Phi \times 10 = 1500 \times 10^4 = \lg 7.18$ $\lg N_w = \lg 7.18$ $7.15 \leq \lg N_w \leq (\lg N - 1.3) 8.05$			
	x	yes	no

Tab No. 7.3 Testing the efficacy of chemical disinfectant **GLOBACID SF 0.25%** on *Pseudomonas aeruginosa* ATCC 15442 on carriers

Test concentration (%) / contact time (min) / conditions	Dilution after test procedure	V_{c1}	V_{c2}	$\lg N_a = \lg (\Phi_a \times 10)$	$\lg R$ ($\lg N_w = \lg 7.18$)
100/5/clean	10^0	<14	<14	< 2.15	≥ 5.03
100/15/clean	10^0	<14	<14	< 2.15	≥ 5.03
100/30/clean	10^0	<14	<14	< 2.15	≥ 5.03

Note: V_c = value is the number of cfu per ml, Φ = average V_{c1} a V_{c2} (1. + 2. duplicate V_c values), N = the number of cfu/ml of the bacterial test suspension, N_w = the number of cfu/ml of the control bacterial test suspension, N_a = the number of survivors per ml in the test mixture at the end of the contact time, N_{v0} = the number of cfu/ml of the bacterial test suspension in the mixture A,B,C at the beginning of the contact time (time „0“), A,B,C = the number of survivors per ml in control tests (A – experimental conditions validation, B – neutralizer toxicity validation, C – method validation), $R = N_w / N_a$ nebo $\lg R = \lg N_w - \lg N_a$ = the reduction in viability

Description: Testing the efficacy of chemical disinfectants and antiseptics

Sample ID: D89/2017

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Sampled: by client

Sampling point: Goodpoint Chemicals Ltd, Urda tee 3, Jälgimäe, Saku vald, Harjumaa, Estonia 76404

Client: Goodpoint Chemicals Ltd, Urda tee 3, Jälgimäe, Saku vald, Harjumaa, Estonia 76404

Batch No: 20042017

Sampling date: 5.5.2017

Sample delivered: 11.5.2017

Testing date: 20.7. – 13.9.2017

Delivered amount: 1 l

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8. Testing the efficacy of chemical disinfectant **GLOBACID SF 0.25%** on *Staphylococcus aureus* ATCC 6538 on carriers

Tab No. 8.1 Verification of methodology, clean conditions

Validation of suspension (N_{v0})			Validation of selected experimental conditions (A)			Neutralizer toxicity control (B)			Method validation (C) Product conc.: 100%		
V_{c1}	113	$\Phi_{N_{v0}} = 109$	V_{c1}	98	$\Phi_A = 102.5$	V_{c1}	94	$\Phi_B = 101.5$	V_{c1}	119	$\Phi_C = 108$
V_{c2}	105		V_{c2}	107		V_{c2}	109		V_{c2}	97	
$30 \leq \Phi_{N_{v0}} \leq 160$			$\Phi_A \geq 0.5 \Phi_{N_{v0}}$			$\Phi_B \geq 0.5 \Phi_{N_{v0}}$			$\Phi_C \geq 0.5 \Phi_{N_{v0}}$		
x	yes	no	x	yes	no	x	yes	no	x	yes	no

Tab No. 8.2 Test suspension

Test suspension (N)	N	V_{c1}	V_{c2}	$\Phi = 161 \times 10^7 = \lg 9.21$ $9.17 \leq \lg N \leq 9.70$		
	10^{-7}	145	177			
	10^{-8}	14	18			
				x	yes	no

Tab No. 8.2.1 The control test suspension, clean conditions

Test suspension (N_w)	N_w	V_{c1}	V_{c2}	$\Phi \times 10 = 710 \times 10^5 = \lg 7.85$ $\lg N_w = \lg 7.85$ $7.15 \leq \lg N_w \leq (\lg N - 1.3) 7.91$		
	10^{-5}	64	78			
				x	yes	no

Tab No. 8.3 Testing the efficacy of chemical disinfectant **GLOBACID SF 0.25%** on *Staphylococcus aureus* ATCC 6538 on carriers

Test concentration (%) / contact time (min) / conditions	Dilution after test procedure	V_{c1}	V_{c2}	$\lg N_a = \lg (\Phi_a \times 10)$	$\lg R$ ($\lg N_w = \lg 7.85$)
100/5/clean	10^{-1}	70	96	3.92	3.93
100/15/clean	10^0	<14	<14	<2.15	≥ 5.70
100/30/clean	10^0	<14	<14	<2.15	≥ 5.70

Note: V_c = value is the number of cfu per ml, Φ = average V_{c1} a V_{c2} (1. + 2. duplicate V_c values), N = the number of cfu/ml of the bacterial test suspension, N_w = the number of cfu/ml of the control bacterial test suspension, N_a = the number of survivors per ml in the test mixture at the end of the contact time, N_{v0} = the number of cfu/ml of the bacterial test suspension in the mixture A,B,C at the beginning of the contact time (time „0“), A,B,C = the number of survivors per ml in control tests (A – experimental conditions validation, B – neutralizer toxicity validation, C – method validation), $R = N_w / N_a$ nebo $\lg R = \lg N_w - \lg N_a$ = the reduction in viability

Description: Testing the efficacy of chemical disinfectants and antiseptics

Sample ID: D89/2017

Rep No: 130

Sample name: **GLOBACID SF 0.25%**

Sampled: by client

Sampling point: Goodpoint Chemicals Ltd, Urda tee 3, Jälgimäe, Saku vald, Harjumaa, Estonia 76404

Client: Goodpoint Chemicals Ltd, Urda tee 3, Jälgimäe, Saku vald, Harjumaa, Estonia 76404

Batch No: 20042017

Sampling date: 5.5.2017

Sample delivered: 11.5.2017

Testing date: 20.7. – 13.9.2017

Delivered amount: 1 l

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9. Testing the efficacy of chemical disinfectant **GLOBACID SF 0.25%** on *Enterococcus hirae* ATCC 10541 on carriers

Tab No. 9.1 Verification of methodology, clean conditions

Validation of suspension (N_{v0})		Validation of selected experimental conditions (A)		Neutralizer toxicity control (B)		Method validation (C) Product conc.: 100%					
V_{c1}	113	$\Phi_{N_{v0}} = 106$	V_{c1}	100	$\Phi_A = 104$	V_{c1}	98	$\Phi_B = 102.5$	V_{c1}	114	$\Phi_C = 103.5$
V_{c2}	99		V_{c2}	108		V_{c2}	107		V_{c2}	93	
$30 \leq \Phi_{N_{v0}} \leq 160$		$\Phi_A \geq 0.5 \Phi_{N_{v0}}$		$\Phi_B \geq 0.5 \Phi_{N_{v0}}$		$\Phi_C \geq 0.5 \Phi_{N_{v0}}$					
x	yes	no	x	yes	no	x	yes	no	x	yes	no

Tab No. 9.2 Test suspension

Test suspension (N)	N	V_{c1}	V_{c1}
	10^{-7}	148	157
	10^{-8}	15	16
$\Phi = 153 \times 10^7 = \lg 9.18$ $9.17 \leq \lg N \leq 9.70$			
x yes no			

Tab No. 9.2.1 The control test suspension, clean conditions

Test suspension (N_w)	N_w	V_{c1}	V_{c2}
	10^{-4}	167	182
$\Phi \times 10 = 1745 \times 10^4 = \lg 7.24$ $\lg N_w = \lg 7.24$ $7.15 \leq \lg N_w \leq (\lg N - 1.3) 7.88$			
x yes no			

Tab No. 9.3 Testing the efficacy of chemical disinfectant **GLOBACID SF 0.25%** on *Enterococcus hirae* ATCC 10541 on carriers

Test concentration (%) / contact time (min) / conditions	Dilution after test procedure	V_{c1}	V_{c2}	$\lg N_a = \lg (\Phi_a \times 10)$	$\lg R$ ($\lg N_w = \lg 7.24$)
100/5/clean	10^0	<14	<14	< 2.15	≥ 5.09
100/15/clean	10^0	<14	<14	< 2.15	≥ 5.09
100/30/clean	10^0	<14	<14	< 2.15	≥ 5.09

10. Evaluation of bactericidal activity of the product **GLOBACID SF 0.25%** on carriers

Tab No. 10.1 The efficacy of chemical disinfectant **GLOBACID SF 0.25%** on test strains – bactericidal activity on carriers

Bactericidal activity of the product on carriers (EN 14561:2006)						
Strain	Test temperature [°C]	Contact time [min]	Product test concentrations [%]	Interfering substances - conditions	$\lg R$ EN 14561:2006	$\lg R$
<i>Pseudomonas aeruginosa</i> ATCC 15442	20	5	100	clean	≥ 5	> 5
<i>Staphylococcus aureus</i> ATCC 6538	20	5	100	clean	≥ 5	< 5
<i>Enterococcus hirae</i> ATCC 10541	20	5	100	clean	≥ 5	> 5
<i>Pseudomonas aeruginosa</i> ATCC 15442	20	15	100	clean	≥ 5	> 5
<i>Staphylococcus aureus</i> ATCC 6538	20	15	100	clean	≥ 5	> 5
<i>Enterococcus hirae</i> ATCC 10541	20	15	100	clean	≥ 5	> 5
<i>Pseudomonas aeruginosa</i> ATCC 15442	20	30	100	clean	≥ 5	> 5
<i>Staphylococcus aureus</i> ATCC 6538	20	30	100	clean	≥ 5	> 5
<i>Enterococcus hirae</i> ATCC 10541	20	30	100	clean	≥ 5	> 5

Note: V_c = value is the number of cfu per ml, Φ = average V_{c1} a V_{c2} (1. + 2. duplicate V_c values), N = the number of cfu/ml of the bacterial test suspension, N_w = the number of cfu/ml of the control bacterial test suspension, N_a = the number of survivors per ml in the test mixture at the end of the contact time, N_{v0} = the number of cfu/ml of the bacterial test suspension in the mixture A,B,C at the beginning of the contact time (time „0“), A,B,C = the number of survivors per ml in control tests (A – experimental conditions validation, B – neutralizer toxicity validation, C – method validation), $R = N_w / N_a$ nebo $\lg R = \lg N_w - \lg N_a$ = the reduction in viability

Prepared by: Mgr. Mirka Horáková, Ph.D., Lab Technician

Description: *Testing the efficacy of chemical disinfectants and antiseptics*

Sample ID: D89/2017

Rep No: 130

Sample name: **GLOBACID SF 0.25%**

Sampled: by client

Sampling point: Goodpoint Chemicals Ltd, Urda tee 3, Jälgimäe, Saku vald, Harjumaa, Estonia 76404

Client: Goodpoint Chemicals Ltd, Urda tee 3, Jälgimäe, Saku vald, Harjumaa, Estonia 76404

Batch No: 20042017

Sampling date: 5.5.2017

Sample delivered: 11.5.2017

Testing date: 20.7. – 13.9.2017

Delivered amount: 1 l

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Experimental conditions:

Testing of disinfecting efficiency of chemical disinfecting and antiseptic agents on carriers SOP-M-22-12 (EN 14562:2006)

Period of analysis:

4.9. – 7.9.2017

Test temperature:

20 °C ± 1 °C

Test method:

dilution neutralization method

Neutralization medium:

Dey-Engley Neutralizing Broth M 1062

Appearance of the product:

colourless liquid

Test concentration:

100% (concentrated)

Contact time:

5, 15 and 30 min

Interfering substances:

0.3 g/l BSA (clean conditions)

Test organisms:

Candida albicans ATCC 10231

Incubation conditions:

30 °C ± 1 °C, 48 hours and additional period of 24 or 48 hours

Test procedure:

1. Preparation of the test suspension
2. Preparation of the product test solutions
3. Quantitative carrier test
4. Incubation and calculation
5. Expression and interpretation of the results

Note:

Fungicidal activity – the capability of a product to produce a reduction in the number of relevant organisms on carriers under defined conditions by at least 4 orders (10^4).

Yeasticidal activity – the capability of a product to produce a reduction in the number of viable fungi belonging to reference strain *Candida albicans* on carriers under defined conditions by at least 4 orders (10^4).

The drying time: 30-35 min

$R = N_w / N_a$ nebo $\lg R = \lg N_w - \lg N_a$ = the reduction in viability

The standard:

EN 14562:2006 Chemical disinfectants and antiseptics – Quantitative carrier test for the evaluation of fungicidal or yeasticidal activity for instruments used in the medical area - Test method and requirements (phase 2, step 2) May 2006

Description: Testing the efficacy of chemical disinfectants and antiseptics

Sample ID: D89/2017

Rep No: 130

Sample name: **GLOBACID SF 0.25%**

Sampled: by client

Sampling point: Goodpoint Chemicals Ltd, Urda tee 3, Jälgimäe, Saku vald, Harjumaa, Estonia 76404

Client: Goodpoint Chemicals Ltd, Urda tee 3, Jälgimäe, Saku vald, Harjumaa, Estonia 76404

Batch No: 20042017

Sampling date: 5.5.2017

Sample delivered: 11.5.2017

Testing date: 20.7. – 13.9.2017

Delivered amount: 1 l

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11. Testing the efficacy of chemical disinfectant **GLOBACID SF 0.25%** on *Candida albicans* ATCC 10231 on carriers

Tab No. 11.1 Verification of methodology, clean conditions

Validation of suspension (N _{v0})			Validation of selected experimental conditions (A)			Neutralizer toxicity control (B)			Method validation (C) Product conc. 100%		
V _{e1}	43	Φ _{Nv0} = 36.5	V _{e1}	41	Φ _A = 36	V _{e1}	33	Φ _B = 35.5	V _{e1}	32	Φ _C = 33.5
V _{e2}	30		V _{e2}	31		V _{e2}	38		V _{e2}	35	
30 ≤ Φ _{Nv0} ≤ 160			Φ _A ≥ 0.5 Φ _{Nv0}			Φ _B ≥ 0.5 Φ _{Nv0}			Φ _C ≥ 0.5 Φ _{Nv0}		
x	yes	no	x	yes	no	x	yes	no	x	yes	no

Tab No. 11.2 Test suspension

Test suspension (N)	N	V _{e1}	V _{e1}	Φ = 47.5 x 10 ⁷ = lg 8.68 8.17 ≤ lg N ≤ 8.70		
	10 ⁻⁶	> 330	> 330			
	10 ⁻⁷	45	50			
				x	yes	no

Tab No. 11.2.1 The control test suspension, clean conditions

Test suspension (N _w)	N _w	V _{e1}	V _{e2}	Φ x 10 = 1530 x 10 ³ = lg 6.18 lg N _w = lg 6.18 6.15 ≤ lg N _w ≤ (lg N - 1.3) 7.38		
	10 ⁻³	145	161			
					x	yes

Tab No. 11.3 Testing the efficacy of chemical disinfectant **GLOBACID SF 0.25%** on *Candida albicans* ATCC 10231 on carriers

Test concentration (%) / contact time (min) / conditions	Dilution after test procedure	V _{e1}	V _{e2}	lg N _a = lg (Φ _a x 10)	lg R (lg N _w = lg 6.18)
100/5/clean	10 ⁰	<14	<14	< 2.15	≥ 4.03
100/15/clean	10 ⁰	<14	<14	< 2.15	≥ 4.03
100/30/clean	10 ⁰	<14	<14	< 2.15	≥ 4.03

12. Evaluation of yeasticidal activity of the product **GLOBACID SF 0.25%**

Tab No. 12.1 The efficacy of chemical disinfectant **GLOBACID SF 0.25%** on test strains – yeasticidal activity

Yeasticidal activity of the product (EN 14562:2006)						
Strain	Test temperature [°C]	Contact time [min]	Product test concentrations [%]	Interfering substances - conditions	lg R EN 14562:2006	lg R
<i>Candida albicans</i> ATCC 10231	20	5	100	clean	≥ 4	> 4
<i>Candida albicans</i> ATCC 10231	20	15	100	clean	≥ 4	> 4
<i>Candida albicans</i> ATCC 10231	20	30	100	clean	≥ 4	> 4

Note: V_e = value is the number of cfu per ml, Φ = average V_{e1} a V_{e2} (1. + 2. duplicate V_e values), N = the number of cfu/ml of the fungal test suspension, N_w = the number of cfu/ml of the control fungal test suspension, N_a = the number of survivors per ml in the test mixture at the end of the contact time, N_{v0} = the number of cfu/ml of the fungal test suspension in the mixture A,B,C at the beginning of the contact time (time „0“), A,B,C = the number of survivors per ml in control tests (A – experimental conditions validation, B – neutralizer toxicity validation, C – method validation), R = N_w / N_a nebo lg R = lg N_w – lg N_a = the reduction in viability

Prepared by: Mgr. Mirka Horáková, Ph.D., Lab Technician

Description: Testing the efficacy of chemical disinfectants and antiseptics

Sample ID: D89/2017

Rep No: 130

Sample name: GLOBACID SF 0.25%

Sampled: by client

Sampling point: Goodpoint Chemicals Ltd, Urda tee 3, Jälgimäe, Saku vald, Harjumaa, Estonia 76404

Client: Goodpoint Chemicals Ltd, Urda tee 3, Jälgimäe, Saku vald, Harjumaa, Estonia 76404

Batch No: 20042017

Sampling date: 5.5.2017

Sample delivered: 11.5.2017

Testing date: 20.7. – 13.9.2017

Delivered amount: 1 l

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Experimental conditions:

Testing of disinfecting efficiency of chemical disinfecting and antiseptic agents by suspension method

SOP-M-19-00 (EN 14348:2005)

Period of analysis:

20.7. – 10.8.2017

Test temperature:

20 °C ± 1 °C

Test method:

membrane filtration method

Filtration diluent:

rinsing liquid

Appearance of the product:

colourless liquid

Test concentration:

100% (concentrated)*

Contact time:

5, 15 and 30 min

Interfering substances:

0.3 g/l BSA (clean conditions)

Test organisms:

Mycobacterium terrae ATCC 15755

Incubation conditions:

37 °C ± 1 °C, 21 days

Test procedure:

1. Preparation of test suspension
2. Preparation of product test solutions
3. Quantitative suspension test
4. Incubation and calculation
5. Expression and interpretation of results

Note:

Mycobactericidal activity – the capability of a product to produce a reduction in the number of viable cells of *Mycobacterium terrae* and *Mycobacterium avium* under defined conditions by at least 4 orders (10^4).

Tuberculocidal activity - the capability of a product to produce a reduction in the number of viable cells of *Mycobacterium terrae* under defined conditions by at least 4 orders (10^4).

$R = N_0 / N_a$ nebo $\lg R = \lg N_0 - \lg N_a$ the reduction in viability

* Product can only be tested at a concentration of 97% (RTU) or less, as some dilution is always produced by adding the test organisms and interfering substance.

The standard:

EN 14348:2005 Chemical disinfectants and antiseptics – Quantitative suspension test for the evaluation of mycobactericidal activity of chemical disinfectants in the medical area including instrument disinfectants - Test method and requirements (phase 2, step 1) January 2005

Description: Testing the efficacy of chemical disinfectants and antiseptics

Sample ID: D89/2017

Sampling date: 5.5.2017

Rep No: 130

Sample delivered: 11.5.2017

Sample name: **GLOBACID SF 0.25%**

Testing date: 20.7. – 13.9.2017

Sampled: by client

Delivered amount: 1 l

Sampling point: Goodpoint Chemicals Ltd, Urda tee 3, Jälgimäe, Saku vald, Harjumaa, Estonia 76404

Client: Goodpoint Chemicals Ltd, Urda tee 3, Jälgimäe, Saku vald, Harjumaa, Estonia 76404

Batch No: 20042017

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13. Testing the efficacy of chemical disinfectant **GLOBACID SF 0.25%** on *Mycobacterium terrae* ATCC 15755

Tab No. 13.1 Verification of methodology, clean conditions

Validation of suspension (N_{v0})			Validation of selected experimental conditions (A)			Membrane filtration control (B)			Method validation (C) Product conc.: 100%*		
V_{c1}	127	$\Phi_{N_{v0}} = 130$	V_{c1}	118	$\Phi_A = 112$	V_{c1}	110	$\Phi_B = 117$	V_{c1}	105	$\Phi_C = 112$
V_{c2}	133		V_{c2}	106		V_{c2}	124		V_{c2}	119	
$30 \leq \Phi_{N_{v0}} \leq 160$			$\Phi_A \geq 0.5 \Phi_{N_{v0}}$			$\Phi_B \geq 0.5 \Phi_{N_{v0}}$			$\Phi_C \geq 0.5 \Phi_{N_{v0}}$		
x	yes	no	x	yes	no	x	yes	no	x	yes	no

Tab No. 13.2 Test suspensions

Test suspension N	N	V_{c1}	V_{c2}	Test suspension N_0 (time = 0)
$\Phi = 152 \times 10^7 = \lg 9.18$	10^{-7}	141	162	$\lg N_0 = \lg N/100 = \lg 7.18$
$9.17 \leq \lg N \leq 9.70$	10^{-8}	15	17	$7.17 \leq \lg N_0 \leq 7.70$
				x yes no

Tab No. 13.3 Testing the efficacy of chemical disinfectant **GLOBACID SF 0.25%** on *Mycobacterium terrae* ATCC 15755

Test concentration (%) / contact time (min) / conditions	Dilution after test procedure	V_{c1}	V_{c2}	$\lg N_a = \lg (\Phi_a \times 10)$	$\lg R$ ($\lg N_0 = \lg 7.18$)
100*/5/clean	10^{-2}	148	162	5.19	1.99
		14	17		
100*/15/clean	10^{-1}	<14	<14	< 3.15	≥ 4.03
100*/30/clean	10^{-1}	<14	<14	< 3.15	≥ 4.03

14. Evaluation of mycobactericidal and tuberculocidal activity of the product **GLOBACID SF 0.25%**

Tab No. 14.1 The efficacy of chemical disinfectant **GLOBACID SF 0.25%** on test strain – mycobactericidal and tuberculocidal activity

Mycobactericidal and tuberculocidal activity of the product (EN 14348:2005)						
Strain	Test temperature [°C]	Contact time [min]	Product test concentrations [%]	Interfering substances - conditions	$\lg R$ EN 14348:2005	$\lg R$
<i>Mycobacterium terrae</i> ATCC 15755	20	5	100*	clean	≥ 4	< 4
<i>Mycobacterium terrae</i> ATCC 15755	20	15	100*	clean	≥ 4	> 4
<i>Mycobacterium terrae</i> ATCC 15755	20	30	100*	clean	≥ 4	> 4

Note: V_c = value is the number of cfu per ml, Φ = average V_{c1} a V_{c2} (1. + 2. duplicate V_c values), N = the number of cfu/ml of the test suspension, N_0 = the number of cfu/ml of the test suspension at the beginning of the contact time (time „0“), N_a = the number of survivors per ml in the test mixture at the end of the contact time and before the membrane filtration, N_v = the number of cfu/ml of the test suspension for validation, N_{v0} = the number of cfu/ml of the test suspension in the mixture A,B,C at the beginning of the contact time (time „0“), A,B,C = the number of survivors per ml in control tests (A – experimental conditions control, B – membrane filtration validation, C – method validation), $R = N_0 / N_a$ nebo $\lg R = \lg N_0 - \lg N_a$ the reduction in viability

* Product can only be tested at a concentration of 97% (RTU) or less, as some dilution is always produced by adding the test organisms and interfering substance.

Prepared by: Ing. Eva Kremlová, Lab Technician

Description: Testing the efficacy of chemical disinfectants and antiseptics

Sample ID: D89/2017

Rep No: 130

Sample name: **GLOBACID SF 0.25%**

Sampled: by client

Sampling point: Goodpoint Chemicals Ltd, Urda tee 3, Jälgimäe, Saku vald, Harjumaa, Estonia 76404

Client: Goodpoint Chemicals Ltd, Urda tee 3, Jälgimäe, Saku vald, Harjumaa, Estonia 76404

Batch No: 20042017

Sampling date: 5.5.2017

Sample delivered: 11.5.2017

Testing date: 20.7. – 13.9.2017

Delivered amount: 1 l

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Interpretation:

Results of tests are in Tabs.

According to EN 13727:2012+A2:2015 the tested concentrated* product **GLOBACID SF 0.25%**, batch No. 20042017, in contact times 5, 15 and 30 min under clean conditions at temperature $20\text{ }^{\circ}\text{C} \pm 1\text{ }^{\circ}\text{C}$ by the membrane filtration method **decreased** the number of alive microbes *Pseudomonas aeruginosa* ATCC 15442, *Staphylococcus aureus* ATCC 6538, *Enterococcus hirae* ATCC 10541 by at least 5 (lg) orders.

According to EN 13624:2013 the tested concentrated* product **GLOBACID SF 0.25%**, batch No. 20042017, in contact times 5, 15 and 30 min under clean conditions at temperature $20\text{ }^{\circ}\text{C} \pm 1\text{ }^{\circ}\text{C}$ by the membrane filtration method **decreased** the number of alive microbes *Candida albicans* ATCC 10231 by at least 4 (lg) orders.

According to EN 14561:2006 the tested concentrated product **GLOBACID SF 0.25%**, batch No. 20042017, in contact times 15 and 30 min under clean conditions at temperature $20\text{ }^{\circ}\text{C} \pm 1\text{ }^{\circ}\text{C}$ by the dilution neutralization method **decreased** on carriers the number of alive microbes *Pseudomonas aeruginosa* ATCC 15442, *Staphylococcus aureus* ATCC 6538, *Enterococcus hirae* ATCC 10541 by at least 5 (lg) orders.

According to EN 14562:2006 the tested concentrated product **GLOBACID SF 0.25%**, batch No. 20042017, in contact times 5, 15 and 30 min under clean conditions at temperature $20\text{ }^{\circ}\text{C} \pm 1\text{ }^{\circ}\text{C}$ by the dilution neutralization method **decreased** on carriers the number of alive microbes *Candida albicans* ATCC 10231 by at least 4 (lg) orders.

The tested concentrated* product **GLOBACID SF 0.25%**, batch No. 20042017, in contact times 15 and 30 min under clean conditions at temperature $20\text{ }^{\circ}\text{C} \pm 1\text{ }^{\circ}\text{C}$ by the membrane filtration method **decreased** the number of alive microbes *Mycobacterium terrae* ATCC 15755 by at least 4 (lg) orders (EN 14348:2005).

* Product can only be tested at a concentration of 97% (RTU) or less, as some dilution is always produced by adding the test organisms and interfering substance.

Conclusion:

The product **GLOBACID SF 0.25%** is capable of reducing the number of viable bacterial, mycobacterial and vegetative yeast cells of the relevant organisms in the suspension and on carriers under defined conditions to the declared values, and consequently, may be called bactericidal, tuberculocidal and yeasticidal.

8.12.2017, Hodonín

Ing. Barbora Stoklasková, Leader of Study

