



MATERIAL SAFETY DATA SHEET
LPS® HDX

Revision Date: June 17, 2011

Supersedes: July 12, 2010

Section 1 • Product and Company Identification

Product Name: LPS® HDX

Part Number(s): 01020 (aerosol), 01005, 01055, C01020 (aerosol), C01005, C01055

Chemical Name: Chlorinated Hydrocarbon (trichloroethylene)

Product Use: A degreaser designed to remove grease, oil, dirt and other residues from metal and other hard surfaces near ignition sources.

Manufacturer Information: LPS Laboratories, 4647 Hugh Howell Road, Tucker, GA, USA 30084
TEL: USA & Canada: 1 800 241-8334
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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. Harmful if inhaled.

Bulk: DANGER: Harmful or fatal if swallowed. Vapor harmful. Harmful if inhaled.

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

Potential Acute Health Effects:

Eyes: Liquid in eyes produces pain and irritation with mild temporary damage possible. Vapor can irritate eyes.

Skin: Prolonged or repeated contact of liquid can cause skin irritation, defatting of the skin and dermatitis. Absorption of liquid through intact skin is possible, causing systemic poisoning but this is an unlikely route of significant toxic exposure.

Inhalation: High concentrations of vapor, in excess of the occupational exposure limit, will lead to adverse effects on the central nervous system, causing nausea, headaches, dizziness and lightheadedness (concentrations in excess of 300 ppm). Higher concentrations, around 5000 ppm and above, will cause anesthetic effects, leading to unconsciousness and in extreme cases, coma and death. Very high exposures may cause an abnormal heart rhythm and prove suddenly fatal.

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 causing adverse health effects as described in the inhalation section above.



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Potential Chronic Health Effects:

Carcinogenic Effects: See Section 11

NTP: Suspect carcinogen

IARC: Group 2A

OSHA: No

ACGIH: No

Mutagenic Effects: Has been linked to mutagenic effects in humans.

Teratogenic Effects: Did not cause birth defects in laboratory animals. Has been toxic to the fetus in laboratory animals at levels toxic to the mother.

Target Organs: In animals, effects have been reported on the following organs: kidney, liver, central nervous system, peripheral nervous system.

Medical conditions aggravated by exposure:

Repeated exposure to high levels produces adverse effects on the liver and, to a lesser extent on the kidney. A condition known as "Degreaser's Flush", a pronounced redness of the skin, may occur on the face, hands, arms, feet and trunk of some individuals following repeated exposure to trichloroethylene and the consumption of alcohol. This effect can intensify over for 30 minute period but usually disappears completely after 1 hour. These symptoms may occur up to 6 weeks after the last exposure to trichloroethylene and can reoccur if exposure continues.

Interactions with other chemicals which enhance toxicity:

Consumption of alcoholic beverages may increase potential for development of toxic effects resulting from exposure to this product.

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
Trichloroethylene	79-01-6	90 - 100%
Carbon Dioxide (aerosol only)	124-38-9	1 - 10%

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.

Notes to Physician: Gastric lavage may be effective within four hours of ingestion. Aspiration hazard should be weighed against toxicity concerns. Chlorinated hydrocarbons may sensitize the heart to epinephrine and other circulating catecholamines so that arrhythmias may occur. Careful consideration of this potential adverse effect should precede administration of epinephrine or other cardiac stimulants and the selection of bronchodilators. Do not allow exposed person to exercise vigorously for 24 hours following potentially toxic exposure. In case of inhalation of decomposition products in a fire, symptoms may be delayed. The exposed person may need to be kept under medical surveillance for 48 hours.



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Section 5 • Fire Fighting Measures

Products of Combustion: Carbon monoxide, carbon dioxide, chlorine, hydrogen chloride and traces of phosgene.

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): Concentrated vapors can be ignited by high intensity ignition source. Firefighters should wear self-contained, positive pressure breathing apparatus and full protective clothing due to thermal decomposition products.

Special Remarks on Explosion Hazards:
Explosive mixtures of trichloroethylene and air can be formed but are difficult to ignite and require high intensity sources of heat such as welding arcs, sparks and flames or high temperatures and pressures; addition of small amounts of flammable substances to trichloroethylene (such as flammable liquids or gases) and/or an increase in the oxygen content of the local atmosphere may strongly enhance these effects. Welding or cutting should not be carried out on any vessel likely to contain solvent because of the risk of explosion. Thermal decomposition will evolve toxic and corrosive vapors of hydrogen chloride and phosgene. Containers may burst if overheated due to thermal expansion of the contents.

Section 6 • Accidental Release Measures

Containment Procedures:

Small Spill and Leak: Absorb with an inert material and dispose of properly.

Large Spill and Leak: 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. Do not allow to enter drains, sewers or waterways. Spillages or uncontrolled discharges into waterways must be alerted to the Environment Agency or other appropriate regulatory body.

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 breathe vapors. Use only in well ventilated areas. Avoid contact with skin and eyes. Avoid contact with naked flames and hot surfaces as toxic and corrosive decomposition products (hydrogen chloride) can be formed. The vapor is heavier than air and may reach dangerously high concentrations in pits, tanks and other confined spaces. In such cases, provide adequate ventilation or wear suitable respiratory protective equipment with positive air supply. When using, do not smoke. When welding metals degreased with trichloroethylene, special care is needed to ensure all solvent has evaporated from the components. Separate cleaning and welding areas. Ensure vapors from degreasing operations do not enter welding areas - welding arcs can cause trichloroethylene vapors to break down producing toxic vapors.

Storage: Keep container dry. Keep in a cool, well ventilated place. Keep away from direct sunlight. Keep away from heat and ignition sources.

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
Trichloroethylene	79-01-6	100 ppm PEL 200 ppm PEL	50 ppm TLV 100 ppm TLV	Not established	None reported
Carbon Dioxide (aerosol only)	124-38-9	5000 ppm PEL	5000 ppm TLV 30000 ppm STEL	5000 ppm TWA 30000 ppm STEL	None reported

Engineering Controls: Provide general and/or local exhaust ventilation to keep exposures below the exposure guidelines listed above. Lethal concentrations may exist in areas with poor ventilation.

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: 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

Appearance:	Clear liquid	Color:	Clear, light brown
Odor:	Sweet, spice	Evaporation Rate:	0.3 (Ethyl Ether = 1)
Solubility Description:	0.1% in water	Flash Point:	None
Boiling Point:	87°C (189°F)	Flash Point Method:	Tag-Closed Cup
Specific Gravity (H₂O=1):	1.41 - 1.47 @ 20°C	Decomposition Temperature:	Not established
Vapor Density (air = 1):	4.5	Auto ignition temperature:	> 420°C (788°F)
Vapor Pressure:	58 mm Hg @ 20°C	Flammable limits (estimated):	LOWER: 8.0% UPPER: 10.5%
Rule 1171 PPC:	Not established	Partition Coefficient (octanol/water):	2.4
V.O.C. Content:	Aerosol: 97.8%, 1414 g/L, 11.8 lb/gal per CARB/OTC/EPA Bulk: 100%, 1446 g/L, 12.1 lb/gal per CARB/OTC/EPA	Odor Threshold:	Not established
Melting Point:	Not established	Viscosity:	0.53 cPs @ 25°C
pH:	Not applicable	Volatiles:	100%
Heat of combustion:	Aerosol: < 20 kJ/g Bulk: < 20 kJ/g		

Section 10 • Stability and Reactivity

Chemical Stability:	Product is stable under recommended storage conditions.
Conditions to Avoid:	Keep away from red hot surfaces, sparks or naked flames which may generate toxic fumes of phosgene and hydrogen chloride. Prolonged contact with aluminum or light alloys may cause a reaction resulting in the generation of hydrogen chloride gas and heat.
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 chloride and traces of phosgen gas.
Hazardous Polymerization:	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.

Trichloroethylene: 200 ppm causes mild eye irritation, 400 ppm causes slight eye irritation and minimal lightheadedness after 3 hours. 1,000 to 1,200 ppm after 6 minutes causes eye and nasal irritation, lightheadedness and dizziness. 2,000 ppm cannot generally be tolerated, is irritating to the eyes and respiratory tract and causes drowsiness, dizziness and nausea within 5 minutes. Ventricular arrhythmias and very rapid respiration have been observed in individuals exposed to 15,000 ppm. High concentrations or prolonged overexposure can cause unconsciousness and death.

B: Component Analysis

Component	CASRN	LC-50	LD-50
Trichloroethylene	79-01-6	12500 ppm / rat / 4 hr*	4920 mg/kg / oral / rat*
			~ 10000 mg/kg / dermal / rabbit*
Carbon Dioxide (aerosol only)	124-38-9	470000 ppm / rat / 30 minutes	Not appropriate

* Supplier Data

Carcinogenicity:

Trichloroethylene has been shown to cause cancer in animals. Mechanistic studies have shown that some of these observations are not relevant to humans. Some experts believe that repeated exposure to high concentrations of trichloroethylene may cause kidney cancer, although the evidence for a causal relationship between these events is not conclusive.

The International Agency for Research on Cancer (IARC) has concluded that with respect to trichloroethylene, there is sufficient evidence of carcinogenicity to experimental animals and limited evidence of carcinogenicity to humans, resulting in a classification in Group 2A as a substance probably carcinogenic to humans. NTP has classified trichloroethylene as reasonably anticipated to be a human carcinogen. Although ACGIH currently does not consider trichloroethylene as a carcinogen, the ACGIH TLV Committee has placed this substance on the Notice of Intended Changes (NIC) list with a proposed change in the carcinogenicity classification from A5 to A2. Although this change is proposed, the A2 classification may or may not be adopted at some time in the future.

Mutagenicity:

Rodent - rat / 1000 ppm / 4 hr Brain and Coverings - Changes in surface EEG Peripheral Nerve and Sensation - Sensory syndrome diagnostic of central lesion Sense Organs and Special Senses (Eye) RTECS# KX4550000. Trichloroethylene has been linked to mutagenic effects in humans. Some studies measuring DNA damage (strand breaks, unscheduled DNA synthesis, in-vitro and in-vivo micronucleus and chromosomal aberrations) have been positive.

Neurotoxicity:

Rat / 1000 ppm / 4 hr Brain and Coverings - Changes in surface EEG Peripheral Nerve and Sensation - Sensory syndrome diagnostic of central lesion Sense Organs and Special Senses (Eye) RTECS# KX4550000.

Reproductive Toxicity:

Did not cause birth defects in laboratory animals; has been toxic to the fetus in laboratory animals at levels toxic to the mother.



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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:** Harmful to aquatic organisms; may cause long-term adverse effects in the aquatic environment. This product has potential for leaching.

Environmental Fate:

When released into the soil, trichloroethylene is expected to quickly evaporate, but large spills have potential to leach into groundwater. When released to water, trichloroethylene will quickly evaporate but large spills are expected to be slightly toxic to aquatic life. When released into the air, trichloroethylene is expected to have a half-life between 1 and 10 days.

Environmental Toxicity:

The LC50/96 hr values for trichloroethylene in fish are between 10 and 100 mg/L. Trichloroethylene has an experimentally determined bioconcentration factor (BCF) of less than 100 and is not expected to significantly bioaccumulate.

Ecotoxicity

Effects on Organisms	Component	CASRN	Test	Species	Results
Acute Toxicity on Fishes	Trichloroethylene	79-01-6	96-hr LC50	Pimephales Promelas	41 - 67 mg/L*
Acute Toxicity on Daphnia	Trichloroethylene	79-01-6	48-hr LC50	Daphnia Magna	2.2 - 100 mg/L*
Bacterial Inhibition	Trichloroethylene	79-01-6	EC50	Unidentified microorganism	260 mg/L*
Growth inhibition of algae	Trichloroethylene	79-01-6	24-hr LC50	Algae	410 mg/L*
Bioaccumulation in fish	Trichloroethylene	79-01-6	BCF	Fish (unidentified species)	17 - 90*

* 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 codes D040 and D003 (U.S.). If disposed of in its received form, the bulk product carries the waste code D040.

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

Aerosol

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:	5T
	Name and description:	AEROSOLS, toxic	Hazard ID No.:	NA
	Labeling:	2.2, 6.1	Technical Name:	NA
IMDG-IMO	UN No.:	1950	Class:	2
	Shipping Name:	Aerosols	Subsidiary Risk:	6.1
	Labeling:	2	Packing Group:	NA
	Packing Instructions:	P003, LP02	EmS:	F-D, S-U
IATA - ICAO:	Marine pollutant:	No	Technical Name:	NA
	UN No.:	1950	Class:	2.2
	Shipping Name:	Aerosols, non-flammable, containing substances in Division 6.1, Packing Group III	Subclass:	6.1
	Packing Instructions:	203, Y203 (Ltd. Qty.)	Packing Group:	III
	Labeling:	Non-flammable Gas & Toxic	Technical Name:	NA

Bulk

D.O.T. Ground	Shipping Name:	Trichloroethylene	UN No.:	1710
	Hazard Class:	6.1	Technical Name:	NA
	Subclass:	NA	Hazard Label:	6.1
	Packing Group:	NA		
Road/Rail - ADR/RID	UN No.:	1710	ADR Class:	6.1
	Packing Group:	III	Classification Code:	T1
	Name and description:	Trichloroethylene	Hazard ID No.:	NA
	Labeling:	6.1	Technical Name:	NA
IMDG-IMO	UN No.:	1710	Class:	6.1
	Shipping Name:	Trichloroethylene	Subsidiary Risk:	NA
	Labeling:	6.1	Packing Group:	III
	Packing Instructions:	P001, LP01	EmS:	F-A, S-A
IATA - ICAO:	Marine pollutant:	No	Technical Name:	NA
	UN No.:	1710	Class:	6.1
	Shipping Name:	Trichloroethylene	Subclass:	NA
	Packing Instructions:	655, 663 (CAO)	Packing Group:	III
	Labeling:	Toxic	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.



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Section 15 • Regulatory Information

U.S. Federal Regulations

RCRA Hazardous Waste No.: D040, D003 (aerosols only)

Comprehensive Environmental Response, Compensation and Liability Act of 1980 (CERCLA):
Trichloroethylene 79-01-6 100 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):
Trichloroethylene 79-01-6

Section 112 Hazardous Air Pollutants (HAPs): Trichloroethylene 79-01-6

State Regulations

California: This product contains chemical(s) known to the State of California to cause cancer, birth defects or other reproductive harm.

California and OTC States: This product is for manufacturing use only - not for retail sale.

New Jersey Right to Know:
Aerosol: Trichloroethylene 79-01-6 • Butylene Oxide 106-88-7 • Methyl Pyrrole 96-54-8 • Butanone 78-93-3 • Carbon Dioxide 124-38-9


Bulk: Trichloroethylene 79-01-6 • Butylene Oxide 106-88-7 • Methyl Pyrrole 96-54-8 • Butanone 78-93-3

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 D1B, Class D2A, Class D2B



WHMIS Classification:
Bulk: Class D1B, Class D2A, 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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Section 16 • Other Information

MSDS#: 11020 MSDS Preparation Responsible Name: Elena Badiuzzi Compliance Manager Telephone: +1 770 243-8800	HMIS 1996		HMIS III		Health  Reactivity Special
	Health:	2	Health:	[*] 2	
	Flammability:	1	Flammability Aerosol:	1	
			Flammability Bulk:	1	
	Reactivity:	0	Physical Hazard Aerosol:	2	
			Physical Hazard Bulk:	0	

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