MATERIAL SAFETY DATA SHEET
LPS® Force 842

Revision Date: January 12, 2012 **Supersedes:** September 30, 2009

Section 1 • Product and Company Identification

Product Name: LPS® Force 842

Part Number(s): 02516, C02516

Chemical Name: Aliphatic / Oxygenated Hydrocarbon Mixture

Product Use: A fast evaporating dry-film lubricant designed for reducing sliding friction under high loads.

Manufacturer Information: LPS Laboratories, 4647 Hugh Howell Road, Tucker, GA, USA 30084
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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: Extremely flammable. Eye irritant. Vapor harmful. Contents under pressure. Harmful or fatal if swallowed. DO NOT use on energized equipment.

Bulk: Not applicable

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 **IARC:** 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. Overexposure to this material (or its components) has been suggested as a cause of the following effects in humans: central nervous system effects.

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
Liquified Petroleum Gas	68476-85-7	20 - 30%
Isopropanol	67-63-0	20 - 30%
2-Methylpentane	107-83-5	15 - 25%
3-Methylpentane	96-14-0	5 - 15%
2,3-Dimethylbutane	79-29-8	5 - 15%
2,2-Dimethylbutane	75-83-2	1 - 5%
n-Hexane	110-54-3	1 - 2%
1,2,4-Trimethylbenzene	95-63-6	1 - 2%

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.

General Fire Hazards: Do not use on energized equipment. 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:** 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:
Aerosols may explode upon heating, spread fire and overcome sprinkler systems.

Section 6 • Accidental Release Measures

Containment Procedures:

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

Large Spill and Leak: 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 a 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 personal protective equipment during cleanup.

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 closed and in a cool, well-ventilated area. Avoid all sources of ignition (spark or flame). Store below 120°F (49°C).

Precautions to be taken in handling and storage:
Store aerosols as Level 3 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
Liquified Petroleum Gas	68476-85-7	1000 ppm PEL	1000 ppm TLV	1000 ppm TWA	None reported
Isopropanol	67-63-0	400 ppm PEL	200 ppm TLV 400 ppm STEL	400 ppm TWA 500 ppm STEL	400 ppm TWA
2-Methylpentane	107-83-5	Not established	Not established	100 ppm TWA	500 ppm TLV 1000 ppm STEL
3-Methylpentane	96-14-0	Not established	Not established	100 ppm TWA	500 ppm TLV 1000 ppm STEL
2,3-Dimethylbutane	79-29-8	Not established	Not established	100 ppm TWA	500 ppm TLV 1000 ppm STEL
2,2-Dimethylbutane	75-83-2	Not established	Not established	100 ppm TWA	500 ppm TLV 1000 ppm STEL
n-Hexane	110-54-3	500 ppm PEL	50 ppm TLV	50 ppm TWA	None reported
1,2,4-Trimethylbenzene	95-63-6	Not established	25 ppm TLV	25 ppm TWA	17 ppm TLV

Engineering Controls: Provide general and/or local exhaust ventilation to keep exposures below the exposure guidelines listed above.

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.

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:	Liquid	**Color:**	Dark gray / black
Odor:	Characteristic	**Evaporation Rate:**	< 1 (Ethyl Ether = 1)
Solubility Description:	< 25% by weight	**Flash Point:**	< -17ºC (+1.4ºF) - dispensed liquid
Boiling Point:	61°C (141°F)	**Flash Point Method:**	Tag-Closed Cup
Specific Gravity (H2O=1):	0.74 - 0.76 @ 20°C	**Decomposition Temperature:**	Not established
Vapor Density (air = 1):	~3	**Auto ignition temperature:**	306ºC (583ºF)
Vapor Pressure:	352.53 mm Hg @ 38ºC	**Flammable limits (estimated):**	LOWER: 0.6% UPPER: 7.0%
Rule 1171 PPc:	Not established	**Partition Coefficient (octanol/water):**	< 1
V.O.C. Content:	Aerosol: 95% (712 g/L) excluding compounds exempted by U.S. EPA Bulk: Not applicable	**Odor Threshold:**	Not established
Melting Point:	Not established	**Viscosity:**	< 14 cSt @ 25ºC
pH:	Not applicable	**Volatiles:**	95%
Heat of combustion:	Aerosol: > 30 kJ/g Bulk: Not applicable		

Section 10 • Stability and Reactivity

Chemical Stability: Product is stable under recommended storage conditions.

Conditions to Avoid: Keep away from heat and ignition sources. Avoid exposure to direct sunlight for extended periods and temperatures in excess of 122°F (50°C).

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
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
Liquified Petroleum Gas	68476-85-7	658 mg/L / rat / 4 hr*	Not appropriate
Isopropanol	67-63-0	13 g/kg	6 g/kg / acute oral / rat
2-Methylpentane	107-83-5	> 3125 ppm / rat / 4 hr*	Not established
3-Methylpentane	96-14-0	Not established	Not established
2,3-Dimethylbutane	79-29-8	Not established	Not established
2,2-Dimethylbutane	75-83-2	Not established	Not established
n-Hexane	110-54-3	48000 ppm / rat / 4 hr*	25 g/kg / oral / rat* 1.3 g/kg / dermal / rabbit*
1,2,4-Trimethylbenzene	95-63-6	18000 mg/m3 / rat / 4 hr	6900 mg/kg / oral / mouse

* Supplier Data

Section 12 • Ecological Information

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

Bioaccumulative potential: Minimal 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	n-Hexane	110-54-3	48-hr LC100	Leuciscus Idus Melanotus	260,000 µg/L
	Isopropanol	67-63-0	24-hr LC50	Carassius Auratus	5,000,000 µg/L
Acute Toxicity on Daphnia	n-Hexane	110-54-3	24-hr LC50	Daphnia Magna	50,000 µg/L
	Isopropanol	67-63-0	24-hr LC50	Daphnia Magna	10,000,000 µg/L
	2-Methylpentane	107-83-5	48-hr EC50	Daphnia Magna	2.1 mg/L
Bacterial Inhibition	No data available				
Growth inhibition of algae	n-Hexane	110-54-3	EC50	Anabaena Inaequalis	1.7%
	Isopropanol	67-63-0	48-hr EC50	Scenedesmus Quadricauda	1,800,000 µg/L
Bioaccumulation in fish	No data available				

* 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 D001 and 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.

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:**	5F
	Name and description:	AEROSOLS, flammable	**Hazard ID No.:**	NA
	Labeling:	2.1	**Technical Name:**	NA
IMDG-IMO	**UN No.:**	1950	**Class:**	2
	Shipping Name:	Aerosols	**Subsidiary Risk:**	2.1
	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:**	2.1
	Shipping Name:	Aerosols, flammable	**Subclass:**	NA
	Packing Instructions:	203, Y203 (Ltd. Qty.)	**Packing Group:**	NA
	Labeling:	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.: D001, D003

Comprehensive Environmental Response, Compensation and Liability Act of 1980 (CERCLA):
n-Hexane 110-54-3 5000 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, 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):
n-Hexane 110-54-3 2% max.
1,2,4-Trimethylbenzene 95-63-6 < 1.5%

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

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 not regulated by consumer product regulations.

New Jersey Right to Know:
Aerosol: Liquified Petroleum Gas 68476-85-7 ● Isopropanol 67-63-0 ● 2-Methylpentane 107-83-5 ● 3-Methylpentane 96-14-0 ● 2,3-Dimethylbutane 79-29-8 ● 2,2-dimethylbutane 75-83-2 ● n-Hexane 110-54-3 ● 1,2,4-Trimethylbenzene 95-63-6
Bulk: Not applicable

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 B5, Class D2A, Class D2B

Other Regulations:

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

Section 16 • Other Information

MSDS#: 12516 MSDS Preparation Responsible Name: Elena Badiuzzi Compliance Manager Telephone: +1 770 243-8800	**HMIS 1996**		**HMIS III**		**NFPA** Flammability Health  Reactivity Special
	Health:	2	Health:	[*] 2	
	Flammability:	3	Flammability Aerosol: Flammability Bulk:	4 NA	
	Reactivity:	0	Physical Hazard Aerosol: Physical Hazard Bulk:	2 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