

BIODEGRADATION (BOD/COD)

TEST SUBSTANCE

Identity: A mixture containing perfluorooctanesulfonate, which may also be referred to as PFOS, FC-95, or as a component of FC-783. (1-Octanesulfonic acid) (CAS # 2795-39-3).

Remarks: The 3M production lot number was not noted. The test sample is FC-783 (cc784-1). Current information indicates it is a mixture of 1.0% PFOS, 2.0% Sultone foamer, 2.3% sodium octyl sulfate, 1.6% polyoxyethylene monooctylphenol ether, 0.1% sodium lauryl sulfate, 25.0% diethylene glycol monobutyl ether, 0.05% tolytriazole, and 67.95% water.

The following summary applies to a mixture with incompletely characterized concentrations of impurities. Data may not accurately reflect the biodegradability of the fluorochemical component of the test sample.

METHOD:

Method: Not given.

Type: Aerobic

GLP: No

Year completed: 1979

Contact time: 20 days

Innoculum: Secondary influent collected from the Metro Wastewater Treatment Plant, St. Paul, MN

RESULTS

Biochemical Oxygen Demand (BOD):

5-Day:	190,000 mg/kg
13-Day:	470,000 mg/kg
20-Day:	560,000 mg/kg

CONCLUSIONS

No conclusions given.

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

DATA QUALITY

Reliability: Klimisch ranking 3. Study lacks description and records of the method followed. The inoculum is not properly characterized. Sample purity

was not properly characterized and the study lacks analytical confirmation of the amount of fluorochemical proportion in the solution.

REFERENCES

This study was conducted by the 3M Company, Environmental Laboratory, St Paul, MN, Lab Request number 4896S, 1979.

OTHER

Last changed: 6/26/00

ULTIMATE BOD ENVIRONMENTAL LABORATORY DATA SHEET

COMPOUND: FC-783
ANALYST: W. A. Schind
DATE: 6-08-79

SAMPLE CONCENTRATION	BOD5 mg/kg	BOD15 mg/kg	BOD20 mg/kg
8.00 mg/l	190,000 ^①	470,000 ^①	560,000 ^①
16.0	210,000 ^①	>440,000 ^③	—
32.0	170,000 ^①	>220,000 ^③	—
200	>37,000 ^③	—	—
AVERAGE =	190,000	470,000	560,000

GENERAL FOOTNOTES

- ① Values included in average.
- ② The less than '<' values were calculated by assuming a 2 mg/l DO depletion due to biochemical oxidation of the test compound for each dilution.
Calculation: $\text{<mg/l or mg/kg BOD} = \frac{2 \times 300}{\text{ml or grams per 300 ml dilution}}$
- ③ These dilutions had a residual DO of <0.5 mg/l at the end of the incubation period. The greater than '>' values were calculated by assuming a residual DO of 1 mg/l at the end of the incubation period.
- ④ When comparing these dilutions to the seeded dilution water blanks, there are indications of inhibited biological action.

ENVIRONMENTAL LABORATORY

BOD WORK SHEET

Page No. 43703

Date: 5-18 77 4. 2. 1977

Dilution Water: 18 ml

Seed: Pigeon Eye - 2nd Inf.

Bk. Avg.

Blanks: _____, _____

Bottle No.	Sample Size ml	Description	INITIAL D.O. AFTER DEPLETION	Depletion	5-Day BOD	Avg.
		FC - 783			mg/Kg	
49	0.40	1.50g → 250 ml*	8.90	6.90	190,000	190,000
53	0.80	1 ml = 0.0060g	8.90	5.00	210,000	
57	1.6		8.90	2.90	170,000	
59	10		8.90	<0.5	>37,000	
* initial sample dilution with D.I. H₂O The greater than '>' value was calculated by assuming a residual D.O. of 1 mg/l at the end of the incubation period.						
W. A. Selvidge 5-23-79						

ENVIRONMENTAL LABORATORY

BOD WORK SHEET

Page no. 4310-

Date: 5-18 79 in y. 2. 1979

Dilution Water: 180

Seed: Pigeon Eye - 2nd leaf

Bk. Avg.

Blanks:

[illegible]

ENVIRONMENTAL LABORATORY

BOD WORK SHEET

Page No. 48762

Date: 5-18 79 u. y. 2000

Dilution Water: 182

Seed: Pigeon Eye - 2nd Inf.

Bk. Avg.

Blanks:

Bottle No.	Sample Size ml	Description	INITIAL D.O. AFTER DEPLETION	Depletion	20 - Day BOD	Avg.
		FC - 783				
49	0.40	1.50g → 250 ml*	8.90 2.65		560,000 mg/Kg	
53	0.80	1 ml = 0.0060g	8.90 —			
57	1.6		8.90 —			
59	10		8.90 —			
* initial sample dilution with D.I. H ₂ O						
W. A. Seid 6-06-79						

ENVIRONMENTAL LABORATORY BOD WORK SHEET

Date: 5-18-79 W.A. Schil

Dilution Water: 18P

Seed: *Lign. Eyz-2nd Inq*

Bk. Avg. _____

Blanks: _____

Bottle No.	Sample Size ml	Description	INITIAL D.O. AFTER INCUBATION	Depletion	5 - Day BOD	Avg.
23	—	Unseeded Dilution	8.95 8.70	0.25		
61	—	H ₂ O Blanks	8.90 8.60	0.30		
95	—		8.85 8.55	0.30		
92	—		8.90 8.45	0.45		
AVG. DEPLETION =				0.325		
22	—	Seeded Dilution	8.90 8.35			
134	—	H ₂ O Blanks	8.90 8.45			
2	—	3ml/d	8.90 8.30			
799	4.9	Seed Controls	8.90 7.80			
81	8.9	(-ml seed per 300ml)	8.80 7.00			
91	13	unseeded dilution	8.80 6.10			
8	17	H ₂ O)	8.70 5.30	← used for calculating seed correction value		
		40% - 70% depletion	≈ 3.5 - 6.15	mg/l DO residual		
87	2	BOD STD. 10	8.90 7.00		210 mg/l	
94	4	150mg Glucose	8.90 5.55		220	
73	5	and 150mg	8.90 4.70		220	
78	6	Glutamic Acid	8.90 3.85		230	
		per 1 liter.				
		Lab Request Nos.				
		48965				
		48955				
		48545				
		48925				
		48945				
		48935				
		48535				

W.A. Schil
5-23-79

ENVIRONMENTAL LABORATORY BOD WORK SHEET

Date: 5-18-79 W.A. Schild

Dilution Water: B.P.

Seed: Ligo Eyz-2nd Inf.

Bk. Avg.

Blanks: _____

e No.	Sample Size ml	Description	INITIAL D.O. AFTER INCUBATION	Depletion	20 - Day BOD	Avg.
3	—	Unseeded Dilution	8.95 7.25	1.7		
1	—	H ₂ O Blanks	8.90 7.60	1.3		
5	—		8.85 7.30	1.55		
12	—		8.90 7.80	1.1		
		avg. depletion =	1.4125			
22	—	Seeded Dilution	8.90 6.45			
34	—	H ₂ O Blanks	8.90 6.55			
2	—	3ml / l	8.90 6.55			
99	4.9	Seed Controls	8.90 5.45			
31	8.9	(ml seed per 300ml	8.80 3.90			
11	13	unseeded dilution	8.80 2.00			
—	17	H ₂ O)	8.70 —			
87	2	BOD STD. 10	8.90 4.65			
94	4	150mg Glucose	8.90 2.60			
73	5	and 150mg	8.90 1.65			
78	6	Glutamic Acid	8.90 1.65			
		per liter.				
		Lab Request Nos.				
		48965				
		48955				
		48545				
		48925				
		48945				
		48935				
		48535				

← used to calculate seed
correction value

W.A. Schild
6-07-79

ENVIRONMENTAL LABORATORY BOD WORK SHEET

Date: 5-18-79 W.A. Scheil

Dilution Water: 18P

Seed: Ligo Eyz-2nd Inf

Bk. Avg.

Blanks:

File No.	Sample Size ml	Description	INITIAL D.O. AFTER INCUBATION	Depletion	13 - Day BOD	Avg.
23	—	Unseeded Dilution	8.95 8.50	0.45		
61	—	H ₂ O Blanks	8.90 8.35	0.55		
75	—		8.85 8.30	0.55		
72	—		8.90 8.25	0.65		
		avg. depletion =	0.55			
22	—	Seeded Dilution	8.90 8.10	0.80		
134	—	H ₂ O Blanks	8.90 8.20			
2	—	3ml/l	8.90 8.10			
199	4.9	Seed Controls	8.90 7.45			
81	8.9	(-ml seed per 300ml)	8.80 6.10			
91	13	unseeded dilution	8.80 4.30			
1	17	H ₂ O)	8.70 1.60			
87	2	BOD STD. 10	8.90 6.40		250 mg/l	
94	4	150mg Glucose	8.90 4.75		250	
73	5	and 150mg	8.90 3.90		250	
78	6	Glutamic Acid	8.90 3.10		250	
		per 1 liter.				
		Lab Request Nos.				
		48965				
		48955				
		48545				
		48925				
		48945				
		48935				
		48535				

W.A. Scheil
5-31-79