Material Safety Data Sheet

Product No. 81600 Precision Duster
Issue Date (03-17-03)
Review Date (09-23-03)

Section 1: Product and Company Identification
Product Name: Precision duster, Inert Dusting Gas
Synonym: Dusting Gas, HFC – 134a
Company Name
Ted Pella, Inc. and PELCO International, P.O. Box 492477, Redding, CA 96049-2477
Domestic Phone (800) 237-3526 (Mon-Thu. 6:00AM to 4:30PM PST; Fri 6:00AM to 4:00PM PST)
International Phone (01) (530) 243-2200 (Mon-Thu. 6:00AM to 4:30PM PST; Fri 6:00AM to 4:00PM PST)
Chemtrec Emergency Number 1-800-424-9300 24 hrs a day.

Section 2: Composition / Information on Ingredients

<table>
<thead>
<tr>
<th>Principle Hazardous Component(s) (chemical and common name(s))</th>
<th>%</th>
<th>OSHA PEL mg/m3</th>
<th>ACGIH TLV mg/m3</th>
<th>NTP</th>
<th>IARC</th>
<th>OSHA regulated</th>
</tr>
</thead>
<tbody>
<tr>
<td>1,1,1,2-Tetrafluoroethane (811-97-2) *</td>
<td>100%</td>
<td>None</td>
<td>None</td>
<td>No</td>
<td>No</td>
<td>No</td>
</tr>
</tbody>
</table>

*Supplier OEL: 1000 PPM

Section 3: Hazard Identification

Emergency overview
Appearance: Clear, colorless, volatile liquid.
Immediate effects: Warning! High concentration of vapor can reduce oxygen available for breathing. Harmful if inhaled. May decompose on contact with flames or extremely hot metal surfaces to produce toxic and corrosive products.

Potential health effects
Primary Routes of entry: Inhalation.
Signs and Symptoms of Overexposure: Acute Toxicity: Overexposure may cause dizziness and loss of concentration. At higher levels, CNS depression and cardiac arrhythmia may result.
Eyes: Liquid contact can cause irritation, which may be severe.
Skin: Prolonged or repeated contact with liquid can cause freezing of skin tissues, defatting, skin irritation and dermatitis.
Ingestion: Ingestion is unlikely because of the physical properties and is not expected to be hazardous.
Inhalation: High concentrations may lead to central nervous system effects (drowsiness, dizziness, nausea, headaches, paralysis and loss of consciousness).
Chronic Exposure: NIF
Chemical Listed As Carcinogen Or Potential Carcinogen: No
See Toxicological Information (Section11)

Potential environmental effects
See Ecological Information (Section 12)
Section 4: First Aid Measures
If accidental overexposure is suspected
Eye(s) Contact: Immediately flush eyes with plenty of water. If irritation persists, seek medical attention.
Skin Contact: In case of cold burns (frostbite) caused by rapidly expanding gas or vaporizing liquids, get medical attention promptly.
Inhalation: Remove to fresh air. If not breathing, give artificial respiration or give oxygen by trained personnel. Seek immediate medical attention.
Ingestion: Ingestion is unlikely because of the physical properties and is not expected to be hazardous. Do not induce vomiting unless instructed to do so by a physician.
Note to physician
Treatment: Because of the 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. Medical Conditions generally Aggravated by Exposure: ND

Section 5: Fire Fighting Measures
Flash Point: NA
General Hazard: Aerosol cans may erupt with force at temperatures above 120 degrees F.
Flammable Limits: NA (Based on ASHRAE Standard 34 with match ignition.)
Auto-ignition point: > 750° C (1382° F).
Fire Extinguishing Media: As appropriate for combustibles in area.
Special Fire Fighting Procedures: As in any fire, wear self-contained breathing apparatus pressure-demand, (MSHA/NIOSH approved or equivalent) and full protective gear. Use water spray to cool containers
Unusual Fire and Explosion Hazards: This product is not flammable at ambient temperatures and atmospheric pressure. However, this material may become combustible when mixed with air under pressure and exposed to strong ignition sources.
Hazardous combustion products: May form hydrochloric and hydrofluoric acids – possibly carbonyl halides, when exposed to high temperatures.
DOT Class: ORM-D, compressed gas, 2.2.

Section 6: Accidental Release Measures
Steps to be Taken in Case Material is Released or Spilled: Evacuate area. Isolate hazard area. Keep unnecessary and unprotected personnel form entering. Ventilate area well and avoid breathing vapors.
Spills and releases may have to be reported to Federal and/or local authorities.
Waste Disposal Methods: Dispose of waste according to Federal, State and Local Regulations.

Section 7: Handling and Storage
Precautions to be Taken in Handling and Storage: Follow standard safety precautions for handling and use of compressed gas cylinders.
Storage temperature: Store in a cool place in original container and protect from sunlight.
Storage Pressure: NA

Section 8: Exposure Controls / Personal Protection
Engineering Controls
Ventilation required: Local exhaust ventilation may be necessary to control any air contaminants to within their TLV’s during use of this product.
Personal Protection Equipment
Respiratory protection: A respiratory protection program that meets OSHA 1910.134 and ANSI Z88.2 requirements must be followed whenever workplace conditions warrant a respirator’s use.
Protective gloves: Gloves recommended: Insulated PVA, Neoprene or Butyl rubber should be used. Skin protection: Skin contact with liquid may cause frostbite. General work clothing and gloves should provide adequate protection. If prolonged contact with the liquid or gas is anticipated, insulated gloves should be used. Eye protection: Wear safety glasses with side shields (or goggles) or face shield. Additional clothing and/or equipment: ND

**Exposure Guidelines**
See Composition/Information on Ingredients (Section 2)

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### Section 9 Physical and Chemical Properties
Specific Gravity (H₂O=1): 1.22 at 20⁰ C (68⁰ F)
Vapor Pressure (mm Hg): 85.5 PSI at 21.1⁰ C (70⁰ F)
Vapor Density (air=1): 3.5
Percent Volatile by volume: 100 at 20⁰ C
Evaporation Rate (CCl₄ =1): >1
Boiling Point: -26.2⁰ C (-15.1⁰ F)
Freezing point / melting point: -101⁰ C (-149.8⁰ F)
pH: NA
Solubility in Water: Negligible
Molecular Weight: 102.0
Formula: CH₂CFC₃

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### Section 10: Stability and Reactivity
Stability: Stable
Conditions to Avoid: Contact with open flame, heat. Reactive alkali metals, strong acids & bases.
Materials to Avoid (Incompatibility): Chemically active metals: potassium, calcium, powdered aluminum, magnesium and zinc.
Hazardous Decomposition Products: May form hydrochloric and hydrofluoric acids – possibly carbonyl halides, when exposed to high temperatures.
Hazardous Polymerization: No

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### Section 11: Toxicological Information
Results of component toxicity test performed: Inhalation LC₅₀ : >500,000 ppm, 4 hour; Sensitization:
Cardiac sensitization threshold (dog) 80,000 ppm. NEOL – 50,000 ppm. Subchronic inhalation (rat) NOEL – 50,000 ppm. Chronic NOEL – 10,000 ppm. Mutagenicity: Collective data indicate non-mutagenic. Teratogenic effects: NOEL (rat and rabbit) – 40,000 ppm.
Human experience: NIF
This product does not contain any compounds listed by NTP or IARC or regulated by OSHA as a carcinogen. NIF

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### Section 12: Ecological Information
Ecological Information: Degradability (BOD): This material is a gas a room temperature; therefore, it is unlikely to remain in water.
Distribution: Octanol Water Partition Coefficient: Log P = 1.06
Chemical Fate Information: NIF

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### Section 13 Disposal Considerations
RCRA 40 CFR 261 Classification: ND

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http://www.tedpella.com/msds_html/81600msd.htm

5/27/2004
Federal, State and local laws governing disposal of materials can differ. Ensure proper disposal compliance with proper authorities before disposal.

**Section 14: Transportation Information**

US DOT Information: Proper shipping name: Consumer Commodity ORM-D
Hazard Class: None
Packaging group: NA
UN Number: NA
Other Shipping Information: Must place Consumer Commodity ORM-D on box. Must have a copy of the DOT-E 10232 with each shipment.
IATA: Proper shipping name: Consumer Commodity: ID8000
Hazard Class: 9
Packing group: NA
UN Number: ID8000
Limitations: Must place Consumer Commodity ORM-D on box. Must have a copy of the DOT-E 10232 with each shipment.
Domestic shipments only:
IMO: Proper shipping name: Aerosols non-flammable
Class: 2.2
UN Number: UN1950
Packing group: NA
EMS: 2-13
MFAG: 350
Marine Pollutant: No
Canadian TDG: NA

**Section 15: Regulatory Information**

**United States Federal Regulations**
SARA: 313 Reportable Ingredients: Not considered a SARA 313 “Toxic Chemical”
SARA Title III: 311/312 Hazard Categories: Immediate/ Pressure
Pressure Generating: Yes. Acute: Yes
RCRA: NIF
TSCA: This product is listed on the TSCA Inventory.
CERCLA: NA

**State Regulations**
California Proposition 65: None

**International Regulations**
Canada WHMIS: Class A, Class D2B
Europe EINECS Numbers: 223770

**Section 16: Other Information**
Label Information: Warning: Contains 1,1,1,2-Tetrafluoroethane (HFC-134a), a greenhouse gas which may contribute to global warming.
European Risk and Safety Phrases: ND
European symbols needed: ND
Canadian WHMIS Symbols: NIF
NFPA Hazard Rating: Health: 2; Fire: 1; Reactivity: 0
HMIS Hazard Rating: Health: 1; Fire: 1; Physical Hazard: 0

http://www.tedpella.com/msds_html/81600msd.htm
5/27/2004
(0=least, 1=Slight, 2=Moderate, 3=High, 4=Extreme)

**Abbreviations used in this document**
NE= Not established
NA= Not applicable
NIF= No Information Found
ND= No Data

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**Disclaimer**
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MSDS Form 0013F1 V2