

MATERIAL SAFETY DATA SHEET
 3M
 3M Center
 St. Paul, Minnesota
 55144-1000
 (612) 733-1110

DIVISION: SPECIALTY CHEMICALS DIVISION
 TRADE NAME:

FC-118 FLUORAD Brand Fluorochemical Surfactant
 3M 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
 ISSUED: May 20, 1996
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 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 PERFLUOROHEXANOATE.....	21615-47-4	0	- 0.1
AMMONIUM PERFLUOROPENTANOATE.....	68259-11-0	0.1	- 1.0

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 %
 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

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



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3. FIRE AND EXPLOSION HAZARD DATA (continued)

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.

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. In the U.S.A., call (612) 733-1110 or (612) 733-6100 for 24-hour spill assistance. 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,

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5. ENVIRONMENTAL INFORMATION (continued)

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.

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.

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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.

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. No smoking while handling this material.

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 PERFLUOROOCCTANOATE.....	0.01	MG/M3	TWA	ACGIH	Y
AMMONIUM PERFLUOROHEPTANOATE.....	0.1	MG/M3	TWA	3M	Y

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EXPOSURE LIMITS (continued)

INGREDIENT	VALUE	UNIT	TYPE	AUTH	SKIN*
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 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.

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8. HEALTH HAZARD DATA (continued)

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. (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.

SECTION CHANGE DATES

PRECAUTIONARY INFO. SECTION CHANGED SINCE May 01, 1996

ISSUE

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The information on this Data Sheet represents our current data and best opinion as to the proper use and handling of this product under normal conditions. Any use of the product which is not in conformance with this Data Sheet or which involves using the product in combination with any other product or any other process is the responsibility of the user.