
**FO1 CHLOR (NP1666) Efficacy Against
Staphylococcus aureus, Escherichia coli, Pseudomonas aeruginosa &
Enterococcus hirae using EN1276: 1997**

Introduction

This test was carried out to determine the efficacy of the Chlorine Foamer NP1666, a chlorine based foaming cleaner and sanitiser. The EN 1276 bactericidal suspension test was used and the efficacy was tested against 4 bacterial strains Staphylococcus aureus, Escherichia coli, Pseudomonas aeruginosa and Enterococcus hirae. A soiling agent and hard water was used in the test.

Bactericidal activity in general use conditions**Staphylococcus aureus, Escherichia coli, Pseudomonas aeruginosa, Enterococcus hirae**

a) **ID Test Lab**.....NCH European Technical Centre

b) ID Sample

NameChlorine Foamer

Batch No..... NP 1666 168 78-9

Manufacturer..... NCH

Date of Delivery..... 23/11/06

Storage..... Room Temperature

Active ingredients... Hypochlorite

c) Test Method and its validation

Method..... EN1276:1997 Bactericidal Activity (phase 2 step 1)

Neutraliser 90ml/l Tween 80, 9g/l Lecithin, 3g/l L-Histidine, 15g/l Sodium Thiosulphate in Diluent.

d) Experimental Conditions

Period of analysis..... 06/02/06 to 24/02/06

Product diluent in test.. Sterile hard water 300 mg/kg CaCO₃

Test Concentrations 2,1.5,1.0,0.5,0.1%.

Test Temperature..... 20°C

Contact time..... 5 minutes

Interfering substance...3g/l of bovine albumin

Incubation Temp..... 36°C ± 1°C

Identification of bacterial strains used Escherichia coli NCIMB 8879
Staphylococcus aureus NCIMB 9518
Pseudomonas aeruginosa NCIMB 10421
Enterococcus hirae NCIMB 8191

e) Test Results

See Tables 1 and 2

f) Conclusion

According to EN 1276:1997 the batch, NP 1666 168 78-9, of the product Chlorine Foamer possesses bactericidal activity in 5 minutes at 20°C under dirty conditions(3g/l bovine albumin) for the strains Staphylococcus aureus NCIMB 6518, Escherichia coli NCIMB 8879, Pseudomonas aeruginosa NCIMB 10421 & Enterococcus hirae NCIMB 8191

5 minute Contact Time

Chlorine Foamer produced a 5 log reduction in viable count of
S. aureus (1.5%), E coli (1.0%), E hirae (1.0%) & Ps aeruginosa (0.5%)
and PASSED the EN1276:1997

RESULTS

Pass Rate for EN 1276 is 5 log or 99.999% reduction

Table 1 Verification of the methodology and validation of dilution-neutralisation method for the test concentration of the test product – Chlorine Foamer

Test organism	Viable Count (cfu/ml)				
	Bacterial Test suspension (N)	Bacterial Suspension (Nv)	Experimental Conditions (A)	Neutraliser toxicity Control (B)	Dilution neutralisation control (C)
S. aureus	2.8×10^8	2.7×10^3	2.5×10^2	2.7×10^2	2.7×10^2
E. coli	1.7×10^8	1.7×10^3	1.8×10^2	1.7×10^2	1.6×10^2
Ps aeruginosa	1.8×10^8	1.7×10^8	1.7×10^2	1.8×10^2	1.7×10^2
E hirae	1.6×10^8	1.6×10^3	1.7×10^2	1.8×10^2	1.5×10^2

For the strains tested:

N = number of cfu/ml of the bacterial test suspension

Nv = number of cfu/ml of the bacterial suspension

A = number of cfu/ml of the experimental conditions validation

B = number of cfu/ml of the neutraliser toxicity validation

C = number of cfu/ml of the dilution-neutralisation validation

The inactivation is validated for the test concentration of Chlorine Foamer for the strains tested.

Table 2 Test Results

Vc = Viable Count

Na = Number of cfu/ml in the test mixture

R = reduction in viability

Test Organism	Viable counts (cfu/ml) for the test mixture			
	2.0% Chl Foam 5 min	1.5% Chl Foam 5 min	1.0% Chl Foam 5 min	0.5% Chl Foam 5 min
Staphylococcus aureus NCIMB 9518	Vc 30, 17 Na < 10 ²	Vc 13, 24 Na < 10 ²	Vc >300, >300 Na >3.0 x 10 ³	Vc >300, >300 Na >3.0 x 10 ³
Reduction in viability at test concentration (R) i.e. Log reduction/kill	> 10 ⁵	> 10 ⁵	< 10 ⁵	<10 ⁵
Test Result	Pass	Pass	Fail	Fail

Test Organism	Viable counts (cfu/ml) for the test mixture			
	2.0% Chl Foam 5 min	1.5% Chl Foam 5 min	1.0% Chl Foam 5 min	0.5% Chl Foam 5 min
Escherichia coli NCIMB 8879	Vc 4, 5 Na <1.5 x 10 ²	Vc 2, 1 Na <1.5 x 10 ²	Vc 1, 5 Na <1.5 x 10 ²	Vc >300, >300 Na >3.0 x 10 ³
Reduction in viability at test concentration (R) i.e. Log reduction/kill	> 10 ⁵	> 10 ⁵	> 10 ⁵	<10 ⁵
Test Result	Pass	Pass	Pass	Fail

Test Organism	Viable counts (cfu/ml) for the test mixture			
	2.0% Chl Foam 5 min	1.5% Chl Foam 5 min	1.0% Chl Foam 5 min	0.5% Chl Foam 5 min
Enterococcus hirae NCIMB 8191	Vc 0, 0 Na $<1.5 \times 10^2$	Vc 0, 0 Na $<1.5 \times 10^2$	Vc 0, 0 Na $<1.5 \times 10^2$	Vc >300 , >300 Na $>3.0 \times 10^3$
Reduction in viability at test concentration (R) i.e. Log reduction/ kill	$> 10^5$	$> 10^5$	$> 10^5$	$<10^5$
Test Result	Pass	Pass	Pass	Fail

Different Dilution range!

Test Organism	Viable counts (cfu/ml) for the test mixture			
	2.0% Chl Foam 5 min	1.0% Chl Foam 5 min	0.5% Chl Foam 5 min	0.1% Chl Foam 5 min
Pseudomonas aeruginosa NCIMB 10421	Vc 0, 0 Na $<1.5 \times 10^2$	Vc 0, 0 Na $<1.5 \times 10^2$	Vc 5, 10 Na $<1.5 \times 10^2$	Vc >300 , >300 Na $>3.0 \times 10^3$
Reduction in viability at test concentration (R) i.e. Log reduction/ kill	$> 10^5$	$> 10^5$	$> 10^5$	$<10^5$
Test Result	Pass	Pass	Pass	Fail

CERTIFICATE OF ANALYSIS

EN 1276 : 1997 Chemical Disinfectants and Antiseptics – Quantitative suspension test for the activity of chemical disinfectants and antiseptics used in the food, industrial, domestic, and institutional areas - Test method and requirements

SAMPLE: Chlorine Foamer – NP 1666 168 78-9

Challenge Organism	Staphylococcus aureus	NCIMB 9518
	Escherichia coli	NCIMB 8879
	Pseudomonas aeruginosa	NCIMB 10421
	Enterococcus hirae	NCIMB 8191

Contact Time 5 minutes

Temp 20°C

Hard water Diluent 300 mg/kg CaCO₃

Dirty conditions 3 g/l Bovine albumin

PASS Level for EN 1276:1997 - 5 log ↓ in Challenge Organism Inoculum

Object of Test: To achieve a 5 log reduction in Challenge Organism Inoculum

5 Minute Contact Time

Chlorine Foamer NP1666 (1.5%) Passed EN 1276:1997
Producing a 5 log ↓ Against
Escherichia coli NCIMB 8879
Staphylococcus aureus NCIMB 9518
Pseudomonas aeruginosa NCIMB 10421
Enterococcus hirae NCIMB 8191

Signed: Joanne Green
Microbiologist

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