

MATERIAL SAFETY
DATA SHEET

3M
3M Center
St. Paul, Minnesota
55144-1000
1-800-364-3577 or (651) 737-6501 (24 hours)

Copyright, 1998, Minnesota Mining and Manufacturing Company.
All rights reserved. Copying and/or downloading of this
information for the purpose of properly utilizing 3M products
is allowed provided that:

- 1) the information is copied in full with no changes unless
prior agreement is obtained from 3M, and
- 2) neither the copy nor the original is resold or otherwise
distributed with the intention of earning a profit thereon.

DIVISION: 3M CHEMICALS

TRADE NAME:

FC-118 FLUORAD Brand Fluorochemical Surfactant

ID NUMBER/U.P.C.:

98-0211-4832-9 00-51135-02697-7 98-0211-4885-7 00-51135-02745-5
98-0211-8012-4 00-51135-10863-5 98-0211-8083-5 00-51135-10918-2
98-0211-8858-0 00-51135-10971-7 98-0211-9389-5 00-51135-45015-4
98-0212-1131-7 00-51135-45148-9

ISSUED: November 04, 1998

SUPERSEDES: September 29, 1998

DOCUMENT: 10-4221-7

1. INGREDIENT	C.A.S. NO.	PERCENT
WATER.....	7732-18-5	80
AMMONIUM PERFLUOROOCTANOATE.....	3825-26-1	18 - 21
AMMONIUM PERFLUOROHEPTANOATE.....	6130-43-4	0.1 - 1.0
AMMONIUM PERFLUOROHXANOATE.....	21615-47-4	0 - 0.1
AMMONIUM PERFLUOROPENTANOATE.....	68259-11-0	0.1 - 1.0

The components of this product are in compliance with the chemical
notification requirements of TSCA. All applicable chemical
ingredients in this material are listed on the European Inventory of
Existing Chemical Substances (EINECS), or are exempt polymers whose
monomers are listed on EINECS.

2. PHYSICAL DATA

BOILING POINT:..... 100 C
(Typical)
VAPOR PRESSURE:..... 18 mmHg
Calc @ 20C
VAPOR DENSITY:..... 0.62 Air=1
Calc @ 20C
EVAPORATION RATE:..... < 1.0 BuOAc=1
SOLUBILITY IN WATER:..... complete
SPECIFIC GRAVITY:..... 1.12 Water=1
PERCENT VOLATILE:..... 80 %

Abbreviations: N/D - Not Determined N/A - Not Applicable CA - Approximately

**Exhibit
1526**

State of Minnesota v. 3M Co.,
Court File No. 27-CV-10-28862

3M_MN02892806

1526.0001

2. PHYSICAL DATA (continued)

pH:..... ca. 5
VISCOSITY:..... N/D
MELTING POINT:..... N/A

APPEARANCE AND ODOR:

Light colored liquid; slight odor.

3. FIRE AND EXPLOSION HAZARD DATA

FLASH POINT:..... > 100 C Setaflash
FLAMMABLE LIMITS - LEL:..... N/A
FLAMMABLE LIMITS - UEL:..... N/A
AUTOIGNITION TEMPERATURE:..... N/A

EXTINGUISHING MEDIA:

Water, Carbon dioxide, Dry chemical, Foam

SPECIAL FIRE FIGHTING PROCEDURES:

Wear full protective clothing, including helmet, self-contained, positive pressure or pressure demand breathing apparatus, bunker coat and pants, bands around arms, waist and legs, face mask, and protective covering for exposed areas of the head.

UNUSUAL FIRE AND EXPLOSION HAZARDS:

See Hazardous Decomposition section for products of combustion.

4. REACTIVITY DATA

STABILITY: Stable

INCOMPATIBILITY - MATERIALS/CONDITIONS TO AVOID:

Not Applicable

HAZARDOUS POLYMERIZATION: Hazardous polymerization will not occur.

HAZARDOUS DECOMPOSITION PRODUCTS:

Carbon Monoxide and Carbon Dioxide, Oxides of Nitrogen, Hydrogen Fluoride, Ammonia.

Abbreviations: N/D - Not Determined N/A - Not Applicable CA - Approximately

5. ENVIRONMENTAL INFORMATION

SPILL RESPONSE:

Refer to other sections of this MSDS for information regarding physical and health hazards, respiratory protection, ventilation, and personal protective equipment. Contain spill. Cover with absorbent material. Collect spilled material.

For spills to ground: Collect contaminated soil. Pump contaminated water from puddles or stagnant storm sewers. Place collected waste in approved containers, and seal. For spills to ground or surface water: Notify appropriate authorities. Contact 3M to evaluate further needs.

RECOMMENDED DISPOSAL:

Incinerate in an industrial or commercial facility in the presence of a combustible material. Combustion products will include HF.

Pass contaminated water through anion exchange resin. If necessary, contact 3M for assistance.

ENVIRONMENTAL DATA:

Data for product solids: Chemical Oxygen Demand (COD): Nil (.000700g/g). Biochemical Oxygen Demand (BOD20): Nil; 96-Hr. LC50, Bluegill Sunfish (*Lepomis macrochirus*): 569 mg/L; 96-Hr. LC50, Fathead Minnow (*Pimephales promelas*): 766 mg/L; 48-Hr EC50, *Daphnia magna*: 632 mg/L; 14-Day EC50 (cell dry weight), Green Algae (*Selenastrum capricornutum*) 73 mg/L. Soil Adsorption Coefficient (Koc): 17, indicates very high mobility. (Study used a sandy loam soil).

REGULATORY INFORMATION:

Volatile Organic Compounds: N/A.
VOC Less H2O & Exempt Solvents: N/A.

Since regulations vary, consult applicable regulations or authorities before disposal. U.S. EPA Hazardous Waste Number = None (Not U.S. EPA Hazardous).

The components of this product are in compliance with the chemical registration requirements of TSCA, EINECS, CDSL and AICS.

EPCRA HAZARD CLASS:

FIRE HAZARD: No PRESSURE: No REACTIVITY: No ACUTE: Yes CHRONIC: Yes

6. SUGGESTED FIRST AID

EYE CONTACT:

Immediately flush eyes with large amounts of water for at least 15 minutes. Get immediate medical attention.

Abbreviations: N/D - Not Determined N/A - Not Applicable CA - Approximately

6. SUGGESTED FIRST AID (continued)

SKIN CONTACT:

Immediately wash skin with soap and large amounts of water. Remove contaminated clothing. If signs/symptoms occur, call a physician. Wash contaminated clothing before reuse and dispose of contaminated shoes.

INHALATION:

If signs/symptoms occur, remove person to fresh air. If signs/symptoms continue, call a physician.

IF SWALLOWED:

Do not induce vomiting. Drink two glasses of water. Call a physician.

7. PRECAUTIONARY INFORMATION

EYE PROTECTION:

Avoid eye contact. Wear vented goggles.

SKIN PROTECTION:

Avoid skin contact. Wear appropriate gloves when handling this material. A pair of gloves made from the following material(s) are recommended: butyl rubber. Use one or more of the following personal protection items as necessary to prevent skin contact: head covering, coveralls. Protective garments (other than gloves) should be made of either of the following materials: polyethylene/polyvinylidene chloride (Saranex)

Coverall made of Tyvek(r). Wear rubber boots when cleaning up spills.

RECOMMENDED VENTILATION:

Use with appropriate local exhaust ventilation. Provide sufficient ventilation to maintain emissions below recommended exposure limits. If exhaust ventilation is not adequate, use appropriate respiratory protection.

RESPIRATORY PROTECTION:

Avoid breathing of vapors, mists or spray. Avoid breathing of airborne material. Select one of the following NIOSH approved respirators based on airborne concentration of contaminants and in accordance with OSHA regulations: full-face high-efficiency filter respirator, full-face supplied air respirator.

PREVENTION OF ACCIDENTAL INGESTION:

Do not eat, drink or smoke when using this product. Wash exposed areas thoroughly with soap and water. Wash hands after handling and before eating.

Abbreviations: N/D - Not Determined N/A - Not Applicable CA - Approximately

7. PRECAUTIONARY INFORMATION (continued)

RECOMMENDED STORAGE:

Do not store containers on their sides. Store at room temperature.
Keep container closed when not in use.

FIRE AND EXPLOSION AVOIDANCE:

Keep container tightly closed. Nonflammable.

OTHER PRECAUTIONARY INFORMATION:

No smoking: Smoking while using this product can result in contamination of the tobacco and/or smoke and lead to the formation of the hazardous decomposition products mentioned in the Reactivity Data section of this MSDS.

HMIS HAZARD RATINGS: HEALTH: 2 FLAMMABILITY: 1 REACTIVITY: 0
PERSONAL PROTECTION: X (See precautions, section 7.)

EXPOSURE LIMITS

INGREDIENT	VALUE	UNIT	TYPE	AUTH	SKIN*
WATER.....	NONE	NONE	NONE	NONE	
AMMONIUM PERFLUOROOCTANOATE.....	0.01	MG/M3	TWA	ACGIH	Y
AMMONIUM PERFLUOROHEPTANOATE.....	0.1	MG/M3	TWA	3M	Y
AMMONIUM PERFLUOROHEXANOATE.....	0.1	MG/M3	TWA	3M	Y
AMMONIUM PERFLUOROPENTANOATE.....	0.1	MG/M3	TWA	3M	Y

* SKIN NOTATION: Listed substances indicated with 'Y' under SKIN refer to the potential contribution to the overall exposure by the cutaneous route including mucous membrane and eye, either by airborne or, more particularly, by direct contact with the substance. Vehicles can alter skin absorption.

SOURCE OF EXPOSURE LIMIT DATA:

- ACGIH: American Conference of Governmental Industrial Hygienists
- 3M: 3M Recommended Exposure Guidelines
- NONE: None Established

8. HEALTH HAZARD DATA

EYE CONTACT:

No toxicity data for the solution. Ammonium perfluoroalkyl carboxylate can be irritating to the eye and may cause eye injury from airborne exposure.

SKIN CONTACT:

May be absorbed through the skin and persist in the body for an extended time.

No toxicity data for the solution. Ammonium perfluoroalkyl

Abbreviations: N/D - Not Determined N/A - Not Applicable CA - Approximately

8. HEALTH HAZARD DATA (continued)

carboxylate is slightly toxic when absorbed through the skin; it is non-irritating to the skin.

INHALATION:

May be absorbed by inhalation and persist in the body for an extended time.

No toxicity data for the solution. Ammonium perfluoroalkyl carboxylate may cause respiratory system irritation from inhalation; can be considered moderately toxic by inhalation on a single exposure; a median lethal concentration for a 4-hour exposure in the albino rat is 980 milligrams per cubic meter. Repeated inhalation exposure produced liver changes and elevated blood organofluoride levels in rats.

IF SWALLOWED:

Ingestion is not a likely route of exposure to this product.

No toxicity data for the solution. Ammonium perfluoroalkyl carboxylate is considered moderately toxic from a single oral exposure; acute oral LD50 (rat) is 540 mg. per kg. of body weight.

CANCER:

A mixture of ammonium perfluorooctanoate, ammonium perfluoroheptanoate, ammonium perfluoropentanoate and ammonium perfluorohexanoate, that was 93 to 97% AMMONIUM PERFLUOROOCTANOATE (3825-26-1) was fed to albino rats for 2 years, no compound induced carcinogenicity was found in the study. There were statistically significant compound related benign testicular tumors. In a second two-year study there were statistically significant compound related benign tumors in the liver, pancreas, and testis when compared to ad libitum and pair-fed controls. Based on the current knowledge, these findings have no human health implications. (3825-26-1) (1983 and 1993 studies conducted jointly by 3M and DuPont).

MUTAGENICITY:

Ammonium perfluoroalkyl carboxylate was not mutagenic in invitro mutagenicity assays. Did not cause cell transformation in a mammalian cell transformation assay.

REPRODUCTIVE/DEVELOPMENTAL TOXINS:

Ammonium perfluoroalkyl carboxylate was not teratogenic in rabbits by oral administration and was not teratogenic to rats by gavage and inhalation exposures.

OTHER HEALTH HAZARD INFORMATION:

This product is not known to contain any substances regulated under California Proposition 65.

Abbreviations: N/D - Not Determined N/A - Not Applicable CA - Approximately

SECTION CHANGE DATES

HEADING SECTION CHANGED SINCE September 29, 1998 ISSUE

Abbreviations: N/D - Not Determined N/A - Not Applicable CA - Approximately

The information in this Material Safety Data Sheet (MSDS) is believed to be correct as of the date issued. 3M MAKES NO WARRANTIES, EXPRESSED OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, ANY IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE OR COURSE OF PERFORMANCE OR USAGE OF TRADE. User is responsible for determining whether the 3M product is fit for a particular purpose and suitable for user's method of use or application. Given the variety of factors that can affect the use and application of a 3M product, some of which are uniquely within the user's knowledge and control, it is essential that the user evaluate the 3M product to determine whether it is fit for a particular purpose and suitable for user's method of use or application.

3M provides information in electronic form as a service to its customers. Due to the remote possibility that electronic transfer may have resulted in errors, omissions or alterations in this information, 3M makes no representations as to its completeness or accuracy. In addition, information obtained from a database may not be as current as the information in the MSDS available directly from 3M.