MATERIAL SAFETY DATA SHEET

SECTION 1: IDENTIFICATION

Product identifier : **LOCK & HINGE DRY LUBE**

Product Use : Lubricant
Chemical Family : Mixture.
Manufacturer part no. : LHL04/6C

Supplier's name and address:

Radiator Specialty Co., of Canada
1711 Aimco Blvd.
Mississauga, ON, Canada
L4W 1H7

Manufacturer's name and address:
Refer to Supplier

Information Telephone # : (905) 625-9117 (Monday - Friday, 8AM - 4PM)
24 Hr. Emergency Tel # : In case of transportation emergencies: 613-996-6666 (CANUTEC)

SECTION 2 - HAZARDS IDENTIFICATION

Classification : WHMIS information: This product is a WHMIS Controlled Product. It meets one or more of the criteria for a controlled product provided in Part IV of the Canadian Controlled Products Regulations (CPR).
WHMIS classification:
Class A (Pressurized containers);
Class B5 (Flammable Aerosols);
Class D2A (Materials Causing Other Toxic Effects, Very Toxic Material);
Class D2B (Materials Causing Other Toxic Effects, Toxic Material).

Labelling: Phrases recommended to appear on a supplier label, can be found in Section 15.
WHMIS symbols required on a supplier label:

Emergency Overview : Opaque liquid with white, suspended particles contained in a pressurized aerosol can. Mild solvent odor.
WARNING!
Flammable aerosol. Contents under pressure. Container may explode if heated. Harmful if inhaled. May cause nausea, vomiting, headache and other central nervous system effects. May be harmful or fatal if swallowed in large amounts. May be an aspiration hazard. Can enter the lungs and cause damage. May cause respiratory irritation. Causes eye and skin irritation. Possible cancer hazard - contains material which may cause cancer.

Contains material that may be harmful in the environment.

POTENTIAL HEALTH EFFECTS:

Signs and symptoms of short-term (acute) exposure

Inhalation : May cause irritation to the nose, throat and upper respiratory tract. Symptoms may include pain, headache, nausea, vomiting, dizziness, drowsiness and other central nervous system effects.

Skin : May cause mild to moderate irritation. May be absorbed through the skin. If product is sprayed directly on skin, symptoms of frostbite may be experienced including numbness, prickling and itching.

Eyes : May cause moderate to severe eye irritation. If product is sprayed directly into the eyes, could cause freezing of the eye.

Ingestion : Not an expected route of entry under normal conditions of use. However, if the product is sprayed directly into mouth and large amounts of the liquid concentrate are swallowed, it may cause irritation to the mouth, throat and stomach. Symptoms may include pain, headache, nausea, vomiting, dizziness, drowsiness and other central nervous system effects. May be an aspiration hazard. Aspiration into the lungs during swallowing or subsequent vomiting may cause chemical pneumonitis, which can be fatal.

Effects of long-term (chronic) exposure

: Prolonged skin contact may cause dermatitis (rash), characterized by red, dry, itching skin. Excessive overexposure could cause blood system effects (anemia).

Carcinogenic status : Possible cancer hazard. See TOXICOLOGICAL INFORMATION, Section 11.

Additional health hazards : See TOXICOLOGICAL INFORMATION, Section 11.

Potential environmental effects

: Contains material that may be harmful in the environment. See Section 12 for more environmental information.

SECTION 3 - COMPOSITION/INFORMATION ON INGREDIENTS

Ingredients	CAS #	Wt.%
stoddard solvent	8052-41-3	60.00 - 100.00
1,2,4-Trimethylbenzene	95-63-6	1.00 - 5.00
Diethylene glycol monobutyl ether	112-34-5	1.00 - 5.00
Carbon dioxide	124-38-9	1.00 - 5.00
Polytetrafluoroethylene (PTFE)	9002-84-0	1.00 - 5.00
trimethylbenzene	25551-13-7	1.00 - 5.00
Ethylbenzene	100-41-4	0.10 - 1.00
Cumene	98-82-8	0.10 - 1.00

SECTION 4 - FIRST AID MEASURES

Inhalation : Immediately remove person to fresh air. If breathing has stopped, give artificial respiration. If breathing is difficult, give oxygen by qualified medical personnel only. Get medical attention if symptoms persist.

Skin contact : For skin contact, wash with soap and water while removing contaminated clothing. If irritation persists, seek prompt medical attention. Launder clothing before reuse.

Eye contact : Immediately flush eyes with running water for at least 15 minutes. If irritation persists, seek prompt medical attention.

Ingestion : Seek immediate medical attention/advice. Do not induce vomiting. If vomiting occurs spontaneously, keep victim's head lowered (forward) to reduce the risk of aspiration. Never give anything by mouth to an unconscious person.

Notes For Physician : Treat symptomatically. This product is a CNS depressant.

SECTION 5 - FIRE FIGHTING MEASURES

Fire hazards/conditions of flammability

: Flammable aerosol. Will ignite when exposed to heat, flame and other sources of ignition. Closed containers are contained under pressure and may explode if exposed to excess heat for a prolonged period of time. Product may float, and be re-ignited at the water's surface.

Oxidizing properties : None known.

Explosion data: Sensitivity to mechanical impact / static discharge

: Aerosols are sensitive to mechanical impact. Contents under pressure. May be sensitive to static discharge.

Suitable extinguishing media : Dry chemical, foam, carbon dioxide and water fog. Do not use water jet, as this may spread burning material.

Special fire-fighting procedures/equipment

: Firefighters should wear proper protective equipment and self-contained breathing apparatus with full face piece operated in positive pressure mode. Move containers from fire area if safe to do so. Shield personnel to protect from venting or rupturing containers. Water spray may be useful in cooling equipment exposed to heat and flame.

Hazardous combustion products

: Carbon oxides; formaldehyde; Hydrogen fluoride; Fluorinated products; Other unidentified organic compounds.

SECTION 6 - ACCIDENTAL RELEASE MEASURES

Personal precautions : All persons dealing with clean-up should wear the appropriate protective equipment including self-contained breathing apparatus. Keep all other personnel upwind and away from the spill/release. Restrict access to area until completion of clean-up. Refer to protective measures listed in sections 7 and 8.

Environmental precautions : Ensure spilled product does not enter drains, sewers, waterways, or confined spaces.

Spill response/cleanup : Ventilate area of release. Remove all sources of ignition. Use only non-sparking tools and equipment in the clean-up process. Contain and absorb spilled liquid with non-combustible, inert absorbent material (e.g. sand), then place absorbent material into a container for later disposal (see Section 13). Notify the appropriate authorities as required.

Prohibited materials : Do not use combustible absorbents, such as sawdust.

SECTION 7 - HANDLING AND STORAGE

Safe Handling procedures : Use in a well-ventilated area. Wear suitable protective equipment during handling. Do not breathe vapours or spray mist. Avoid contact with skin, eyes and clothing. Keep away from heat, sparks and open flames. No sparking tools should be used. Avoid contact with incompatible materials. Do not puncture or incinerate. Wash thoroughly after handling. Always replace cap after use.

Storage requirements : Store in a cool, dry, well-ventilated area. Keep away from direct sunlight. Storage area should be clearly identified, clear of obstruction and accessible only to trained and authorized personnel. Inspect periodically for damage or leaks. No smoking in the area.

Incompatible materials : Strong oxidizing agents; Strong acids; Strong bases; Alkali metals

Special packaging materials : Always keep in containers made of the same materials as the supply container.

SECTION 8 - EXPOSURE CONTROLS AND PERSONAL PROTECTION

Exposure Limits

Ingredients	ACGIH TLV		OSHA PEL	
	TWA	STEL	PEL	STEL
stoddard solvent	100 ppm	N/Av	500 ppm (2900 mg/m³)	N/Av
1,2,4-Trimethylbenzene	*25 ppm	N/Av	*25 ppm (final rule limit)	N/Av
Diethylene glycol monobutyl ether	10 ppm (inhalable) (vapor)	N/Av	N/Av	N/Av
Carbon dioxide	5000 ppm	30 000 ppm	5000 ppm (9000 mg/m³)	N/Av
Polytetrafluoroethylene (PTFE)	N/Av	N/Av	N/Av	N/Av
trimethylbenzene	25 ppm	N/Av	25 ppm (final rule limit)	N/Av
Ethylbenzene	20 ppm	N/Av	100 ppm (435 mg/m³)	N/Av
Cumene	50 ppm	N/Av	50 ppm (245 mg/m³) (Skin)	N/Av

*Note: The OSHA PEL's and ACGIH TLV's listed above for 1,2,4-Trimethylbenzene are for 'Trimethylbenzene (mixed isomers)'.

Ventilation and engineering measures

: Use in a well-ventilated area. Use general or local exhaust ventilation to maintain air concentrations below recommended exposure limits.

Respiratory protection : If the TLV is exceeded, a NIOSH/MSHA-approved respirator is advised. Advice should be sought from respiratory protection specialists.

Skin protection : Impervious gloves must be worn when using this product. Advice should be sought from glove suppliers. Wear sufficient clothing to prevent skin contact.

Eye / face protection : Chemical splash goggles are recommended.

Other protective equipment : An eyewash station and safety shower should be made available in the immediate working area. Other equipment may be required depending on workplace standards.

General hygiene considerations

: Do not breathe vapours or spray mist. Avoid contact with skin, eyes and clothing. Handle in accordance with good industrial hygiene and safety practice. Do not eat, drink, smoke or use cosmetics while working with this product. Remove and wash contaminated clothing before re-use. Wash with soap and water after handling.

SECTION 9 - PHYSICAL AND CHEMICAL PROPERTIES

Physical state : Opaque liquid with white, suspended particles contained in a pressurized aerosol can.

Appearance : Clear yellow liquid.

Odour : Mild solvent odor.

Odour threshold : N/Av

pH : N/Av

Boiling point : > 149°C (concentrate) (based on ingredients)

Specific gravity : 0.80

Melting/Freezing point : N/Av

Coefficient of water/oil distribution : N/Av

Vapour pressure (mmHg @ 20° C / 68° F) : N/Av

Solubility in water : Insoluble.

Vapour density (Air = 1) : N/Av

Evaporation rate (n-Butyl acetate = 1) : N/Av

Volatile organic Compounds (VOC's) : N/Av

Volatiles (% by weight) : 94.5%

Flash point : 39.4°C (concentrate)

Flash point Method : calculated

Auto-ignition temperature : N/Av

Lower flammable limit (% by vol.) : N/Av

Upper flammable limit (% by vol.) : N/Av

Flame Projection Length : > 45.7 cm, < 100 cm

Flashback observed : NO

Absolute pressure of container : N/Av

Viscosity : < 7 mm²/sec (concentrate)

General Information : Chemical heat of combustion: 38.9 kJ/g

Section 10: STABILITY AND REACTIVITY

Stability and reactivity : Stable under the recommended storage and handling conditions prescribed.

Hazardous polymerization : Hazardous polymerization does not occur.

Conditions to avoid : Avoid heat and open flame. Keep away from direct sunlight. Ensure adequate ventilation, especially in confined areas.

Materials To Avoid And Incompatibility : Oxidizing agents; Strong acids; Strong bases; Alkali metals

Hazardous decomposition products : None known, refer to hazardous combustion products in Section 5.

SECTION 11 - TOXICOLOGICAL INFORMATION

Target organs : Eyes, skin, respiratory system, central nervous system, blood system, liver, brain and kidneys.

Routes of exposure : *Inhalation:* YES *Skin Absorption:* YES *Skin & Eyes:* YES *Ingestion:* YES

Irritancy : Mild to moderate skin irritant. Moderate to severe eye irritant. .

Toxicological data : There is no available data for the product itself, only for the ingredients. See below for individual ingredient acute toxicity data.

Ingredients	LC_{50} (4hr) inh, rat	LD_{50} (Oral, rat)	LD_{50} (Rabbit, dermal)
stoddard solvent	> 5.5 mg/L (vapour)	> 5000 mg/kg	> 3000 mg/kg
1,2,4-Trimethylbenzene	18 mg/L (vapour)	5000 mg/kg	> 3160 mg/kg
Diethylene glycol monobutyl ether	N/Av	6560 mg/kg	2764 mg/kg
Carbon dioxide	200 000 ppm/2H (141 421 ppm/4H)	N/Ap(gas)	N/Ap(gas)
Polytetrafluoroethylene (PTFE)	N/Av	N/Av	N/Av
trimethylbenzene	18 - 24 mg/L (vapour)	8970 mg/kg	> 3160 mg/kg
Ethylbenzene	4000 ppm (17.4 mg/L) (vapour)	3500 mg/kg	15 380 mg/kg

Cumene	8000 ppm (39 mg/L) (vapour)	2260 mg/kg	10 627 mg/kg

Carcinogenic status : Contains Ethylbenzene. Ethylbenzene is classifed as carcinogenic by IARC (Group 2B) and ACGIH (Category A3).
Contains Cumene. Cumene is classified as possibly carcinogenic by IARC (Group 2B).
No other components are classified as carcinogenic by IARC, ACGIH, OSHA or NTP.

Reproductive effects : Not expected to cause reproductive effects.

Teratogenicity : Not expected to be a teratogen.

Mutagenicity : Not expected to be mutagenic in humans.

Epidemiology : None known or reported by the manufacturer.

Sensitization to material : Not expected to be a skin or respiratory sensitizer.

Synergistic materials : None known or reported by the manufacturer.

other important hazards : CNS depression may result from extreme exposures.

Conditions aggravated by overexposure

: Pre-existing skin, eye and respiratory disorders.

SECTION 12 - ECOLOGICAL INFORMATION

Ecotoxicity : The ecological characteristics of this product have not been fully investigated. The product should not be allowed to enter drains or water courses, or be deposited where it can affect ground or surface waters. The product contains the following substances which are hazardous for the environment: stoddard solvent; Trimethylbenzene; 1,2,4-Trimethylbenzene; Cumene; Ethylbenzene. Other ingredients present in this product are not classified as environmentally toxic.

See the following tables for individual ingredient ecotoxicity data.

Ecotoxicity data:

Ingredients	**CAS No**	**Toxicity to Fish**		
		LC50 / 96h	**NOEC / 21 day**	**M Factor**
stoddard solvent	8052-41-3	2.1 - 4.2 mg/L (Bluegill sunfish)	N/Av	None.
1,2,4-Trimethylbenzene	95-63-6	7.72 mg/L (Fathead minnow)	N/Av	None.
Diethylene glycol monobutyl ether	112-34-5	1300 mg/L (Bluegill sunfish)	N/Av	None.
Carbon dioxide	124-38-9	N/Ap	N/Ap	N/Ap
Polytetrafluoroethylene (PTFE)	9002-84-0	N/Av	N/Av	None.
trimethylbenzene	25551-13-7	7.72 mg/L (Fathead minnow) (Read-across)	N/Av	None.
Ethylbenzene	100-41-4	4.2 mg/L (Rainbow trout)	1.13 mg/L (30 days) (QSAR)	None.
Cumene	98-82-8	4.8 mg/L (Rainbow trout)	N/Av	None.

Ingredients	CAS No	Toxicity to Daphnia		
		EC50 / 48h	NOEC / 21 day	M Factor
stoddard solvent	8052-41-3	N/Av	N/Av	None.
1,2,4-Trimethylbenzene	95-63-6	3.6 mg/L (Daphnia magna)	N/Av	None.
Diethylene glycol monobutyl ether	112-34-5	> 100 mg/L (Daphnia magna)	N/Av	None.
Carbon dioxide	124-38-9	N/Ap	N/Ap	N/Ap
Polytetrafluoroethylene (PTFE)	9002-84-0	N/Av	N/Av	None.
trimethylbenzene	25551-13-7	2.7 mg/L (Daphnia magna) (Read-across)	0.4 mg/L (Read-across)	None.
Ethylbenzene	100-41-4	1.81 mg/L (Daphnia magna)	N/Av	None.
Cumene	98-82-8	4 mg/L/24hr (Daphnia magna)	N/Av	None.

Ingredients	CAS No	Toxicity to Algae		
		EC50 / 96h or 72h	NOEC / 96h or 72h	M Factor
stoddard solvent	8052-41-3	N/Av	N/Av	None.
1,2,4-Trimethylbenzene	95-63-6	2.356 mg/L/96hr (Green algae) (QSAR)	N/Av	None.
Diethylene glycol monobutyl ether	112-34-5	> 100 mg/L/96hr (Green algae)	≥ 100 mg/L/96hr	None.
Carbon dioxide	124-38-9	N/Ap	N/Ap	N/Ap
Polytetrafluoroethylene (PTFE)	9002-84-0	N/Av	N/Av	None.
trimethylbenzene	25551-13-7	5.7 mg/L/72hr (Green algae) (Read-across)	0.38 mg/L/72hr (Read-across)	None.
Ethylbenzene	100-41-4	3.6 mg/L/96hr (Green algae)	3.4 mg/L/96hr	None.
Cumene	98-82-8	2.6 mg/L/72hr (Green algae)	N/Av	None.

Mobility : No data is available on the product itself.

Persistence : No data is available on the product itself. Contains::stoddard solvent; Trimethylbenzene; 1,2,4-Trimethylbenzene; Cumene; Ethylbenzene.
Stoddard solvent is not considered to be readily biodegradable.
Trimethylbenzene is not considered to be readily biodegradable.
1,2,4-Trimethylbenzene is not considered readily biodegradable.
Cumene is not considered readily biodegradable.
Ethylbenzene is considered to be inherently biodegradable.

Bioaccumulation potential : No data is available on the product itself. See the following data for ingredient information.

Components	Partition coefficient n-octanol/water (log Kow)	Bioconcentration factor (BCF)
stoddard solvent (CAS 8052-41-3)	3.16 - 7.06	N/Av
1,2,4-Trimethylbenzene (CAS 95-63-6)	3.78	31 - 275
Diethylene glycol monobutyl ether (CAS 112-34-5)	1.0	3.0
trimethylbenzene (CAS 25551-13-7)	3.63	42 - 328 (common carp)
Ethylbenzene (CAS 100-41-4)	3.15	1.1 - 1.5
Cumene (CAS 98-82-8)	3.55	224 (calculated)

Other Adverse Environmental effects

: No other adverse environmental effects (e.g. ozone depletion, photochemical ozone creation potential, endocrine disruption, global warming potential) are expected from this component.

SECTION 13 - DISPOSAL CONSIDERATIONS

Handling for Disposal : Handle waste according to recommendations in Section 7. Do not puncture or incinerate containers.

Methods of Disposal : Dispose of in accordance with federal, provincial and local hazardous waste laws.

SECTION 14: TRANPORT INFORMATION

Regulatory Information	UN Number	Shipping Name	Class	Packing Group	Label
TDG	UN1950	AEROSOLS	2.1	None	
TDG Additional information	May be shipped as LIMITED QUANTITY when transported in containers no larger than 1.0 Litre, in packages not exceeding 30 kg gross mass. Under the TDGR, refer to Section 1.17 for additional exemption information, if shipping under this exemption.				

SECTION 15 - REGULATORY INFORMATION

Labelling:

WARNING! Flammable aerosol. Contents under pressure. Container may explode if heated. Harmful if inhaled. May be harmful or fatal if swallowed in large amounts. May cause respiratory irritation. May cause nausea, vomiting, headache and other central nervous system effects. Material is an aspiration hazard. Can enter the lungs and cause damage. Causes eye and skin irritation. Possible cancer hazard - contains material which may cause cancer.

PRECAUTIONS: Use in a well-ventilated area. Wear suitable protective equipment during handling. Do not breathe vapours or spray mist. Avoid contact with skin, eyes and clothing. Keep away from heat, sparks and open flames. No sparking tools should be used. Avoid contact with incompatible materials. Do not puncture or incinerate containers. Wash thoroughly after handling. Store in a cool, dry, well-ventilated area away from sources of heat, ignition and sunlight.

FIRST AID: If inhaled, move to fresh air. If breathing stops, provide artificial respiration. If breathing is difficult, give oxygen by qualified medical personnel only. Get medical attention if symptoms persist. For skin contact, wash with soap and water while removing contaminated clothing. If irritation persists, seek prompt medical attention. Immediately flush eyes with running water for at least 15 minutes. If irritation persists, seek prompt medical attention. If ingested, do not induce vomiting. If vomiting occurs spontaneously, keep victim's head lowered (forward) to reduce the risk of aspiration. Never give anything by mouth to an unconscious person. Seek immediate medical attention/advice.

Refer To Material Safety Data Sheet for further information.

Canadian Information:

Canadian Environmental Protection Act (CEPA) information: All ingredients listed appear on the Domestic Substances List (DSL).

WHMIS information: Refer to Section 2 for a WHMIS Classification for this product.

This product has been classified according to the hazard criteria of the CPR and the MSDS contains all of the information required by the CPR.

US Federal Information:

TSCA: All listed ingredients appear on the Toxic Substances Control Act (TSCA) inventory.

SECTION 16 - OTHER INFORMATION

Legend : ACGIH: American Conference of Governmental Industrial Hygienists
CAS: Chemical Abstract Services
CNS: Central Nervous System
HSDB: Hazardous Substances Data Bank
IARC: International Agency for Research on Cancer
Inh: Inhalation
LC: Lethal Concentration
LD: Lethal Dose

MSHA: Mine Safety and Health Administration
N/Ap: Not Applicable
N/Av: Not Available
NIOSH: National Institute of Occupational Safety and Health
NOEC: No observable effect concentration
NTP: National Toxicology Program
OECD: Organisation for Economic Co-operation and Development
OSHA: Occupational Safety and Health Administration
PEL: Permissible exposure limit
RTECS: Registry of Toxic Effects of Chemical Substances
STEL: Short Term Exposure Limit
TDG: Canadian Transportation of Dangerous Goods Act & Regulations
TLV: Threshold Limit Values
TWA: Time Weighted Average
WHMIS: Workplace Hazardous Materials Identification System

References :

1. ACGIH, Threshold Limit Values for Chemical Substances and Physical Agents & Biological Exposure Indices for 2017.
2. International Agency for Research on Cancer Monographs, searched 2017.
3. Canadian Centre for Occupational Health and Safety, CCInfoWeb databases, 2017 (Chempendium, HSDB and RTECs).
4. Material Safety Data Sheets from manufacturer.
5. OECD - The Global Portal to Information on Chemical Substances - eChemPortal, 2017.

Prepared for: Radiator Specialty Co. of Canada 1711 Aimco Blvd. Mississauga, ON, Canada, L4W 1H7 Telephone: 905-625-9117 (Mon. - Fri., 8 AM - 4 PM) Please direct all enquiries to Radiator Specialty.	
Prepared by: ICC The Compliance Center Inc. http://www.thecompliancecenter.com	icc ComplianceCenter

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12. ECOLOGICAL INFORMATION

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