MATERIAL SAFETY DATA SHEET
Electro Contact Cleaner

Revision 4 | Revision Date 5/7/09 | Supercedes: 1/10/08

Section 1 – Identification

Product Name: Electro Contact Cleaner

Part Number: 00416, C00416

Chemical Name: Halogenated hydrocarbon mixture

Product Use: Electro Contact Cleaner is 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 Rd., Tucker, GA, USA 30084

TEL: 1 770-243-8800

FAX: 1 770-243-8899

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

Electro Contact Cleaner is designed for cleaning electrical and electronic parts as well as other types of delicate mechanisms. It contains halogenated hydrocarbons whose vapor and liquid can be irritating to eyes and skin. Avoid extended exposure to unprotected skin. If the product soaks clothing (and even shoes), remove the affected clothing and launder it before wearing it again. Don't get the solvent in your eyes (it stings), or breath the vapor. Vapors from Electro Contact Cleaner can make you dizzy and even sick; use only in a well-ventilated area. For more exposure and first aid information, refer to sections 2, 3, 8 and 11.

Flammability

Electro Contact Cleaner is non-flammable having no flash point. Under normal use conditions flammability is not a concern, but do not heat container to avoid possible explosion.

Disposal

Dispose of contents/container in accordance with local / regional/ national regulations. Refer to section 13 for more information.

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: DANGER: Harmful or Fatal if Swallowed. Vapor Harmful. Contents under pressure.

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 skin.
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:	Ingestion of this material may result in nausea, vomiting, and weakness followed by central nervous system depression. May cause injury if aspirated into lungs.

Potential Chronic Health Effects:

Carcinogenic Effects: NTP: 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 – Compositon / Information on Ingredients

Ingredient	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%
Perfluorinated polyethers	69991-67-9	10 - 20%
1, 2-Trans-dichloroethylene	156-60-5	5 -10%
Isopropanol	67-63-0	1 - 5%
Methylcyclohexane	108-87-2	1 - 5%

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: Get 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: This material is not flammable under normal circumstances.

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, autoignition 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.

Section 6 – Accidental Release Measures

Containment Procedures Contain and recover spilled liquid when possible.

Clean-Up Procedures Wear appropriate personal protective equipment (respiratory protection, solvent resistant gloves). Absorb spill with an inert material such as clay, vermiculite or diatomaceous earth. Place slurry in an approved chemical waste container for disposal. Wash spill area with detergent and water. Before discharging rinse water to sanitary sewer system, consult local regulations.

Evacuation Procedures Ventilate area of leak or spill. Keep unnecessary and unprotected people away.

Special Procedures Remove all sources of ignition. Ventilate area. Wear appropriate protective equipment during cleanup.

Section 7 – Handling and Storage

Handling: Do not allow material to come into contact with eyes or skin. Wear appropriate protective equipment during handling. Keep container closed. Do not breathe vapors or mists. Use only with adequate ventilation. Wash thoroughly after handling.

Storage: Keep in original container. Keep container tightly closed. Store in a well ventilated area away from sources of ignition.

Section 8 – Exposure Controls / Personal Protection

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*
(Nonafluorobutyl) methyl ether	163702-07-6	Not Established	Not Established	Not Established	Not Established	750 ppm AIHA TWA*
(Nonafluoroisobutyl) methyl ether	163702-08-7	Not Established	Not Established	Not Established	Not Established	750 ppm AIHA TWA*
Perfluorinated polyethers	69991-67-9	Not Established	Not Established	Not Established	Not Established	Not Established
1, 2-Trans-dichloroethylene	156-60-5	200 ppm	Not Established	200 ppm	Not Established	Not Established
Isopropanol	67-63-0	400 ppm	Not Established	200 pm	400 ppm	400 ppm NIOSH TWA 500 ppm NIOSH STEL
Methylcyclohexane	108-87-2	500 ppm	Not Established	400 ppm	Not Established	400 ppm NIOSH TWA

*Note: Exposure limits provided by supplier.

Engineering measures: 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: Normally no hand protection is required; however, if product will be sprayed for an extended period, "overspray" onto skin may occur. If so, use protective 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 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 extended spraying of product will be made under poor ventilation, use appropriate organic vapor filtering respirators.

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

Section 9 – Physical and Chemical Properties

Appearance:	Clear liquid.	**Colour:**	Colorless
Odour/Taste:	Characteristic	**Evaporation Rate:**	<1(Ethyl Ether =1)
Solubility Description:	<5% by weight.	**Flash Point (°C):**	None.
Odour Threshold:	Not Determined.	**Decomposition Temperature:**	Not Determined.
Boiling Point (°C):	48°C @ 1 atm	**Flash Point Method:**	TCC
Specific Gravity (Water=1):	1.38 – 1.40 @ 25°C	**Auto Ignition Temperature (°C):**	>250°C
Vapour Density (air=1):	>1	**Partition Coefficient (octanol/water):**	<1
Vapour Pressure:	60 psi @ 25 °C		
pH:	N/A	**Volatiles:**	100%
Flammable limits (estimated):	LOWER: Not available UPPER: Not available	**Viscosity:**	<3 cSt @ 25°C
V.O.C. content	62.5% , 840 g/L, 7.3 #/gal per CARB definition)	**Melting Point (°C):**	Not Applicable

Section 10 – Chemical 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, barium metal. Reacts with finely divided aluminum, 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, chlorine, carbon monoxide and carbon dioxide
Hazardous Polymerization:	Will not occur.

Section 11 – Toxicological Information

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.

B: Component Analysis

Ingredients	CASRN	LC-50	LD-50	Carcinogenicity (IARC, NTP, OSHA)	Neurotoxicity	Reproductive Toxicity
1, 1, 1, 2-tetrafluoroethane	811-97-2	567,000 ppm/ 4 hrs/ inhalation/ rat	Not Established	Not Listed	Not Established	Not Established
Trans-dichloroethylene	156-60-5	24100 ppm rat	1235 mg/kg rat	Not listed.	Not Established	Inhalation/pregnant female rats/12000 ppm/6H/stunted fetus (RTECS # KV9400000)
Isopropanol	67-63-0	16000 ppm / 8 hr. rat	5045 mg/kg rat	Not listed.	Inhalation/mouse / 3000 ppm/ 6M/ respiratory depression (RTECS # NT8050000)	Inhalation/pregnant female rats/3500 ppm/7H/stunted fetus (RTECS # NT8050000)
Methylcyclohexane	108-87-2	36900 mg/m^3/2H/ mouse	>3200 mg/kg/rat	Not listed.	Inhalation / mouse / 11000 mg/m^3/6H/5D (intermittent)/ general anesthetic (RTECS # GV6125000)	Not Established

Section 12 – Ecological Information

Mobility: Semi-volatile. Readily absorbed into soil.

Persistence and degradability: Only slightly biodegradable.

Bioaccumulative potential: No bioaccumulation potential

Other adverse effects: None known.

Ecotoxicology

Effect on Organisms	Component	CASRN	Test	Species	Results
Acute Toxicity on Fishes	Trans-dichloroethylene	156-60-5	LC_{50}	Pimephales promelas	81267 ug/L
	Isopropanol	67-63-0	LC_{50}	Pimephales promelas	10,824,444 ug/L
Acute Toxicity on Daphnia	Trans-dichloroethylene	156-60-5	LC_{50}	Daphnia magna	50050 ug/L
	Isopropanol	67-63-0	LC_{50}	Daphnia magna	> 10000 mg/L
Bacterial inhibition	No Data Available				
Growth inhibition of algae	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

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 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 – Transportation 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:**	N/A	**ADR Class:**	N/A
	Packing group:	N/A	**Classification code:**	N/A
	Name and Description:	N/A	**Hazard ID no:**	N/A
	Labelling:	N/A		
IMDG-IMO	**UN no:**	1950	**Class:**	2
	Shipping Name:	AEROSOLS	**Subsidiary Risk:**	NA
	Labeling:	NA	**Packing group:**	N/A
	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:**	NA
	Labelling:	Non-flammable Gas		

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

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.

New Jersey Right to Know:

1,1,1,2-tetrafluoroethane	811-97-2
(Nonafluorobutyl) methyl ether	163702-07-6
(Nonafluoroisobutyl) methyl ether	163702-08-7
Perfluorinated polyethers	69991-67-9
1, 2-Trans-dichloroethylene	156-60-5
Isopropanol	67-63-0
Methylcyclohexane	108-87-2

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

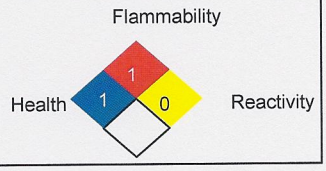
Other Regulations

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

Section 16 • Other Information

MSDS#10416 Responsible Name: Clea Johnson **Regulatory Affairs Coordinator**	HMIS 1996		HMIS III	
	Health:	1	Health:	[/]1
	Flammability:	1	Flammability:	1
	Reactivity:	0	Physical Hazard:	2

NFPA



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.

Form #3543

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LPS Laboratories
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