

MICROBICS MICROTOX® TOXICITY TEST

TEST SUBSTANCE

Identity: Mixture containing perfluorooctanesulfonate, which may also be referred to as PFOS, FC-95, or as a component of FC-203CF-X or FC-203CF. (1-Octanesulfonic acid) (CAS # 2795-39-3).

Remarks: The 3M production lot number was 101. The test sample is FC-203CF. Current information indicates it is a mixture of 1% PFOS, 20% diethylene glycol monobutyl ether, 70.2% water, 2.75% Acrylic foamer, 3% sodium octyl sulfate, 1% triethanolamine, 2% sulfonated alkyl ether salts, and 0.05% tolyltriazole.

The following summary applies to a mixture with incompletely characterized concentrations of impurities. Data may not accurately reflect 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 6.6. 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 = 470 (420 – 520) mg/L
 15-minute EC₅₀ = 360 (330 – 390) mg/L
 30-minute EC₅₀ = 280 (260 – 300) 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 280 mg/L with a 95% confidence interval of 260 to 300 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, 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 J1884-3, 1991.

OTHER

Last changed: 6/28/00.

Exposure

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Exposure

Exposure

	FC 203CF			FC 208CF			WITCOLATE			TRITON X-305			FM 4400					
TEST CONC.																		
Mod.	1-min	15-min	30-min	1-min	15-min	30-min	1-min	15-min	30-min	1-min	15-min	30-min	1-min	15-min	30-min	1-min	15-min	30-min
1.25																		
2.5																		
3.125																		
5.0																		
6.25																		
10																		
12.5							11	16	17									
25							20	22	22									
31.25																		
50							36	37	41									
62.5																		
100							50	63	65									
125	19	23	27	9.4	10	12				6.4	15	14	17	23	25			
250	86	41	49	17	17	22				0.7	13	16	22	20	24			
500	62	60	66	30	35	41				10	16	20	25	20	26			
1000	70	76	82	48	64	82				17	21	25	33	42	49			
EC50	170	240	280	>1000	690	680	27	70	83	>1000	>1000	>1000	>1000	>1000	>1000			
95% C.I.	(150-200)	(220-280)	(260-320)	(700-1000)	(610-750)	(630-750)	(24-30)	(55-80)	(55-70)									

ENVIRONMENTAL LABORATORY
MICROBICS MICROTOX® SYSTEM

LR 71884-3
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RAW DATA

TEST SUBSTANCE: EC-203CF Lot 101

TEST DATE: 7/19/91

ANALYST: Amson A. Beach

SAMPLE CUVETTE	mg/L FINAL ASSAY CONCENTRATION	INITIAL READING I (0)	FINAL READINGS		
			5-MIN I (5)	15-MIN I (15)	30-MIN I (30)
E1 F1	BLANK CONTROL DUPLICATE	97 100	57 57	40 40	32 33
E2 F2	125 Duplicate	93 96	45 43	30 29	23 23
E3 F3	250 Duplicate	98 91	36 35	23 22	16 16
E4 F4	500 Duplicate	92 84	26 23	15 14	10 9
E5 F5	1000 Duplicate	94 98	17 17	9 10	6 6

Stock soln. prep: 200 mg / 100 ml Milli-Q water = 2000 mg/L. Each 1.0 ml = 2.0 mg

Initial pH: 6.6 pH adjusted to 7.0 with NaOH

Osmotic adjustment: Added 200 mg NaCl to 10 mL sample

Final appearance of test solution: Clear, Colorless

Comments:

PS 2064

MICROTOX(r) DATA SHEET

FC-203CF Lot 101 5-min exp. J1884-3 7/19/91 eab

PAIR #	CONC.	Io/It	G-OBS	G-EST	% Light Loss (1)	X̄
1	125.000	93.0/ 45.0	0.190	0.240	16	19
2	125.000	96.0/ 43.0	0.285	0.240	22	
3	250.000	98.0/ 36.0	0.567	0.507	36	35
4	250.000	91.0/ 35.0	0.497	0.507	33	
5	500.000	92.0/ 26.0	1.037	1.075	51	52
6	500.000	84.0/ 23.0	1.103	1.075	52	
7	%1000.000	94.0/ 17.0	2.184	2.277	69	70
8	%1000.000	98.0/ 17.0	2.319	2.277	70	

BLANK Bo/Bt= 99 / 57

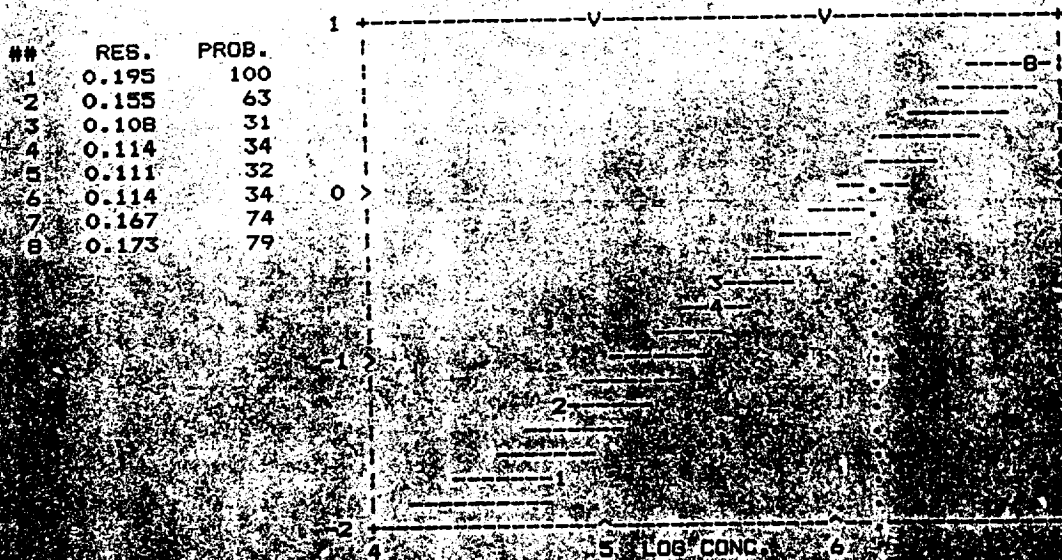
BLANK RATIO= 0.5758

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

EC 50 = 465.422 (417.172 TO 519.253)

EC50 = 470 (420-520) mg/L

R = 0.99110 SLOPE = 0.9071 INTERCEPT = +6.1429



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MICROTOX(r) DATA SHEET

FC-203CF Lot 101 15-min exp. J1884-3 7/19/91 sab

PAIR #	CONC.	Ia/It	G-OBS	G-EST	% Light Loss (1)	X
1	125.000	93.0/ 30.0	0.253	0.303	20	23
2	125.000	96.0/ 29.0	0.338	0.303	25	
3	250.000	98.0/ 23.0	0.722	0.661	42	41
4	250.000	91.0/ 22.0	0.671	0.661	40	
5	500.000	92.0/ 15.0	1.478	1.443	60	60
6	500.000	84.0/ 14.0	1.424	1.443	59	
7	%1000.000	94.0/ 9.0	3.220	3.152	76	76
8	%1000.000	98.0/ 10.0	2.960	3.152	75	

BLANK Bo/Bt= 99 / 40
BLANK RATIO= 0.4040

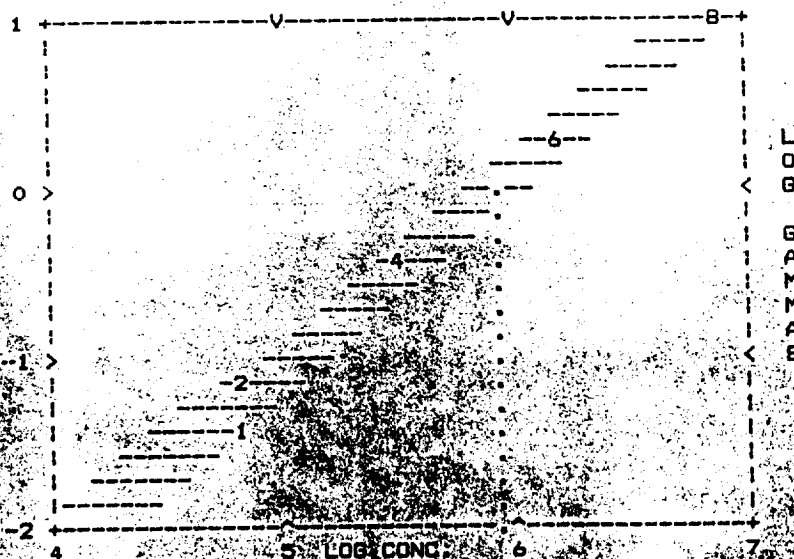
$$(1) \frac{G\text{-obs}}{(1+G\text{-obs})} \times 100$$

EC 50 = 360.954 (334.846 TO 389.097)

$$EC_{50} = 360 (330 - \frac{340}{390}) \text{ mg/L}$$

R = 0.99529 SLOPE = 0.8792 INTERCEPT = +5.8887

##	RES.	PROB.
1	0.138	100
2	0.118	73
3	0.079	33
4	0.082	35
5	0.083	36
6	0.082	35
7	0.127	84
8	0.121	77



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MICROTOX(r) DATA SHEET

FC-203CF Lot 101 30-min exp. J1884-3 7/19/91 sab

PAIR #	CONC.	Io/It	G-OBS	G-EST	% Light Loss (1)	$\bar{X}$
1	125.000	93.0/ 23.0	0.348	0.394	26	27
2	125.000	96.0/ 23.0	0.391	0.394	28	
3	250.000	98.0/ 16.0	1.042	0.891	51	49
4	250.000	91.0/ 16.0	0.896	0.891	47	
5	500.000	92.0/ 10.0	2.067	2.015	67	68
6	500.000	84.0/ 9.0	2.111	2.015	68	
7	%1000.000	94.0/ 6.0	4.222	4.558	81	82
8	%1000.000	98.0/ 6.0	4.444	4.558	82	

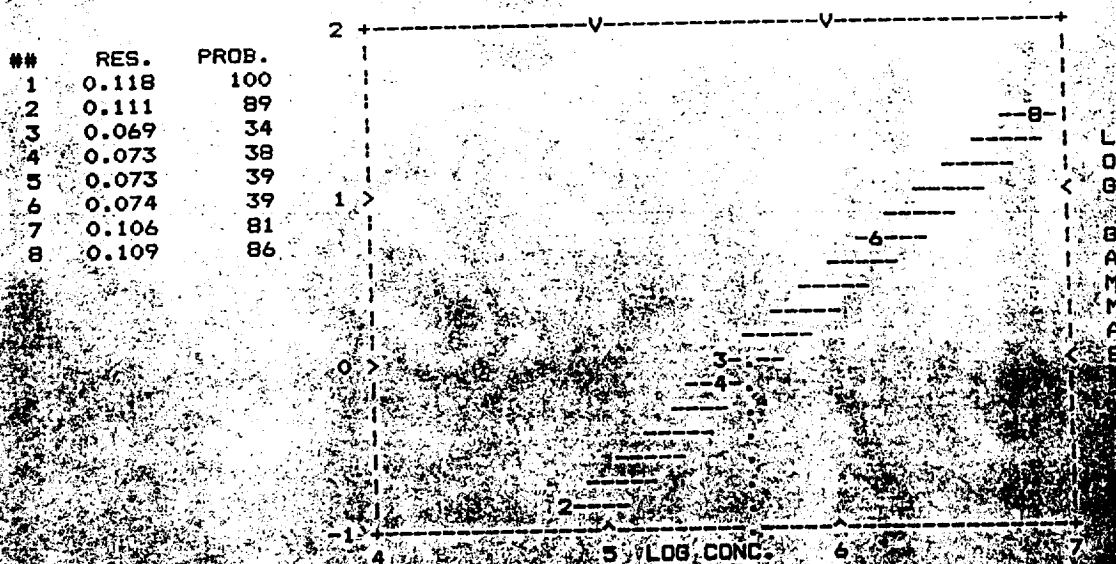
BLANK Bo/Bt= 99 / 33
BLANK RATIO= 0.3333

EC 50 = 276.232 (257.632 TO 296.174)

EC50 = 280 (260 - 300) mg/L

R = 0.99632 SLOPE = 0.8431 INTERCEPT = +5.6212

(1) $\frac{6-obs}{(1+6-obs)} \times 100$



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