



# MATERIAL SAFETY DATA SHEET

## LPS® VOC Free

Revision Date: December 28, 2011

Supersedes: March 16, 2007

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### Section 1 • Product and Company Identification

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**Product Name:** LPS® VOC Free

**Part Number(s):** 03416, C03416

**Chemical Name:** HCFC / Ketone Mixture

**Product Use:** A non-flammable solvent blend for the removal of dirt, moisture, dust, flux and oxides from the internal components of electronic or precision equipment such as circuit boards and the internal components of electronic devices used in factories and other industrial settings.

**Manufacturer Information:** LPS Laboratories, 4647 Hugh Howell Road, Tucker, GA, USA 30084  
**TEL:** USA & Canada: 1 800 241-8334  
Outside USA and Canada: +1 770 243-8800  
**FAX:** USA & Canada: 1 800 543-1563  
Outside USA and Canada: +1 770 243-8899

**Emergency Telephone Number:** Chemtrec: USA & Canada: 1 800 424-9300  
Outside USA and Canada: +1 703 527-3887

**Website:** <http://www.lpslabs.com>

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### Section 2 • Hazards Identification

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*This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200). This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations and the MSDS contains all the information required by the Controlled Products Regulations.*

**Emergency Overview:**

**Aerosol:** DANGER: Harmful or fatal if swallowed. Vapor harmful. Contents under pressure. Causes irritation.

**Bulk:** Not applicable

**Primary route(s) of entry:** Skin and eye contact. Inhalation.

**Potential Acute Health Effects:**

**Eyes:** Irritating to eyes.

**Skin:** Repeated exposure may cause skin dryness or cracking.

**Inhalation:** Excessive inhalation of vapors can cause hepatitis, heart irregularities and unconsciousness. Intentional misuse can be fatal. Vapor reduces oxygen available for breathing and is heavier than air.

**Ingestion:** Product has a low order of acute oral toxicity, but ingestion of large quantities may cause nausea, vomiting, and gastrointestinal irritation. May cause injury if aspirated into lungs.



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### Potential Chronic Health Effects:

**Carcinogenic Effects:** NTP: No IARC: No OSHA: No ACGIH: No

**Mutagenic Effects:** None

**Teratogenic Effects:** None

**Target Organs:** None

### Medical conditions aggravated by exposure:

Persons with pre-existing central nervous system (CNS) disease, neurological conditions, skin disorders, chronic respiratory diseases, or impaired liver or kidney function should avoid exposure.

### Signs and Symptoms

Stinging in eyes. Repeated or prolonged skin contact can cause redness, irritation, and scaling of the skin (dermatitis). Breathing of high vapor concentrations may cause headaches, stupor, irritation of throat and eyes, and kidney effects.

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## Section 3 • Composition / Information on Ingredients

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Component	CASRN	Weight Percent
1,3-Dichloro-1,1,2,2,3-Pentafluoropropane	507-55-1	30 - 40%
1,1,1,2-Tetrafluoroethane	811-97-2	30 - 40%
3,3-Dichloro-1,1,1,2,2-Pentafluoropropane	422-56-0	20 - 30%
Acetone	67-64-1	5 - 10%

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## Section 4 • First Aid Measures

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**Eyes:** Check for and remove contact lenses. If irritation or redness develops, flush eyes with cool, clean, low pressure water for at least 15 minutes. Hold eyelids apart to ensure complete irrigation of the eye and eyelid tissue. DO NOT use eye ointment. Seek medical attention immediately.

**Skin:** Remove contaminated shoes and clothing. Clean affected area thoroughly with mild soap and water. DO NOT use ointments. Seek medical attention if irritation persists.

**Inhalation:** Immediately move victim to fresh air. If victim is not breathing, immediately begin rescue breathing. If heart has stopped, immediately begin cardiopulmonary resuscitation (CPR). If breathing is difficult, seek medical attention immediately.

**Ingestion:** DO NOT induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person. If spontaneous vomiting is about to occur, place victim's head below knees. If victim is drowsy or unconscious, place on the left side with head down. DO NOT leave victim unattended. Seek medical attention immediately.



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### Section 5 • Fire Fighting Measures

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<b>Products of Combustion:</b>	Carbon monoxide, carbon dioxide, hydrochloric acid, hydrofluoric acid, and possibly carbonyl halides.		
<b>General Fire Hazards:</b>	High heat will cause product to boil, evolving vapor that could cause explosive rupture of closed containers.		
<b>Firefighting media:</b>	SMALL FIRE: Use DRY chemical powder. LARGE FIRE: Use CO <sub>2</sub> , water spray, fog or foam. Cool containing vessels with water jet in order to prevent pressure build-up, auto-ignition or explosions.		
<b>Sensitivity to Impact:</b>	None	<b>Sensitivity to Static Discharge:</b>	Yes
<b>Protection Clothing (Fire):</b>	Firefighters must use full bunker gear including NIOSH-approved positive pressure self-contained breathing apparatus to protect against potential hazardous combustion or decomposition products and oxygen deficiencies. Evacuate area and fight the fire from a maximum distance or use unmanned hose holders or monitor nozzles.		

**Special Remarks on Explosion Hazards:**  
Aerosols may explode upon heating, spread fire and overcome sprinkler systems.

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### Section 6 • Accidental Release Measures

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<b>Containment Procedures:</b>	<b>Small Spill and Leak:</b>	Absorb with an inert material and dispose of properly.
	<b>Large Spill and Leak:</b>	Eliminate ignition sources. Secure the area and control access. Dike far ahead of a liquid spill to ensure complete collection. Pick up free liquid for disposal using absorbent pads, sand, or other inert non-combustible absorbent materials. Place into appropriate waste containers for later disposal.
<b>Clean-Up Procedures:</b>	Recover free product and place in a suitable container for disposal.	
<b>Evacuation Procedures:</b>	Ventilate area of leak or spill. Keep unnecessary and unprotected people away.	
<b>Special Procedures:</b>	Ventilate area. Wear personal protective equipment during cleanup.	

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### Section 7 • Handling and Storage

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**Handling:** DO NOT spray into or around ignition sources. After handling, always wash hands thoroughly with soap and water. Use only with adequate ventilation. Avoid breathing vapors or spray mists.

**Storage:** Keep container in a cool, well-ventilated area. Avoid all sources of ignition (spark or flame). Store below 120°F (49°C).

**Precautions to be taken in handling and storage:**  
Store aerosols as Level 1 Aerosol (NFPA 30B). Store all materials in a dry, well-ventilated area. Avoid breathing vapors.



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### Section 8 • Exposure Controls / Personal Protection

#### Exposure Guidelines:

Component	CASRN	OSHA	ACGIH	NIOSH	Supplier
1,3-Dichloro-1,1,2,2,3-Pentafluoropropane	507-55-1	Not established	Not established	Not established	400 ppm TWA
1,1,1,2-Tetrafluoroethane	811-97-2	Not established	Not established	1000 ppm TWA WEEL 1000 ppm; TWA OEL - UK	1000 ppm TWA
3,3-Dichloro-1,1,1,2,2-Pentafluoropropane	422-56-0	Not established	Not established	Not established	50 ppm TWA 1000 ppm STEL
Acetone	67-64-1	1000 ppm PEL	500 ppm TLV 750 ppm STEL	250 ppm TWA	400 ppm TWA

**Engineering Controls:** Normal room ventilation is usually adequate. If necessary, use appropriate local exhaust ventilation to keep exposures below the regulated limits.

#### Personal protective equipment

**Eye protection:** Safety glasses with side shields conforming to appropriate regulations. Eye wash fountain and emergency shower facilities are recommended.

**Hand protection:** Use chemically resistant protective gloves conforming to appropriate regulations. Please observe the instructions regarding permeability and breakthrough time that are provided by the supplier of the gloves.

**Respiratory protection:** Typical use of this product under normal conditions does not require the use of respiratory protection. If airborne concentrations are above the applicable exposure limits (listed above), use NIOSH approved respiratory protection (i.e. organic vapor cartridge).

**General Hygiene Considerations:** Wash thoroughly after handling. Have eye-wash facilities immediately available.



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**Section 9 • Physical and Chemical Properties**

<b>Appearance:</b>	Clear liquid	<b>Color:</b>	Colorless
<b>Odor:</b>	Mild, ether-like	<b>Evaporation Rate:</b>	0.9 (diethyl ether = 1)
<b>Solubility Description:</b>	< 10% by weight	<b>Flash Point:</b>	None
<b>Boiling Point:</b>	54°C (129°F)	<b>Flash Point Method:</b>	Tag-Closed Cup
<b>Specific Gravity (H<sub>2</sub>O=1):</b>	1.30 - 1.50 @ 20°C	<b>Decomposition Temperature:</b>	Not established
<b>Vapor Density (air = 1):</b>	7.0	<b>Auto ignition temperature:</b>	Not established
<b>Vapor Pressure:</b>	285.03 mm Hg @ 20°C	<b>Flammable limits (estimated):</b>	LOWER: N.E. UPPER: N.E.
<b>Rule 1171 PPc:</b>	Not established	<b>Partition Coefficient (octanol/water):</b>	< 1
<b>V.O.C. Content:</b>	Aerosol: 0% (0 g/L) excluding compounds exempted by U.S. EPA, 58.5% per California Consumer Product Regulations Bulk: Not applicable	<b>Odor Threshold:</b>	Not established
<b>Melting Point:</b>	Not established	<b>Viscosity:</b>	2 cSt @ 25°C
<b>pH:</b>	Not applicable	<b>Volatiles:</b>	100%
<b>Heat of combustion:</b>	Aerosol: < 20 kJ/g Bulk: Not applicable		

**Section 10 • Stability and Reactivity**

<b>Chemical Stability:</b>	Product is stable under recommended storage conditions.
<b>Conditions to Avoid:</b>	Keep away from heat and ignition sources.
<b>Incompatibility:</b>	Reactive or incompatible with oxidizing agents, alkali and alkaline earth metals (powdered Aluminum, Zinc, Beryllium, Etc.).
<b>Hazardous Decomposition:</b>	Combustion will generate smoke, possibly thick and choking, resulting in zero visibility and combustion products include hydrochloric acid, hydrofluoric acid, carbon monoxide, carbon dioxide and possibly carbonyl halides.
<b>Hazardous Polymerization:</b>	Will not occur.



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### Section 11 • Toxicological Information

#### Acute and Chronic Toxicity

##### A: General Product Information

An acute toxicity study of this product has not been conducted. Information given in this section relates only to individual constituents contained in this preparation.

Following exposure to vapors, this material can produce central nervous system depression. High atmospheric concentrations can result in eye, nasal and respiratory tract irritation. However, if handled in accordance with good industrial hygiene practice, this product will not present a significant hazard in the workplace.

##### B: Component Analysis

Component	CASRN	LC-50	LD-50
1,3-Dichloro-1,1,2,2,3-Pentafluoropropane	507-55-1	36800 ppm / rat / 4 hr*	> 2000 mg/kg / dermal / rabbit > 5000 mg/kg / oral / rat
1,1,1,2-Tetrafluoroethane	811-97-2	1500 g/m3 / rat / 4 hr*	Not appropriate
3,3-Dichloro-1,1,1,2,2-Pentafluoropropane	422-56-0	37300 ppm / rat / 4 hr*	> 2000 mg/kg / dermal / rabbit > 5000 mg/kg / oral / rat
Acetone	1/0/1900	50100 mg/m3 / rat / 8 hr	5800 mg/kg / oral / rat* 20000 mg/kg / dermal / rabbit*

\* Supplier Data

### Section 12 • Ecological Information

**Mobility:** Semi-volatile. Readily absorbed into soil. **Persistence / Degradability:** Only slightly biodegradable

**Bioaccumulative potential:** No bioaccumulation potential **Other adverse effects:** None known

Ecological studies have not been conducted for this product. The following information is available for component(s) of this product.

#### Ecotoxicity

Effects on Organisms	Component	CASRN	Test	Species	Results
Acute Toxicity on Fishes	Acetone	67-64-1	96-hr LC50	Alburnus Alburnus	11,000 mg/L
Acute Toxicity on Daphnia	Acetone	67-64-1	48-hr EC50	Daphnia Magna	12,700 mg/L
Bacterial Inhibition	No data available				
Growth inhibition of algae					
Bioaccumulation in fish					

\* Supplier Data



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**Section 13 • Disposal Considerations**

**Waste Status:** Aerosol cans, if depressurized and emptied to less than 1 inch (2.54 cm) of fluid contents, are classified as non-hazardous waste under 40 CFR 261.7 (U.S.). If disposed of in its received form, the aerosol product carries the waste code D003 (U.S.).

**Disposal:** Waste must be disposed of in accordance with any and all applicable environmental control rules and/or regulations.

**Note:** Chemical additions to, processing of, or otherwise altering this material may make this waste management information inaccurate, incomplete, or otherwise inappropriate. Furthermore, state and local waste disposal requirements may be more restrictive than federal laws and regulations.

**Section 14 • Transport Information**

D.O.T. Ground	<b>Shipping Name:</b>	Consumer Commodity	<b>UN No.:</b>	NA
	<b>Hazard Class:</b>	ORM-D	<b>Technical Name:</b>	NA
	<b>Subclass:</b>	NA	<b>Hazard Label:</b>	ORM-D Already on box
	<b>Packing Group:</b>	NA		
Road/Rail - ADR/RID	<b>UN No.:</b>	1950	<b>ADR Class:</b>	2
	<b>Packing Group:</b>	NA	<b>Classification Code:</b>	5A
	<b>Name and description:</b>	AEROSOLS, asphyxiant	<b>Hazard ID No.:</b>	NA
	<b>Labeling:</b>	2.2	<b>Technical Name:</b>	NA
IMDG-IMO	<b>UN No.:</b>	1950	<b>Class:</b>	2
	<b>Shipping Name:</b>	Aerosols	<b>Subsidiary Risk:</b>	2.2
	<b>Labeling:</b>	NA	<b>Packing Group:</b>	NA
	<b>Packing Instructions:</b>	P003, LP02	<b>EmS:</b>	F-D, S-U
IATA - ICAO:	<b>UN No.:</b>	1950	<b>Class:</b>	2.2
	<b>Shipping Name:</b>	Aerosols, non-flammable	<b>Subclass:</b>	NA
	<b>Packing Instructions:</b>	203, Y203 (Ltd. Qty.)	<b>Packing Group:</b>	NA
	<b>Labeling:</b>	Non-flammable Gas	<b>Technical Name:</b>	NA

The preceding information is subject to change and must be verified prior to shipment. It is the responsibility of anyone offering hazardous materials for shipment to ensure compliance with all applicable regulations.

**Section 15 • Regulatory Information**

**U.S. Federal Regulations**

**RCRA Hazardous Waste No.:** D003

**Comprehensive Environmental Response, Compensation and Liability Act of 1980 (CERCLA):**

Acetone 67-64-1 5000 lbs

**Toxic Substances Control Act (TSCA):**

All components of this product are TSCA inventory listed and/or are exempt.

**Superfund Amendments and Reauthorization Act (SARA) Title III SARA Section 311/312 (40 CFR 370) Hazard Categories:**

Sudden Release of Pressure (aerosols only), Immediate (Acute) Health Hazard, Delayed (Chronic) Health Hazard

**This product contains the following toxic chemical(s) subject to reporting requirements of SARA Section 313 (40 CFR 372):**

1,3-Dichloro-1,1,2,2,3-Pentafluoropropane 507-55-1

3,3-Dichloro-1,1,1,2,2-Pentafluoropropane 422-56-0

**Section 112 Hazardous Air Pollutants (HAPs):** None



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### State Regulations

**California:** This product does not contain chemical(s) known to the State of California to cause cancer, birth defects or other reproductive harm.

**California and OTC States:** This product conforms to consumer product regulations.

### New Jersey Right to Know:

Aerosol: 1,1,1,2-Tetrafluoroethane 811-97-2 • 1,3-Dichloro-1,1,2,2,3-Pentafluoropropane 507-55-1 • 3,3-Dichloro-1,1,1,2,2-Pentafluoropropane 422-56-0 • Acetone 67-64-1

Bulk: Not applicable

### International Regulations

#### Canadian Environmental Protection Act (CEPA):

All of the components of this product are included on the Canadian Domestic Substances list (DSL).

#### Canadian Workplace Hazardous Materials Information System WHMIS:

This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations and the MSDS contains all the information required by the Controlled Products Regulations.

#### WHMIS Classification:

Aerosol: Class A, Class D2B



#### Other Regulations:

Montreal Protocol listed ingredients: None  
 Stockholm Convention listed ingredients: None  
 Rotterdam Convention listed ingredients: None  
 RoHS Compliant: Yes

### Section 16 • Other Information

MSDS#: 13416 MSDS Preparation Responsible Name: Elena Badiuzzi Compliance Manager Telephone: +1 770 243-8800	<b>HMIS 1996</b>		<b>HMIS III</b>		<b>NFPA</b> Flammability  Special Health      Reactivity
	Health:	2	Health:	[/] 2	
	Flammability:	1	Flammability Aerosol:	2	
			Flammability Bulk:	NA	
	Reactivity:	0	Physical Hazard Aerosol:	2	
			Physical Hazard Bulk:	NA	

#### Notice to Reader:

To the best of our knowledge, the information contained herein is accurate. However, neither the above named supplier nor any of its subsidiaries assumes any liability whatsoever for the accuracy or completeness of the information contained herein. Final determination of suitability of any material is the sole responsibility of the user. All materials may present unknown hazards and should be used with caution. Although certain hazards are described herein, we cannot guarantee that these are the only hazards that exist.

Elena Badiuzzi, Compliance Manager  
 LPS Laboratories, a division of Illinois Tool Works