

MICROBICS MICROTOX® TOXICITY TEST

TEST SUBSTANCE

Identity: A mixture containing perfluorooctanesulfonate, which may also be referred to as PFOS, FC-95, or as a component of FC-603F. (1-Octanesulfonic acid) (CAS # 2795-39-3).

Remarks: The 3M production lot number was 501. The test sample is FC-603F. Current information indicates it is a mixture of 0.5% PFOS, 7% diethylene glycol butyl ether, 82.95% water, 2% acrylic foamer, 4% Alkylether sulfate, 1.45% Xanthan gum, 1.4% calcium acetate, 0.07% N-(3-Chloroallyl)hexaminium chloride, 0.5% triethanolamine, 0.05% sodium hydroxide, 0.03% cis-1-(3-Chloroallyl)-3,5,7-triaza-1-azoniaadamantane chloride, and 0.05% tolyltriazole.

The following summary applies to a mixture with incompletely characterized concentrations of impurities. Data may not accurately reflect the toxicity of the fluorochemical component of the test sample.

METHOD:

Method: Microbics Microtox® "BASIC" Procedure

Test type: Static acute

GLP: No

Year Completed: 1994

Species: *Photobacterium phosphoreum*

Analytical monitoring: pH and osmotic condition.

Exposure period: 30-minutes

Statistical methods: EC50 values calculated by statistical linear regression program provided for Microtox®

Test organism source: Microbics' Reagent, Lot AM025

Test conditions:

Diluent: Millipore Milli-Q™ water

Test temperature: Not noted.

Stock and test solution preparation: A 2000 mg/L primary stock solution was prepared by dissolving 200 mg test substance in 100 mL Millipore Milli-Q™ water. The pH of the stock solution was 6.7. An osmotic adjustment was made using 200 mg NaCl dissolved in 10 mL stock solution. Appearance of test solutions was noted as "clear and colorless". All test solutions were made by proportional dilutions.

Exposure vessels: 4 mL cuvettes.

Number of replicates: two

Number of concentrations: Four plus a blank control

Element basis: Percent light loss

RESULTS

Nominal concentrations: Blank control, 125, 250, 500, and 1000 mg/L

Element value: 5-minute EC₅₀ = 480 (450 – 510) mg/L
 15-minute EC₅₀ = 390 (370 – 420) mg/L
 30-minute EC₅₀ = 340 (320 – 350) mg/L

Element values based on nominal concentrations.

Remarks: Testing was conducted on a mixture as described in the Test Substance Remarks field. The values reported apply to that mixture and not the fluorochemical proportion alone.

CONCLUSIONS

The FC-603F 30-minute EC₅₀ for *Photobacterium phosphoreum* was determined to be 340 mg/L with a 95% confidence interval of 320 to 350 mg/L.

Submitter: 3M Company, Environmental Laboratory, P.O. Box 33331, St. Paul, MN, 55133

DATA QUALITY

Reliability: Klimisch ranking = 2. This study meets the criteria for quality testing. However, sample purity was not properly characterized and the study lacks analytical confirmation of the amount of fluorochemical proportion in the solution.

REFERENCES

This study was conducted by the 3M Company, Environmental Laboratory, St. Paul, MN, Lab Request number M1655, 1994.

OTHER

Last changed: 6/26/00.

Microtox Test Data Summary

LR: M1655

Date: 5/20/94

Analyst: JBD

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SAMPLE: FC-603F (Lot #501)

Sample Conc. (mg/L)	% Reduction In Bioluminescence		
	5 min	15 min	30 min
125	18	24	25
250	35	39	43
500	50	55	59
1000	68	73	77
EC50 (95% C.I.)	480 mg/L (450-510)	390 mg/L (370-420)	340 mg/L (320-350)

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Lab Request No. MI655

Environmental Lab — Work Sheet

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Sample Description

FC-603F
(Lot # 501)Microtox testing of
FC-603FDate: 5-20-94Analyst: JBD

A) stock soln. preparation

→ Add 200 mg test substance to 100 mL volumetric
flask & dilute to volume with Milli-Q™↳ Conc. = 2000 mg/LB) Initial pH of stock soln. = 6.7 (no adjustment
needed).

C) Osmotic adjustment of stock soln.

→ Dissolve 200 mg solid NaCl in 10 mL stock soln.
(= 2% NaCl)

D) Appearance of stock soln = clear & colorless

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30 min.

MICROTOX DATA REPORT

MIC55

(65.11)

FILE NAME: MI-55.DTG

TEST DATE: 5-20-94

TEST TIME: 1

APPROVED BY: 1

Investigator: JBD

Sample Description: FC-4035 (Lot #501)

Procedure: BASIC

Initial Concentration: 10000 mg/L

Test Time: 30 minutes

Chemical Adjustment: NaCl

Dilution Factor: 1

Concentration Units: mg/L

NUMBER	10/1	ECNC	BAMMA	Mictox Reagent Lot # AM026
1	79.89/ 76.75	25.0000	0.3145.4	
2	80.57/ 78.44	125.0000	0.3416.4	
3	79.03/ 67.44	250.0000	0.7268.4	
4	77.65/ 64.53	250.0000	0.7751.4	
5	77.78/ 60.46	500.0000	1.4151.4	
6	72.72/ 53.78	500.0000	1.4752.4	
7	72.55/ 51.56	1000.0000	2.573.4	
8	74.65/ 41.11	1000.0000	2.573.4	

CONTROL 1: 10/1 = 11.45/ 54.13

RATIOS = 1.00

CORRECTION FACTOR = 1.00

END OF REPORT. IF YOU HAVE ANY COMMENTS, PLEASE CONTACT THE MICROTOX UNIT.

OFF

002467

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30 min.

m1655
(4511)

STATISTICAL REPORT FOR DATA FILE M1655.C30

ESTIMATED EQUATION: $LOS = 0.8952 \times LOS + 1.243273$

NUMBER OF DATA PAIRS USED: 8

COEFFICIENT OF DETERMINATION: 0.9952

95% CONFIDENCE FACTOR: 1.94473 FOR EQUATION

CORRELATION COEFFICIENT: $r = 0.9976$

COEFFICIENT OF VARIATION: 0.0000

EFFECTIVE COEFFICIENTS: 95% CONFIDENCE RANGE

COEFFICIENT OF VARIATION: 0.0000

COEFFICIENT OF VARIATION: 0.0000

COEFFICIENT OF VARIATION: 0.0000

COEFFICIENT OF VARIATION: 0.0000

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30 min.

LR: M1655
(5511)

TABLE RESULTS

NUMBER	CONC.	GAMMA	GAMMA EFF.	% EFF. T
1	125.0000	0.3147	0.3310	23.75
2	125.0000	0.3416	0.3110	21.40
3	250.0000	0.7269	0.7110	45.91
4	250.0000	0.7757	0.7150	45.54
5	500.0000	1.4152	1.5442	58.59
6	500.0000	1.4911	1.5442	59.25
7	1000.0000	2.5363	3.3319	70.17
8	1000.0000	2.4250	3.3319	71.23

CONFIDENTIAL

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15 min.

M1655
(6 of 11)

INITIAL DATA

M1655.K15

NUMBER	CONCENTRATION	GAMMA	% EFFECT
1	125.0000	0.278	2.58
2	125.0000	0.348	25.84
3	250.0000	0.643	45.12
4	250.0000	0.634	38.87
5	500.0000	1.262	53.75
6	500.0000	1.214	54.83
7	1000.0000	2.830	73.86
8	1000.0000	2.508	71.50

15 min.

m1655
(8054)

ESTIMATING EQUATION: $\text{LOG } Q = 0.965 + 0.2 \text{ LOG } P + 12.3947$

NUMBER OF DATA TAIDS USED: 6

RESIDUAL VARIANCE: 0.0353

95% CONFIDENCE FACTOR: 102671 FOR E530

CORRELATION COEFFICIENT BETWEEN SET 1 & SET 2: .92

DEPENDENT OF DEFENDING

PHOTO BY CONCEPTUAL ARTIST ANDY WARHOL, 1965

75-373,244 0000 300,000

EC-20 - 108.072

[illegible]

4.6474 mg/L

UNCLASSIFIED REGULATORY

5 min.

m1655
(9 of 11)

INITIAL DATA

M1655-K2

NUMBER	CONCENTRATION	GAMMA	EFFECT
1	125.0000	0.184	15.56
2	125.0000	0.252	20.11
3	250.0000	0.522	34.36
4	250.0000	0.557	35.75
5	500.0000	0.965	47.11
6	500.0000	1.003	50.35
7	1000.0000	2.209	68.87
8	1000.0000	2.304	67.78

...to continue.

5 min.

111663
(10 of 11)

FILE NAME: H1655.K5

DATE: 5-20-94

TEST TIME 1:00 HOURS

Investigator: J30

Approved by: _____

Sample Description: FC-603F (Lot #301)

Osmotic Pressure

Procedure: BASIC

Dilation Factor

Initial Concentration : 1200 mg/L

Concentration in the $\mu\text{g/L}$

Test 144: 10 minutes

NUMBER	10/IT	COND.	GARMA
1	75.69/ 65.45	5.0000	0.14431
2	73.87/ 65.10	175.0000	0.12375
3	75.05/ 50.38	250.0000	0.52033
4	78.75/ 49.84	250.0000	0.52033
5	77.78/ 38.59	500.0000	0.52033
6	76.85/ 33.82	500.0000	0.52033
7	76.12/ 23.15	1000.0000	0.52033
8	75.73/ 23.45	1000.0000	0.52033

PLATE NO. 17410-1 95-297 94-13 78.57/ 21.94

RATIOS 5 7508

CORRECTION FACTOR = 0.9752

~~CONFIDENTIAL~~

ENCLOSURE 12-19-77

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5 min.

M1655
(11811)

STATISTICAL REPORT FOR DATA FILE M1655.KB

ESTIMATING EQUATION: $\log L = 0.9936 \log P + 2.6774$

NUMBER OF DATA PAIRS USED: 6

RESIDUAL VARIANCE: 0.00000

95% CONFIDENCE FACTOR: 1.065724 FOR ED50

CORRELATION COEFFICIENT: $R = 0.9967$

COEFFICIENT OF DETERMINATION: $R^2 = 0.9934$

OPERATIVE CONCENTRATIONS: 95% CONFIDENCE RANGES

ED05 = 475.7855 mg/L	ED10 = 791.9140	ED50 = 507.7504
ED90 = 119.9948 mg/L	ED95 = 5930.70	ED99 = 8.4441
ED01 = 25.5052 mg/L	ED05 = 41.1403	ED99 = 8.4441
ED01 = 4.5402 mg/L	ED95 = 218258.16	ED99 = 8.4441

ALL EXTRAPOLATED RESULTS