MATERIAL SAFETY DATA SHEET

SECTION 1: IDENTIFICATION

Product identifier : **WHITE LITHIUM GREASE**

Product Use : Lubricant.
Chemical Family : Hydrocarbons
Manufacturer part no. : L6200

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, 8 AM - 4 PM)
24 Hr. Emergency Tel # : 613-996-6666 (CANUTEC)

SECTION 2 - HAZARDS IDENTIFICATION

Classification : WHMIS information: This product is not a WHMIS controlled product in Canada. It does not meet any of the criteria for a controlled product provided in Part IV of the Controlled Products Regulations (CPR).

Emergency Overview : Semi-solid. Grease. Off-white. Bland odour.
Caution! May be harmful if inhaled or swallowed. Prolonged or repeated skin contact may cause drying and irritation.
Contains material that may be harmful in the environment.

POTENTIAL HEALTH EFFECTS:

Signs and symptoms of short-term (acute) exposure

Inhalation : May be harmful if inhaled. If product is heated or mists are formed, inhalation may cause irritation to the nose, throat and respiratory tract. Inhalation of fumes may result in metal fume fever, a flu-like illness. Symptoms of metal fume fever may include fever, fatigue, vomiting, muscle aches and shortness of breath.

Skin : Direct skin contact may result in little or no irritation.

Eyes : May cause mild transient irritation.

Ingestion : May be harmful if swallowed. May cause nausea, stomach pain and vomiting.

Effects of long-term (chronic) exposure
: Prolonged or repeated skin contact may cause drying and irritation.

Carcinogenic status : See TOXICOLOGICAL INFORMATION, Section 11.

Additional health hazards : See TOXICOLOGICAL INFORMATION, Section 11.

Potential environmental effects
: This product contains marine pollutants. See ECOLOGICAL INFORMATION, Section 12.

SECTION 3 - COMPOSITION/INFORMATION ON INGREDIENTS

Ingredients	CAS #	Wt.%
Mineral oil	64742-65-0	40.00 - 70.00
Residual oils (petroleum) solvent-dewax	64742-62-7	10.00 - 30.00
Lithium 12-hydroxy stearate	7620-77-1	3.00 - 7.00
Zinc oxide	1314-13-2	1.00 - 5.00
titanium dioxide	13463-67-7	1.00 - 2.00

SECTION 4 - FIRST AID MEASURES

Inhalation : If breathed in, move person into fresh air. Seek medical attention if respiratory irritation occurs, or if breathing is difficult.

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

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

Ingestion : Do not induce vomiting. Never give anything by mouth to an unconscious person. Consult a physician.

Notes For Physician : Treat symptomatically.

SECTION 5 - FIRE FIGHTING MEASURES

Fire hazards/conditions of flammability

: Not flammable under normal conditions of handling. However, may ignite if exposed to extreme heat and flame. Closed containers may rupture if exposed to excess heat or flame due to a build-up of internal pressure. Material will float on water and can be re-ignited at the water's surface.

Oxidizing properties : None known.

Explosion data: Sensitivity to mechanical impact / static discharge

: Not expected to be sensitive to mechanical impact or 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. Water spray may be useful in cooling equipment exposed to heat and flame.

Hazardous combustion products

: Carbon oxides; Sulphur oxides; Nitrogen oxides; Phosphorus oxides; Hydrocarbons; Polycyclic aromatic hydrocarbons; Other unidentified organic compounds.

SECTION 6 - ACCIDENTAL RELEASE MEASURES

Personal precautions : All persons dealing with the clean-up should wear the appropriate chemically protective equipment. Refer to protective measures listed in sections 7 and 8. Keep all other personnel upwind and away from the spill/release. Restrict access to area until completion of clean-up. Material can create slippery conditions. Use non-slip safety shoes in areas where spills or leaks can occur.

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. Scrape up product and place it into a container for disposal. Absorb material with inert absorbent, and place into labelled containers for disposal. Refer to Section 13 for disposal of contaminated material. Notify the appropriate authorities as required. Wash area to prevent slipping. The contaminated water must be collected and removed for treatment or disposal.

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

SECTION 7 - HANDLING AND STORAGE

Safe Handling procedures : Use with adequate ventilation. Wear suitable protective equipment during handling. Avoid breathing vapours. Avoid contact with skin, eyes and clothing. Keep away from extreme heat and flame. Avoid contact with incompatible materials. Wash thoroughly after handling. Keep containers closed when not in use.

Storage requirements : Store in a cool, dry, well-ventilated area. Store away from areas of excessive heat, open flames, sparks, and other possible sources of ignition. Keep away from incompatibles. Storage area should be clearly identified, clear of obstruction and accessible only to trained and authorized personnel. Inspect periodically for damage or leaks.

Incompatible materials : Strong oxidizing agents; Acids; chlorinated rubber

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
Mineral oil	5 mg/m³ (inhalable) (severely refined mineral oils)	N/Av	5 mg/m³ (As 'Oil mist, mineral')	N/Av
Residual oils (petroleum) solvent-dewax	N/Av	N/Av	N/Av	N/Av
Lithium 12-hydroxy stearate	N/Av	N/Av	N/Av	N/Av
Zinc oxide	2 mg/m³ (respirable)	10 mg/m³ (respirable)	5 mg/m³ (fume); 15 mg/m³ (total dust); 5 mg/m³ (respirable)	N/Av
titanium dioxide	10 mg/m³	N/Av	15 mg/m³ (total dust)	N/Av

Ventilation and engineering measures
: General room ventilation is normally adequate. Provide mechanical ventilation in confined spaces.

Respiratory protection : None required under normal conditions. If the TLV is exceeded, a NIOSH/MSHA-approved respirator is advised. Advice should be sought from respiratory protection specialists.

Skin protection : Chemical-resistant impervious gloves, such as Neoprene or nitrile rubber, should be worn where skin contact is a risk. Advice should be sought from glove suppliers. Wear sufficient clothing to prevent skin contact.

Eye / face protection : Safety goggles or glasses as appropriate for the job.

Other protective equipment : An eyewash station and safety shower should be made available in the immediate working area.

General hygiene considerations
: Avoid breathing vapours. Avoid contact with skin, eyes and clothing. Handle in accordance with good industrial hygiene and safety practice. Wash hands thoroughly after using this product, and before eating, drinking or smoking. Remove soiled clothing and wash it thoroughly before reuse.

SECTION 9 - PHYSICAL AND CHEMICAL PROPERTIES

Physical state : Semi-solid. Grease.
Appearance : off-white
Odour : Bland odour.
Odour threshold : N/Av
pH : N/Av
Boiling point : N/Av
Specific gravity : 0.90
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) : 0%
Flash point : > 100°C
Flash point Method : Cleveland Open Cup
Auto-ignition temperature : N/Av
Lower flammable limit (% by vol.) : N/Av
Upper flammable limit (% by vol.) : N/Av
Flame Projection Length : N/Ap
Flashback observed : N/Ap
Absolute pressure of container : N/Ap
Viscosity : N/Av

General Information : No additional information.

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. Avoid contact with incompatible materials.
Materials To Avoid And Incompatibility
: Strong oxidizing agents; Acids; chlorinated rubber
Hazardous decomposition products
: None known, refer to hazardous combustion products in Section 5.

SECTION 11 - TOXICOLOGICAL INFORMATION

Target organs : Eyes, skin, respiratory system and digestive system.
Routes of exposure : *Inhalation:* YES *Skin Absorption:* NO *Skin & Eyes:* YES *Ingestion:* YES
Irritancy : May be mildly irritating to eyes and skin.
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)
Mineral oil	> 5 mg/L (mist)	> 5000 mg/kg	> 5000 mg/kg
Residual oils (petroleum) solvent-dewax	> 5.0 mg/L (mist)	> 5000 mg/kg	> 2000 mg/kg
Lithium 12-hydroxy stearate	N/Av	> 5000 mg/kg	> 2000 mg/kg (No mortality)
Zinc oxide	> 5.7 mg/L (dust) (No mortality)	> 5000 mg/kg	> 2000 mg/kg (No mortality)
titanium dioxide	> 6.82 mg/kg (dust) (No mortality)	> 25 000 mg/kg	> 10 000 mg/kg

Carcinogenic status : This product contains titanium dioxide, an IARC Group 2B carcinogen. However, the Titanium dioxide used in this product is in a non-respirable form and under normal conditions of use, Titanium dioxide cannot become airbourne. The carcinogenic effects of Titanium dioxide are therefore not applicable to this product.
Use caution when handling this material. This product can generate a complex mixture of airbourne material during heating or in a fire. This combustion material can include carcinogenic polycyclic aromatic hydrocarbons.
Reproductive effects : Not expected to have other 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 : None known or reported by the manufacturer.
Conditions aggravated by overexposure
: None known or reported by the manufacturer.

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.
This product contains marine pollutants. The product contains the following substances which are hazardous for the environment: Zinc oxide.

See the following tables for individual ingredient ecotoxicity data.

Ecotoxicity data:

Ingredients	CAS No	Toxicity to Fish		
		LC50 / 96h	NOEC / 21 day	M Factor
Mineral oil	64742-65-0	> 100 mg/L (Fathead minnow)	N/Av	None.
Residual oils (petroleum) solvent-dewax	64742-62-7	> 100 mg/L (Fathead minnow)	N/Av	None.
Lithium 12-hydroxy stearate	7620-77-1	> 100 mg/L (Rainbow trout)	N/Av	None.
Zinc oxide	1314-13-2	1.1 mg/L (Rainbow trout)	N/Av	None.
titanium dioxide	13463-67-7	> 100 mg/L (Japanese ricefish)	N/Av	None.

Ingredients	CAS No	Toxicity to Daphnia		
		EC50 / 48h	NOEC / 21 day	M Factor
Mineral oil	64742-65-0	> 10 000 mg/L (Daphnia magna)	N/Av	None.
Residual oils (petroleum) solvent-dewax	64742-62-7	> 10 000 mg/L (Daphnia magna)	N/Av	None.
Lithium 12-hydroxy stearate	7620-77-1	> 100 mg/L (Daphnia magna)	N/Av	None.
Zinc oxide	1314-13-2	0.098 mg/L (Daphnia magna)	N/Av	10
titanium dioxide	13463-67-7	> 100 mg/L (Daphnia magna)	N/Av	None.

Ingredients	CAS No	Toxicity to Algae		
		EC50 / 96h or 72h	NOEC / 96h or 72h	M Factor
Mineral oil	64742-65-0	> 1000 mg/L/96hr (Green algae)	> 100 mg/L/72hr	None.
Residual oils (petroleum) solvent-dewax	64742-62-7	N/Av	≥ 100 mg/L/72hr (Green algae)	None.
Lithium 12-hydroxy stearate	7620-77-1	> 100 mg/L/72hr (Green algae)	100 mg/L/72hr	None.
Zinc oxide	1314-13-2	0.044 mg/L/72hr (Green algae)	N/Av	10
titanium dioxide	13463-67-7	> 100 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.
The following ingredients are considered to be readily biodegradable: Lithium 12-hydroxy stearate.
Contains the following chemicals which are considered to be inherently biodegradable: Mineral oil; Residual oils (petroleum) solvent-dewax.
Contains the following chemicals which are not readily biodegradable: Zinc oxide; titanium dioxide.

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)
Mineral oil (CAS 64742-65-0)	3.9 - 6	N/Av
Residual oils (petroleum) solvent-dewax (CAS 64742-62-7)	3.9 - 6	N/Av
Lithium 12-hydroxy stearate (CAS 7620-77-1)	2.6 (estimated)	N/Av
Zinc oxide (CAS 1314-13-2)	- 1.53 (estimated)	N/Av

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.

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	UN3077	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. (Zinc oxide)	9	III	
TDG Additional information	This material may be shipped as an exempted marine pollutant in accordance with TDG Section 1.45.1 and Special Provision 99.				

SECTION 15 - REGULATORY INFORMATION

Labelling:

This product is not a WHMIS controlled product in Canada. As such, this product does not require a WHMIS Supplier label.

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
EC50: Effective Concentration 50%.
HSDB: Hazardous Substances Data Bank
ECOTOX: U.S. EPA Ecotoxicology Database
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
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 2016.
2. International Agency for Research on Cancer Monographs, searched 2016.
3. Canadian Centre for Occupational Health and Safety, CCInfoWeb databases, 2016 (Chempendium, HSDB and RTECs).
4. Material Safety Data Sheets from manufacturer.
5. OECD - The Global Portal to Information on Chemical Substances - eChemPortal, 2016.

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.

END OF DOCUMENT