

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 the major component of FC-1015 or FC-1015-X. (Octanoic acid, pentadecafluoro-, ammonium salt, CAS # 3825-26-1)

Remarks: The test sample is FC-1015-X. It's purity was not sufficiently characterized, though current information indicates is a 30% straight carbon chain version of FC-143 in 80% water. The 3M product lot number was not noted.

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. Data was used to compare toxicity of the branched/straight chain ammonium perfluorooctanoate homologue mixture in FC-143 vs. FC-1015-X.

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 6.660 g/L stock solution was prepared in Millipore Milli-Q™ water. The pH of the stock solution was 6.9 and an osmotic adjustment was made using 200 mg NaCl dissolved in 10 mL of stock solution. Appearance of test solutions was noted as "clear and colorless". All test solutions were made by proportional dilution.

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, 416, 832, 1665, and 3330 mg/L
Element value: 5-minute EC₅₀ = 2300 (2070 - 2560) mg/L
15-minute EC₅₀ = 1960 (1730 - 2210) mg/L
30-minute EC₅₀ = 1950 (1760 - 2160) mg/L

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 FC-1015-X 30-minute EC₅₀ for *Photobacterium phosphoreum* was determined to be 1950 mg/L with a 95% Confidence Interval of 1760 to 2160 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 Company, Environmental Laboratory, St. Paul, MN, Lab Request number P1626.

OTHER

Last changed: 5/25/00

ENVIRONMENTAL LABORATORY: MICROTOX PREP SHEET

LR: P1626-2
Date: 4-24-96
Analyst: TLS
Pg 5 of 12

TEST SUBSTANCE: FC-1015-X (RM-55192)

1. Preparation of Stock Solution

- Mass/Vol. Test Substance: 666 mg / 100 ml
- Final Dilution Volume: 6660 mg / L
- Diluent: M.H.-Q water
- Final Concentration of Stock Solution: 6660 mg / L

2. pH Adjustment of Stock Solution

- Initial pH of Stock Solution: 6.9
- pH Adjusted to: -
- pH Adjusted with: -

3. Osmotic Adjustment of Stock Solution

- Osmotic Adjuster: NaCl
- Comments: 10 ml of stock soln is added to 200 mg 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-1015.K5
P1626 FC-1015-X (RM-55192)

Test Time: 5 minutes

Osmotic Adjustment: NaCl

NUMBER	IO/IT	CONC.	CR/GAMMA	% LOSS	Ratio
Control	95.86/ 79.79	0.0	0.8324	—	—
Control	93.58/ 79.19	0.0	0.8462	—	—
1	94.75/ 68.60	416.2500	0.159	13.9	12
2	93.57/ 70.40	416.2500	0.116	10.8	12
3	94.99/ 65.48	832.5000	0.218	13.9	12
4	90.51/ 64.19	832.5000	0.183	15.7	12
5	89.71/ 56.07	1665.0000	0.336	25.1	20
6	88.45/ 52.24	1665.0000	0.421	29.6	20
7	86.97/ 16.82	3330.0000	3.340	77.0	10
8	85.99/ 19.29	3330.0000	2.741	73.3	10

CR = LOCORRECTION FACTOR = 0.8397
* Used for calculations

ED502304.9023 MG/L (95% CONFIDENCE RANGE: 12071.7647 TO 2564.2505)

$$x = \frac{\gamma_{\text{max}}}{(\gamma_{\text{max}} + 1)}$$

Signature: Larry Stufenhagen

TEST DATE: 4-24-96

TIME:

[illegible]

3SLOPE 3.0074

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MICROTOX DATA REPORT
Basic Test

FILE FC-1015.R15
R1626 FC-1015-X (RM-55192)

Test Time: 15 minutes

Osmotic Adjustment: NaCl

NUMBER	IN/IT	CONC.	CR/GAMMA	9.0 Lg (u) Loss	MEAN 90 Lg Loss
Control	95.86/ 74.31	0.0	0.7752 #	-	-
Control	93.58/ 74.06	0.0	0.7914 #	-	-
1	94.75/ 54.63	416.2500	0.359	26.4	
2	93.57/ 57.24	416.2500	0.280	21.9	24
3	94.97/ 52.83	832.5000	0.408	27.0	
4	90.51/ 52.69	832.5000	0.346	25.7	27
5	89.21/ 46.00	1665.0000	0.519 #	34.2	
6	88.43/ 42.00	1665.0000	0.650 #	39.4	36
7	86.97/ 8.53	3330.0000	0.986 #	87.5	
8	85.99/ 10.53	3330.0000	5.397 #	84.4	86

CR - CoCORRECTION FACTOR = 0.7833
Used for calculations

EL501957.2068 MG/L (95% CONFIDENCE RANGE: 1732.4070 TO 2211.1770)

Signature Ludy Stefenbauer

TEST DATE: 4-24-96 $\gamma = \frac{\text{gamma}}{(\text{gamma} + 1)}$ x 1

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MICROTOX DATA REPORT
Basic Test

FILE FC-1015.K30
F1426 FC-1015-X (RM-55192)

Test Time: 30 minutes

Osmotic Adjustment: NaCl

NUMBER	DOSE	CONC.	CR/GAMMA	% Light Loss	Mean % Light Loss
Control	95.86 / 72.93	0.0	0.7718 #	—	—
Control	93.58 / 72.92	0.0	0.7782 #	—	—
1	94.75 / 51.94	418.2500	0.337	27.9	27.9
2	93.57 / 52.42	418.2500	0.285	22.2	22.2
3	94.97 / 51.34	832.5000	0.400	27.9	27.9
4	90.51 / 52.99	832.5000	0.320	24.5	24.5
5	89.21 / 43.92	1665.0000	0.500 #	33.6	33.6
6	88.43 / 41.15	1665.0000	0.626 #	38.5	38.5
7	86.97 / 7.59	3330.0000	7.880 #	88.7	88.7
8	85.99 / 9.05	3330.0000	8.367 #	86.4	86.4

CR = CoCORRECTION FACTOR = 0.7150
Used for calculations

EL501951.4486 MS/L (95% CONFIDENCE RANGE: 1764.0007 TO 2100.8152)

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

Signature Ludy Stufenhagen

TEST DATE: 4-24-90

TIME

TIME _____
JSTIME = 3.6337

351 DFE = 3.6537

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