

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, FC-143, or as a major component of FX-1003. (Octanoic acid, pentadecafluoro-, ammonium salt, CAS # 3825-26-1)

Remarks: The 3M production lot number was 2327. The test sample is FX-1003. It's purity was not sufficiently characterized, though current information indicates it is a solution of <45% ammonium perfluorooctanoate, 50% water, <3% inert perfluorinated compound and 1 - 2% C₅ and C₇ perfluoro analogue compounds.

The following summary applies to the test sample as a mixture of the test substance in water solution with incompletely characterized concentrations of impurities. Data may not accurately relate toxicity of the test sample with that of the test substance.

METHOD:

Method: Microbics Microtox® "BASIC" Procedure

Test type: Static acute

GLP: No

Year Completed: 1990

Species: *Photobacterium phosphoreum*

Analytical monitoring: Light loss.

Exposure period: 30-minutes

Statistical methods: EC₁₀ and EC₅₀ values calculated by statistical linear regression program provided for Microtox®

Test organism source: Not noted.

Test conditions:

Diluent: 2% NaCl Microbic's Reagent.

Test temperature: Not noted.

Stock and test solution preparation: A 2000 mg/L stock solution was prepared in Millipore Milli-Q® water. Test solutions were prepared using aliquots of the stock solution.

Concentrations dosing rate: Once

Stability of the test chemical solutions: Not noted

Exposure vessels: Microbic's cuvettes.

Number of replicates: two

Number of concentrations: Four plus a blank control

RESULTS

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

Element value: 5-minute EC_{50} = >1,000 mg/L
15-minute EC_{50} = >1,000 mg/L
30-minute EC_{50} = >1,000 mg/L

All element values based on nominal concentrations.

Remarks: Testing was conducted on the mixture of the test substance as described in the test substance remarks field. The values reported apply to that mixture and not the test substance.

CONCLUSIONS

The FX-1003 30-minute EC_{50} for *Photobacterium phosphoreum* was determined to be >1,000 mg/L.

Submitter: 3M Company, Environmental Laboratory, P.O. Box 33331, St. Paul, Minnesota, 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 G2882.

OTHER

Last changed: 5/25/00

ENVIRONMENTAL LABORATORY
MICROBICS MICROTOX^R SYSTEM
RAW DATA

LR G 2882

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TEST SUBSTANCE: FX-1003 Lot 2327

TEST DATE: 3-7-90

ANALYST: Ausan 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	96	77	68	68
C1	DUPLICATE	104	85	73	73
B2	125	109	79	64	62
C2	Duplicate	108	78	66	62
B3	250	109	76	64	59
C3	Duplicate	105	74	60	56
B4	500	111	76	63	60
C4	Duplicate	106	74	60	56
B5	1000	108	65	49	46
C5	Duplicate	109	67	52	49

Test Substance: Stock soln. = 2000 mg/L Each 1.0 ml = 2.0 mg

Clear liquid

Test substance apparently miscible with Milli-Q water.

Initial pH = 6.8, adjusted to pH 6.7 with dilute H₂SO₄

Osmotic Adjustment: Added 200 mg NaCl to 10 ml Sample.

Diluent: Final solution Clear, Colorless

Microbics 2% NaCl Solution

Initial Dilutions: Initial concentrations were double the final assay concentrations mentioned above. Initial dilutions were placed in Row A, and were then transferred (50/50) to rows B + C.

MICROTOX(r) DATA SHEET

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SUB

Microtox 5-min exp FX-1003 LR G2882 3/7/90 sab

PAIR #	CONC.	Io/It	G-OBS	G-EST	% Light Loss (1)
1	125.000	109.0/ 79.0	0.118	0.112	11
2	125.000	108.0/ 78.0	0.122	0.112	11
3	250.000	109.0/ 76.0	0.162	0.154	14
4	250.000	105.0/ 74.0	0.149	0.154	13
5	500.000	111.0/ 76.0	0.183	0.211	15
6	500.000	106.0/ 74.0	0.160	0.211	14
7	%1000.000	108.0/ 65.0	0.346	0.289	26
8	%1000.000	109.0/ 67.0	0.318	0.289	24

BLANK Bo/Bt= 100 / 81

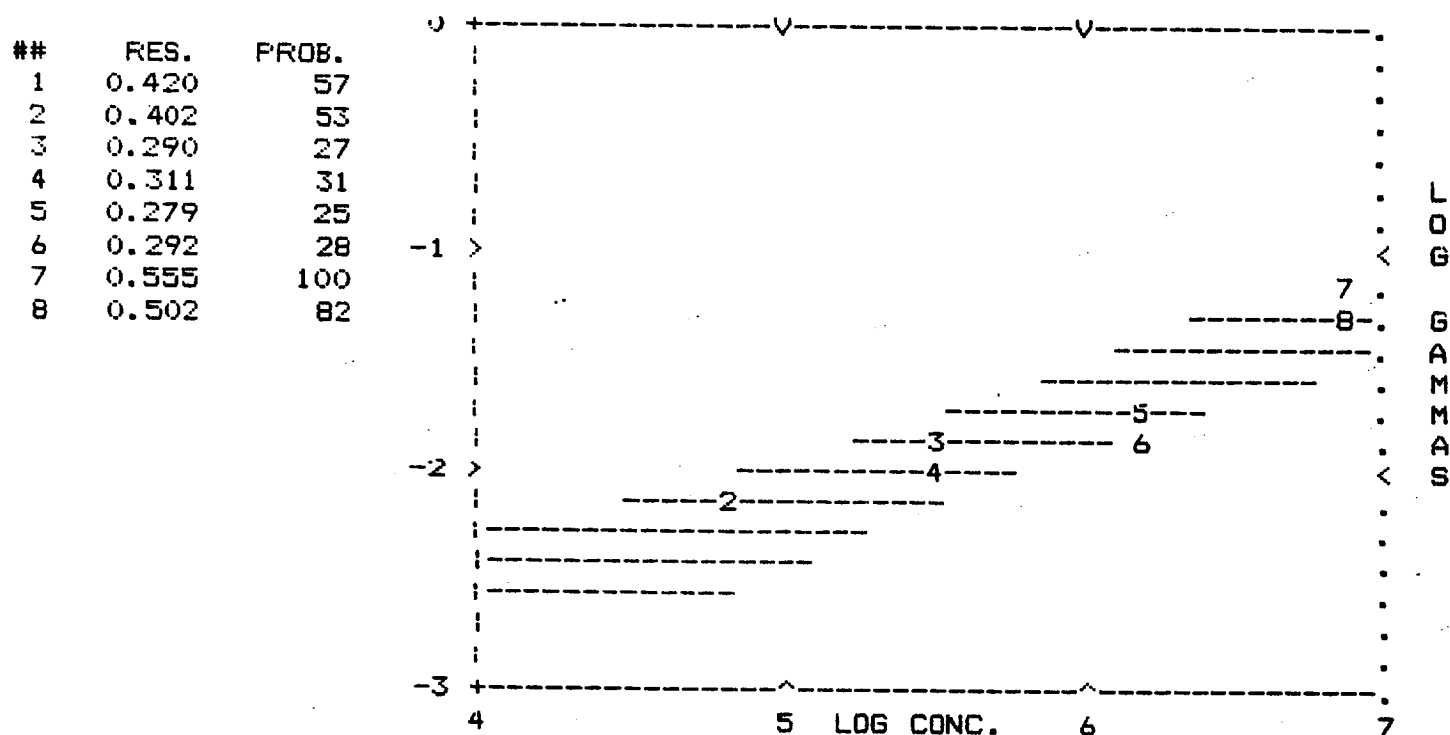
BLANK RATIO= 0.8100

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

EC 50 = %9347.118 (%2565.755 TO %34051.820)

EC50 > 1000 mg/L

R = 0.93295 SLOPE = 1.9111 INTERCEPT = +9.1428



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MICROTOX(r) DATA SHEET

Microtox 15-min exp. FX-1003 LR 62882 3/7/90 sab

PAIR #	CONC.	Io/It	G-OBS	G-EST	% Light Loss ⁽¹⁾
1	125.000	109.0/ 64.0	0.209	0.167	17
2	125.000	108.0/ 66.0	0.162	0.167	14
3	250.000	109.0/ 64.0	0.209	0.231	17
4	250.000	105.0/ 60.0	0.242	0.231	19
5	500.000	111.0/ 63.0	0.251	0.321	20
6	500.000	106.0/ 60.0	0.254	0.321	20
7	%1000.000	108.0/ 49.0	0.565	0.444	36
8	%1000.000	109.0/ 52.0	0.488	0.444	33

BLANK Bo/Bt= 100 / 71

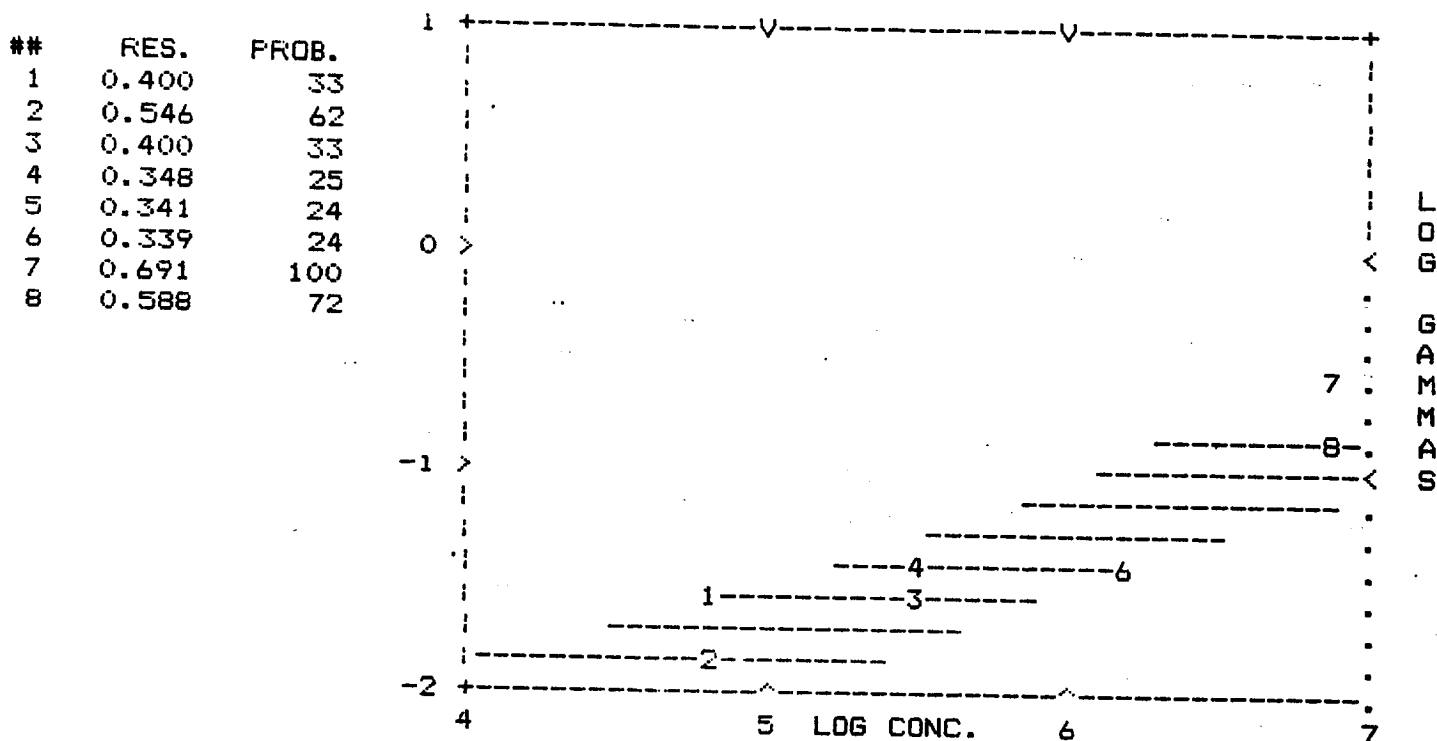
BLANK RATIO= 0.7100

EC 50 = %3347.798 (%1084.118 TO %10338.120)

R =0.90172 SLOPE = 1.7282 INTERCEPT = +8.1161

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

EC₅₀ > 1000 mg/L



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MICROTOX(r) DATA SHEET

Microtox 30-min exp. FX-1003 LR G2882 3/7/90 sab

PAIR #	CONC.	Io/It	G-OBS	G-EST
1	125.000	109.0/ 62.0	0.248	0.232
2	125.000	108.0/ 62.0	0.237	0.232
3	250.000	109.0/ 59.0	0.312	0.308
4	250.000	105.0/ 56.0	0.331	0.308
5	500.000	111.0/ 60.0	0.313	0.409
6	500.000	106.0/ 56.0	0.344	0.409
7	%1000.000	108.0/ 46.0	0.667	0.544
8	%1000.000	109.0/ 49.0	0.579	0.544

%
Light Loss⁽¹⁾
20
19
24
25
24
26
40
37

BLANK Bo/Bt= 100 / 71

BLANK RATIO= 0.7100

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

EC 50 = %2918.197 (%1094.210 TO %7782.670)

EC₅₀ > 1000 mg/L

R = 0.91498 SLOPE = 2.0386 INTERCEPT = +7.9787

##	RES.	PROB.
1	0.448	48
2	0.480	55
3	0.334	27
4	0.319	24
5	0.332	26
6	0.314	24
7	0.647	100
8	0.539	70

