

MATERIAL SAFETY 3M  
 DATA SHEET 3M Center  
 St. Paul, Minnesota  
 55144-1000  
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DIVISION: 3M SPECIALTY MATERIALS  
 TRADE NAME:

PFM-5040 3M (TM) SPECIALTY GAS  
 ID NUMBER/U.P.C.:

98-0211-8851-5	-	-	-	98-0211-8852-3	-	-	-
98-0211-8853-1	00-51135-10966-3	98-0211-8892-9	00-51135-11000-3				

ISSUED: February 20, 2001  
 SUPERSEDES: December 13, 1999  
 DOCUMENT: 07-3459-0

1. INGREDIENT	C.A.S. NO.	PERCENT
Perfluorobutane (C4F10).....	355-25-9	> 99.5

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.

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 2. PHYSICAL DATA  
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BOILING POINT:..... ca. -2 C  
   Typical  
 VAPOR PRESSURE:..... ca. 1680 mmHg  
   @ 20 C  
 VAPOR DENSITY:..... ca. 8.4 Air=1  
 EVAPORATION RATE:..... > 1 BuOAc=1  
 SOLUBILITY IN WATER:..... neglig.  
 SPECIFIC GRAVITY:..... ca. 1.5 Water=1  
 PERCENT VOLATILE:..... 100 %  
 pH:..... N/A  
 VISCOSITY:..... < 10 centipoise  
 MELTING POINT:..... N/D

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 Abbreviations: N/D - Not Determined N/A - Not Applicable CA - Approximately  
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2. PHYSICAL DATA (continued)  
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APPEARANCE AND ODOR:  
Liquefied Gas

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3. FIRE AND EXPLOSION HAZARD DATA  
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FLASH POINT:..... None  
FLAMMABLE LIMITS - LEL:..... Nonflammable  
FLAMMABLE LIMITS - UEL:..... Nonflammable  
AUTOIGNITION TEMPERATURE:..... Nonflammable

EXTINGUISHING MEDIA:  
Nonflammable.

SPECIAL FIRE FIGHTING PROCEDURES:  
When fire fighting conditions are severe and total thermal decomposition of the product is possible, 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. No unusual effects are anticipated during fire extinguishing operations. Avoid breathing the products and substances that may result from the thermal decomposition of the product or the other substances in the fire zone. Keep containers cool with water spray when exposed to fire to avoid rupture.

UNUSUAL FIRE AND EXPLOSION HAZARDS:  
Exposure to extreme heat can give rise to thermal decomposition. See section 8, Health Hazard Data.

NFPA HAZARD CODES: HEALTH: 1 FIRE: 0 REACTIVITY: 0  
UNUSUAL REACTION HAZARD: none

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4. REACTIVITY DATA  
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STABILITY: Stable

INCOMPATIBILITY - MATERIALS/CONDITIONS TO AVOID:  
Finely divided active metals, Alkali and alkaline earth metals.

HAZARDOUS POLYMERIZATION: Hazardous polymerization will not occur.

HAZARDOUS DECOMPOSITION PRODUCTS:  
See Health Hazard Data section.

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5. ENVIRONMENTAL INFORMATION  
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SPILL RESPONSE:

Observe precautions from other sections. Ventilate area. Close cylinder or if necessary vent in hood or remote area. Place leaking containers in a well-ventilated area, preferably in an exhaust hood, if available, or outdoors.

RECOMMENDED DISPOSAL:

Incinerate at a facility equipped to handle gaseous waste. Facility must be capable of handling aerosol cans. Combustion products will include HF. Dispose of empty cans in a sanitary landfill. Reclaim if feasible.

ENVIRONMENTAL DATA:

No data available.

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. Clean Water Act, Section 307, Toxic Pollutants = None. U.S. EPA Hazardous Waste Number = None (Not U.S. EPA Hazardous).

Components are in compliance with TSCA, EINECS, and MITI.

Transportation Information:

Regulated for ground, air and ocean transport (UN3163).

OTHER ENVIRONMENTAL INFORMATION:

EPCRA 311/312 Reportable Quantity = Not Reportable.

EPCRA HAZARD CLASS:

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

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6. SUGGESTED FIRST AID  
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EYE CONTACT:

Immediately flush eyes with large amounts of water. Get immediate medical attention.

SKIN CONTACT:

No need for first aid is anticipated.

INHALATION:

Remove person to fresh air. If not breathing, give artificial respiration. If breathing is difficult, get immediate medical attention.

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6. SUGGESTED FIRST AID (continued)  
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IF SWALLOWED:

No need for first aid is anticipated.

OTHER FIRST AID INFORMATION:

NOTE TO PHYSICIANS: Exposure to high concentration may increase "myocardial irritability." Do not administer sympathomimetic drugs (i.e. adrenaline) unless absolutely necessary. No specific antidote. Supportive care and treatment based on the judgement of physician in response to the patient are recommended.

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7. PRECAUTIONARY INFORMATION  
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EYE PROTECTION:

Wear safety glasses with side shields.

SKIN PROTECTION:

Avoid skin contact. Wear appropriate gloves when handling this material.

RECOMMENDED VENTILATION:

Use with adequate dilution ventilation.

RESPIRATORY PROTECTION:

Avoid prolonged breathing of vapors.

PREVENTION OF ACCIDENTAL INGESTION:

Not applicable.

RECOMMENDED STORAGE:

Store in a cool place. Keep container closed when not in use. Store in explosion-proof containers.

FIRE AND EXPLOSION AVOIDANCE:

Nonflammable.

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: 0 FLAMMABILITY: 0 REACTIVITY: 0  
PERSONAL PROTECTION: X (See precautions, section 7.)

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7. PRECAUTIONARY INFORMATION (continued)  
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EXPOSURE LIMITS

INGREDIENT	VALUE	UNIT	TYPE	AUTH	SKIN*
Perfluorobutane (C4F10).....	NONE	NONE	NONE	NONE	

\* 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:  
- NONE: None Established

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8. HEALTH HAZARD DATA  
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EYE CONTACT:

Eye contact is not expected to occur during normal use of the product.

Frostbite: signs/symptoms can include pain, clouding of the cornea, redness, swelling and blindness.

SKIN CONTACT:

Frostbite: signs/symptoms can include firm blanched areas, redness, pain, tissue destruction, swelling and scar tissue formation.

INHALATION:

Simple Asphyxiation: signs/symptoms can include light-headedness, rapid heart beat, a feeling of suffocation and blue color. Unconsciousness and death may occur if oxygen deprivation is severe or prolonged. Simple asphyxiation results from the displacement of oxygen in air to a concentration which is less than that necessary to maintain life.

IF SWALLOWED:

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

No information was found regarding effects from swallowing.

OTHER HEALTH HAZARD INFORMATION:

If the product is exposed to extreme conditions of heat from misuse or equipment failure, toxic decomposition products that include hydrogen fluoride can occur.

Hydrogen fluoride has an ACGIH threshold limit value of 3 parts per million parts of air, ppm, of fluoride as a ceiling limit and an OSHA PEL of 3 ppm of fluoride as an eight hour time-weighted average and

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8. HEALTH HAZARD DATA (continued)  
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6 ppm of fluoride as a Short Term Exposure Limit.

A 3M Product Toxicity Summary Sheet is Available.

EXPOSURE ROUTE	SUMMARY OF TOXICITY FINDINGS
Oral	Practically Non-Toxic
Inhalation	Simple Asphyxiant

Not a cardiac sensitizer where tested.

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SECTION CHANGE DATES  
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HEADING	SECTION CHANGED SINCE	December 13, 1999	ISSUE
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