

MICROBICS MICROTOX® TOXICITY TEST

TEST SUBSTANCE

Identity: Perfluorooctanoic acid, ammonium salt; may also be referred to as PFOA ammonium salt, Ammonium perfluorooctanoate, PFO, FC-116, FC-126, FC-169, or FC-143. (Octanoic acid, pentadecafluoro-, ammonium salt, CAS # 3825-26-1)

Remarks: The test sample is FC-143. It's purity was not sufficiently characterized, though current information indicates it is a mixture of 96.5 - 100% test substance and 0 - 3.5% C₆, C₇, and C₉ perfluoro analogue compounds. The 3M product lot number was 427.

METHOD:

Method: Microbics Microtox® "BASIC" Procedure

Test type: Static acute

GLP: No

Year Completed: 1996

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.

Test conditions:

Diluent: Millipore Milli-Q™ water

Test temperature: Not noted.

Stock and test solution preparation: A primary 2000 mg/L stock solution was prepared in Millipore Milli-Q™ water. The pH of the stock solution was then adjusted from 5.8 to 7.6 using 1.0 N NaOH and 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: 3 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 = >1000 mg/L
 15-minute EC₅₀ = 800 (790 - 820) mg/L
 30-minute EC₅₀ = 730 (630 - 850) mg/L

Element values based on nominal concentrations.

CONCLUSIONS

The FC-143 30-minute EC₅₀ for *Photobacterium phosphoreum* was determined to be 730 mg/L with a 95% confidence interval of 630 to 850 mg/L.

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

DATA QUALITY

Reliability: Klimisch ranking 2. Testing meets all criteria for quality testing, but lacks analytical confirmation of test substance concentrations. There is a lack of characterization of the test sample.

REFERENCES

This study was conducted by the 3M Environmental Laboratory, St. Paul, Minnesota, Lab Request number P1626.

OTHER

Last changed: 5/25/00

ENVIRONMENTAL LABORATORY: MICROTOX PREP SHEET

LR: P1626-1
Date: 4-24-96
Analyst: TKS
Pg 1 of 12

TEST SUBSTANCE: FC-143 LOT 427

1. Preparation of Stock Solution

- * Mass/Vol. Test Substance: 200mg/100ml
* Final Dilution Volume: 20ml 4-24-96 TKS
* Diluent: M.I.I. - Q water
* Final Concentration of Stock Solution: 2g/L

2. pH Adjustment of Stock Solution

- * Initial pH of Stock Solution: 5.8
* pH Adjusted to: 7.6
* pH Adjusted with: < 1 drop 1.0N NaOH

3. Osmotic Adjustment of Stock Solution

- * Osmotic Adjuster: NaCl
* Comments: added 10ml stock soln to 200mg NaCl

4. Appearance of pH and Osmotically Adjusted Stock Solution

* CLEAR or OPAQUE (circle one)

* Color: Clear

* Comments:

5. Comments

MICROTOX DATA REPORT
Basic Test

FILE FC-143, K19
F1526 L01 427

Test Time: 15 minutes

Osmotic Adjustment: NaCl (*)

NUMBER	IO/IT	CONC.	CR/GAMMA	% Light Loss	Mean % Light Loss
Control	96.67/ 86.09	0.0	0.9112 #	-	-
Control	92.15/ 87.60	0.0	0.9416 #	-	-
1	99.34/ 81.22	125.0000	0.133	11.7	
2	91.89/ 77.25	125.0000	-0.018 #	0	5.9
3	91.80/ 74.58	250.0000	0.151	13.1	
4	81.63/ 63.69	250.0000	0.190	16.0	14.5
5	99.32/ 64.73	500.0000	0.432	36.2	
6	58.40/ 64.48	500.0000	0.410 #	27.1	29.6
7	91.64/ 50.58	1000.0000	1.517 #	603	
8	91.87/ 43.78	1000.0000	1.523 #	603	60

$$R^2 = 0.436$$

+ Invalid data or controls.

95% CONFIDENCE RANGE: 745.3783 TO 817.8113

$$* = \frac{\text{gamma}}{(\text{gamma} + 1)} \times 100$$

© LUDWIG LUTER

Ludy Stefenbauer

TEST DATE: 4-24-96

TIME:

[illegible][illegible]

ESTIMATING EQUATION: $\log C = 2.1329 + 0.006 H$
95% CONFIDENCE FACTOR: 1.02043 FOR EC50
COEFFICIENT OF DETERMINATION: $R^2 = 0.9998$

MICROTOX DATA REPORT
Basic Test

Test Time: 30 minutes

Osmotic Adjustant: NaCl

NUMBER	10/17	CONC.	ORGANISM	% Light Loss	(*) Mean % Light Loss
Control	96.67/ 93.76	0.0	0.9679 #	—	—
Control	93.25/ 91.86	0.0	0.9671 #	—	—
1	99.34/ 86.18	125.0000	0.1127	11.3	
2	81.89/ 82.81	125.0000	0.0073 #	0	5.6
3	92.80/ 78.80	250.0000	0.0049 #	13.1	
4	81.83/ 66.18	500.0000	0.0049 #	17.3	15.2
5	99.32/ 67.17	500.0000	0.0049 #	30.8	
6	98.90/ 66.94	500.0000	0.0044 #	30.7	30.8
7	99.64/ 35.00	1000.0000	0.0029 #	64.1	
8	91.97/ 31.86	1000.0000	0.0029 #	64.6	64.3

CR = CORRECTION FACTOR = 0.977
Used for calculations

* Investigate the controls

0.00 730.8603 MB/L (95% CONFIDENCE RANGE: 691.642 769.078)

$$x = \frac{\text{gamma}}{(\text{gamma} + 1)} \times 100$$

Signature Ludy Stufenberg

TEST DATE: 4-24-96
TIME: _____

TIME :
SLOPE = 1.6715

35 SLOPE = 1.6715

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83 84 85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 100

.10 0000000000000000 .00 0000000000000000 0000000000000000
100 1000 CONCENTRATION 10E4 10E

ESTIMATING FUNCTION: $\text{LOG } C = 0.5942 + \text{LOG } S + 2.0438$

100-443887-100

CRIMINAL DETERMINATION