

BIODEGRADATION

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. 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 will not accurately relate biodegradation of the test sample with that of the test substance.

METHOD:

Method: Not noted.

Type: Aerobic BOD with Dichromate reflux determination of COD

GLP: No

Year completed: 1982

Contact time: 20 days

Innoculum: Not noted

RESULTS

Chemical Oxygen Demand: 415,000 mg O₂ / kg chemical (mean value)

Biochemical Oxygen Demand:

5-Day: 240,000 mg/L

10-Day: 310,000 mg/L

20-Day: 320,000 mg/L

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. The BOD and COD values are expected to be the result of biodegradation / oxidation of the organic solvent components, but it's not understood what portion of the degradation can be attributed to the Perfluorooctanesulfonylamido(ethyl)acetate.

CONCLUSIONS

This testing indicated that some portion of the test sample biodegraded in aerobic environments capable of supporting biodegradation.

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

DATA QUALITY

Reliability: Klimisch ranking 3. This study lacks information on the methodology. Testing cannot conclude what portions of the test sample were responsible for the apparent biodegradation values. The analytical method is not chemical specific.

REFERENCES

This study was conducted by the 3M Environmental Laboratory, Lab Request Numbers 7009 (August 19, 1981) and 7633 (February 3, 1982)

OTHER

Last changed: 5/18/00

ENVIRONMENTAL RISK ASSESSMENT OF FC-127

SUBJECT PRODUCT

Identity: FLUORAD Brand Fluorochemical Surfactant FC-127. Major component is Perfluorooctanesulfonylamido(ethyl)acetate, CAS # 2991-51-7

Remarks: The subject product is FC-127. 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.

CONCLUSIONS

This assessment is extremely subjective. There is no data to support conclusions that it will "enter the environment in very low concentrations". Additionally, conclusions are based on limited hazard data.

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

REFERENCES

The subject assessment was conducted by E. A. Reiner of the 3M Environmental Laboratory, Env. Assessment Inquiry Number 81290, March 2, 1982.

OTHER

Last changed: 5/17/00

8-25-81

ENVIRONMENTAL LABORATORY FINAL REPORT

LAB REQUEST NO. 7009

EQUESTER NAME: EAR
 EPT: 0535
 PROJECT NO: 9970012600
 ATE RECEIVED: 7-09-81
 ESC: FC-127

CONTRACT LAB:
 CONTRACT LAB COST: 0
 3M E-L HOURS: 18
 DATE COMPLETED: 8-19-81

SAMPLE	DATE	CODE	DESCRIPTION	TEST	RESULT
1		FC-127	F-6390 LOT 1 .190 g/2 .25 g/4 .25 g/4	96 HR LC50 BOD 05 BOD 10 BOD 20 COD OX UP 96 HR LC50 COMB LC50	823 ⁸⁶⁰ MG/L 240000 MG/L 310000 MG/L 320000 MG/L 110000 MG/L SEE ATTACHED 816 MG/L 824 MG/L 110000 MG/L
2		DUP		COD	

* = CONTRACT LAB

APPROVED AND SUBMITTED BY

DATED

8-25-81

Densub

COD updated
on attached

Kick

This COD is ~ 100% additional
 greater than the calculated. This must
 theoretical COD for this product. be an error
 Please Redo calculation.
 If you don't see an error
 redo using the Standard
Methods Didromate reflex
method.

In ~~the~~ future please
 make sure I get copies
 of COD Data sheets.

2-04-82

ENVIRONMENTAL LABORATORY FINAL REPORT

LAB REQUEST NO. 7009

EQUESTER NAME: EAR
EPT: 0535
PROJECT NO: 9970012600
DATE RECEIVED: 7-09-81
ESC: FC-127

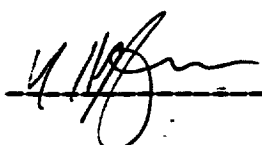
CONTRACT LAB:
CONTRACT LAB COST: 0
3M E-L HOURS: 19
EST CMPLT DATE: 2-03-82
DATE COMPLETED: 2-03-82

ORIGINAL COD'S RUN ON 7-22-81 ARE VOIDED -- ANALYST APPEARS TO HAVE MADE A DILUTION ERROR. SAMPLES #1 AND #2 WERE ANALYZED 1-6-82 AND SAMPLE #3 AND #4 WERE ANALYZED 1-11-82. SEE LR 7633 FOR MORE RECHECKS.

SAMPLE	DATE	CODE	DESCRIPTION	TEST	RESULT
1		FC-127	F-6390 LOT 1	96 HR LC50 BOD 05 COD-RFX OX UP 96 HR LC50 COMB LC50	833 MG/L 240000 MG/L 403000MG/KG SEE ATTACHED 816 MG/L 824 MG/L
2		DUP		COD-RFX	416000MG/KG
3		DUP	NO DILUTION	COD-RFX	380000MG/KG
4		DUP	NO DILUTION	COD-RFX	380000MG/KG

* = CONTRACT LAB

APPROVED AND SUBMITTED BY



DATED

2-8-82

CODs on FC 127

1-25-82
JCS

7-22-81

1,100,000 mg/L
1,120,000 mg/L

Ampule
"

7009-1
" Dup

} Dilute

1-30-82

1-6-82

402,700 mg/kg
446,000 mg/kg

Reflex
"

7009-1
7009-2

} Dilution

1-11-82

380,500 mg/kg
380,500 mg/kg

"
"

7009-1
7009-2

} Direct

1-21-82

430,000 mg/kg
430,000 mg/kg

Ampule
"

7633-1
7633-2

} Dilut

1-21-82

560,000 mg/L
(Sp. Grav. 1.26 $\rightarrow$ 440,000 mg/kg)

Ampule

7009-1 } Dilut

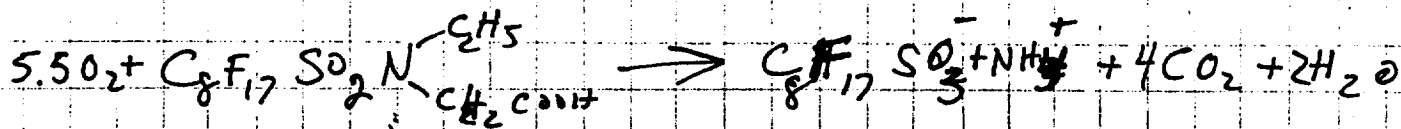
Mean 415,000 mg/kg
(s = 27,000 mg/kg)

409
380
430
440

Isopropyl

$$2.39 \text{ g/g} \times 0.14 = \boxed{.322}$$

$$\text{Ethanol } 2.08 \text{ g/g} \times 0.04 = \boxed{.083}$$



MW 585

$$0.3 \text{ g/g} \times .5 = \underline{.15}$$

↑
1.19

$$\Sigma = 0.555 = \text{Theoretical } \boxed{\text{COD}}$$

TH = $\rightarrow$ COD = 0.50 g/g

2-04-82

ENVIRONMENTAL LABORATORY FINAL REPORT

LAB REQUEST NO. 7633

EQUESTER NAME: EAR
EPT: 0535
PROJECT NO: 9970012600
DATE RECEIVED: 1-15-82
ESC: RECHECK OF COD'S ON FC-127

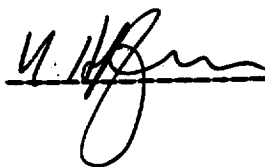
CONTRACT LAB:
CONTRACT LAB COST: 0
3M E-L HOURS: 3
EST CMPLT DATE: 2-03-82
DATE COMPLETED: 2-03-82

PREVIOUS ANALYSES: REFLUX 1-6-82 AND 1-11-82; AMPULE 7-22-81 (SEE LR 7009).
FC-127 SPECIFIC GRAVITY (FROM EAR) 1.26 G/ML -- #4 EQUAL TO 440,000 MG/KG COD.

SAMPLE	DATE	CODE	DESCRIPTION	TEST	RESULT
1		FC-127	7009-1	COD	430000MG/KG
2			DUP OF 1	COD	430000MG/KG
4		7009-1		COD	560000 MG/L

* = CONTRACT LAB

APPROVED AND SUBMITTED BY



DATED

2-8-82