

PF-16 Pro-Flush™

MSDS# PF-16
March 2010

SECTION 1. PRODUCT AND COMPANY IDENTIFICATION

Product Name: Pro-Flush™
Catalog Number: PF-16

SECTION 2. COMPONENT INFORMATION

INGREDIENT	CAS No.	EINECS No.	%	Symbol	Risk Phrases
Acetone	67-64-1	200-662-2	10-20	F,Xi,T	R11, 36, 66, 67, 39/23/24/25
t-Butyl Acetate	540-88-5	208-760-7	20-30	Xn, F	R11, R20
trans 1,2 Dichloroethene	156-60-5	205-860-2	50-60	Xn F	R11, R20, 21, 22, 36/37/38
Ethyl Nonafluoroisobutyl Ether	163702-06-5	98-02-0209-00	10-20	Xi	R18, R53, S23, S61
Ethyl Nonafluorobutyl Ether	163702-05-4	98-02-0209-00	10-20	Xi	R18, R53, S23, S61

SECTION 3. HAZARDS IDENTIFICATION

Emergency Overview: Colorless, volatile liquid with ethereal and faint sweetish odor. Overexposure may cause dizziness and loss of concentration. At higher levels, CNS depression and cardiac arrhythmia may result from exposure. Vapors displace air and can cause asphyxiation in confined spaces. At high temperatures (>250°C), decomposition products may include Hydrofluoric Acid (HF) and carbonyl halides.

Skin: Mildly irritating

Eyes: Contact with liquid or mist may cause pain and moderate irritation.

Inhalation: Components of Pro-Flush™ are of a low order of toxicity in animals. At high levels of exposure, cardiac arrhythmia may occur. When oxygen levels are reduced to 12-14% by displacement, symptoms of asphyxiation, loss of coordination, increased pulse rate and deeper respiration will occur.

Effects from inhalation of mists and vapors vary from mild to moderate irritation of the upper respiratory tract, depending on severity of exposure. Abusive or excessive inhalation of vapors may cause irritation to the upper respiratory tract, dizziness, nausea and other central nervous system effects.

Ingestion: Swallowing can cause gastro-intestinal irritation, nausea, vomiting, diarrhea. Aspiration of material into the lungs can cause chemical pneumonitis.

Skin Contact: Frequent or prolonged contact may cause mild irritation. Repeated contact may cause drying or flaking of skin.

Aggravation of Pre-existing Conditions: Persons with pre-existing skin disorders or eye problems or impaired respiratory function may be more susceptible to the effects of the product.

SECTION 4. FIRST AID

Inhalation: Remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Call a physician.

Ingestion: Call the nearest poison control center, the National Poison Control Hotline at 1-800-222-1222 (U.S.A.), or Chem-Tel Emergency Response, 1+813.248.0585 (011 +1+813.248.0585 for international calls) for advice immediately. Do not induce vomiting, unless directed to do so by a physician. If victim is conscious and alert, give 2-3 glasses of water to drink. Do not leave victim unattended. To prevent aspiration of swallowed product, lay victim on side with head lower than waist. Vomiting may occur spontaneously.

Skin Contact: Wash with soap and water. Rinse with copious amounts of fresh, running water. If irritation persists, get medical attention.

Eye Contact: Immediately flush eyes with large amounts of cool running water for at least 15 minutes while holding eyelids open. If irritation persists, get medical attention immediately.

Advice To Physician: Because of possible disturbances of cardiac rhythm, catecholamine drugs such as epinephrine, should be used with special caution and only in situations of emergency life support. Treatment of overexposure should be directed at the control of symptoms and the clinical conditions.

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SECTION 5. FIRE FIGHTING MEASURES

Flash Point: None to boiling (41°C/106°F) ASTM D56-87 - TAG Closed Cup (TCC)

Autoignition Temperature: Not determined

Upper Flame Limit (volume % in air): Not determined

Lower Flame Limit (volume % in air): Not determined

Flame Propagation Rate (solids): Not applicable

Fire Extinguishing Media: Foam, CO2, Dry media or other media suitable for the surrounding fire.

Unusual Fire and Explosion Hazards: Exposure to temperatures above 70°C/160°F may cause containers to burst. Pro-Flush™ is not flammable at ambient temperatures and atmospheric pressure. However, based on similar mixtures, this material will become combustible when mixed with air under pressure and exposed to strong ignition sources. Contact with certain finely divided reactive metals may result in formation of explosive or exothermic reactions under specific conditions (e.g. very high temperatures and/or appropriate pressures). In the event of a liquid spill, ethyl nonafluoroisobutyl ether and ethyl nonafluorobutyl ether will evaporate from the mixture faster than the other components, leaving a mixture enriched with trans-1,2-dichloroethylene, acetone and t-butyl acetate. The enriched mixture may be flammable.

Special Fire Fighting Precautions/Instructions: Firefighters should wear self-contained breathing apparatus for protection against suffocation and possible toxic decomposition products. Wear proper eye and skin protection. Use a water spray to keep fire-exposed containers cool and to knock down vapors that may result from product decomposition.

SECTION 6. ACCIDENTAL RELEASE MEASURES

Remove contaminated clothing immediately. Keep unnecessary and unprotected personnel away from area of spill. Remove all potential sources of ignition from the area if possible. Ventilate area of leak or spill. Contain and absorb liquid with clay, vermiculite or other inert substance and package in a suitable container for disposal. Dispose of absorbed material in accordance with Federal, local and state regulations. Only personnel equipped with proper respiratory and eye/skin protection should be permitted in the area until air has been tested and determined safe, including low lying areas. The ethyl nonafluoroisobutyl ether/ethyl nonafluorobutyl ether fraction will evaporate from Pro-Flush faster than the other components, leaving a mixture enriched with trans-1,2-dichloroethylene, acetone and t-butyl acetate. The enriched mixture may be flammable. *Spills and releases may have to be reported to Federal and/or local authorities.* See Section 15 regarding reporting requirements.

SECTION 7. HANDLING AND STORAGE

Protect from physical damage. Store in a cool, dry, ventilated area away from sources of heat, moisture. Empty containers of this material, pose no disposal hazard and may be recycled. Keep this and all chemicals out of the reach of children. Wash thoroughly after handling.

Normal Handling: (Always wear recommended personal protective equipment.) Avoid breathing vapors or liquid contact with eyes, skin or clothing. Do not puncture or drop containers, expose them to open flame, excessive heat, or direct sunlight. Use approved containers only. Pro-Flush™ should not be mixed with air above atmospheric pressure for any purpose. Use only dry nitrogen to pressurize with Pro-Flush™ injectors.

Storage Recommendations: Because of its low boiling properties, store Pro-Flush in a cool, well-ventilated area of low fire risk. Protect container, injector and its fittings from physical damage. Avoid storing Pro-Flush in basement areas. Do not heat the container or store at a temperature above 110°F (44°C). Close container and/or injector valve tightly after use and when empty. If container temperature exceeds 106°F, cool the can with water before opening cans or filling injector to minimize the risk of splashing or hazardous contact.

SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Substance:	CAS No.	EINECS No.	OSHA PEL	ACGIH TLV	8hr TWA	UK WEL 15min STEL
Acetone	67-64-1	200-662-2	750ppm	750ppm	1210 mg/m3	3620 mg/m3
t-Butyl Acetate	540-88-5	208-760-7	200ppm	200ppm	966 mg/m3	1210 mg/m3
trans 1,2 Dichloroethene	156-60-5	205-860-2	200ppm	None	No Data	No Data
Ethyl Nonafluoroisobutyl Ether	163702-06-5			200ppm	No Data	No Data
Ethyl Nonafluorobutyl Ether	163702-05-4			200ppm	No Data	No Data

Engineering Controls:

Ventilation System: A system of local and/or general exhaust is recommended to keep employee exposures below the Airborne Exposure Limits. Local exhaust ventilation is generally preferred because it can control the emissions of the contaminant at its source, preventing dispersion of it into the general work area. Please refer to the ACGIH document, *Industrial Ventilation, A Manual of Recommended Practices*, most recent edition, for details.

Personal Protective Equipment:

Skin Protection: Use protective, impervious gloves and clothing made of neoprene, nitrile or butyl rubber if prolonged or repeated contact with liquid is anticipated. Wash clothing promptly, if wet. Remove any non-impervious clothing and wash before re-use.

Eye Protection: For normal conditions, wear safety glasses. Where there is reasonable probability of liquid contact, wear splash-proof goggles. Contact lenses should not be worn under such conditions.

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Respiratory Protection: None required for normal work situations where adequate ventilation is provided. Use NIOSH approved self-contained, positive pressure respirators for emergencies and in situations where air may be displaced by vapors.

Additional Recommendations: High dose-level warning signs are recommended for areas of principle exposure. Provide eyewash stations and quick drench shower facilities at convenient locations. For tank cleaning operations, see OSHA regulations, 29 CFR 1910.132 and 29 CFR 1910.133.

Personal Respirators: Not required for normal use in accordance with label directions. If respiratory protection is required, wear a properly fitted full-facepiece respirator with organic vapor cartridges to minimize exposure to vapors. Do not use air-purifying respirators if the oxygen content is below 14%.

Skin Protection: Use solvent resistant gloves to minimize skin contact.

Eye Protection: Use chemical safety goggles and/or a full face shield where splashing is possible. Do not use unless a source of running water or other eyewash provisions are nearby.

Work Hygienic Practices: Use proper industrial hygiene practices and follow label instructions to minimize hazardous exposure. Wash hands after handling this material, and before eating or smoking.

SECTION 9. PHYSICAL/CHEMICAL CHARACTERISTICS

Boiling Point: 41°C/106°F

Vapor Pressure (@ 70°F): ~1psig, ~16psia

Evaporation Rate (Ether = 1): >1

Solubility in water: ~7 grams/liter

Appearance: Clear colorless liquid

Specific Gravity (H₂O = 1): 1.086

Vapor Density (Air = 1): 3.8 @ 70°F

VOC Content: 0% (all components are VOC exempt)

pH @ 25°C: Does not apply

Odor: Sweet odor

SECTION 10. STABILITY AND REACTIVITY DATA

Stability: Stable under ordinary conditions of use and storage.

Hazardous Decomposition Products: Carbon monoxide, Carbon dioxide, Hydrogen sulfide, Phosgene

Hazardous Polymerization: Will not occur.

Incompatibilities: Avoid contact with strong oxidizing agents, strong alkalis and strong acids.

Conditions to Avoid: Heat, incompatibles.

SECTION 11. TOXICOLOGY INFORMATION

Immediate (Acute) Effects:

Acetone

LD50/LC50: CAS# 67-64-1:

Inhalation, rat: LC50 = 50100 mg/m³/8H;

Oral, mouse: LD50 = 3 gm/kg

Oral, rabbit: LD50 = 5340 mg/kg

Oral, rat: LD50 = 5800 mg/kg

Skin, rabbit: LD50 = 20 gm/kg.

Carcinogenicity: 2-propanone - Not listed by ACGIH, IARC, NIOSH, NTP, or OSHA.

Epidemiology: No information available.

Teratogenicity: No information available.

Reproductive Effects: Fertility: post-implantation mortality. Ihl, mam: TCLo=31500 ug/m³/24H (1-13D preg)

Neurotoxicity: No information available.

Mutagenicity: Cytogenetic analysis: hamster fibroblast, 40 g/L, Sex chromosome loss/non-disjunction: *S.cerevisiae*, 47600 ppm

t-Butyl acetate

LD50/LC50 CAS# 540-88-5:

Draize test, rabbit, eye: 100 uL Mild irritant

Draize test, rabbit, skin: 500 uL/24H Mild irritant

Inhalation, rat: LC50 = >2230 mg/m³/4H

Oral, rat: LD50 = 4100 mg/kg

Skin, rabbit: LD50 = >2 gm/kg

Ethyl Nonafluoroisobutyl Ether

Ethyl Nonafluorobutyl Ether

Acute Oral Toxicity, LD50-Rat: >2.0 grams/KG body weight.

Acute Inhalation Toxicity, 4-hour LC50-Rat: 92,000ppm

Trans-1,2-dichloroethylene

Acute Dermal (rabbit) LD50: > 5,000mg/kg

Acute Inhalation (rat) 4-hr. LC50: >24,100 ppm

Delayed (Subchronic and Chronic) Effects:

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Ethyl Nonafluoroisobutyl Ether

Ethyl Nonafluorobutyl Ether

For a mixture of ethyl nonafluorobutyl ether and its isomer, a single positive response for cardiac sensitization was observed at an exposure level of 49,000 ppm. No adverse health effects are anticipated from normal handling and use.

Trans-1,2-dichloroethylene

Embryotoxicity (rats): Not a teratogen. Fetal toxicity present only at maternally toxic concentrations.

Dose levels: 0, 2,000, 6,000, and 12,000 ppm

NOEL (pups): 12,000 ppm (decreased bodyweight, increased skeletal variations)

NOEL (dams): 6,000 ppm

90-day Inhalation Study (rats): NOAEL – 4,000 ppm, the highest level tested

Dose levels: 200, 1,000, 4,000 ppm

Other Data:

Ethyl Nonafluoroisobutyl Ether

Ethyl Nonafluorobutyl Ether

Eye Irritation: Minimally irritating to eyes

Skin Irritation: Non-irritating to skin

Skin Sensitization: Not a skin sensitizer

Trans-1,2-dichloroethylene

Genetic studies: Not mutagenic to E-coli or S. typhimurium when incubated in the presence of liver enzymes. Not mutagenic in Saccharomyces cerevisiae with or without microsomal activation.

SECTION 12. ECOLOGICAL INFORMATION

Environmental Fate: No information found. Based on data from analogous mixtures, this product is not expected to bio-accumulate.

Environmental Toxicity:

Acetone

Ecotoxicity: Rainbow trout LC50=5540 mg/L/96H; Sunfish (tap water), death at 14250 ppm/24H; Mosquito fish (turbid water) TLm=13000 ppm/48H

Environmental Fate: Volatilizes, leeches, and biodegrades when released to soil.

Physical/Chemical: No information available.

t-Butyl Acetate

Ecotoxicity: Bacteria: Phytobacterium phosphoreum: EC50 = 6.38-11.1 mg/L; 5,15,30 minutes; Microtox test; 15 degrees C Based on a log Kow of 1.38, the BCF value for tert-butyl acetate can be estimated to be 6.6 by a recommended regression-derived equation. This BCF value suggests that bioconcentration is not significant.

Environmental: Chemical hydrolysis of tert-butyl acetate in moist, very alkaline soils (pH approaching 10 or higher) may be important, but hydrolysis in soils of pH 9 or lower is not expected to be important. Based on an estimated Koc value of 134, tert-butyl acetate may be subject to significant leaching in soil.

Volatilization from dry soil surfaces may be rapid.

Physical: ATMOSPHERIC FATE: tert-Butyl acetate will exist almost entirely in the vapor-phase in the ambient atmosphere due to its expected high vapor pressure. The half-life for the vapor-phase reaction of tert-butyl acetate with photochemically produced hydroxyl radicals has been estimated to be about 26 days in an average atmosphere indicating that this reaction may be the dominant atmospheric degradation mechanism. Physical removal via washout may be possible.

Other: Do not empty into drains.

Ethyl Nonafluoroisobutyl Ether

Ethyl Nonafluorobutyl Ether

Test Organism

Test Type

Result

Water flea, Daphnia magna	48 hours Effect Concentration 50%	>2.55 mg/l
Fathead Minnow, Pimephales promelas	96 hours Lethal Concentration 50%	>2.75 mg/l
Green algae, Selenastrum capricornutum	96 hours Effect Concentration 50%	>2.32 mg/l

SECTION 13. DISPOSAL CONSIDERATIONS

Dispose of spill-clean up and other wastes in accordance with Federal, State, and local regulations. Whatever cannot be saved for recovery or recycling should be managed in an appropriate and approved waste facility. All spent material must be disposed of in accordance with all applicable Federal and State RCRA Regulations. Consult with appropriate regulatory agencies before disposing of waste material. The information offered here is for the product as shipped. Use and/or alterations to the product such as mixing with other materials may significantly change the characteristics of the material and alter the RCRA classification and the proper disposal method. The unused product is an RCRA hazardous waste if discarded. The RCRA ID number is: U079 (1,2 dichloroethylene); U002 (Acetone, Ignitability)

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SECTION 14. TRANSPORTATION INFORMATION

US DOT: Not regulated for ground transport in quantities below 5 liters.

International Water, I.M.O.: Dangerous Goods Description: UN3082, Environmentally Hazardous Substance, Liquid, NOS (Contains trans 1,2 dichloroethylene), 9, PGIII (Ltd.QTY)

Marine Pollutant: No

SECTION 15. REGULATORY INFORMATION



EC Classification: Not classified

Risk phrases:

R18: In use, may form flammable/explosive vapour-air mixtures

R20: Harmful by inhalation

R22: Harmful if swallowed

R36: Irritating to eyes.

R37: Irritating to respiratory system.

R38: Irritating to skin.

R53: May cause long-term adverse effects in the environment.

R66: Repeated exposure may cause skin dryness or cracking

R67: Vapors may cause drowsiness and dizziness

Safety phrases

S2: Keep out of reach of children

S7: Keep container tightly closed.

S9: Keep container in a well-ventilated place.

S16: Keep away from sources of ignition - No smoking.

S23: Do not breathe fumes, vapor or spray

S26: In case of contact with eyes, rinse immediately with plenty of water and seek medical advice

S61: Avoid release to the environment. Refer to special instructions/safety data sheets

US EPA:

Comprehensive Environmental Response Compensation and Liability Act of 1980 (CERCLA): Spills or releases resulting in the loss of any ingredient at or above its RQ requires immediate notification to the National Response Center [(800) 424-8802] and to your Local Emergency Planning Committee.

RQ: 2000 pounds (1,2 dichloroethylene)

Superfund Amendments and Reauthorization Act of 1986 (SARA) Title III requires emergency planning based on threshold planning quantities and release reporting based on reportable quantities in 40 CFR 355 (used for SARA 302, 304, 311, and 312) is not required.

Superfund Amendments and Reauthorization Act of 1986 (SARA) Title III requires submission of annual reports of release of toxic chemicals that appear in 40 CFR 372 (for SARA 313). This material is not subject to reporting requirements.

Toxic Substances Control Act (TSCA) Status: The ingredients of this product are on the TSCA inventory.

State Right to Know

California Proposition 65: None listed

Massachusetts: Hazardous substances and extraordinarily hazardous substances must be identified.

Pennsylvania: Hazardous substances must be identified.

California SCAQMD Rule 443.1 (VOC's): 0%

SARA 311/312: Acute: No Chronic: No Fire: No Pressure: Yes Reactivity: No

WHMIS:

This MSDS has been prepared according to the hazard criteria of the Controlled Products Regulations (CPR) and the MSDS contains all of the information required by the CPR.

Acetone meets the Canadian WHMIS criteria for classes:

B2: Flammable and combustible material: Flammable liquid

D2B- Poisonous and Infectious material-Other Effects: Toxic

Foreign Inventory Status:

Ethyl Nonafluoroisobutyl Ether: Not listed

Ethyl Nonafluorobutyl Ether: Not listed

Trans-1,2-Dichloroethylene

Europe: ELINCS #419 170 6 #205-860-2

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Trans-1,2-Dichloroethylene

Japan: MOL 2-(13)-143

Canada: Notified Listed DSL

Australia: Notified

16. OTHER INFORMATION:



NFPA Ratings:

NFPA Classification: Health - 2, Flammability - 1, Reactivity - 1

HMIS III Classification: Health - 2, Flammability - 1, Physical Hazard-1

Risk Phrases:

R18 In use, may form flammable/explosive vapour-air mixtures

R20: Harmful by inhalation

R22: Harmful if swallowed

R36: Irritating to eyes.

R37: Irritating to respiratory system.

R38: Irritating to skin.

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R66: Repeated exposure may cause skin dryness or cracking

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Safety phrases:

S2: Keep out of reach of children

S7: Keep container tightly closed.

S9: Keep container in a well-ventilated place.

S16: Keep away from sources of ignition - No smoking.

S23: Do not breathe fumes, vapor or spray

S26: In case of contact with eyes, rinse immediately with plenty of water and seek medical advice

S61: Avoid release to the environment. Refer to special instructions/safety data sheets

Label Hazard Warning: Store Pro-Flush™ in a cool, dry area, away from sources of ignition. Use only with adequate ventilation. Wear suitable personal protective equipment to prevent contact with skin or eyes. Avoid breathing fumes vapors or mists. Do not take internally. May be harmful or fatal if swallowed.

Label First Aid: For eye contact, rinse the eyes with running water for 15 minutes, lifting the eyelids occasionally to flush the area behind the lid. If irritation persists, get medical attention. For skin contact, wash the affected area with soap and water, then rinse thoroughly with water. Wash contaminated clothing before re-use. For inhalation, remove affected individual to fresh air. If the victim is not breathing, administer artificial respiration. If breathing is difficult, administer oxygen. Get medical attention. If swallowed, do not induce vomiting. Dilute by drinking 3-4 glasses of water or milk, and call the nearest poison control center or the National Poison Control Hotline 1-800-222-1222 for advice.

Product Use: Flushing Solvent for air conditioning and refrigeration equipment.

17. ADDITIONAL INFORMATION:

This information is provided in accordance with the requirements of the UK Health and Safety at Work Act 1974, and specifically in order to assist users of the product to make their 'assessment of health risks' as required by the UK Control of Substances Hazardous to Health Regulation 1988 (COSHH assessments). Provision of this information does not preclude users from seeking advice from other sources as indicated in the COSHH guides. This information is intended to cover potential hazards at the place of work and does not detail medical uses, indications, contra-indications and precautions for the treatment of patients.

18. MANUFACTURER:

Specialty Chemical Manufacturing

A Diversitech Company

1633-B High Bridge Road

Quincy, FL 32351

USA

Phone: 011 + 1+678.542.3600

EMERGENCY Phone No.: 1 800-255-3924 Chem-Tel (Chemical Emergencies Only)

International Chemical Emergency Contact: 011 +1+813.248.0585 (Chem-Tel, Inc.)

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19. REFERENCE NUMBER AND DATE OF ISSUE:

Date of Issue: 03/10/2008
Issued: Revised: 03/22/2010
COSHH Safety Data Sheet: PF-16

This information is, to the best of our knowledge and belief, accurate and reliable as of the date completed. However no representation, warranty or guarantee is made as to its accuracy, reliability or completeness. It is the user's responsibility to satisfy himself as to the completeness and suitability of such information for his own particular use. We do not accept liability for any loss or damage that may occur from the use of this information, nor do we offer any warranty against patent infringement.