MATERIAL SAFETY DATA SHEET
Pneu-flush

I - PRODUCT IDENTIFICATION

Company Name: Nu-Calgon Wholesaler, Inc.
Address: 2008 Altom Court, St. Louis, MO 63146-4151
Product Name: Pneu-flush
Synonyms: Hydrofluorocarbon(HFC's) blended with methyl alcohol.
Tel No: (314) 469-7000, (800) 554-5499
CHEMTREC: (800) 424-9300
Product Number: 4298

II - HAZARDOUS INGREDIENTS OF MIXTURES

MATERIAL	CAS#	% By Wt	TLV	PEL
Tetrafluoroethane	811-97-2	28.0	1000	1000
1,1,1,3,3-Pentafluorobutane	406-58-6	32.0-42.0		None Estab.
1,1,1,2,3,4,4,5,5,5-decafluoropentane	138495-42-8	32.0-42.0		None Estab.
Methanol	67-56-1	3.0-7.0	200	250

All ingredients are TSCA listed.

III - PHYSICAL DATA

Vapor Pressure: 487 Kilopascals at 20°C (estimated)
Evaporation Rate: >>1 (ether=1)
Solubility in H_2O: Slightly Soluble
Freezing Point °F: -58°F
Boiling Point °F: 118 °F
Specific Gravity H_2O=1 @25° C: 1.41
Vapor Density (Air=1) 60-90° F: 4
VOC Content (% by wt.): 100
pH @ Solution: N/A
pH as Distributed: 6.9
Appearance: colorless liquid
Odor: ethereal odor

IV - FIRE AND EXPLOSION

Flash Point F: Non Flammable **Flammable Limits:** Air, LEL/UEL:5.5-9.0 (%by volume)
Extinguishing Media: CO_2, dry chemical or water
Special Fire Fighting Procedures: Evacuate personnel. Wear self-contained NIOSH approved breathing apparatus and full protective equipment.
Unusual Fire and Explosion Hazards: Containers generate pressure when heated, causing violent bursting and dangerous propelling of container. Cool containers with water spray or fog.

V - REACTIVITY DATA

Stability - Conditions to avoid: Material is stable - Avoid high temperatures or open flames which may cause decomposition.
Incompatibility: Avoid strong bases, reactive materials (e.g. powdered aluminum, sodium, potassium, calcium, magnesium, zinc, molten aluminum, barium & lithium shavings).
Hazardous Decomposition Products: Hydrochloric and hydrofluoric acids, and possibly carbonyl halides.
Conditions Contributing to Hazardous Polymerizations: Will not occur.

VI - HEALTH HAZARD DATA

EFFECTS OF OVEREXPOSURE (Medical Conditions Aggravated/Target Organ Effects),
A. ACUTE (Primary Route of Exposure) INHALATION: Gross overexposure may cause: suffocation if air is displaced by vapor, irregular heart beat with a strange sensation in the chest, lightheadedness, dizziness, fainting, drowsiness. It is unlikely that concentrations sufficient to produce these effects would be achieved without producing other signs of overexposure such as irritation of the nose and throat with sneezing, sore throat, or runny nose. ORAL: Short term exposure may cause irritation of digestive tract, stomach pain, nausea, vomiting or diarrhea. Liquid which may enter the lungs may result in "chemical pneumonia". SKIN: Slight irritation with redness, itching or swelling may occur. Defatting of the skin can occur with repeated overexposure. EYES: Liquid contact: Will irritate eyes and may cause redness, swelling, pain, tearing and hazy vision.
B. SUBCHRONIC, CHRONIC, OTHER: CARCINOGENICITY: None of the components of Air Line Flushing Solvent are listed as carcinogens by NTP, IARC, or OSHA
C. MEDICAL CONDITIONS AGGRAVATED BY OVEREXPOSURE:

VII - EMERGENCY AND FIRST AID PROCEDURES

INHALATION: Remove to fresh air. Give artificial respiration if necessary. If breathing is difficult, give oxygen. Call physician.
EYES: In case of contact, flush with water for 15 minutes, lifting eyelids occasionally until no evidence of the chemical remains. If irritation persists, call physician.
SKIN: Wash promptly with soap and water for at least 15 minutes. Remove contaminated clothing and shoes.
INGESTION: If conscious, give 2-4 glasses of water and induce vomiting by touching finger to back of throat. Do not give stimulants. Contact physician immediately.

VIII - SPILL OR LEAK PROCEDURE

Spill Management: Spill, Leak or Release: Although the chances of a significant spill or leak is unlikely in aerosol containers, in the event of such an occurrence, evacuate area, absorb spilled liquid with commercial nonflammable absorbent,(i.e. sand, vermiculite). Remove unprotected personnel. Protected personnel should remove ignition sources and shut off fire sources. Provide ventilation. Shovel (spark proof) absorbent material into drums and close. Do not flush to sewer.
Waste Disposal Methods: Comply with Federal, State and Local regulations. Consult appropriate regulatory agency prior to disposal or discharge of waste material.

IX - PROTECTION INFORMATION/CONTROL MEASURES

Respiratory: None required in ventilated work areas. Although unlikely in aerosol packaging, in NIOSH approved self-contained or supplied air respirators for emergencies and in situations where air may be displaced by vapors.
Eye Protection: Chemical protective safety glasses. **Glove:** For long repeated contact, impervious gloves.
Other Clothing and Equipment: Protective clothing for prolonged or repeated contact.
Ventilation: Adequate. Local Exhaust: For poorly ventilated work areas. Mechanical: Adequate for storage.

X - SPECIAL PRECAUTIONS

Precautions to be taken in Handling and Storing : Avoid breathing vapors. Use only with adequate ventilation. Avoid lighted cigarettes, flame, welding or hot spots which may generate toxic decomposition products. Vapors are heavy and may concentrate in low poorly ventilated areas.
Additional Information: Toxicological Information: 1,1,1,3,3-Pentafluorobutane no Federal OSHA PEL 929 CFR 1919.1000) or ACGIH TLV values are established for this chemical. The manufacturer of this material (Solvay) has established and AEL (Acceptable Exposure Limit) as an 8 hour and 12 hour Time Weighted Average of 500 ppm. Where governmentally imposed occupational exposure limits which are lower then the above AEL are in effect, such limits shall take precedence.
Oral LD50>5,000 mg/kg in rats. Dermal ALD. 2,000 in rats. Inhalation, 4 hour LC50, Rat: 301 mg/liter. Animal testing indicates that 1,1,1,3,3, pentafluorobutane is not a skin irritant for rabbits. It is a slight eye irritant for rabbits. It is not an irritant of the respiratory tract for rats. No sensitization was observed in Guinea Pigs.

This material Is currently undergoing chronic toxicity testing. 1,1,1,2,3,4,4,5,5,5-decafluoropentane: No Federal OSHA PEL (29 CFR 1919.1000) or ACGIH TLV Values are established an AEL (Acceptable Exposure Limit) as an 8 hour & 12 hour Time Weighted Average (TWA) of 200 ppm. Where governmentally imposed occupational exposure limits which are lower than the above AEL are in effect, such limits take precedence.

Oral LD50>5,000 mg/kg in rats. Dermal ALD.5,000 mg/kg in rabbits. Inhalation, 4 hour LC50: 11,100 ppm in rats. Animal testing indicates that 1,1,1,2,3,4,4,5,5,5-decfluoropentane is a slight skin irritant and a mild eye irritant, but is not a skin sensitizer. Single exposure to 5,000 ppm by inhalation caused tremors. No cardiac sensitization was observed. A different single exposure study by inhalation in rats caused incoordination, hyperactivity and prostration; pathological examination of rats from this study revealed kidney and lung changes and external hair loss. Repeated exposures to 1,900-3,500 ppm caused tremors or convulsions, behavioral effects, and altered clinical chemistry. These effects were temporary. In a different repeated exposure test the No Observed Adverse Effect Level (NOAEL) for convulsions was 1,000 ppm. Resultes indicate convulsins is an acute effect of 1,1,1,2,3,4,4,5,5,5-decafluoropetane. The 90 day NOAEL is 500 ppm. In animal testing this material produced developmental effects only at exposure levels producing other toxic effect in carcinogenic or reproductive hazards of this material. Tests have shown that 1,1,1,2,3,4,4,5,5,5-decafluoropentane does not cause genetic damage in bacterial mammalian cell cultures. It has not produced genetic damage in tests on animals.

Carcinogenicity: None of the components present in this material at concentrations equal to or greater than 0.1% are listed by IARC, NTP, OSHA or ACGI as a carcinogen.

Ecological Information / Aquatic Toxicity: 1,1,1,2,3,4,4,5,5,5-decafluoropentane : 96 hour LC50 in fathead minnows: 27.2 mg/L, 96 hr LC50 in rainbow trout: 13.9 mg/L, 48 hour LC50 in Daphnia magna: 11.7 mg/L 1,1,1,3,3-Pentafluorobutane : 96 hour in fish (B. rerio) >200 mg/L, 48 hour NOEC in Daphna magna: >200 mg/L, 72 hour NOEC in Algae: 113 mg/L.

NFPA	HMIS RATING
Health Hazard.....: 1	Health Hazard.....: 1
Fire Hazard.....: 0	Fire Hazard.....: 0
Reactivity.....: 1	Reactivity.....: 1
Specific Hazard...:	Personal Protection...: X (Sec. 9)

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