

MATERIAL SAFETY DATA SHEET**SECTION 1: IDENTIFICATION**

Product identifier : **LIQUID FIRE STARTING FLUID**

Product Use : Cold starting gas and diesel engines.

Chemical Family : Mixture.

Manufacturer part no. : M3911C

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 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 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 : Aerosol spray. Clear liquid. Ether like odour.
WARNING!
Flammable aerosol. Contents under pressure. Harmful if inhaled. May cause nausea, vomiting, headache and other central nervous system effects. May be harmful if swallowed. May be an aspiration hazard. Causes skin irritation. May cause respiratory irritation.
This product contains marine pollutants.

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.
In extremely high concentrations, product may act as an asphyxiant and cause increased breathing and pulse rates, fatigue and unconsciousness.
- Skin** : May cause moderate to severe skin irritation. If product is sprayed directly on skin, symptoms of frostbite may be experienced including numbness, pricking and itching.
- Eyes** : May cause mild 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.
Prolonged overexposure may cause liver and kidney effects.
- Carcinogenic status** : See TOXICOLOGICAL INFORMATION, Section 11.
- Additional health hazards** : See TOXICOLOGICAL INFORMATION, Section 11.
- Potential environmental effects** : Very toxic to aquatic life with long lasting effects. Avoid release to the environment. See Section 12 for more environmental information.

SECTION 3 - COMPOSITION/INFORMATION ON INGREDIENTS

<u>Ingredients</u>	<u>CAS #</u>	<u>Wt.%</u>
n-Heptane	142-82-5	30.00 - 60.00
Diethyl ether	60-29-7	30.00 - 60.00
Carbon dioxide	124-38-9	5.00 - 10.00

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** : Remove/Take off immediately all contaminated clothing. Wash exposed area thoroughly with soap and water for at least 15 minutes. Get medical attention.
- Eye contact** : Immediately flush eyes with plenty of water for at least 15 minutes. If irritation persists, seek prompt medical attention.
- Ingestion** : Seek immediate medical attention/advice. Do not induce vomiting. Never give anything by mouth to an unconscious person. If vomiting occurs spontaneously, keep victim's head lowered (forward) to reduce the risk of aspiration.
- Notes For Physician** : Treat symptomatically. Material is an aspiration hazard.

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. Vapours are heavier than air and collect in confined and low-lying areas. Vapour can travel to ignition source and flash back. Product may float, and be re-ignited at the water's surface.

Oxidizing properties : None known.

Explosion data: Sensitivity to mechanical impact / static discharge

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

Suitable extinguishing media : Dry chemical, foam, carbon dioxide and water fog.

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; Aldehydes; 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. 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 ingest. Avoid breathing vapours or mists. 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.
- 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; Acids; Halogenated compounds; Sulphur compounds.
- 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**

<u>Ingredients</u>	<u>ACGIH TLV</u>		<u>OSHA PEL</u>	
	<u>TWA</u>	<u>STEL</u>	<u>PEL</u>	<u>STEL</u>
n-Heptane	400 ppm	500 ppm	500 ppm (2000 mg/m ³)	N/Av
Diethyl ether	400 ppm	500 ppm	400 ppm (1200 mg/m ³)	N/Av
Carbon dioxide	5000 ppm	30 000 ppm	5000 ppm (9000 mg/m ³)	N/Av

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. Depending on conditions of use, an impervious apron should be worn.

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.

General hygiene considerations

- : Do not breathe vapours or spray mist. 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 | : Liquid aerosol. | Appearance | : Clear, colourless liquid. |
| Odour | : Ether-like. | Odour threshold | : N/Av |
| pH | : N/Av | | |
| Boiling point | : 35 - 93.3°C (concentrate) | Specific gravity | : 0.7 @ 20°C (concentrate) |
| Melting/Freezing point | : - 116°C (Diethyl ether) | Coefficient of water/oil distribution | : N/Av |
| Vapour pressure (mmHg @ 20° C / 68° F) | : 537 (Diethyl ether) | Solubility in water | : slight |
| Vapour density (Air = 1) | : > 1 | Evaporation rate (n-Butyl acetate = 1) | : > 1 |
| Volatile organic Compounds (VOC's) | : N/Av | Volatiles (% by weight) | : 100 |
| Flash point | : - 49°C (Diethyl ether) | | |
| Flash point Method | : TCC | Auto-ignition temperature | : Not available. |

Lower flammable limit (% by vol.)

: N/Av

Upper flammable limit (% by vol.)

: N/Av

Flame Projection Length

: 45.7 - 99 cm

Flashback observed

: N/Av

Absolute pressure of container

: N/Av

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. Keep away from direct sunlight. Do not use in areas without adequate ventilation. Avoid contact with incompatible materials.

Materials To Avoid And Incompatibility

: Strong oxidizing agents; Acids; Halogenated compounds; Sulphur compounds.

Hazardous decomposition products

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

SECTION 11 - TOXICOLOGICAL INFORMATION**Target organs**

: Eyes, skin, respiratory system, digestive system, central nervous system.

Routes of exposure: *Inhalation:* YES *Skin Absorption:* NO *Skin & Eyes:* YES *Ingestion:* YES**Irritancy**

: Mild eye irritation. Moderate to severe skin irritant.

Toxicological data

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

<u>Ingredients</u>	<u>LC₅₀(4hr)</u> <u>inh, rat</u>	<u>LD₅₀</u>	
		<u>(Oral, rat)</u>	<u>(Rabbit, dermal)</u>
n-Heptane	25 000ppm (102.5 mg/L) (vapour)	> 15 000 mg/kg	> 2000 mg/kg (No mortality)
Diethyl ether	32 000 ppm (97 mg/L) (vapour)	1200 mg/kg	> 14 200 mg/kg
Carbon dioxide	200 000 ppm/2H (mouse)	N/Av (gas)	N/Av (gas)

Carcinogenic status

: No components are listed as carcinogens by ACGIH, IARC, 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**

: Very toxic to aquatic life with long lasting effects. 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: Heptane.

See the following tables for individual ingredient ecotoxicity data.

Ecotoxicity data:

<u>Ingredients</u>	CAS No	Toxicity to Fish		
		LC50 / 96h	NOEC / 21 day	M Factor
n-Heptane	142-82-5	5.738 mg/L (Rainbow trout) (QSAR)	1.284 mg/L/28-day (QSAR)	None.
Diethyl ether	60-29-7	2560 mg/L (Fathead minnow)	N/Av	None.
Carbon dioxide	124-38-9	N/Ap	N/Ap	N/Ap

<u>Ingredients</u>	CAS No	Toxicity to Daphnia		
		EC50 / 48h	NOEC / 21 day	M Factor
n-Heptane	142-82-5	0.2 mg/L/96hr [Chaetogammarus marinus (Water flea)]	0.06 - 0.23 mg/L	1
Diethyl ether	60-29-7	1380 mg/L (Daphnia magna)	100 mg/L	None.
Carbon dioxide	124-38-9	N/Ap	N/Ap	N/Ap

<u>Ingredients</u>	CAS No	Toxicity to Algae		
		EC50 / 96h or 72h	NOEC / 96h or 72h	M Factor
n-Heptane	142-82-5	4.338 mg/L/72hr (Green algae) (QSAR)	0.97 mg/L/72hr (QSAR)	1
Diethyl ether	60-29-7	> 100 mg/L/72hr (Green algae)	100 mg/L/72hr	None.
Carbon dioxide	124-38-9	N/Ap	N/Ap	N/Ap

- Mobility** : No data is available on the product itself.
- Persistence** : No data is available on the product itself. Contains: Heptane. Heptane is considered to be readily biodegradable.
- Bioaccumulation potential** : No data is available on the product itself. See the following data for ingredient information.

<u>Components</u>	<u>Partition coefficient n-octanol/water (log Kow)</u>	<u>Bioconcentration factor (BCF)</u>
n-Heptane (CAS 142-82-5)	4.66	2000
Diethyl ether (CAS 60-29-7)	0.89	0.9 - 9.1 (Fish)


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: TRANSPORT 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. Harmful if inhaled. May cause nausea, vomiting, headache and other central nervous system effects. May be harmful if swallowed. May be an aspiration hazard. Causes skin irritation. May cause respiratory irritation.

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, immediately remove contaminated clothing then wash thoroughly with soap and water for at least 15 minutes. Obtain medical attention immediately. For eye contact, flush with running water for at least 15 minutes. If irritation persists, seek prompt medical attention. If ingested, do not induce vomiting. 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

TCC: Tagliabue Closed Cup
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, CCIInfoWeb 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.

<p><u>Prepared for:</u> 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.</p>	
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: 4

Revision Information

- : (M)SDS sections updated
- 11. TOXICOLOGICAL INFORMATION (Toxicological data);
- 12. ECOLOGICAL INFORMATION.

END OF DOCUMENT