



MATERIAL SAFETY DATA SHEET

LPS® Electro Contact Cleaner

Revision Date: May 4, 2012

Supersedes: May 7, 2009

Section 1 • Product and Company Identification

Product Name: LPS® Electro Contact Cleaner

Part Number(s): 00416, C00416

Chemical Name: Halogenated Hydrocarbon 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
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Emergency Telephone Number: Chemtrec: USA & Canada: 1 800 424-9300
Outside USA and Canada: +1 703 527-3887

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

Section 2 • Hazards Identification

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.

Bulk: Not applicable

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

Potential Acute Health Effects:

Eyes: Vapor and liquid can irritate eyes.

Skin: Prolonged or repeated skin contact can cause defatting and drying of the skin.

Inhalation: Respiratory irritant. High vapor concentrations including an oxygen deficient atmosphere in enclosed areas can affect the nervous system and can cause headache, dizziness and drowsiness.

Ingestion: Ingestion of this material may result in nausea, vomiting and weakness followed by central nervous system depression. 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.

Section 3 • Composition / Information on Ingredients

Component	CASRN	Weight Percent
1,1,1,2-Tetrafluoroethane	811-97-2	30 - 50%
Nonafluorobutyl Methyl Ether	163702-07-6	10 - 20%
Nonafluoroisobutyl Methyl Ether	163702-08-7	10 - 20%
C5 - C18 Perfluoro Compounds	86508-42-1	10 - 20%
1,2-Trans-Dichloroethylene	156-60-5	5 - 10%
Isopropanol	67-63-0	1 - 5%
Methylcyclohexane	108-87-2	1 - 5%



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Section 4 • First Aid Measures

Eyes:	Liquid contact may cause irritation. Flush eyes with running water for at least 15 minutes, keeping eyelids open. Get medical attention if irritation persists.
Skin:	Seek medical attention if irritation persists.
Inhalation:	If inhaled, remove to fresh air. If breathing is difficult, give oxygen and get medical attention. If not breathing, give artificial respiration and get medical attention.
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.

Section 5 • Fire Fighting Measures

Products of Combustion:	Hydrogen fluoride, hydrogen chloride, chlorine, carbon monoxide and carbon dioxide.		
General Fire Hazards:	High heat will cause product to boil, evolving vapor that could cause explosive rupture of closed containers.		
Firefighting media:	SMALL FIRE: Use DRY chemical powder. LARGE FIRE: Use CO2, water spray, fog or foam. Cool containing vessels with water jet in order to prevent pressure build-up, auto-ignition or explosions.		
Sensitivity to Impact:	None	Sensitivity to Static Discharge:	None
Protection Clothing (Fire):	Wear protective clothing and equipment suitable for the surrounding fire, including helmet, face mask, and self-contained breathing apparatus.		
Special Remarks on Explosion Hazards:	Aerosols may explode upon heating.		

Section 6 • Accidental Release Measures

Containment Procedures:	Small Spill and Leak:	Absorb with an inert material and dispose of properly.
	Large Spill and Leak:	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.
Clean-Up Procedures:	Recover free product and place in a suitable container for disposal.	
Evacuation Procedures:	Ventilate area of leak or spill. Keep unnecessary and unprotected people away.	
Special Procedures:	Ventilate area. Wear personal protective equipment during cleanup.	



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Section 7 • Handling and Storage

Handling: DO NOT allow material to come in contact with eyes, skin or clothing. Wear appropriate protective equipment during handling. Keep container closed. Avoid breathing vapors or mists. Use only with adequate ventilation. Wash thoroughly after handling.

Storage: Keep in original container at ambient temperatures. Store in a well ventilated area away from sources of ignition.

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.

Section 8 • Exposure Controls / Personal Protection

Exposure Guidelines:

Component	CASRN	OSHA	ACGIH	NIOSH	Supplier
1,1,1,2-Tetrafluoroethane	811-97-2	Not established	Not established	1000 ppm TWA WEEL 1000 ppm; TWA OEL - UK	1000 ppm TWA
Nonafluorobutyl Methyl Ether	163702-07-6	Not established	Not established	Not established	750 ppm AIHA TWA
Nonafluoroisobutyl Methyl Ether	163702-08-7	Not established	Not established	Not established	750 ppm AIHA TWA
C5 - C18 Perfluoro Compounds	86508-42-1	Not established	Not established	Not established	None reported
1,2-Trans-Dichloroethylene	156-60-5	Not established	200 ppm TLV	Not established	None reported
Isopropanol	67-63-0	400 ppm PEL	200 ppm TLV 400 ppm STEL	400 ppm TWA 500 ppm STEL	400 ppm TWA
Methylcyclohexane	108-87-2	500 ppm PEL	400 ppm TLV	400 ppm TWA	None reported

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



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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:** Normally no hand protection is required; however, if product will be sprayed for an extended period, "overspray" onto skin may occur. If so, wear chemical resistant gloves conforming to appropriate regulations. Please observe the instructions regarding permeability and breakthrough time that are provided by the supplier of the gloves. Take into consideration the specific local conditions under which the product is used, such as the danger of the cuts, abrasion and the contact time.
- 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.

Section 9 • Physical and Chemical Properties

Appearance:	Clear liquid	Color:	Colorless
Odor:	Characteristic	Evaporation Rate:	< 1 (Ethyl Ether = 1)
Solubility Description:	< 5% by weight	Flash Point:	None
Boiling Point:	48°C (59°F)	Flash Point Method:	Tag-Closed Cup
Specific Gravity (H₂O=1):	1.38 - 1.40 @ 25°C	Decomposition Temperature:	Not established
Vapor Density (air = 1):	> 1	Auto ignition temperature:	> 250°C (482°F)
Vapor Pressure:	3103 mm Hg @ 20°C	Flammable limits (estimated):	LOWER: N.E. UPPER: N.E.
Rule 1171 PPc:	Not established	Partition Coefficient (octanol/water):	< 1
V.O.C. Content:	Aerosol: 45.0% per State & Federal Consumer Product Regulations Bulk: Not applicable	Odor Threshold:	Not established
Melting Point:	Not established	Viscosity:	< 3 cSt @ 25°C
pH:	Not applicable	Volatiles:	100%
Heat of combustion:	Aerosol: < 20 kJ/g Bulk: Not applicable		



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Section 10 • Stability and Reactivity

Chemical Stability:	Product is stable under recommended storage conditions.
Conditions to Avoid:	Keep away from heat and ignition sources.
Incompatibility:	Extremely reactive or incompatible with oxidizing agents. Reacts violently with sodium, potassium and barium metal. Reacts with finely divided aluminium, zinc and magnesium.
Hazardous Decomposition:	Combustion will generate smoke, possibly thick and choking, resulting in zero visibility and combustion products include hydrogen fluoride, hydrogen chloride, fluorine, chlorine, carbon monoxide and carbon dioxide.
Hazardous Polymerization:	Will not occur.

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
1,1,1,2-Tetrafluoroethane	811-97-2	567000 ppm / rat / 4 hr	Not appropriate
Nonafluorobutyl Methyl Ether	163702-07-6	> 100,000 ppm / rat / 4 hr	> 5000 mg/kg / oral / rat
Nonafluoroisobutyl Methyl Ether	163702-08-7	> 100,000 ppm / rat / 4 hr	> 5000 mg/kg / oral / rat
C5 - C18 Perfluoro Compounds	86508-42-1	1000 - 5000 ppm / 8 - 40 mg/L	> 5000 mg/kg / oral / rat
1,2-Trans-Dichloroethylene	156-60-5	24100 ppm / rat / 8 hr	1235 mg/kg / oral / rat
Isopropanol	67-63-0	16000 ppm / rat / 4 hr*	5045 mg/kg / oral / rat*
Methylcyclohexane	108-87-2	36900 mg/m3 / mouse / 2 hr	> 3200 mg/kg / oral / rat

* Supplier Data

Neurotoxicity:

Isopropanol: Inhalation / Mouse / 3000 ppm / 6 month - Respiratory Depression (RTECS# NT8050000).

Methylcyclohexane: Inhalation / Mouse / 11,000 mg/m3 / 6 hr - 5 Days Intermittant - General anesthetic (RTECS# GV6125000).

Reproductive Toxicity:

1,2-Trans-Dichloroethylene: Inhalation / Pregnant female rats / 12,000 ppm / 6 hr - Stunted Fetus (RTECS#KV9400000).

Isopropanol: Inhalation / Pregnant female rats / 3500 ppm / 7 hr - Stunted Fetus (RTECS#NT8050000).



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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	1,2-Trans-Dichloroethylene	156-60-5	LC50	Pimephales Promelas	81,267 µg/L
	Isopropanol	67-63-0	LC50	Pimephales Promelas	10,824 mg/L
Acute Toxicity on Daphnia	1,2-Trans-Dichloroethylene	156-60-5	LC50	Daphnia Magna	50,050 µg/L
	Isopropanol	67-63-0	LC50	Daphnia Magna	> 10000 mg/L
Bacterial Inhibition	No data available				
Growth inhibition of algae	1,2-Trans-Dichloroethylene	156-60-5	EC50	Selenastrum Capricornutum	560,000 µg/L
	Isopropanol	67-63-0	EC50	Scenedesmus Quadricauda	1,800,000 µg/L
Bioaccumulation in fish	Isopropanol	67-63-0	Dosage of 4,800,000 µg/L	Oncorhynchus Mykiss	No effect

* Supplier Data

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.



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Section 14 • Transport Information

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

1,2-Trans-Dichloroethylene 156-60-5 1000 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, Immediate (Acute) Health Hazard

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

No individual section 313 component is present at or above 1%.

Section 112 Hazardous Air Pollutants (HAPs): None

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 • Nonfluorobutyl Methyl Ether 163702-07-6 • Nonfluoroisobutyl Methyl Ether 163702-08-7 • Perfluoro Compounds 86508-42-1 • 1,2-Trans-Dichloroethylene 156-60-5 • Isopropanol 67-63-0 • Methylcyclohexane 108-87-2

Bulk: Not applicable



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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#: 10416 MSDS Preparation Responsible Name: Elena Badiuzzi Compliance Manager Telephone: +1 770 243-8800	HMIS 1996		HMIS III		Health	NFPA Flammability Special	Reactivity
	Health:	1	Health:	[/] 1			
	Flammability:	1	Flammability Aerosol:	2			
	Reactivity:	0	Flammability Bulk:	NA			
			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