

BIODEGRADATION (BOD/COD)

TEST SUBSTANCE

Identity: Mixture containing perfluorooctanesulfonate which may also be referred to as PFOS, FC-95, or as a component of FC-3017. (1-Octanesulfonic acid) (CAS # 2795-39-3).

Remarks: The 3M production lot number was not noted. The test sample is FC-3017. Current information indicates FC-3017 is a mixture of 0.67% PFOS, 20% diethylene glycol butyl ether, 55.41% water, 21% ethylene glycol, 1.33% Hydroxy foamer, 1% sodium octyl sulfate, 0.5% polyoxyethylene monooctylphenyl ether, 0.04% sodium lauryl sulfate, and 0.05% tolyltraizole.

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

METHOD:

Method: OECD Guideline.

Type: Aerobic

GLP: No

Year completed: 1996

Contact time: 28 days

Inoculum: Polyseed NX 2 capsules, Lot C205, Polybac, Bethlehem, PA

RESULTS

Chemical Oxygen Demand (COD):	563,800 mg/kg
Biochemical Oxygen Demand (CBOD):	
5-Day:	261,100 mg/kg
	246,100 mg/kg (replicate)
10-Day:	422,800 mg/kg
	446,100 mg/kg (replicate)
20-Day:	507,100 mg/kg
	478,700 mg/kg (replicate)
28-Day:	490,900 mg/kg
	508,100 mg/kg (replicate)

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

CONCLUSIONS

No conclusions given.

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

REFERENCES

This test was conducted by AScl Corporation, Duluth Environmental Testing Division, Duluth, MN at the request of the 3M Company, Lab Request number N3688, 1995.

OTHER

Last changed: 6/26/00

ASCI Corporation/ASCI-Duluth
Environmental Testing Division
Submitted to 3M Company - 4/96
ASCI-DETD Study ID #5010-068

**N3688 BOD REPORT FOR
3M COMPANY**

Submitted to

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Prepared by

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This report lists the data, information, and calculation used to determination of the BOD and COD for the test chemical.

COD = 563,800 mg O₂ / kg chemical

Dates of BOD test: 3/19/96 - 4/16/96

Water bath temperature range during the test: 19.6 - 21.0 °C

Lot number of Polyseed NX: C205

TABLE 1. BOD Dilution Information for N3688

Sample ID (mg/L)	Stock Solution Concentration (mg/L)	Sample Volume (ml)	Sample Concentration (mg/L)
10	984	3.0	9.84
18	984	5.5	18.04
25	984	7.5	24.60
50	984	15.0	49.20

TABLE 2. BOD Blank Calculations for N3688

Sample ID	Day	FIRST REPLICATE			SECOND REPLICATE		
		Initial D.O.	Final D.O.	D.O. Drop	Initial D.O.	Final D.O.	D.O. Drop
Blank	5	9.43	9.36	0.07	9.43	9.33	0.10
Blank	10	9.43	9.20	0.23	9.43	9.37	0.06
Blank	20	9.43	9.34	0.09	9.43	9.37	0.06
Blank	28	9.43	9.26	0.17	9.43	9.11	0.32

TABLE 3. BOD Seed Correction Factor Calculations for N3688

Seed Conc. ml/Bottle	Day	FIRST REPLICATE				SECOND REPLICATE				Average SCF
		Initial D.O.	Final D.O.	D.O. Drop	SCP	Initial D.O.	Final D.O.	D.O. Drop	SCF	
10	5	9.32	5.33	3.99	0.80	9.32	5.31	4.01	0.80	0.80
10	10	9.32	3.17	6.15	1.23	9.32	3.75	5.57	1.11	1.17
10	20	9.32	4.11	5.21	1.04	9.32	3.08	6.24	1.25	1.15
10	28	9.32	4.15	5.17	1.03	9.32	4.16	5.16	1.03	1.03

* SCF = (D.O. drop * ml seed in test) / ml seed in seed blank.

TABLE 4. BOD Reference* and Tox Blanks Calculations for N3688

Conc. mg/L	Day	SCF	FIRST REPLICATE					SECOND REPLICATE				
			Initial D.O.	Final D.O.	D.O. Drop	Corrected Drop	BOD mg/L ^b	Initial D.O.	Final D.O.	D.O. Drop	Corrected Drop	BOD mg/L
0	5	0.80	9.42	4.23	5.19	4.39	220	9.42	4.29	5.13	4.33	217
49.20	5	0.80	9.39	0.07	9.32	8.52	426	9.39	0.10	9.29	8.49	425

* Reference = 150 mg glucose and 150 mg glutamic acid in 1 liter BOD dilution water, tested at 2% dilution.

^b BOD mg/L = (corrected D.O. drop) * 300 ml BOD volume / 6 ml reference.

TABLE 5. BOD Calculations for N3688

Conc. mg/L	Day	SCF	FIRST REPLICATE					SECOND REPLICATE				
			Initial D.O.	Final D.O.	D.O. Drop	Corrected Drop	BOD mg/kg*	Initial D.O.	Final D.O.	D.O. Drop	Corrected Drop	BOD mg/kg
9.84	5	0.80	9.36	6.48	2.88	2.08	211400	9.36	6.52	2.84	2.04	207300
18.04	5	0.80	9.38	3.38	6.00	5.20	288200	9.38	3.71	5.67	4.87	270000
24.60	5	0.80	9.40	1.62	7.78	6.98	283700	9.40	2.18	7.22	6.42	261000
49.20	5	0.80	9.42	0			***	9.42	***			
			Mean 261100					Mean 246100				
9.84	10	1.17	9.36	4.03	5.33	4.16	422800	9.36	3.80	5.56	4.39	446100
18.04	10	1.17	9.38	0			***	9.38	0			***
24.60	10	1.17	9.40	0			***	9.40	0			***
49.20	10	1.17	9.42	0			***	9.42	0			***
			Mean 422800					Mean 446100				
9.84	20	1.15	9.36	3.22	6.14	4.99	507100	9.36	3.50	5.86	4.71	478700
18.04	20	1.15	9.38	0			***	9.38	0			***
24.60	20	1.15	9.40	0			***	9.40	0			***
49.20	20	1.15	9.42	0			***	9.42	0			***
			Mean 507100					Mean 478700				
9.84	28	1.03	9.36	3.50	5.86	4.83	490900	9.36	3.33	6.03	5.00	508100
18.04	28	1.03	9.38	0			***	9.38	0			***
24.60	28	1.03	9.40	0			***	9.40	0			***
49.20	28	1.03	9.42	0			***	9.42	0			***
			Mean 490900					Mean 508100				

* BOD = corrected drop x 1,000,000 / test concentration.

Omitted data points: *** Final D.O. measured at level lower than detection limit.