

MICROBICS MICROTOX® TOXICITY TEST

TEST SUBSTANCE

Identity: A mixture containing perfluorooctanesulfonate; may also be referred to as PFOS, FC-95, or as a component of FC-206CF or FC-206CF-X. (1-Octanesulfonic acid) (CAS # 2795-39-3).

Remarks: The 3M production lot number was 101. The test sample is FC-206CF. Current information indicates it is a mixture of 0.5% PFOS, 10% diethylene glycol monobutyl ether, 78.08% water, 1.375% acrylic foamer, 1.5% sodium octyl sulfate, 1% sulfonated alkyl ether salts, 6.0% urea, 0.5% triethanolamine, 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: Acute static

GLP: No

Year Completed: 1991

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 by dissolving 200 mg of test substance in 100 mL of Millipore Milli-Q™ water. The pH of the stock solution was 6.5, and an osmotic adjustment was made using 200 mg NaCl dissolved in 10 mL stock solution. Appearance of test solutions was noted as "clear, 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 = >1000 mg/L
 15-minute EC₅₀ = 890 (730 – 1000) mg/L
 30-minute EC₅₀ = 680 (610 – 750) mg/L

Element values based on nominal concentrations.

Remarks: Testing was conducted on the 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 680 mg/L with a 95% confidence interval of 610 to 750 mg/L.

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

DATA QUALITY

Reliability: Klimisch ranking = 2. The study meets all criteria for quality testing. However, the 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 Environmental Laboratory, St. Paul, MN, Lab Request number J1884-4, 1991.

OTHER

Last changed: 6/28/00.

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TEST SUBSTANCE: FC-206CF Lot 101

TEST DATE: 7/19/91

ANALYST:

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SAMPLE CUVETTE	mg/L FINAL ASSAY CONCENTRATION	INITIAL READING I (0)	5-MIN I (5)	FINAL READINGS	
				15-MIN I (15)	30-MIN I (30)
B1 C1	BLANK CONTROL DUPLICATE	93 107	60 73	47 59	44 56
B2 C2	125 Duplicate	110 117	68 70	52 56	48 52
B3 C3	250 Duplicate	112 98	64 54	51 42	45 37
B4 C4	500 Duplicate	110 104	52 48	39 35	33 30
B5 C5	1000 Duplicate	104 110	38 39	26 27	20 21

Stock soln. prep: $200\text{mg} / 100\text{ml Milli-Q water} = 2000\text{mg/L}$; Each $1.0\text{ ml} = 2.0\text{ mg}$

Initial pH: 6.5

pH adjusted to _____ with _____

Osmotic adjustment: Added 200 mg NaCl to 10 mL sample

Final appearance of test solution: Clear colorless

Comments:

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MICROTOX(r) DATA SHEET

FC-206CF Lot 101 5-min exp. J1884-4 7/19/91 sab

PAIR #	CONC.	Io/It	G-OBS	G-EST	% Light Loss ⁽¹⁾	$\bar{X}$
1	125.000	110.0/ 68.0	0.084	0.098	7.7	9.4
2	125.000	117.0/ 70.0	0.120	0.098	11	
3	250.000	112.0/ 64.0	0.173	0.203	15	17
4	250.000	98.0/ 54.0	0.216	0.203	18	
5	500.000	110.0/ 52.0	0.417	0.419	29	30
6	500.000	104.0/ 48.0	0.452	0.419	31	
7	%1000.000	104.0/ 38.0	0.834	0.867	45	46
8	%1000.000	110.0/ 39.0	0.890	0.867	47	

BLANK Bo/Bt= 100 / 67

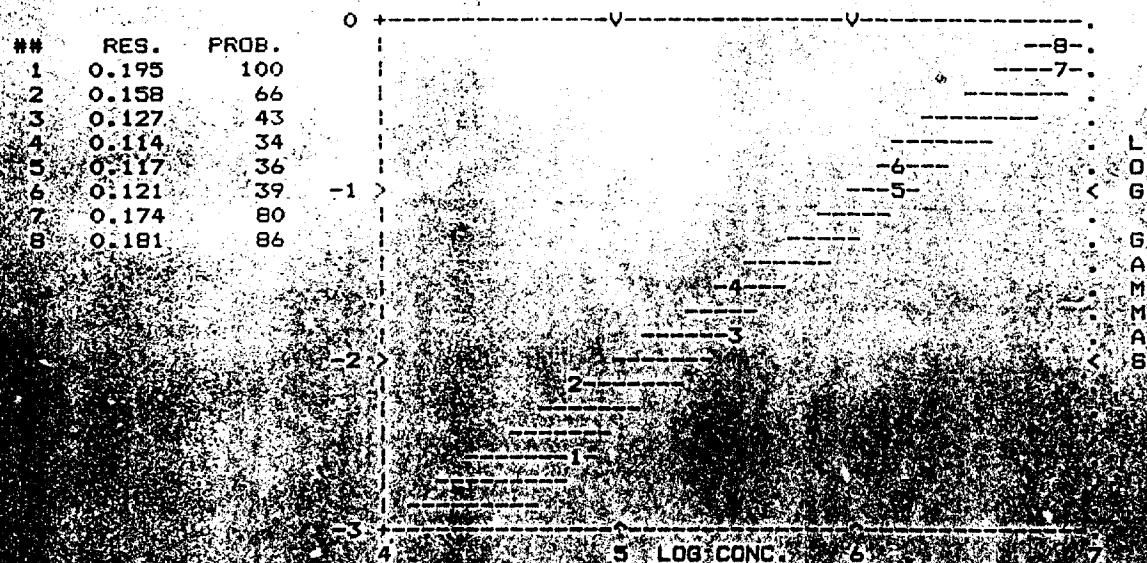
BLANK RATIO= 0.6700

EC 50 = %1120.493 (923.602 TO %1359.357)

EC50 > 1000 mg/L

R = 0.99039 SLOPE = 0.9361 INTERCEPT = +7.0215

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



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MICROTOX(r) DATA SHEET

FC-206CF Lot 101 15-min exp. J1884-4 7/19/91 sab

PAIR #	CONC.	Io/It	G-OBS	G-EST	% Light Loss ⁽¹⁾	$\bar{X}$
1	125.000	110.0/ 52.0	0.121	0.104	11	10
2	125.000	117.0/ 56.0	0.107	0.104	9.7	
3	250.000	112.0/ 51.0	0.164	0.230	14	17
4	250.000	98.0/ 42.0	0.237	0.230	14	
5	500.000	110.0/ 39.0	0.495	0.507	33	35
6	500.000	104.0/ 35.0	0.575	0.507	37	
7	%1000.000	104.0/ 26.0	1.120	1.118	53	54
8	%1000.000	110.0/ 27.0	1.159	1.118	54	

BLANK Bo/Bt= 100 / 53
BLANK RATIO= 0.5300

EC 50 = 885.997 (733.348 TO %1070.421)

EC50 = 890 (730 - 1000) mg/L

R = 0.98770 SLOPE = 0.8558 INTERCEPT = +6.7867

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

##	RES.	PROB.
1	0.185	82
2	0.198	93
3	0.157	58
4	0.131	41
5	0.131	41
6	0.140	47
7	0.201	96
8	0.205	100



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MICROTOX(r) DATA SHEET

FC-206CF Lot 101 30-min exo. J1884-4 7/19/91 sab

PAIR #	CONC.	Io/It	G-OBS	G-EST	% Light Loss ⁽¹⁾	$\bar{X}$
1	125.000	110.0/ 48.0	0.146	0.130	13	12
2	125.000	117.0/ 52.0	0.125	0.130	11	12
3	250.000	112.0/ 45.0	0.244	0.300	20	22
4	250.000	98.0/ 37.0	0.324	0.300	24	22
5	500.000	110.0/ 33.0	0.667	0.690	40	41
6	500.000	104.0/ 30.0	0.733	0.690	42	41
7	1000.000	104.0/ 20.0	1.600	1.590	62	62
8	1000.000	110.0/ 21.0	1.619	1.590	62	62

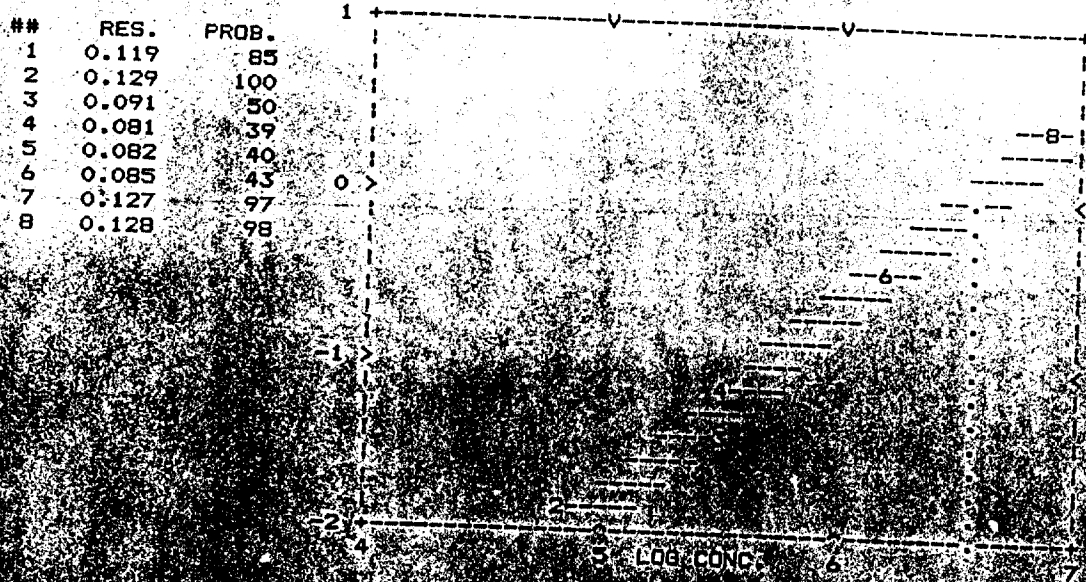
BLANK Bo/Bt= 100 / 50
BLANK RATIO= 0.5000

EC 50 = 676.026 (612.149 TO 746.568)

EC₅₀ = 680 (610 - 750) mg/L

R = 0.99517 SLOPE = 0.8227 INTERCEPT = +6.5162

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



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