DIVERSITECH®

# Pro-Flush®
## HVAC Flushing Kit

**Information Booklet contains:**
- Detailed instructions
- Material Safety Data Sheet

**El folleto informativo contiene:**
- Instrucciones detalladas
- Hoja de datos material de la seguridad

**La brochure d'information contient:**
- Instructions détaillées
- Fiche technique matérielle de sûreté


**Thank you for your purchase of Pro-Flush® HVAC Flushing Solvent.**
Pro-Flush® is a flushing solvent for air conditioning and refrigeration systems, and is formulated for R-410A retrofits, refrigerant conversions and compressor burnouts. Pro-Flush® is compatible with CFC and HFC refrigerants and compressor oils. Pro-Flush® is the answer for technicians who need a professional quality flushing solvent as well as the components to match. All solvents in Pro-Flush® are non-VOC and conform to EPA SNAP standards. Pro-Flush® is not HAZMAT for storage and ground transportation. This flushing solvent is:

- Low toxicity
- Residue free

Pro-Flush® is available both in this kit or in an 8 oz. or 16 oz. solvent refill. This kit makes servicing quick, easy, and safe as well as making sure you have all the necessary hardware in hand for 1-stop servicing. One 8 oz. can of Pro-Flush® will treat up to 250 feet of liquid line. Treatment results will vary depending on the application and conditions of the line set when serviced.

This kit includes:
- Charging hose
- Clip-on funnel
- Injector trigger nozzle
- Reusable tank with pressure relief valve for added safety
- 8 oz. container of Pro-Flush® solvent

# CONTENTS




DiversiTech Corporation
800.995.2222
www.diversitech.com







**Figure A**

**Figure B**



# Pro-Flush® HVAC & Refrigeration Systems Flush
## *Detailed Application Bulletin and Instructions*

### Description

The Pro-Flush® Kit consists of a reusable injection tank (with built-in 200psi pressure relief valve), nitrogen charging hose, injection tool assembly and one 8 oz can of Pro-Flush® Solvent. The trigger injector on the tool assembly assures more efficient use of the solvent by allowing infinite control of the flushes rather than the less efficient method of flushing in one long burst. The Pro-Flush® Solvent is a dual purpose blend designed to clean line sets in preparation of changing from R-22 to R-410A (mineral oil to POE oil) as well as to flush the contaminants from a system after a compressor burn out. Typically, due to the high acidic level of contamination in a burn out, more solvent will be required in system flushes than in line set flushes. The Pro-Flush® Solvent conforms to the EPA Significant New Alternatives Program (SNAP) and is non-ozone depleting and low-toxicity.

### Detailed Instructions

*Compressor Burnouts*

**I. Equipment required**

1. Pro-Flush® Kit including one 8 oz. can of Pro-Flush® Solvent for every 5-8 tons of system capacity.
2. Re-sealable container to hold the contaminated flush material.
3. Nitrogen tank with regulator.
4. Vacuum pump with accessories.
5. Absorbent shop cloths, rubber gloves and safety goggles.

**II. Detailed Instructions**

1. Evacuate the system using approved techniques and recovery equipment.
2. Take the electrical system off-line
3. Remove the old compressor from the system
4. Remove filter drier cores as well as any check valves and reversing valves on heat pumps. It may be faster and less expensive to by-pass the filter drier, check and reversing valves with a by-pass loop.
5. Make sure a re-sealable waste container is attached to a discharge port to capture the flushed acidic contaminants.
6. To maximize solvent contact time, restrict the flow at the discharge port. This will minimize the amount of solvent needed to thoroughly clean the system.
7. Attach the hose and injector tool assembly to the outlet side of the pressure tank. Fill the Pro-Flush® Injector pressure tank with Pro-Flush® Solvent. A tank may be filled with up to 24 oz. of Pro-Flush®. Connect the hose from the regulator of the nitrogen tank to the inlet (ball valve) side of the injector tank (fig. A, page 3).
8. Set the nitrogen gauge at 50 psi, open the regulator valve on the nitrogen tank then slowly open the valve on the injector tank to pressurize it. DO NOT EXCEED 200PSI.
9. Close the valve on the injector tank and nitrogen tank and then disconnect the nitrogen hose from the injection tank.
10. Insert the rubber adapter in the inlet port (fig. B, page 4), maintaining the injector tank in an upright position. Inject Pro-Flush® Solvent in 3 second increments in stages (2-3 oz/ton). The number of flushes will depend on the size of the system and the contamination level.
11. Connect the hose from the nitrogen tank to the inlet port of the part that is being flushed and purge the system at 150 psi for 1-2 minutes. This will assure removal of all trace amounts of oil residue and solvents. Check the solvent at the outlet port to be sure all contaminants have been purged from the system. If the exiting solvent is not yet clear repeat steps 10 and 11.
12. Next install the new compressor, new filter drier core and check valves. If the system was bypassed with a loop, remove and reconnect the lines.
13. Using a vacuum pump, evacuate the system to a low micron reading. The typical evacuation time is approximately 3 minutes per ton.
14. Check the system for leaks, then recharge the system with refrigerant and oil per the equipment manufacturer's recommendations.

15. Reconnect the electrical circuitry and test the system again following manufacturer recommendations.
16. Any unused Pro-Flush® Solvent can be stored in the injection tank and saved for future use. Ensure all valves are closed on the injection tank to prevent solvent loss during storage. Dispose of the waste solvent in accordance with local and state waste disposal regulations.

### *Flushing Line Sets for R-22 to R-410A Conversions*

**I. Equipment required**

1. Pro-Flush™ Kit including one 8 oz. can of Pro-Flush® Solvent.
2. Re-sealable container to hold the contaminated flush material.
3. Nitrogen tank with regulator.
4. Vacuum pump with accessories
5. Absorbent shop cloths, rubber gloves and safety goggles.

**II. Detailed Instructions**

1. Disconnect and remove old equipment.
2. Make sure a re-sealable waste container is attached to the exit end of the line set to capture the flushed oil. Establish one end of the line set as the discharge point.
3. To maximize solvent contact time, restrict the flow at the discharge point. This will also minimize the amount of solvent needed to thoroughly clean the system. For best results, use a DiversiTech Line Set Flush Adapter (sold separately) to connect the liquid line and the suction line at the disconnected air handler. Inject solvent into the liquid line and collect solvent at the suction line outdoors at the disconnected condensing unit.
4. Attach the hose and injector tool assembly to the outlet side of the pressure tank. Fill the Pro-Flush® Injector pressure tank with Pro-Flush® Solvent. A tank may be filled with up to 24 oz. of Pro-Flush®. Connect the hose from the regulator of the nitrogen tank to the inlet (ball valve) side of the injector tank (fig. A, page 3).
5. Set the pressure regulator on the nitrogen tank at 50 psi, open the inlet valve at the tank then slowly open the valve on the injector tank to pressurize it. DO NOT EXCEED 200PSI.
6. After pressurizing the Injection Tank, close the both valves and disconnect the nitrogen fill hose.
7. Line sets of different diameters, lengths and configurations will require different quantities of Pro-Flush® Solvent to achieve complete removal of residual oils.
   A. *For liquid lines, one 8 oz. can of Pro-Flush® will typically clean up to 250 ft. of liquid line: Insert the rubber adapter in the inlet of one of the line sets, maintaining the injector tank in an upright position, inject Pro-Flush® Solvent in 3 second increments in stages. The number of flushes will depend on the length of the line and the contamination level. A typical line set will require 2 to 3 oz of Pro-Flush® to effectively remove the oil residual in the line sets. Results will vary depending on contamination level.*
   B. *For larger diameter tubing: Larger diameter line sets will require considerably more Pro-Flush® Solvent due to increased volume of the larger tubing. The flushing process will therefore require multiple 3 second injections of Pro-Flush® solvent to achieve satisfactory results.*
8. Connect the hose from the nitrogen tank to the inlet port (fig. B, page 4) of the part that is being flushed and purge the system at 150 psi for 1-2 minutes. This will assure removal of all trace amounts of oil residue and solvents. Check the solvent at the outlet port to be sure all contaminants have been purged from the system. If the exiting solvent is not yet clear, repeat steps 7 & 8.
9. Connect the new equipment. Using a vacuum pump, evacuate the system to a low micron level.
10. Check the system for leaks, then charge system with the refrigerant and oil per the equipment manufacturer's recommendations.
11. Connect the electrical circuitry and test the system again following manufacturer recommendations.
12. Any unused Pro-Flush® Solvent can be stored in the injection tank and saved for future use. Ensure all valves are closes on the injection tank to prevent solvent loss during storage. Dispose of the waste solvent in accordance with local and state waste disposal regulations.



These recommended quantities are based on typical flush situations during a conversion from R-22 to R-410A. In the event of compressor burn out double the amount of flush required to compensate for the added soil load. This is for lines only and do not calculate in any components outside the line set.

| Line Size | | | Feet per 8 oz. Can | Feet per Ounce |
|---|---|---|---|---|
| 3/8 | 1 can | Treats | 250 | 31.3 |
| 1/2 | 1 can | Treats | 200 | 25.0 |
| 5/8 | 1 can | Treats | 150 | 18.8 |
| 3/4 | 1 can | Treats | 100 | 12.5 |
| 7/8 | 1 can | Treats | 50 | 6.3 |
| 1 | 1 can | Treats | 42 | 5.3 |
| 1 1/8 | 1 can | Treats | 39 | 4.9 |
| 1 1/4 | 1 can | Treats | 36 | 4.5 |
| 1 1/2 | 1 can | Treats | 31 | 3.8 |
| 1 5/8 | 1 can | Treats | 28 | 3.6 |
| 1 3/4 | 1 can | Treats | 26 | 3.3 |
| 1 7/8 | 1 can | Treats | 25 | 3.1 |
| 2 | 1 can | Treats | 23 | 2.9 |

| Liquid Line | Suction Line | Length | Estimated Ounces |
|---|---|---|---|
| 3/8 | 3/4 | 25 | 2.8 |
| 3/8 | 3/4 | 35 | 3.9 |
| 3/8 | 3/4 | 50 | 5.6 |
| 3/8 | 7/8 | 25 | 4.8 |
| 3/8 | 7/8 | 35 | 6.7 |
| 3/8 | 7/8 | 50 | 9.6 |
| 3/8 | 1 | 25 | 5.6 |
| 3/8 | 1 | 35 | 7.8 |
| 3/8 | 1 | 50 | 11.1 |
| 3/8 | 1 1/8 | 25 | 6.3 |
| 3/8 | 1 1/8 | 35 | 8.8 |
| 3/8 | 1 1/8 | 50 | 12.6 |

# MSDS# PRO-FLUSH
# March 2014

## SECTION 1. PRODUCT AND COMPANY IDENTIFICATION

**Product Name:** Pro-Flush™
**Catalog Number:** PF-08, PF-16
**Manufactured by:** DiversiTech Corp.
6650 Sugarloaf Parkway, Duluth, GA 03397
**EMERGENCY Phone No.:** 1+800.255.3924 Chem-Tel (Chemical Emergencies Only)
**International Chemical Emergency Contact:** 011 +1+813.248.0585 (Chem-Tel, Inc.)
**Product Information:** 678.542.3600
**Date Issued:** March 2010
**Date Revised:** March 2014
**Prepared by:** A. Jernigan

## SECTION 2. 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 3. COMPONENT INFORMATION

| *INGREDIENT* | *CAS No.* | *EIN/ECS 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 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 ChemTel 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.

## 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 Propogation 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 temperature above 160°F/70°C may cause containers to burst. 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, pentafluoropropane will evaporate from the mixture faster, leaving a mixture enriched with trans-1,2-dichloroethylene. 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. Proper eye and skin protection should be provided. Use water spray to keep fire-exposed containers cool and to knock down vapors which 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



## 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 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

| *Substance:* | *CAS No.* | *EINECS No.* | *OSHA PEL* | *ACIGH 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.
**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%
**pH @ 25°C:** N/A
**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:**
**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:**
***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.
**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)

## 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:
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
***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
**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 of 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.

*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.*