



MATERIAL SAFETY DATA SHEET

LPS[®] Micro-X NU Fast Evaporating Contact Cleaner

Revision 4

Revision Date: 7/10/09

Supersedes: 5/19/09

Section 1 • Product and Company Identification

Product Name:	LPS [®] Micro-X NU
Part Number:	06616, C06616
Chemical Name:	Hydrocarbon and Isopropanol mixture
Product Use:	A fast evaporating contact cleaner designed for the removal 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 will not 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, do not hesitate to call us at 1 770-243-8800.

Worker Toxicity

LPS[®] Micro-X NU is a fast evaporating contact cleaner designed for the removal of dirt, moisture, dust, flux, or oxides from the internal components of electronic or precision equipment. It contains a mixture of heptane, hexane and isopropyl alcohol which can be irritating to skin at a minimum 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 breath large amounts of the vapor, (it will dry out your nasal passages and if you breathe large amounts in poorly ventilated areas it can make you dizzy and even sick). Don't spray LPS[®] Micro-X NU for extended periods without adequate ventilation. If you are going to perform work involving a lot of product in a poorly ventilated area, use of a respirator or self-contained breathing equipment may be required. For more exposure and first aid information, refer to MSDS Sections 2, 8 and 11.

Flammability

LPS[®] Micro-X NU is extremely flammable, having a flash point below 0 °F (-18°C). Do not spray onto live electrical equipment or in or around ignition sources. Store product away from heat sources.

Disposal

If you spill LPS[®] Micro-X NU, notify the proper environmental or safety department at your company right away. If LPS[®] Micro-X NU becomes contaminated with another substance and is rendered unusable for cleaning, the resulting mixture will fall under at least one hazardous classification. 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).

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: Extremely Flammable. Eye Irritant. Vapor Harmful. Contents under pressure. Harmful or Fatal if swallowed.

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 irritation of the respiratory tract, nausea, dizziness or headache.

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.

Potential Chronic Health Effects:

Carcinogenic Effects: NTP: No OSHA: No ACGIH: No

Mutagenic Effects: None

Teratogenic Effects: This material (or component) has been shown to cause harm to the fetus in laboratory animal studies. Harm to the fetus occurs only at exposure levels that harm the pregnant animal. The relevance of these findings to humans is uncertain.

Target Organs: Prolonged and repeated exposure to n-hexane may cause peripheral neuropathy by damaging peripheral nerve tissue (that of the arms and legs) and result in muscular weakness and loss of sensation. Prolonged and repeated inhalation of high levels of mixed isomers of hexane resulted in kidney damage in male rats. The effects observed are the same as those seen in male rats exposed to other hydrocarbons. The mechanism by which these chemicals cause the characteristic kidney toxicity is unique to the male rat and the kidney effects are not expected to occur in man. Breathing isopropanol vapors has caused damage to the lining of the middle ear in experimental animals. The relevance of this finding to humans is uncertain. Overexposure to this material (or its components) has been suggested as a cause of the following effects in laboratory animals: liver abnormalities, kidney damage.

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

Component	CASRN	Weight Percent
2-Methylpentane	107-83-5	40 - 50
1,1,1,2-Tetrafluoroethane	811-97-2	20 - 30
3-Methylpentane	96-14-0	10 - 20
2,3-Dimethylbutane	79-29-8	10 - 20
2,2-Dimethylbutane	75-83-2	5 - 10
n-Heptane	142-82-5	1 - 5
Isopropanol	67-63-0	1 - 5
n-Hexane	110-54-3	1 - 3

Section 4 • First Aid Measures

- 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.

Section 5 • Fire Fighting Measures

Products of Combustion: 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:** Yes

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: High heat will cause explosive rupture of containers and the rapid spread of fire.



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Section 6 • Accidental Release Measures

Containment Procedures	Small Spill and Leak: Large Spill and Leak:	Eliminate ignition sources. Absorb with an inert material and dispose of properly. 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.
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	Remove all sources of ignition. Ventilate area. Wear appropriate protective equipment during cleanup.	

Section 7 • Handling and Storage

Handling: DO NOT spray into or around ignition sources. Do not allow material to come into contact with eyes or skin. Wear appropriate protective equipment during handling. Keep container closed. Avoid breathing vapors or mists. Use only with adequate ventilation. Wash thoroughly after handling.

Storage: Store in a well ventilated area away from sources of ignition.

Precautions to be taken in handling and storage: Store all materials in dry, well-ventilated area. Avoid breathing vapors. Ground and bond containers before transferring materials.

Section 8 • Exposure Controls / Personal Protection

Exposure Guidelines:

Component	CASRN	OSHA TWA-PEL	OSHA STEL	ACGIH-TLV	ACGIH-STEL	NIOSH REL
2-Methylpentane*	107-83-5	500 ppm	1000 ppm	500 ppm	1000 ppm	100 ppm
1,1,1,2-Tetrafluoroethane	811-97-2	Not Established	Not Established	Not Established	Not Established	1000 ppm WEEL TWA*
3-Methylpentane*	96-14-0	500 ppm	1000 ppm	500 ppm	1000 ppm	100 ppm
2,3-Dimethylbutane*	79-29-8	500 ppm	1000 ppm	500 ppm	1000 ppm	100 ppm
2,2-Dimethylbutane*	75-83-2	500 ppm	1000 ppm	500 ppm	1000 ppm	100 ppm
Isopropanol*	67-63-0	400 ppm	Not Established	200 ppm	1000 ppm	400 ppm
n-Heptane*	142-82-5	500 ppm	500 ppm	400 ppm	500 ppm	85 ppm
n-Hexane*	110-54-3	500 ppm	Not Established	50 ppm	Not Established	50 ppm

*Note: Exposure guidelines provided by supplier.



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Engineering Controls: Provide exhaust ventilation or other engineering controls to keep the airborne concentrations of vapors below their respective occupational exposure limits.

Personal Protection:

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

Respiratory: A NIOSH-approved air-purifying respirator with an organic vapor cartridge or canister may be permissible under certain circumstances where airborne concentrations are expected to exceed exposure limits (listed above). Protection provided by air-purifying respirators is limited. Use a positive-pressure, air-supplied respirator if there is any potential for uncontrolled release, when exposure levels are not known, or any other circumstances where air-purifying respirators may not provide adequate protection.

Hands: 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 (i.e., nitrile) 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.

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

Section 9 • Physical and Chemical Properties

Appearance:	Clear Liquid	Color:	Colorless/water-white
Odor:	Mild or faint alcohol	Evaporation Rate:	<1 (Ethyl Ether = 1)
Solubility:	<5% by weight	Decomposition Temperature:	Not Established
Boiling Point:	60.5°C (141°F) dispensed liquid	Flash Point:	-18°C (0°F) dispensed liquid
Specific Gravity (H₂O=1):	0.80 – 0.82 @ 25°C	Flashpoint Method:	TCC
Vapor Density (air=1):	~3.0	Partition Coefficient (octanol/water):	>1
Vapor Pressure (mmHg):	1113 (calculated)	VOC Content:	74%, 481g/L, 4.01 #/gal
VOC Composite Partial Vapor Pressure (mmHg):	130 (calculated)	Viscosity:	<3 cSt @ 25°C
pH	Not Applicable	Melting Point:	Not Applicable
Flammable Limits:	LOWER:1.2% UPPER: 7%	Auto-Ignition Temperature:	306°C (582.8°F)



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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. Exposure to direct sunlight for extended periods. Temperatures in excess of 50°C(122°F).
Incompatibility:	Extremely reactive or incompatible with oxidizing agents.
Hazardous Decomposition:	Combustion will generate smoke, possibly thick and choking, resulting in zero visibility and combustion products include carbon monoxide and carbon dioxide.
Hazardous Polymerization:	Will not occur.

Section 11 • Toxicological Information

Acute and Chronic Toxicity

A: General Product Information

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.

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

Component	CASRN	LC ₅₀	LD ₅₀
2-Methylpentane	107-83-5	3125 ppm inhalation/rat/4H*	Not Available
1, 1, 1, 2-tetrafluoroethane	811-97-2	567,000 ppm/4H/rat	Not Established
3-Methylpentane	96-14-0	Not available	Not Available
2,3-Dimethylbutane	79-29-8	Not Available	Not Available
2,2-Dimethylbutane	75-83-2	Not Available	Not Available
Isopropanol	67-63-0	16000 ppm inhalation/rat/4H*	5045 mg/kg oral/rat* 5030 – 7900 mg/kg dermal/rabbit*
n-Heptane	142-82-5	103 gm/m ³ /4hr. rat	222 mg/kg mouse
n-Hexane	110-54-3	48000 ppm inhalation/rat/4H*	25 g/kg oral/rat* 1.3 g/kg dermal/rabbit*

*Note: Supplier data



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Section 12 • Ecological Information

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

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

Bioaccumulation / Accumulation: Minimal bioaccumulation potential

Other Adverse Effects: None Known.

Ecotoxicity

Component	CAS RN	Test	Species	Results
2-Methylpentane	107-83-5	48-hour EC ₅₀	Daphnia magna	2.1 mg/L
		96-hour LC ₅₀	Microcystis pyrifera	10 mg/L
Isopropanol	67-63-0	48-hour EC ₅₀	Pimephales promelas	10,000 mg/L
		96-hour LC ₅₀	Gambusia affinis	14,000 mg/L
n-Hexane	110-54-3	48-hour EC ₅₀	Water flea	3.87 mg/L
		96-hour LC ₅₀	Lepomis macrochirus	4.12 mg/L

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 codes D001 and 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. This information presented here only applies to the material as supplied. It is the responsibility of the waste generator to determine the toxicity and physical properties of the material generated to determine the proper waste identification and disposal methods in compliance with applicable regulations.



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Section 14 • Transport Information

D.O.T. Ground	Shipping Name:	ORM-D	UN Number:	NA
	Hazard Class:	NA	Technical Name:	NA
	Subclass:	NA	Hazard Label:	ORM-D Already on box
Road/Rail - ADR/RID	UN no:	1950	ADR Class:	2.1
	Packing group:	NA	Classification code:	5F
	Name and Description:	AEROSOLS, Flammable	Hazard ID no:	NA
	Labeling:	2.1		
IMDG-IMO	UN no:	1950	Class:	2.1
	Shipping Name:	AEROSOLS	Subsidiary Risk:	NA
	Packing Instructions:	NA	Packing group:	NA
	Marine pollutant:	NO	EmS:	F-D, S-U
IATA-ICAO	UN no:	1950	Class:	2.1
	Shipping Name:	AEROSOLS, Flammable	Subclass	NA
	Packing instructions:	NA	Packing group:	NA
	Labeling:	Flammable Gas		

Section 15 – Regulatory Information

U.S. Federal Regulations

Toxic Substances Control Act (TSCA):

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

RCRA Hazardous Waste No.: D001, D003 (aerosols only)

Comprehensive Environmental Response and Liability Act of 1980 (CERCLA)

Reportable Quantity: n-hexane- 5000 pounds

Superfund Amendments and Reauthorization Act (SARA) Title III

SARA Section 311/312 (40 CFR 370) Hazard Categories:

Sudden Release of Pressure (aerosols only), Fire Hazard, 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):

Component	CAS Number	Maximum %
n-hexane	110-54-3	3%

Section 112 Hazardous Air Pollutants (HAPs): n-hexane



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State Regulations

New Jersey Right to Know: 2-methylpentane 107-83-5 • 1, 1, 1, 2-tetrafluoroethane 811-97-2 • 3-methylpentane 96-14-0 • 2,3-dimethylbutane 79-29-8 • 2, 2 dimethylbutane 75-83-2 • Heptane 142-82-5 • Isopropanol 67-63-0 • Hexane 110-54-3

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

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

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:

Class A, Class B5, Class D2A, 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

Section 16 • Other Information					
MSDS#16616 Responsible Name: Clea Johnson Regulatory Affairs Coordinator	HMIS 1996	HMIS III	NFPA Flammability Health Reactivity		
	Health:	2		Health:	*2
	Flammability:	3		Flammability:	3
	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