



MATERIAL SAFETY DATA SHEET

Revo 66

Contact Cleaner

Revision 4

Revision Date: 10/2/09

Supersedes: 7/26/07

Section 1 • Product and Company Identification

Product Name:	LPS [®] Revo 66 Contact Cleaner
Part Number:	04416, C04416
Chemical Name:	Halogenated hydrocarbon mixture
Product Use:	An aerosol remover of dirt, moisture, dust, flux, or oxides from the internal components of electronic or precision equipment.
Manufacturer Information:	LPS Laboratories, 4647 Hugh Howell Rd., Tucker, GA, USA 30084
TEL:	1 770-243-8800
Emergency Telephone Number:	1-800-424-9300 Chemtrec; Outside U.S.: (703) 527-3887
FAX:	1 770-243-8899
Website:	http://www.lpslabs.com

PLAIN LANGUAGE HAZARD SUMMARY

Material Safety Data Sheets can be confusing. Federal and State laws require us to include a great deal of technical information that probably won't help the non-professional. LPS includes this "PLAIN LANGUAGE HAZARD SUMMARY" to address the questions and concerns of the average worker. If you have additional health, safety or product questions, don't hesitate to call us at 800/241-8334.

Worker Toxicity

LPS Revo 66 Contact Cleaner is an aerosol remover of dirt, moisture, dust, flux, or oxides from the internal components of electronic or precision equipment such as circuit boards, and the internal components of electronic devices, including but not limited to, radios, compact disc (CD) players, digital video disc (DVD) players, and computers. It contains solvents that can be irritating to skin and, if handled improperly, can be dangerous. We suggest you wear gloves and avoid extended exposure to unprotected skin. Don't get it in your eyes (it stings) or breathe large amounts of vapor (it will dry out your nasal passages). Don't spray LPS Revo 66 Contact Cleaner for extended periods without adequate ventilation (if you breathe large amounts in poorly ventilated areas it can make you dizzy and even sick). If you're going to perform work involving a lot of product in a poorly ventilated area, use of a respirator or even a self-contained breathing apparatus may be necessary. For more exposure and first aid information, refer to MSDS Sections 2, 8 and 11.

Flammability

LPS Revo 66 Contact Cleaner has no flash point and exhibits no flame extension when sprayed into an ignition source. However, it does contain some flammable ingredients. If a sufficient amount of material is sprayed into a confined area and allowed to partially evaporate, conditions for flammability could exist. Do not spray onto live electrical equipment (such as DC drive motors) or in or around ignition sources. Store product away from heat sources.

Disposal

If the aerosol container of LPS Revo 66 Contact Cleaner will not empty and contains 1 inch (2.5 cm) or more of liquid, it will fall under at least one hazardous waste classification. If the item is exhausted of its contents and is no longer pressurized, it is not considered a hazardous waste. Treat all spent aerosol containers appropriately. See section 13 for more details.



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Section 2 • Hazards Identification

This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200).

Emergency Overview: DANGER: Contents under pressure. Vapor harmful. Causes irritation.

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

Potential Acute Health Effects:

Eyes Irritating to eyes. May cause frostbite upon extended direct contact.

Skin Repeated exposure may cause skin dryness or cracking. May cause frostbite upon extended direct contact.

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

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

Potential Chronic Health Effects:

Carcinogenic Effects: NTP: No IARC: No OSHA: No

Mutagenic Effects: None

Teratogenic Effects: 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	Percent by Weight
1,1,1,2-Tetrafluoroethane	811-97-2	20 - 40
Trans-1,2-dichloroethylene	156-60-5	50 - 70
2,3-Dihydroperfluoropentane	138495-42-8	5-10
Isopropanol	67-63-0	1 - 5



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Section 4 • First Aid Measures

- Eyes:** Check for and remove contact lenses. If irritation or redness develops, flush eyes with lukewarm, 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. If frostbite occurs, warm area with lukewarm water and 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. If frostbite occurs, warm area with lukewarm water and seek medical attention immediately.

Section 5 • Fire Fighting Measures

Flash point: TCC CLOSED CUP: 38.3°C (100.9°F) bulk liquid

Flammable limits: Not Established **Auto ignition Temperature:** Not Established

Products of Combustion: Hydrogen fluoride, hydrogen chloride, chlorine, carbon monoxide and carbon dioxide.

Firefighting media: SMALL FIRE: Use DRY chemical powder.

LARGE FIRE: Use 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): 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.

Section 6 • Accidental Release Measures

- | | | |
|-------------------------------|--|--|
| Containment Procedures | Small Spill and Leak:
Large Spill and Leak: | Absorb with an inert material and dispose of properly.
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 suitable container for disposal. |
| Evacuation Procedures | | Ventilate area of leak or spill. Keep unnecessary and unprotected people away. |
| Special Procedures | | Ventilate area. Wear appropriate protective equipment during cleanup. |



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Section 7 • Handling and Storage

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.

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

Section 8 • Exposure Controls / Personal Protection

Exposure Guidelines:

Component	CASRN	OSHA TWA-PEL	OSHA STEL	ACGIH TLV	ACGIH STEL	OTHER LIMITS
1,1,1,2-Tetrafluoroethane	811-97-2	Not Established	Not Established	Not Established	Not Established	1000 ppm WEEL TWA*
1,2- Trans- Dichloroethylene	156-60-5	200 ppm	Not Established	200 ppm	Not Established	Not Established
2,3-Dihydroperfluoropentane	138495-42-8	Not Established	Not Established	Not Established	Not Established	200 ppm
Isopropanol	67-63-0	400 ppm	Not Established	200 pm	400 ppm	400 ppm NIOSH TWA 500 ppm NIOSH STEL

*Note: Exposure limits provided by supplier.

Engineering measures: Provide local and/or general exhaust ventilation or other engineering controls to keep the airborne concentrations of vapors below their respective occupational exposure 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: Normally no hand protection is required; however, if product will be sprayed for an extended period, "overspray" onto skin may occur. If so, wear chemically resistant gloves conforming to appropriate regulations (i.e., nitrile).

Respiratory protection: If airborne concentrations are above the applicable exposure limits (listed above), use NIOSH approved respiratory protection (i.e., organic cartridge).

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



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Section 9 • Physical and Chemical Properties

Appearance:	Liquid.	Color:	Colorless / water-white
Odor/Taste:	Characteristic	Vapor Pressure:	868 mmHg at 20°C (calculated)
Solubility Description:	< 5% by weight	Evaporation Rate:	<1 (Ether Ethyl=1)
Boiling Point:	42°C (108 °F) bulk liquid	Flash Point (°C):	38.3°C (100.9°F) bulk liquid
Specific Gravity (Water=1):	1.2 – 1.3 @ 20 °C	Flash Point Method:	Tag-Closed Cup.
Vapor Density (air=1):	>1	Auto Ignition Temperature (°C):	Not Established
V.O.C. Content:	71.5%, 894g/L, 7.4 #/gal Per CARB/OTC definition 64.7%, 809 g/L, 6.7 #/gal Per EPA definition	Volatiles:	100%
Flammable limits (estimated):	Not Established	Viscosity:	<3 cSt @ 25°C
pH:	Not applicable		

Section 10 • Stability and Reactivity

Chemical Stability:	Product is stable under recommended storage conditions.
Conditions to Avoid:	Avoid contact with open flame and other hot surfaces which can cause thermal decomposition.
Incompatibility:	Extremely reactive or incompatible with oxidizing agents. Reacts violently with sodium, potassium, barium metal. Reacts with finely divided aluminum, zinc and magnesium.
Hazardous Decomposition:	Thermal decomposition may yield hydrogen fluoride, hydrogen chloride, chlorine, carbon monoxide and carbon dioxide
Hazardous Polymerization:	Will not occur.



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Section 11 • Toxicological Information

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.

Component	CASRN	LC-50	LD-50
1, 1, 1, 2-tetrafluoroethane	811-97-2	567,000 ppm/4H/rat	Not Established
1,2- Trans- Dichloroethylene	156-60-5	24100 ppm/4H/rat	1235 mg/kg/rat/oral/rat >5000 mg/kg/dermal/rabbit
2,3-Dihydroperfluoropentane	138495-42-8	11100 ppm/4H/rat	>5000 mg/kg/oral/rat >5000 mg/kg/dermal/rabbit
Isopropanol	67-63-0	16000 ppm/4H/rat	5045 mg/kg/rat/oral 5030-7900 mg/kg/dermal/rabbit

Section 12 • Ecological Information

Mobility:	Semi-volatile. Partially absorbed into soil.	Persistence and degradability:	Only slightly biodegradable.
Bioaccumulative potential:	No bioaccumulation potential	Other adverse effects:	Hazardous to the aquatic environment.

Ecotoxicology

Effect on Organisms	Component	CASRN	Test	Species	Results
Acute Toxicity on Fishes	1,2- Trans- Dichloroethylene	156-60-5	96hr-LC ₅₀	Pimephales promelas	81.3 mg/L
	2,3-Dihydroperfluoropentane	138495-42-8	96hr-LC ₅₀	Pimephales promelas	27.2 mg/L
	Isopropanol	67-63-0	96hr-LC ₅₀	Pimephales promelas	10,824 mg/L
Acute Toxicity on Daphnia	1,2- Trans- Dichloroethylene	156-60-5	48 hr-LC ₅₀	Daphnia magna	50.1 mg/L
	2,3-Dihydroperfluoropentane	138495-42-8	48 hr-LC ₅₀	Daphnia magna	11.7 mg/L
	Isopropanol	67-63-0	LC ₅₀	Daphnia magna	> 10000 mg/L
Bacterial inhibition	No Data Available				
Growth inhibition of algae	1,2- Trans- Dichloroethylene	156-60-5	EC ₅₀	Selenastrum capricornutum	560,000 ug/L
	Isopropanol	67-63-0	EC ₅₀	Scenedesmus quadricauda	1,800,000 ug/L
Bioaccumulation in fish	Isopropanol	67-63-0	Dosage of 4,800,000 ug/L	Oncorhynchus mykiss	No Effect



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Section 13 • Disposal Considerations

Waste Status: Aerosol products, if depressurized and emptied to less than 2.5 cm of fluid contents are classified as non-hazardous waste under 40 CFR 261.7 (U.S.). If disposed of in its received form, this item carries waste code D003. (U.S.)

Disposal: Waste must be disposed of in accordance with national, regional, provincial, and local environmental control 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	Shipping Name:	Consumer Commodity	UN Number:	NA
	Hazard Class:	ORM-D	Technical Name:	NA
	Subclass:	NA	Hazard Label:	ORM-D
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		
IMDG-IMO	UN no:	1950	Class:	2
	Shipping Name:	AEROSOLS	Subsidiary Risk:	NA
	Labeling:	NA	Packing group:	NA
	Marine pollutant:	NO	EmS:	F-D, S-U
IATA-ICAO	UN no:	1950	Class:	2.2
	Shipping Name:	Aerosols, non-flammable	Subclass	NA
	Packing group:	NA	Packing instructions:	203, Y203 (Ltd. Qty)
	Labeling:	Non-flammable Gas		



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Section 15 • Regulatory information

U.S. Federal Regulations

RCRA Hazardous Waste No.: D003

Comprehensive Environmental Response and Liability Act of 1980 (CERCLA)

Reportable Quantities: 1, 2-Trans-dichloroethylene 156-60-5 (1000 lb)

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): None

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 regulations.

New Jersey Right to Know: 1, 2-Trans-Dichloroethylene 156-60-5 • 1, 1, 1, 2-Tetrafluoroethane 811-97-2 • 2,3-Dihydroperfluoropentane 138495-42-8 • Isopropanol 67-63-0 •

International Regulations

Canadian Environmental Protection Act: 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.



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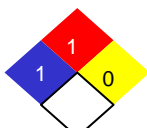
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Section 16 • Other Information

MSDS#14416 Responsible Name: Clea Johnson Regulatory Affairs Coordinator	HMIS 1996		HMIS III		NFPA Flammability  Health Reactivity
	Health:	1	Health:	[/]1	
	Flammability:	1	Flammability:	1	
	Reactivity:	0	Physical Hazard:	2	

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.

Clea L Johnson, Regulatory Affairs Coordinator
LPS Laboratories
A division of Illinois Tool Works