

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-203CE. (1-Octanesulfonic acid) (CAS # 2795-39-3).

Remarks: The 3M production lot number was 519. The test sample is FC-203CE. Current information indicates it is a mixture of 1.84% PFOS, 30% diethylene glycol butyl ether, 60.23% water, 2.56% Sultone foamer, 3.1% sodium octyl sulfate, 2.1% polyoxyethylene monooctylphenyl ether, 0.12% sodium lauryl sulfate, 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® Procedure

Test type: Acute static

GLP: No

Year Completed: 1989

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: Microbics 2% NaCl solution

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 6.8 and an osmotic adjustment was made using 200 mg NaCl dissolved in 10 mL stock solution. Appearance of test solutions was noted as "completely miscible, no color apparent". 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 = 370 (360 – 380) mg/L
15-minute EC₅₀ = 260 (250 – 270) mg/L
30-minute EC₅₀ = 230 (220 – 240) 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 test substance 30-minute EC₅₀ for *Photobacterium phosphoreum* was determined to be 230 mg/L with a 95% confidence interval of 220 to 240 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. 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 G1358-1, 1989.

OTHER

Last changed: 6/26/00.

ENVIRONMENTAL LABORATORY
MICROBICS MICROTOX^R SYSTEM

Pg 1 of 4

RAW DATA

TEST SUBSTANCE: FC-203CE Lot 519TEST DATE: 6-16-89ANALYST: Jusan A. Beach

SAMPLE CUVETTE	FINAL ASSAY CONCENTRATION mg/L	INITIAL READING I(0)	FINAL READINGS		
			5-MIN. I(5)	15-MIN. I(15)	30-MIN. I(30)
B1	BLANK CONTROL	94	80	74	70
C1	DUPLICATE	95	81	74	70
B2	125	88	55	45	41
C2	Duplicate	96	59	49	45
B3	250	92	46	37	33
C3	Duplicate	97	49	39	35
B4	500	87	32	25	21
C4	Duplicate	93	34	26	22
B5	1000	94	24	18	15
C5	Duplicate	96	23	17	14

Test Substance: Stock Solution: 200 mg / 100 ml Milli-Q water
Yellow Liquid Each 1.0 ml = 2.0 mg
Apparently completely miscible, No color apparent
Stock Soln. pH = 6.8

Osmotic Adjustment: Added 200 mg NaCl to 10 ml stock Solution

Diluent: Microbics 2% NaCl Solution

Initial Dilutions: Initial concentrations were double the final assay concentrations mentioned above. The initial dilutions were introduced into the top row (Row A) and were then transferred (50/50) into the middle and the lower rows (Rows B+C)

001118

MICROTOX(r) DATA SHEET

BEST COPY AVAILABLE

LR G1358-1 FC-203CE 5-MIN EXPOSURE 6/16/89 SAB

PAIR #	CONC. mg/L	Io/It	G-OBS	G-EST	Percent Light Loss
1	125.000	88.0/ 55.0	0.364	0.375	27
2	125.000	96.0/ 59.0	0.387	0.375	28
3	250.000	92.0/ 46.0	0.705	0.702	41
4	250.000	97.0/ 49.0	0.688	0.702	41
5	500.000	87.0/ 32.0	1.318	1.313	57
6	500.000	93.0/ 34.0	1.332	1.313	57
7	%1000.000	94.0/ 24.0	2.339	2.456	70
8	%1000.000	96.0/ 23.0	2.559	2.456	72

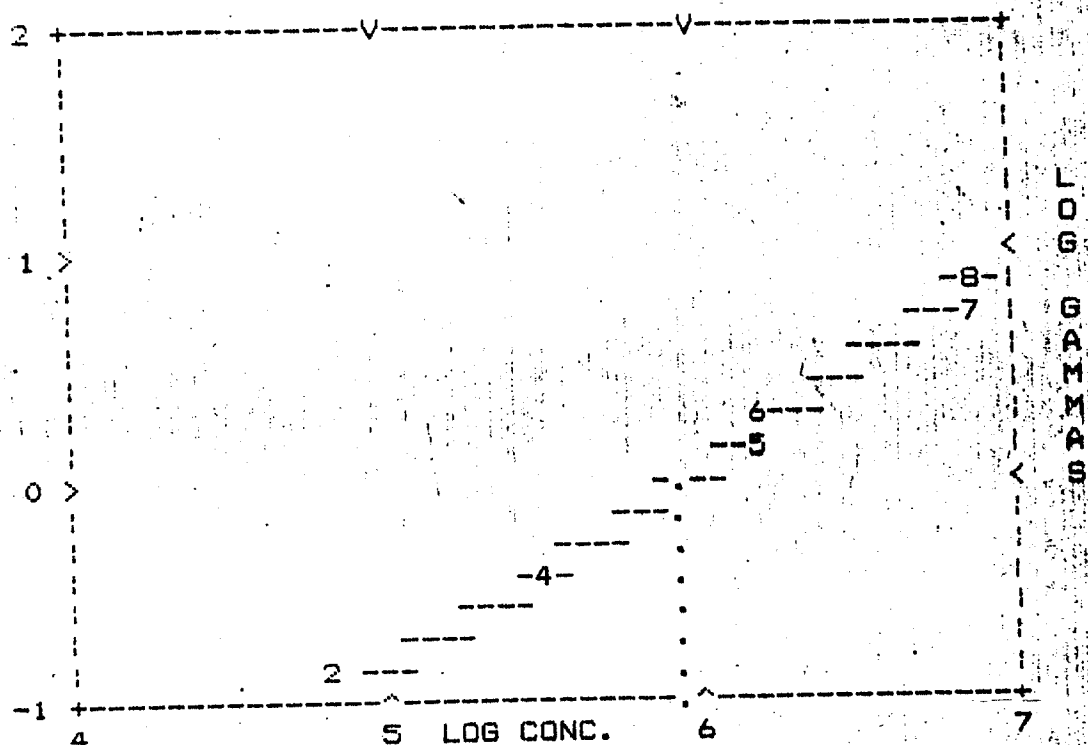
BLANK Bo/Bt= 95 / 81
 BLANK RATIO= 0.8526

$$\frac{(1-G_{obs})}{(1+G_{obs})} \times 100$$

EC 50 = 370.001 (358.387 TO 381.992) 370 (360-380) mg/L

R = 0.99915 SLOPE = 1.1045 INTERCEPT = +5.9135

##	RES.	PROB.
1	0.054	98
2	0.052	90
3	0.035	40
4	0.035	41
5	0.035	41
6	0.035	41
7	0.051	88
8	0.055	100



LIST 2RUN 3 L O A D " 4 S A V E " 5
 C O N T 6 Y " L P T 1 7 O T R O C N B T R D
 F F K E Y O S C R E E
 E N

001119

MICROTOX(r) DATA SHEET

BEST COPY AVAILABLE

LR G1358-1 FC-203CE 15-MIN EXPOSURE 6/16/89 SAB

PAIR #	CONC. mg/L	Ia/It	G-QBS	G-EST	Percent Light Loss (1)
1	125.000	88.0/ 45.0	0.523	0.519	34
2	125.000	96.0/ 49.0	0.526	0.519	34
3	250.000	92.0/ 37.0	0.937	0.953	48
4	250.000	97.0/ 39.0	0.937	0.953	48
5	500.000	87.0/ 25.0	1.711	1.749	63
6	500.000	93.0/ 26.0	1.786	1.749	63
7	%1000.000	94.0/ 18.0	3.068	3.210	75
8	%1000.000	96.0/ 17.0	3.399	3.210	77

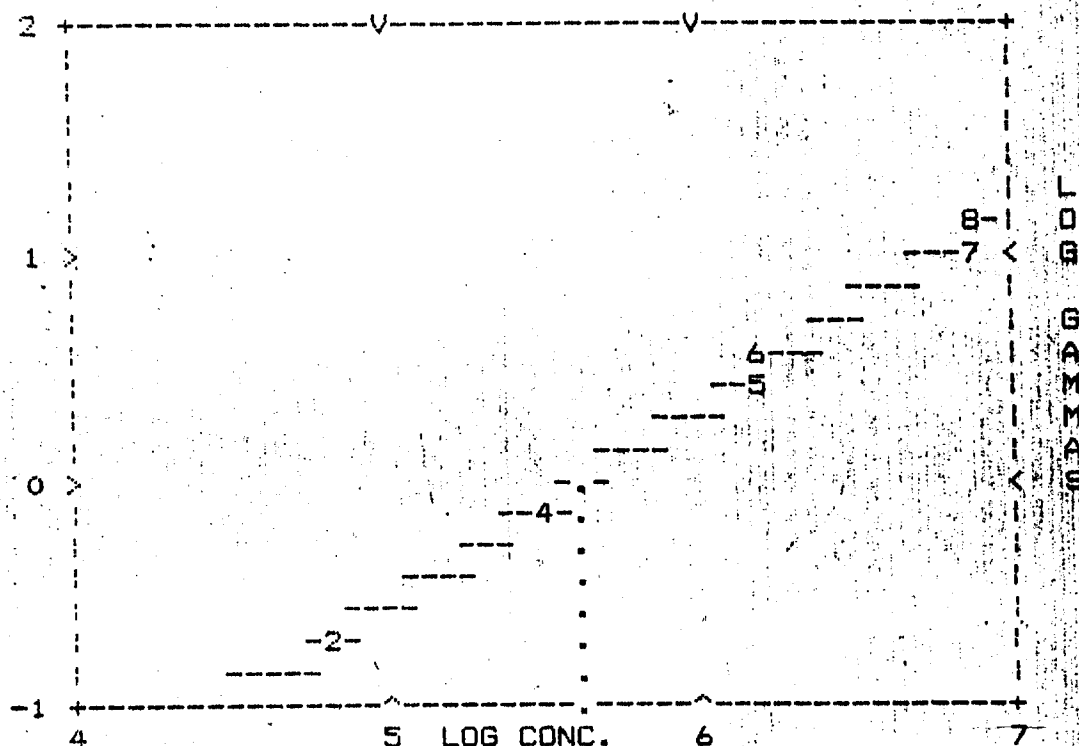
BLANK Ba/Bt= 95 / 74
BLANK RATIO= 0.7789

$$(1) \frac{G-obs}{(1+G-obs)} \times 100$$

EC 50 = 264.385 (254.982 TO 274.134) 260 (250-270) mg/L

R = 0.99904 SLOPE = 1.1388 INTERCEPT = +5.5774

##	RES.	PROB.
1	0.056	91
2	0.056	91
3	0.037	40
4	0.037	40
5	0.037	39
6	0.038	41
7	0.055	87
8	0.059	100



LIST 2RUN 3 L O A D " 4 S A V E " 5
C O N T 6 Y " L P T 1 7 T R O N 8 T R O
F K E Y " L P T 1 7 T R O N 8 T R O
E N

BEST COPY AVAILABLE

MICROTOX(r) DATA SHEET

LR G1358-1 FC-203CE 30-MIN EXPOSURE 6/16/89 SAB

PAIR #	CONC. mg/L	Io/It	G-OBS	G-EST	Percent Light Loss (1)
1	125.000	88.0/ 41.0	0.582	0.570	37
2	125.000	96.0/ 45.0	0.572	0.570	36
3	250.000	92.0/ 33.0	1.054	1.078	51
4	250.000	97.0/ 35.0	1.042	1.078	51
5	500.000	87.0/ 21.0	2.053	2.037	67
6	500.000	93.0/ 22.0	2.115	2.037	68
7	1000.000	94.0/ 15.0	3.618	3.850	78
U	1000.000	96.0/ 14.0	4.053	3.850	80

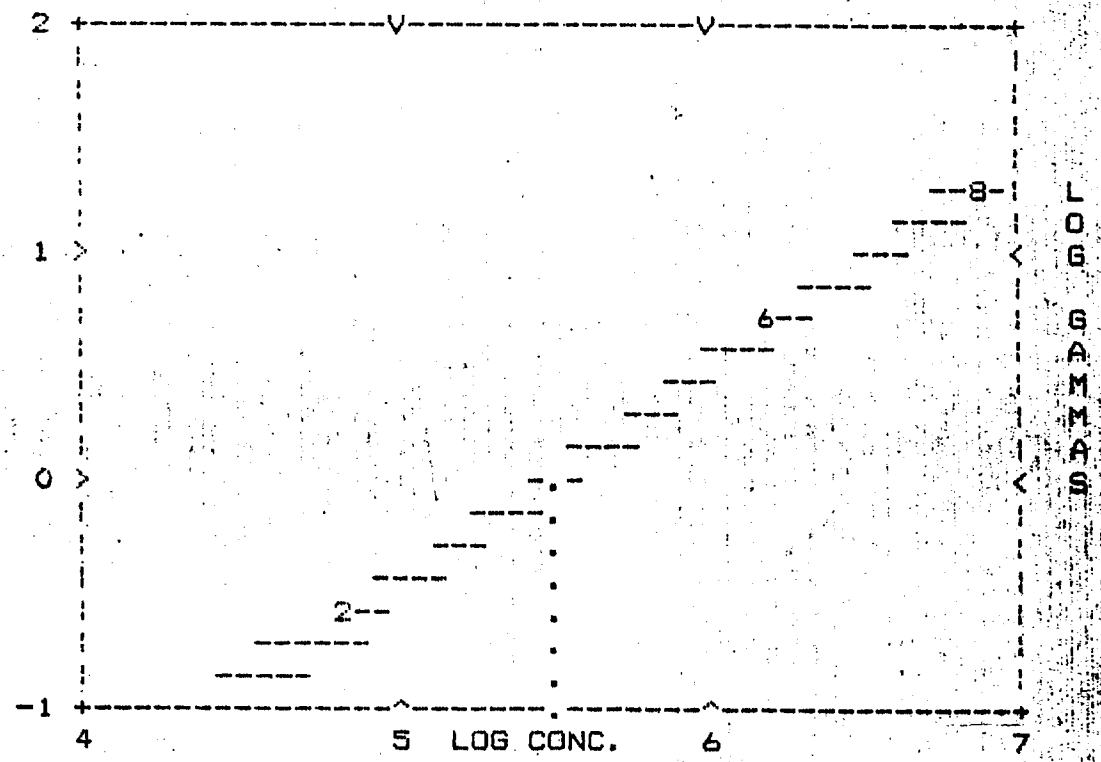
BLANK Bo/Bt= 95 / 70
BLANK RATIO= 0.7368

(1) $\frac{G-OBS}{(1+G-OBS)} \times 100$

EC 50 = 230.637 (220.720 TO 241.001) 230 (220-240) mg/L

R = 0.99876 SLOPE = 1.0861 INTERCEPT = +5.4408

##	RES.	PROB.
1	0.063	91
2	0.064	93
3	0.043	41
4	0.043	42
5	0.042	40
6	0.043	42
7	0.062	86
8	0.067	100



1LIST 2RUN 3 L O A D " 4 S A V E " 5
C O N T 6 , " L P T 1 7 T R O N 8 T R O F
F F K E Y O S C R E E
E N