Swift Silliker (Pty) Ltd t/a Mérieux NutriSciences
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CERTIFICATE OF ANALYSIS

COA No.: CT 57187/21
COA Date: 21 September 2021

Customer: IQ Green Solutions (Pty) Ltd.
Order No.: N/A
Client Reference: N/A

Analysed by: Swift Silliker Pty. Ltd. t/a Merieux NutriSciences
7 Warrington Road,
Claremont,
Western Cape, South Africa.

Received from: IQ Green Solutions (Pty) Ltd.

15 Jan van Riebeeck Drive,

Paarl,

TO IQ GREEN SOLUTIONS
(PTY) LTD

15 JAN van RIEBEECK DRIVE
PAARL
7620

MOHAMED MOOSA
mohamed@iq-greensolutions.com

****Information provided by customer**

DATE RECEIVED: 20/08/2021

TEST TYPE: FUNGICIDAL ACTIVITY

METHOD NO.: SWM.MIC.017

a) Sample Identification

□ Product Name**:	IQ DISINFECTANT SOLUTION
□ Batch Number**:	21R0034
□ Manufacturer/ Supplier**:	IQ Green Solutions (Pty) Ltd.
□ Manufacturing Date**:	16 July 2021
□ Exp. Date**:	N/A
□ Laboratory Ref No.:	CT 57187/21
□ Storage Conditions:	Ambient
□ Active Substances and their concentrations**:	Ano-Lyte® (HOCl +/- 0.05%)
□ Appearance of the Product:	Liquid, clear, colourless
□ Product diluent recommended by manufacturer for use:	Standard water

b) Methods Used:

□ SANS 51650:2011 – Evaluation of Fungicidal Activity of Chemical disinfectants & Antiseptics (Neutralization by dilution Method)

Directors: V. Stewart (Managing), A. Lamb (Fr/It), P. Sans (France), S. Schneider (France), J-F. Billet (France) / Reg. No: 2000/025067/07

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COA Date:	21/09/2021
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c) Experimental Conditions - SANS 51650 Edition 2

□ Test Strains:	*Aspergillus brasiliensis* ATCC16404 *Candida albicans* ATCC10231
□ Product Test Concentrations**:	0.1%, 50% & 80% (**Please note**: a NEAT concentration is equal to 80% of sample. Products can only be tested at a concentration of 80 % or less, as some dilution is always produced by adding the test organisms and interfering substance.)
□ Appearance of Diluted Product:	0.1% - Liquid, clear, colourless 50% - Liquid, clear, colourless 80% - Liquid, clear, colourless
□ Interfering Substance:	0.3g/l Bovine Albumin, Clean conditions
□ Contact Time:	5 minutes
□ Test Temperature:	20°C
□ Rinsing Solution:	Sodium thiosulphate (20g/l) + Tween 80 (30g/l) + Lecithin (3g/l)
□ Incubation Conditions:	Aerobic incubation: 30°C ± 1°C
□ Incubation Media:	Malt Extract Agar
□ Testing Period:	31/08-17/09/2021

d) Test Results: see tables 1-2.

e) Summary of results

Fungicidal Efficacy

Organism	Experimental conditions	Product Conc.	Contact time	CFU/ML: Start	CFU/ML: End	Log Reduction (Log R= ≥ 5)	Evaluation
Aspergillus brasiliensis ATCC16404	Obligatory, Clean conditions	0.1%	15 minutes	6.64	>3.22	<3.42	FAIL
		50%		6.64	<2.15	>4.49	PASS
		80%		6.64	<2.15	>4.49	PASS
Candida albicans ATCC10231	Obligatory, Clean conditions	0.1%	15 minutes	6.40	>3.52	<2.88	FAIL
		50%		6.40	<2.15	>4.25	PASS
		80%		6.40	<2.15	>4.25	PASS

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f) Conclusions

According to SANS 51650, the test product, **IQ DISINFECTANT SOLUTION**, when used at concentrations 50% & 80% has fungicidal activity (*logR* ≥ 4) under the following test conditions:

- **Contact time:** 15 minutes
- **Temperature:** 20°C
- **Interfering substance:** 0.3g/ L Bovine albumin – Clean conditions
- **Test strains:** *Aspergillus brasiliensis* ATCC16404, *Candida albicans* ATCC10231

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Ref. Report section (d)

ORGANISM: *Aspergillus brasiliensis* ATCC16404

Obligatory Experimental Conditions

Table 1a: Validation test

Validation suspension (Nv_0)			**Experimental Conditions Control (A)**			**Neutralizer Control (B)**			**Method Validation (C) (80% Product Concentration)**		
		Ave			**Ave**			**Ave**			**Ave**
*Vc*1	38	41	*Vc*1	30	34	*Vc*1	24	26	*Vc*1	38	33
*Vc*2	44		*Vc*2	38		*Vc*2	28		*Vc*2	28	
Acceptance limits		Nv_0 = 30 - 160	**Acceptance limits**		≥ 0.5x Nv_0	**Acceptance limits**		≥ 0.5x Nv_0	**Acceptance limits**		≥ 0.5x Nv_0
Complies		Yes	**Complies**		Yes	**Complies**		Yes	**Complies**		Yes
0.5 x Nv_0 = 20.5											

Table 1b: Test suspensions

Dilution (Test suspension)	***Vc*1**	***Vc*2**	**Average *N* (wm)**	**Log *N***	***N₀***	**Log *N₀***
10^{-5}	480	410	$4.4X10^7$	7.64	$4.4X10^6$	6.64
10^{-6}	30	40				
Acceptance limits:	Log *N* is between 7.17 and 7.70		**Complies**	Yes		
Acceptance limits:	Log N_0 is between 6.17 and 6.70		**Complies**	Yes		
Acceptance limits:	Control of weighted mean counts: 12.7		**Complies**	Yes		

Table 1c: Log Reduction values

Product Concentration	***Vc*1**	***Vc*2**	***Na* (Ave Vc1 & Vc2 x 10)**	**Log *Na***	**Log Reduction (N_0: 6.64)**	**Contact time**
0.1%	>165	>165	>1650	<3.22	<3.42	15 minutes
50%	<14	<14	<140	<2.15	>4.49	15 minutes
80%	<14	<14	<140	<2.15	>4.49	15 minutes

Where:

VC = Viable Count
N = Test suspension
N_0 = Test suspension at beginning of contact time (t=0)
Na = Test suspension (survivors) before neutralization
Nv = Validation suspension
Nv_0 = Validation suspension at beginning of contact time
A = number of cfu/mL of the experimental conditions control
B = number of cfu/mL of the neutralization control
C = number of cfu/mL of the method validation

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ORGANISM: *Candida albicans* ATCC10231

Obligatory Experimental Conditions

Table 2a: Validation test

Validation suspension (Nv_0)			**Experimental Conditions Control (A)**			**Neutralizer Control (B)**			**Method Validation (C) (80% Product Concentration)**		
		Ave			**Ave**			**Ave**			**Ave**
*Vc*1	34	36.5	*Vc*1	48	44	*Vc*1	35	40	*Vc*1	28	29
*Vc*2	39		*Vc*2	40		*Vc*2	45		*Vc*2	30	
Acceptance limits		Nv_0 = 30 - 160	**Acceptance limits**		≥ 0.5x Nv_0	**Acceptance limits**		≥ 0.5x Nv_0	**Acceptance limits**		≥ 0.5x Nv_0
Complies		Yes	**Complies**		Yes	**Complies**		Yes	**Complies**		Yes
0.5 x Nv_0 = 18.25											

Table 2b: Test suspensions

Dilution (Test suspension)	***Vc*1**	***Vc*2**	**Average *N* (wm)**	**Log *N***	**N_0**	**Log N_0**
10^{-5}	208	300	$2.5X10^7$	7.40	$2.5X10^6$	6.40
10^{-6}	18	28				
Acceptance limits:	Log *N* is between 7.17 and 7.70		**Complies**		Yes	
Acceptance limits:	Log N_0 is between 6.17 and 6.70		**Complies**		Yes	
Acceptance limits:	Control of weighted mean counts: 11.0		**Complies**		Yes	

Table 2c: Log Reduction values

Product Concentration	***Vc*1**	***Vc*2**	***Na* (Ave Vc1 & Vc2 x 10)**	**Log *Na***	**Log Reduction (N_0: 6.40)**	**Contact time**
0.1%	>330	>330	>3300	>3.52	<2.88	15 minutes
50%	<14	<14	<140	<2.15	>4.25	15 minutes
80%	<14	<14	<140	<2.15	>4.25	15 minutes

Where:

VC = Viable Count
N = Test suspension
N_0 = Test suspension at beginning of contact time (t=0)
Na = Test suspension (survivors) before neutralization
Nv = Validation suspension
Nv_0 = Validation suspension at beginning of contact time
A = number of cfu/mL of the experimental conditions control
B = number of cfu/mL of the neutralization control
C = number of cfu/mL of the method validation

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Test Validity
The test is valid when, for each test organism:

- *N* (Test suspension) is between $1{,}5x10^7$ and $5{,}0x10^7$ ($7{,}17 \leq lg\ N \leq 7{,}70$)
- N_0 *(Test suspension)* is between $1{,}5x10^6$ and $5{,}0x10^6$ ($6{,}17 \leq lg\ N0 \leq 6{,}70$)
- Nv_0 is between 30 and 160 ($3{,}0x10^1$ and $1{,}6x10^2$)
- *Nv* is between $3{,}0x10^2$ and $1{,}6x10^3$
- *A, B, C* are equal to or greater than 0,5x*Nv*0.
- Control of weighted mean counts: quotient is not lower than 5 and not higher than 15.
- At least one of the test concentrations will demonstrate a log reduction of less than 4 log.

Pass Requirements
Fungicidal activity for general purposes
The product shall be deemed to have passed the SANS 51650 standard if it demonstrates in a valid test, at least a 4 log reduction within 15 min at 20 °C with the chosen interfering substance simulating clean or dirty conditions as defined by SANS 51650, when the test organisms are *Aspergillus brasiliensis* and *Candida albicans.*

The fungicidal concentration for general purposes is the concentration active on the limiting strain.

Fungicidal activity for specific purposes

The fungicidal concentration for a specific purpose is the concentration of the tested product for which at least a 4 log reduction is demonstrated in a valid test, under the additional chosen test conditions. The product shall have passed the SANS 51650 standard under the obligatory test conditions. The fungicidal concentration for specific purposes may be lower than the one determined for general purposes.

Special remarks regarding results:

- All controls and validation were within the basic limits.
- At least one concentration of the product demonstrated an lg reduction of less than 5 lg.
- No precipitate during the test procedure (test mixtures were homogeneous).

Notes:

Note 1: *Products can only be tested at a concentration of 80 % or less, as some dilution is always produced by adding the test organisms and interfering substance. A concentration indicated as NEAT therefore must be interpreted as a 80% solution.*

Tanya Michelle Swanson
Digitally signed by Tanya Michelle Swanson
Date: 2021.09.21 15:32:44 +02'00'

Technical Signatory

Directors: V. Stewart (Managing), A. Lamb rechts, P. Sans (France), S. Schneider (France), J-F . Billet (France) / Reg. No 2000/ 025067/07

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