

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

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

LR 7009

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

Test Organism FATHEAD MINNOW Source KURTZ'S, EMERSON, PA. Date Rec'd 4/28/81 Batch No. 581

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 JAR

Time Started 10:00AM Date Started 4/20/81 Date Completed 4/24/81

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

Investigator S3, AMM LC₅₀ (95% Confidence Limits) R=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	<u>WQ</u>	0	8.1	7.5	0	8.1	6.1	0	8.0	6.1	0	8.0	6.1
CTI	CONTROL	<u>---</u>	0	8.3	7.8	0	8.2	6.6	0	8.2	6.6	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	4.9	0	8.2	5.0	0	8.2	5.1
3	500	1500	0	8.4	7.8	0	8.3	5.2	0	8.0	1.8	0	8.0	3.1
4	1000	3000	0	8.4	8.0	1/5	8.3	5.2	2/5	7.9	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 1/21/81			S3 1/22/81			S3 1/23/81			S3 1/24/81		

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

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	---

(1) NOTABLE INCREASE IN D.O. CONCENTRATION BETWEEN 72-HR AND 96-HR.

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

LR 7009

Type Test 96HR, ACUTE STATIC Material Tested EC-127 F-6390 Lot 1

Test Organism FATHEAD MINNOWS Source KURTZ, EVERSON Date Rec'd 4/28/81 Batch # 581

Avg. Wt. 0.251 grams Avg. Size 3.0 cm No. Organisms per dose 20 Loading Factor 0.3 g/l

Fish Disease Treatment: 25 mg/l TETRACYCLINE N/P 4/8/81

Test Solution Volume 16 Liters/All-Glass Tank Tank Dimensions: 35x20 cm and 25 cm deep

Time Started 10:40 AM Date Started 4/27/81 Date Completed 7/3/81

Dilution Water Carbon-filtered well water (Temp. 20 °C., D.O. 8.9 ppm, pH 8.5)

Investigator R3C JMD IC₅₀ (95% Confidence Limits) 833 mg/l (634-984)
(Full Signature) COMBINED 824 mg/l
USED PROBIT ANALYSIS Calculated C_{max} = 776-950 mg/l

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
1B	1650	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	10	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 7/12/81 ES 7/19/81 ES 7/30/81 ES 7/13/81

REMARKS: INDIVIDUAL DEATHS. TEST MATERIAL IS A CLEAR, AMBER LIQUID EASILY DISPERSED IN WATER AT AMBIENT ROOM TEMPERATURE. SLIGHT SEPARATION AFTER 24 HR.
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					
1B	SURFACING	ALL	ALL	ALL	ALL
2B	SURFACING	ALL	ALL	ALL	ALL
3B	SURFACING	ALL	ALL	ALL	ALL
4B	SURFACING	ALL	ALL	ALL	ALL
5B	SURFACING	ALL	ALL	ALL	ALL

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

LR 4009

Type Test 96HR. ACUTE STATIC Material Tested FC-127 F-6390 Lot 1

Test Organism BATHHEAD MINNOWS Source KURTZ, ELVERSON, PA. Date Rec'd 4/28/81 Batch # 5-81

Avg. Wt. 0.25 grams Avg. Size 3.0 cm No. Organisms per dose 20 Loading Factor 0.3

Fish Disease Treatment: 25 mg/l TETRACYCLINE HCl 6/8/81

Test Solution Volume 16 Liters/All-Glass Tank Tank Dimensions: 35x20 cm and 25 cm deep

Time Started 10:40 AM Date Started 7/27/81 Date Completed 7/31/81

Dilution Water Carbon-filtered well water (Temp. 20 °C., D.O. 8.9 ppm, pH 8.5)

Investigator [Signature] LC_{50} (95% Confidence Limits) 81 mg/l
Full Signature) COMBINED 824 mg/l

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, AMBER BROWN. EASILY

DISPENSED IN WATER AT AMBIENT ROOM TEMPERATURE. SUGIT SEPARATE

AFTER 96 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					
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	—