



MATERIAL SAFETY DATA SHEET

1. IDENTIFICATION OF THE MATERIAL AND SUPPLIER

Material name LPS® Force 842
Recommended use A fast evaporating dry-film lubricant designed for reducing sliding friction under high loads.
Version # 01
CAS # Mixture
Part Number 02516
Supplier Name MRO Chem Pty Ltd
Address Level 19, 644 Chapel Street,
South Yarra, Vic 3141, Australia.
Tel: +61 (3)9823 6273
Website: <http://www.mrochem.com.au>
In Case of Emergency (Australia) +61 (4)3448 1129 (US) +1 703-527-3887
Manufacturer
Company name LPS Laboratories, a division of Illinois Tool Works, Inc.
Address 4647 Hugh Howell Rd., Tucker, GA 30084 (U.S.A.)
Website <http://www.lpslabs.com>
E-mail sds@lpslabs.com

2. HAZARDS IDENTIFICATION

Classification F+;R12, Xi;R36/38, R67, N;R51/53
Risk phrase(s) R12 Extremely flammable.
R36/38 Irritating to eyes and skin.
R67 Vapors may cause drowsiness and dizziness.
R51/53 Toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.
Safety phrase(s) S1/2 Keep locked up and out of the reach of children.
S7/9 Keep container tightly closed and in a well-ventilated place.
S16 Keep away from sources of ignition - No smoking.
S23 Do not breathe gas/fumes/vapor/spray.
S24/25 Avoid contact with skin and eyes.
S26 In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.
S57 Use appropriate container to avoid environmental contamination.
S60 This material and its container must be disposed of as hazardous waste.
S61 Avoid release to the environment. Refer to special instructions/ Safety data sheets.

3. COMPOSITION/INFORMATION ON INGREDIENTS

Components	CAS #	Percent
2-Methylpentane	107-83-5	10 - < 30
Isopropanol	67-63-0	10 - < 30
Petroleum Gases, Liquified, Sweetened	68476-86-8	10 - < 30
1,2,4-Trimethylbenzene	95-63-6	< 10
2,2-Dimethylbutane	75-83-2	< 10
2,3-Dimethylbutane	79-29-8	< 10
3-Methylpentane	96-14-0	< 10
Aromatic Solvent	64742-95-6	< 10
Mesitylene	108-67-8	< 10
N-hexane	110-54-3	< 10
Urea	57-13-6	< 10
Xylene	1330-20-7	< 10
Other components below reportable levels		< 10

4. FIRST AID MEASURES

Inhalation	Remove victim to fresh air and keep at rest in a position comfortable for breathing. Oxygen or artificial respiration if needed. Do not use mouth-to-mouth method if victim inhaled the substance. Induce artificial respiration with the aid of a pocket mask equipped with a one-way valve or other proper respiratory medical device. Call a POISON CENTER or doctor/physician if you feel unwell.
Skin contact	In case of contact, immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Get medical attention if irritation develops and persists.
Eye contact	Immediately flush with plenty of water for at least 15 minutes. If easy to do, remove contact lenses. Get medical attention if irritation develops and persists.
Ingestion	Call a physician or poison control center immediately. Only induce vomiting at the instruction of medical personnel. Never give anything by mouth to an unconscious person. If vomiting occurs, keep head low so that stomach content doesn't get into the lungs.
General advice	In the case of accident or if you feel unwell, seek medical advice immediately (show the label where possible). Ensure that medical personnel are aware of the material(s) involved, and take precautions to protect themselves.
Notes to physician	Provide general supportive measures and treat symptomatically. In case of shortness of breath, give oxygen. Keep victim under observation. Symptoms may be delayed.

5. FIRE-FIGHTING MEASURES

Suitable extinguishing media	Powder. Alcohol resistant foam. Carbon dioxide (CO ₂).
Extinguishing media which must not be used for safety reasons	Do not use a solid water stream as it may scatter and spread fire.
Unusual fire & explosion hazards	Heat may cause the containers to explode.
Specific hazards	Fire may produce irritating, corrosive and/or toxic gases.
Special protective equipment for fire-fighters	Wear full protective clothing, including helmet, self-contained positive pressure or pressure demand breathing apparatus, protective clothing and face mask. Structural firefighters protective clothing will only provide limited protection.
Specific methods	Use standard firefighting procedures and consider the hazards of other involved materials. Move container from fire area if it can be done without risk. In the event of fire and/or explosion do not breathe fumes. Self-contained breathing apparatus and full protective clothing must be worn in case of fire.
HAZCHEM code	None.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions	Keep unnecessary personnel away. Keep out of low areas. Keep upwind. Do not touch damaged containers or spilled material unless wearing appropriate protective clothing. Ventilate closed spaces before entering them. For personal protection, see section 8 of the MSDS.
Environmental precautions	Contact local authorities in case of spillage to drain/aquatic environment. Prevent further leakage or spillage if safe to do so. Avoid discharge into drains, water courses or onto the ground.
Containment procedures	Eliminate all ignition sources (no smoking, flares, sparks, or flames in immediate area). Stop leak if you can do so without risk. Move the cylinder to a safe and open area if the leak is irreparable. Use water spray to reduce vapors or divert vapor cloud drift. Prevent entry into waterways, sewer, basements or confined areas.
Methods for cleaning up	The product is immiscible with water and will spread on the water surface. Stop the flow of material, if this is without risk. Use a non-combustible material like vermiculite, sand or earth to soak up the product and place into a container for later disposal. Isolate area until gas has dispersed. Following product recovery, flush area with water. This material and its container must be disposed of as hazardous waste. For waste disposal, see section 13 of the MSDS.

7. HANDLING AND STORAGE

Handling	Pressurized container: Do not pierce or burn, even after use. Do not use if spray button is missing or defective. Do not spray on a naked flame or any other incandescent material. Do not smoke while using or until sprayed surface is thoroughly dry. Do not cut, weld, solder, drill, grind, or expose containers to heat, flame, sparks, or other sources of ignition. Avoid exposure - obtain special instructions before use. Do not breathe dust/fume/gas/mist/vapors/spray. Avoid contact with skin. Avoid contact with eyes. Avoid prolonged exposure. Use only in well-ventilated areas. When using do not eat or drink. Use appropriate container to avoid environmental contamination. Do not empty into drains.
Storage	Pressurized container. Protect from sunlight and do not expose to temperatures exceeding 50°C/122 °F. Do not expose to heat or store at temperatures above 120°F/49°C as can may burst. Do not puncture, incinerate or crush. Do not handle or store near an open flame, heat or other sources of ignition. Use appropriate container to avoid environmental contamination. Keep away from food, drink and animal feedingstuffs.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Occupational exposure limits

US. ACGIH Threshold Limit Values

Components	Type	Value
2,2-Dimethylbutane (CAS 75-83-2)	STEL	1000 ppm
	TWA	500 ppm
2,3-Dimethylbutane (CAS 79-29-8)	STEL	1000 ppm
	TWA	500 ppm
2-Methylpentane (CAS 107-83-5)	STEL	1000 ppm
	TWA	500 ppm
3-Methylpentane (CAS 96-14-0)	STEL	1000 ppm
	TWA	500 ppm
Isopropanol (CAS 67-63-0)	STEL	400 ppm
	TWA	200 ppm
N-hexane (CAS 110-54-3)	TWA	50 ppm
	Xylene (CAS 1330-20-7)	STEL
TWA		100 ppm

Australia. National Workplace OELs (Workplace Exposure Standards for Airborne Contaminants, Appendix A)

Components	Type	Value
2,2-Dimethylbutane (CAS 75-83-2)	STEL	3500 mg/m3
	TWA	1000 ppm 1760 mg/m3
Isopropanol (CAS 67-63-0)	STEL	500 ppm 1230 mg/m3
	TWA	983 mg/m3 400 ppm
N-hexane (CAS 110-54-3)	TWA	72 mg/m3 20 ppm
	Xylene (CAS 1330-20-7)	STEL
TWA		350 mg/m3 80 ppm

Australia. OELs. (Adopted National Exposure Standards for Atmospheric Contaminants in the Occupational Environment)

Components	Type	Value
Isopropanol (CAS 67-63-0)	STEL	1230 mg/m3 500 ppm
	TWA	983 mg/m3 400 ppm
N-hexane (CAS 110-54-3)	TWA	72 mg/m3 20 ppm
	Xylene (CAS 1330-20-7)	STEL
TWA		350 mg/m3 80 ppm

Biological limit values

ACGIH Biological Exposure Indices

Components	Value	Determinant	Specimen	Sampling Time
Isopropanol (CAS 67-63-0)	40 mg/l	Acetone	Urine	*
N-hexane (CAS 110-54-3)	0.4 mg/l	2,5-Hexanedion, without hydrolysis	Urine	*
Xylene (CAS 1330-20-7)	1.5 g/g	Methylhippuric acids	Creatinine in urine	*

* - For sampling details, please see the source document.

Recommended monitoring procedures

Additional exposure data Not available.

US ACGIH Threshold Limit Values: Skin designation

N-hexane (CAS 110-54-3)

Can be absorbed through the skin.

Engineering measures to reduce exposure Good general ventilation (typically 10 air changes per hour) should be used. Ventilation rates should be matched to conditions. If applicable, use process enclosures, local exhaust ventilation, or other engineering controls to maintain airborne levels below recommended exposure limits. If exposure limits have not been established, maintain airborne levels to an acceptable level.

Personal protective equipment

Respiratory protection

No personal respiratory protective equipment normally required. Use a positive-pressure air-supplied respirator if there is any potential for an uncontrolled release, exposure levels are not known, or any other circumstances where air-purifying respirators may not provide adequate protection.

Hand protection

Chemical resistant gloves are recommended.

Eye protection

Wear safety glasses with side shields (or goggles). Eye wash fountain is recommended.

Skin and body protection

Avoid contact with clothing. Wear suitable protective clothing. Chemical resistant gloves.

General

Use personal protective equipment as required.

Environmental exposure controls

Environmental manager must be informed of all major releases.

Hygiene measures

When using do not smoke. Always observe good personal hygiene measures, such as washing after handling the material and before eating, drinking, and/or smoking. Routinely wash work clothing and protective equipment to remove contaminants.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance	Liquid.
Physical state	Gas.
Form	Aerosol.
Color	Dark grey. Black.
Odor	Characteristic.
Odor threshold	Not established
pH	Not applicable
Vapor pressure	352.53 mm Hg @ 38°C
Vapor density	~3
Boiling point	141.8 °F (61 °C)
Melting point/Freezing point	Not established
Solubility (water)	< 25 % by weight
Specific gravity	Not available.
Flash point	< 1.4 °F (< -17.0 °C) Tag Closed Cup (dispensed liquid)
Flammability limits in air, upper, % by volume	7 %
Flammability limits in air, lower, % by volume	0.6 %
Auto-ignition temperature	582.8 °F (306 °C)
VOC	95 % per US State and Federal Consumer Product Regulations (excluding compounds exempted by US EPA)
Evaporation rate	< 1 (Ethyl Ether = 1)
Viscosity	< 14 cSt
Viscosity temperature	77 °F (25 °C)
Partition coefficient (n-octanol/water)	> 1
Other data	
Decomposition temperature	Not established
Flammability (solid, gas)	Flammable gas.
Heat of combustion	> 30 kJ/g
Relative density	0.74 - 0.76 @ 20°C

10. STABILITY AND REACTIVITY

Chemical stability Risk of ignition.

Conditions to avoid	Heat, flames and sparks. Avoid temperatures exceeding the flash point.
Materials to avoid	Strong oxidizing agents.
Hazardous decomposition products	Upon decomposition this product emits acrid dense smoke with carbon dioxide, carbon monoxide, water and other products of combustion.

11. TOXICOLOGICAL INFORMATION

Toxicological data

Components	Species	Test Results
1,2,4-Trimethylbenzene (CAS 95-63-6)		
Acute		
<i>Dermal</i>		
LD50	Rabbit	> 3160 mg/kg
<i>Inhalation</i>		
LC50	Rat	> 2000 mg/l, 48 Hours 10200 mg/m3
<i>Oral</i>		
LD50	Rat	3280 mg/kg
Aromatic Solvent (CAS 64742-95-6)		
Acute		
<i>Dermal</i>		
LD50	Rabbit	> 1900 mg/kg
<i>Inhalation</i>		
LC50	Rat	> 4980 mg/m3 > 4.96 mg/l
<i>Oral</i>		
LD50	Rat	4820 mg/kg
Isopropanol (CAS 67-63-0)		
Acute		
<i>Dermal</i>		
LD50	Rabbit	12800 mg/kg 16.4 ml/kg
<i>Inhalation</i>		
LC50	Rat	> 10000 ppm
<i>Oral</i>		
LD50	Dog	4797 mg/kg
	Mouse	3600 mg/kg
	Rabbit	5.03 g/kg
	Rat	4.7 g/kg
<i>Other</i>		
LD50	Mouse	1509 mg/kg
	Rat	1099 mg/kg
Mesitylene (CAS 108-67-8)		
Acute		
<i>Dermal</i>		
LD50	Rat	> 4 ml/kg
<i>Inhalation</i>		
LC50	Rat	10200 mg/m3
<i>Oral</i>		
LD50	Rat	3280 mg/kg
<i>Other</i>		
LD100	Rat	1.5 g/kg
N-hexane (CAS 110-54-3)		
Acute		
<i>Dermal</i>		
LD50	Rabbit	> 2000 mg/kg

Components	Species	Test Results
		> 5 ml/kg
<i>Inhalation</i>		
LC50	Mouse	48000 mg/l, 4 Hours
	Rat	> 5000 ppm
		> 31.86 mg/l
<i>Oral</i>		
LD50	Rat	24 ml/kg
	Wistar rat	24 mg/kg
		49 mg/kg
Petroleum Gases, Liquified, Sweetened (CAS 68476-86-8)		
Acute		
<i>Inhalation</i>		
LC100	Cat	90 %
LC50	Mouse	1237 mg/l
		52.04 %
	Rat	> 13023 ppm
		1355 mg/l
Urea (CAS 57-13-6)		
Acute		
<i>Oral</i>		
LD50	Mouse	11500 mg/kg
	Rat	8471 mg/kg
	Sheep	28500 mg/kg
<i>Other</i>		
LD50	Mouse	4600 mg/kg
	Rat	5300 mg/kg
Xylene (CAS 1330-20-7)		
Acute		
<i>Dermal</i>		
LD50	Rabbit	> 5000 ml/kg
		12126 mg/kg
<i>Inhalation</i>		
LC50	Mouse	3907 mg/l, 6 Hours
	Rat	6350 mg/l, 4 Hours
		5922 ppm
LCL0	Rat	8000 mg/l, 4 Hours
<i>Oral</i>		
LD50	Mouse	1590 mg/kg
	Rat	3523 - 8600 mg/kg
		10 ml/kg
Acute toxicity	Narcotic effects.	
Routes of exposure	Inhalation. Skin contact. Eye contact.	
Chronic toxicity	Prolonged inhalation may be harmful.	
Sensitization	Based on available data, the classification criteria are not met.	
Carcinogenicity		
IARC Monographs. Overall Evaluation of Carcinogenicity		
Xylene (CAS 1330-20-7)	3 Not classifiable as to carcinogenicity to humans.	
Mutagenicity	No data available to indicate product or any components present at greater than 0.1% are mutagenic or genotoxic.	
Reproductivity	Suspected of damaging fertility.	
Epidemiology	No epidemiological data is available for this product.	

Local effects	Irritating to eyes and skin. Ingestion may cause gastrointestinal irritation, nausea, vomiting and diarrhea.
Symptoms and target organs	Skin irritation. Causes serious eye irritation. Symptoms may include stinging, tearing, redness, swelling, and blurred vision. Vapors have a narcotic effect and may cause headache, fatigue, dizziness and nausea. Symptoms of overexposure may be headache, dizziness, tiredness, nausea and vomiting.
Further information	Symptoms may be delayed.

12. ECOLOGICAL INFORMATION

Ecotoxicological data

Components		Species	Test Results
1,2,4-Trimethylbenzene (CAS 95-63-6)			
Aquatic			
Fish	LC50	Fathead minnow (<i>Pimephales promelas</i>)	7.19 - 8.28 mg/l, 96 hours
Isopropanol (CAS 67-63-0)			
Aquatic			
Fish	LC50	Bluegill (<i>Lepomis macrochirus</i>)	> 1400 mg/l, 96 hours
Mesitylene (CAS 108-67-8)			
Aquatic			
Fish	LC50	Goldfish (<i>Carassius auratus</i>)	9.89 - 15.05 mg/l, 96 hours
N-hexane (CAS 110-54-3)			
Aquatic			
Fish	LC50	Fathead minnow (<i>Pimephales promelas</i>)	2.101 - 2.981 mg/l, 96 hours
Urea (CAS 57-13-6)			
Aquatic			
Crustacea	EC50	Water flea (<i>Daphnia magna</i>)	3910 mg/l, 48 hours
Fish	LC50	Giant gourami (<i>Colisa fasciata</i>)	5 mg/l, 96 hours
Xylene (CAS 1330-20-7)			
Aquatic			
Fish	LC50	Bluegill (<i>Lepomis macrochirus</i>)	7.711 - 9.591 mg/l, 96 hours

Ecotoxicity Toxic to aquatic life with long lasting effects.

Persistence and degradability Not inherently biodegradable.

Mobility Readily absorbed into soil.

Bioaccumulation

Bioaccumulative potential

Octanol/water partition coefficient log Kow

LPS® Force 842	> 1
2,2-Dimethylbutane	3.82
2,3-Dimethylbutane	3.42
2-Methylpentane	3.74
3-Methylpentane	3.6
Isopropanol	0.05
N-hexane	3.9
Urea	-2.11
Xylene	3.12 - 3.2

Environmental effects Toxic to aquatic organisms.

Aquatic toxicity Toxic to aquatic organisms. May cause long-term adverse effects in the aquatic environment.

Other adverse effects None known.

13. DISPOSAL CONSIDERATIONS

Disposal instructions Collect and reclaim or dispose in sealed containers at licensed waste disposal site. Contents under pressure. Do not puncture, incinerate or crush. This material and its container must be disposed of as hazardous waste. Must be incinerated in a suitable incineration plant holding a permit delivered by the competent authorities. Do not discharge into drains, water courses or onto the ground. Do not allow this material to drain into sewers/water supplies. Do not contaminate ponds, waterways or ditches with chemical or used container. Dispose in accordance with all applicable regulations.

Waste from residues / unused products Dispose of in accordance with local regulations. Empty containers or liners may retain some product residues. This material and its container must be disposed of in a safe manner (see: Disposal instructions). Avoid discharge into water courses or onto the ground.

Contaminated packaging

Empty containers should be taken to an approved waste handling site for recycling or disposal. Since emptied containers may retain product residue, follow label warnings even after container is emptied. Do not re-use empty containers.

14. TRANSPORT INFORMATION**ADG**

UN number UN1950
UN proper shipping name Aerosols, flammable
Transport hazard class(es)
Class 2.1
Subsidiary risk -
Packing group Not applicable.
Environmental hazards No
Hazchem code 2YE
Special precautions for user Not available.

IATA

UN number UN1950
UN proper shipping name Aerosols, flammable
Transport hazard class(es)
Class 2.1
Subsidiary risk -
Label(s) 2.1
Packing group Not applicable.
Environmental hazards No.
Special precautions for user Not available.
Other information
Passenger and cargo aircraft Allowed.
Cargo aircraft only Allowed.

IMDG

UN number UN1950
UN proper shipping name Aerosols, flammable
Transport hazard class(es)
Class 2.1
Subsidiary risk -
Label(s) 2.1
Packing group Not applicable.
Environmental hazards
Marine pollutant No
EmS Not available.
Special precautions for user Not available.

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code Not applicable.

ADG**IATA; IMDG**

15. REGULATORY INFORMATION

National regulations

This Material Safety Data Sheet was prepared in accordance with the Australia National Code of Practice for the Preparation of Material Safety Data Sheets (NOHSC: 2011.)

Australia HVIC: Listed substance

Aromatic Solvent (CAS 64742-95-6)	Listed.
Isopropanol (CAS 67-63-0)	Listed.
N-hexane (CAS 110-54-3)	Listed.
Urea (CAS 57-13-6)	Listed.
Xylene (CAS 1330-20-7)	Listed.

Australia Medicines & Poisons Schedule 5: Use/Concentration/Exceptions

N-hexane (CAS 110-54-3)	Exception may apply, see the regulation for relevance.
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Australia Medicines & Poisons Schedule 6: Use/Concentration/Exceptions

Xylene (CAS 1330-20-7)	Exception may apply, see the regulation for relevance.
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Inventory status

Country(s) or region	Inventory name	On inventory (yes/no)*
Australia	Australian Inventory of Chemical Substances (AICS)	No
Canada	Domestic Substances List (DSL)	Yes
Canada	Non-Domestic Substances List (NDSL)	No
China	Inventory of Existing Chemical Substances in China (IECSC)	Yes
Europe	European Inventory of Existing Commercial Chemical Substances (EINECS)	No
Europe	European List of Notified Chemical Substances (ELINCS)	No
Japan	Inventory of Existing and New Chemical Substances (ENCS)	No
Korea	Existing Chemicals List (ECL)	Yes
New Zealand	New Zealand Inventory	No
Philippines	Philippine Inventory of Chemicals and Chemical Substances (PICCS)	Yes
United States & Puerto Rico	Toxic Substances Control Act (TSCA) Inventory	Yes

*A "Yes" indicates that all components of this product comply with the inventory requirements administered by the governing country(s)

A "No" indicates that one or more components of the product are not listed or exempt from listing on the inventory administered by the governing country(s).

16. OTHER INFORMATION

Disclaimer

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.

Issue date

02-09-2014