

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, FC-109-X, FC-4351, or L-6778. (Glycine, N-ethyl-N-[(heptadecafluorooctyl)sulfonyl]-, potassium salt, CAS # 2991-51-7)

Remarks: The 3M production lot number was 501 (F6873). The test sample is L-6778. Current information indicates it is a mixture of 40% water, 34.4% PFOSAA, 5.6% C₄-C₇ fluoroalkyl carboxylate compounds, 17% isopropyl alcohol, and 3% ethanol.

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: Not noted.

Test type: Acute static

GLP: No

Year Completed: 1982

Species: *Pimephales promelas*

Supplier: Brady, Nebraska.

Analytical monitoring: Temperature, pH, DO

Exposure period: 96-hours

Statistical methods: None. LC50 value greater than highest concentration tested.

Test fish age: Not noted

Average Length and weight: Length = 2.5 cm
Weight = 0.12 grams

Loading: 0.2 g/L

Pretreatment: Not noted.

Test conditions:

Dilution water: Carbon-filtered well water.

Initial dilution water chemistry:

Dissolved Oxygen: 8.7 mg/L

pH: 7.9

Temperature: 20°C

Lighting: Not noted

Stock and test solution preparation: Test solutions were created by direct weights additions.

Concentrations dosing rate: Once
Stability of the test chemical solution: Sample was noticed to undergo phase separation after 24 hours.
Exposure vessels: Wide-mouth 1 gallon glass jars
Number of replicates: blank controls – two. L-6778 - none
Number of fish per vessel: 5
Number of concentrations: 4 plus 2 blank controls
Water chemistry during the study:
 pH range (24-96 hours):
 8.1 – 8.2 (control exposures)
 7.9 – 8.4 (1,000 mg/L exposure)
 Dissolved oxygen range (24-72 hours*):
 6.5 – 7.0 mg/L (control exposure)
 0.7 – 6.8 mg/L (1,000 mg/L exposure)*
 *Dissolved Oxygen values for the 72-hr exposure were used because the values at 96-hours were not legible.

Temperature range (0-96 hours): 20 - 21°C

RESULTS

Nominal concentrations: Blank controls, 1, 10, 100 and 1,000 mg/L
Element value: 96-hour LC₅₀ >1,000 mg/L

Element value based on nominal concentrations.

Remarks: Testing was conducted on the mixture as described in the Test Substance Remarks field. The value reported applies to that mixture and not the fluorochemical proportion alone.

Dissolved oxygen concentrations fell well below acceptable levels in the 100 mg/L and 1000 mg/L test concentrations. Surfacing of some or all of the test organisms was noted as a sublethal effect for both concentrations and was probably due to low dissolved oxygen concentrations.

CONCLUSIONS

The L-6778 96-hour LC₅₀ for *Pimephales promelas* was determined to be >1,000 mg/L, the highest concentration tested.

Submitter: 3M Company, Environmental Laboratory, P.O. Box 33331, St. Paul, Minnesota, 55133

DATA QUALITY

Reliability: Klimisch ranking 3. Study not conducted in duplicate. Each concentration separated from the previous by an order of magnitude. The sample purity was not properly characterized and the study lacks analytical confirmation of the amount of fluorochemical proportion in the solutions. Dissolved oxygen concentrations were allowed to fall below acceptable levels and appeared to affect the fish.

REFERENCES

This study was conducted by the 3M Company, Environmental Laboratory, St. Paul, MN, 3M Lab Request number 8442-1, November, 1982.

OTHER

Last changed: 3/31/01