

ACUTE TOXICITY TO FISH (FATHEAD MINNOW)

TEST SUBSTANCE

Identity: Perfluorooctanesulfonylamido(ethyl)acetate; may also be referred to as PFOSAA, FC-128 or as the major component of FC-127, FC-129, FC-109, or FC-109-X. (Glycine, N-ethyl-N-[(heptadecafluorooctyl)sulfonyl]-, potassium salt, CAS # 2991-51-7)

Remarks: The test sample is FC-127 (F-6390, Lot 1). Current information indicates it is a mixture of 40-44% test substance, 32% water, 14% isopropanol, 4% ethanol, and 6-10% C₄-C₇ fluoroalkyl carboxylate compounds.

The following summary is abbreviated because the test sample is a mixture of the test substance in a water/organic solvent solution. Data may not accurately relate toxicity of the test sample with that of the test substance.

METHOD:

Methods: EPA protocol.

Test type: Static acute

GLP: No

Year Completed: 1981

Species: *Pimephales promelas*

Analytical monitoring: Temperature, pH, DO, and conductivity

RESULTS

Nominal concentrations: Bk control, 650, 870, 1150, 1550, 2100 mg/L

Element value: 96-hour LC₅₀ = 863 (796-950) mg/L

Element value based on nominal concentrations.

Remarks: There was a slight separation in test concentrations after 24 hours (surface film formation). Testing was conducted on the mixture of the test substance as described in the test substance remarks field. The value reported applies to that mixture and not the test substance. No attempt was made to determine the impact of the presence of the organic solvents or what portion of the toxicity can be contributed to the Perfluorooctanesulfonylamido(ethyl)acetate.

CONCLUSIONS

The FC-127 96-hour LC₅₀ for *Pimephales promelas* was determined to be 863 mg/L with a 95% confidence interval of 796-950 mg/L by moving average angle method.

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 at 3M Company, Environmental Laboratory, St. Paul, MN, Lab Request number 7009.

OTHER

Last changed: 5/18/00

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ENVIRONMENTAL LABORATORY AQUATIC TOXICITY DATA SHEET EXPLORATORY (RANGE-FINDING TEST)

LR 7009

Type Test 96HR. ACUTE SYNTIC Material Tested EP-127 F-16390 Lot 1

Test Organism EATHEAD MINNOW Source KURTZ'S, EMERSON, PA. Date Rec'd. 4/28/81 Batch No. 58

Avg. Wt. 0.205 grams Avg. Size 3.0 CM No. Organisms per dose 5

Test Solution Volume 3 Liters/All-Glass Tank Tank Dimensions: WIDE-MOUTH 1 GALLON GLASS J

Time Started 10:00AM Date Started 7/20/81 Date Completed 7/24/81

Dilution Water Carbon-filtered well water (Temp. 19 °C, D.O. 10.0 ppm, pH 8.2)

Investigator S3, AMW LC₅₀ (95% Confidence Limits) N=2

Tank No.	Init. Conc. mg/l	Total Amount Added	24 Hours			48 Hours			72 Hours			96 Hours		
			Total No. Dead	pH	D.O. ppm	Total No. Dead	pH	D.O. ppm	Total No. Dead	pH	D.O. ppm	Total No. Dead	pH	D.O. ppm
CI	Control	—	0	8.1	7.5	0	8.1	6.1	0	8.0	6.1	0	8.0	6.1
CTI	CONTROL	—	0	8.3	7.8	0	8.2	6.1	0	8.2	6.1	0	8.2	6.1
1	10	30 *	0	8.3	7.7	0	8.2	6.1	0	8.2	6.1	0	8.2	6.1
2	100	300	0	8.3	7.8	0	8.2	4.8	0	8.2	5.0	0	8.2	5.0
3	500	1500	0	8.4	7.8	0	8.3	5.2	0	8.0	1.8	0	8.0	1.8
4	1000	3000	0	8.4	8.0	1/5	8.3	5.2	2/5	8.0	0.5	3/5	7.9	0.5
5	2000	6000	2/5	8.5	8.0	3/5	8.3	4.3	4/5	7.9	0.3	5/5	7.9	0.3
Test Temp. °C			19°C			20°C			20°C			20°C		
Initials & Date			S3 7/21/81			S3 7/22/81			S3 7/23/81			S3 7/24/81		

Comments: * INDIVIDUAL WEIGHTS. TEST MATERIAL IS A CLEAR, AMBER LIQUID. EASILY DISPENSED IN WATER AT AMBIENT ROOM TEMPERATURE. SLIGHT SEPARATION AFTER 24 HOURS. SURFACE FILM. Effects other than Mortality EC₅₀

Tank No.	Symptoms or Reactions	Total No. Affected			
		24-Hr.	48 Hr.	72-Hr.	96-Hr.
Control	CONTROL				
1					
2					
3	SLIGHT SURFACING			5	5
4	SLIGHT SURFACING	3	3	3	2
5	SLIGHT SURFACING	3	2	1	—

REMARKS: (1) NOTICEABLE INCREASE IN D.O. CONCENTRATION BETWEEN 72-HR AND 96-HR.

000227

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ENVIRONMENTAL LABORATORY
AQUATIC TOXICITY DATA SHEET
DEFINITIVE (FULL-SCALE TEST)

LR 7009

Type Test 96HR ACUTE STATIC Material Tested FC-127 F-6390 Lot 1Test Organism FATHEAD MINNOWS Source KURTZ, ELVERSON, PA. Date Rec'd 4/28/81 Batch # 581Avg. Wt. 0.251 grams Avg. Size 3.0 cm No. Organisms per dose 20 Loading Factor 0.3 g/lFish Disease Treatment: 25 mg/l TETRACYCLINE T/P 6/8/81Test Solution Volume 16 Liters/All-Glass Tank Tank Dimensions: 35x20 cm and 25 cm deepTime Started 10:40 AM Date Started 4/27/81 Date Completed 7/31/81Dilution Water Carbon-filtered well water (Temp. 20 °C., D.O. 8.9 ppm, pH 8.5)Investigator 341/110 LC₅₀ (95% Confidence Limits) 833 mg/l (634-984)
(Full Signature) COMBINED 824 mg/l

USED PROBIT ANALYSIS

Calculated $\bar{C}$ having $n=2$ See attached pg. 2 (795-950 mg/l)

Tank No.	Initial Conc. mg/l	Total Amount Added mg	24 Hours			48 Hours			72 Hours			96 Hours		
			Total No. Dead	pH	D.O. ppm	Total No. Dead	pH	D.O. ppm	Total No. Dead	pH	D.O. ppm	Total No. Dead	pH	D.O. ppm
CI	Control	—	0	8.3	7.4	1	8.2	6.8	1	8.1	6.2	1	8.0	6.2
CII	Control	—	0	8.2	7.4	2	8.2	7.0	2	8.2	6.6	2	8.0	6.4
1B	650	10400	3	8.2	4.5	6	8.2	0.8	10	8.0	0.5	10	7.9	0.5
2B	870	13920	1	8.2	5.8	3	8.2	0.5	5	8.0	0.4	7	8.0	0.4
3B	1150	18400	0	8.3	4.5	5	8.2	1.5	6	8.0	0.4	13	8.0	0.4
4B	1550	24800	3	8.4	5.0	5	8.2	1.0	11	8.0	0.4	17	8.0	0.3
5B	2100	33600	5	8.4	1.0	16	8.2	0.4	20	8.0	0.3	20	—	—

Test Temp. °C 21°C 20°C 20°C 20°C
Initials & Date ES 7/28/81 ES 7/29/81 ES 7/30/81 ES 7/31/81Remarks: INDIVIDUAL INDICATORS. TEST MATERIAL IS CLEAR, LIQUID, EASILY DISSOLVEDIN WATER AT AMBIENT ROOM TEMPERATURE. SLANT SEPARATION AFTER 24 HRSURFACE FILM

Secondary Effects (other than Mortality):

EC50

Tank No.	Symptoms or Reactions	Total Number Affected			
		24-Hr.	48-Hr.	72-Hr.	96-Hr.
Control I	I				000000
Control II	II				
1B	SURFACING	Ann	Ann	Ann	Ann
2B	SURFACING	Ann	Ann	Ann	Ann
3B	SURFACING	Ann	Ann	Ann	Ann
4B	SURFACING	Ann	Ann	Ann	Ann
5B	SURFACING	Ann	Ann	—	—

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ENVIRONMENTAL LABORATORY
AQUATIC TOXICITY DATA SHEET
DEFINITIVE (FULL-SCALE TEST)LR 4009Type Test 1 HOUR ACUTE STATIC Material Tested EC-127 E-6390 Lot 1Test Organism BATHEAD MINNOWS Source KURTZ, ELVERSON, PA. Date Rec'd 4/28/81 Batch # 5-81Avg. Wt. 0.251 grams Avg. Size 3.0 cm No. Organisms per dose 20 Loading Factor 0.3Fish Disease Treatment: 25 mg/l TETRACYCLINE HCl 6/8/81Test Solution Volume 16 Liters/All-Glass Tank Tank Dimensions: 35x20 cm and 25 cm deepTime Started 10:40 AM Date Started 7/27/81 Date Completed 7/31/81Dilution Water Carbon-filtered well water (Temp. 20 °C., D.O. 8.9 ppm, pH 8.5)Investigator [Signature] IC₅₀ (95% Confidence Limits) 824 mg/l
(Full Signature) USED PROBIT ANALYSIS

Tank No.	Initial Conc. mg/l	Total Amount Added	24 Hours			48 Hours			72 Hours			96 Hours		
			Total No. Dead	pH	D.O. ppm	Total No. Dead	pH	D.O. ppm	Total No. Dead	pH	D.O. ppm	Total No. Dead	pH	D.O. ppm
CI	Control	—	0	8.3	7.4	1	8.2	6.8	1	8.1	6.2	1	8.0	6.2
CII	Control	—	0	8.2	7.4	2	8.2	7.0	2	8.2	6.6	2	8.0	6.4
1C	1650	10400*	3	8.2	4.0	6	8.2	0.8	9	8.0	0.6	10	7.9	0.6
2C	870	13920	0	8.2	4.2	2	8.2	1.2	5	8.0	0.4	7	8.0	0.4
3C	1150	18400	0	8.3	4.5	3	8.2	1.0	5	8.0	0.5	12	8.0	0.3
4C	1550	24800	4	8.4	4.5	7	8.2	0.5	15	8.0	0.4	20	8.0	0.3
5C	2100	33600	3	8.5	3.2	10	8.2	0.5	19	8.0	0.3	20	8.0	0.3

Test Temp. °C 21°C 20°C 20°C 20°C
 Initials & Date ES 7/28/81 ES 7/29/81 ES 7/30/81 ES 7/31/81

INDIVIDUAL WEIGHTS. TEST MATERIAL IS A CLEAR, OILY LIQUID. EASILY
 DISPENSED IN WATER AT AMBIENT ROOM TEMPERATURE. SWEET SEPARATE
 AFTER 24 HOURS. SURFACE FILM.
 Secondary Effects (other than Mortality): NO

Tank No.	Symptoms or Reactions	Total Number Affected			
		24-hr.	48-hr.	72-hr.	96-hr.
Control I					
Control II					000229
1C	SURFACING	Am	Am	Am	Am
2C	SURFACING	Am	Am	Am	Am
3C	SURFACING	Am	Am	Am	Am
4C	SURFACING	Am	Am	Am	—
5C	SURFACING	Am	Am	1	—