MATERIAL SAFETY DATA SHEET

1. Product and Company Identification

Product Name **Kerosene**

Synonym(s) Range Oil
Fuel Oil No. 1

CAS # Mixture

Product use Fuel

Manufacturer Irving Oil Refining G.P.
Box 1260
Saint John, NB E2L 4H6 CA
Phone: (506) 202-2000
Refinery: (506) 202-3000
Emergency Phone: 1-800-424-9300 (CHEMTREC)

2. Hazards Identification

Emergency overview WARNING
COMBUSTIBLE LIQUID AND VAPOR.
CAUSES EYE IRRITATION. CAUSES SKIN IRRITATION.
CAUSES RESPIRATORY TRACT IRRITATION.
PROLONGED OR REPEATED CONTACT MAY DRY SKIN AND CAUSE IRRITATION.

Potential short term health effects

Routes of exposure Eye, Skin contact, Skin absorption, Inhalation, Ingestion.

Eyes Causes irritation.

Skin Causes irritation. May be absorbed through the skin.

ACGIH - Threshold Limit Values - Skin Notations

Benzene	71-43-2	Skin - potential significant contribution to overall exposure by the cutaneous route
Kerosene	8008-20-6	Skin - potential significant contribution to overall exposure by the cutaneous route

Inhalation Excessive intentional inhalation may cause respiratory tract irritation and central nervous system effects (headache, dizziness).

Ingestion Harmful if swallowed. Aspiration of material into lungs can cause chemical pneumonitis. May cause stomach distress, nausea or vomiting.

Target organs Eyes. Respiratory system. Skin.

Chronic effects Prolonged or repeated exposure to dilutions can cause drying, defatting and dermatitis. Prolonged or repeated exposure can cause kidney damage.

Signs and symptoms Symptoms may include redness, edema, drying, defatting and cracking of the skin. Symptoms of overexposure may be headache, dizziness, tiredness, nausea and vomiting.

OSHA Regulatory Status This product is a "Hazardous Chemical" as defined by the OSHA Hazard Communication Standard, 29 CFR 1910.1200.

Potential environmental effects Components of this product have been identified as having potential environmental concerns.

3. Composition / Information on Ingredients

Ingredient(s)	CAS #	Percent
Kerosene	8008-20-6	60 - 100
Benzene	71-43-2	< 0.1

Composition comments *Sulphur: <8 ppm
*Hydrogen sulphide: Nil

*Kerosene is a complex mixture of hydrocarbons. Its exact composition depends on the source of the crude oil from which it was produced and the refining methods used. Kerosene contains hundreds of individual organic chemicals. This section identifies only some of the well-known chemical constituents.

4. First Aid Measures

First aid procedures

Eye contact	Flush with cool water. Remove contact lenses, if applicable, and continue flushing. Obtain medical attention if irritation persists.
Skin contact	Flush with cool water. Wash with soap and water. Obtain medical attention if irritation persists.
Inhalation	If symptoms develop, move victim to fresh air. If symptoms persist, obtain medical attention. If breathing has stopped, trained personnel should administer CPR immediately.
Ingestion	Do not induce vomiting. If vomiting occurs naturally, have victim lean forward to reduce risk of aspiration. Never give anything by mouth if victim is unconscious, or is convulsing. Obtain medical attention.
Notes to physician	Symptoms may be delayed.
General advice	Keep away from sources of ignition. No smoking. If you feel unwell, seek medical advice (show the label where possible). Ensure that medical personnel are aware of the material(s) involved, and take precautions to protect themselves. Show this safety data sheet to the doctor in attendance. Avoid contact with eyes and skin. Keep out of reach of children.

5. Fire Fighting Measures

Flammable properties	Combustible by WHMIS/OSHA criteria. Vapors may travel to a source of ignition and flash back. Container may explode in heat of fire.
Extinguishing media	
Suitable extinguishing media	Carbon dioxide. Dry chemical. Foam.
Unsuitable extinguishing media	Not available
Protection of firefighters	
Specific hazards arising from the chemical	Container may explode in heat of fire. Vapors are heavier than air and may travel along the ground to some distant source of ignition and flash back. Cool containers with flooding quantities of water until well after fire is out.
Protective equipment for firefighters	Firefighters should wear full protective clothing including self contained breathing apparatus. Cool containers with flooding quantities of water until well after fire is out.
Hazardous combustion products	May include and are not limited to: Oxides of carbon. Oxides of nitrogen. Aromatic hydrocarbons.
Explosion data	
Sensitivity to mechanical impact	Not expected to be sensitive to mechanical impact.
Sensitivity to static discharge	Vapor: Yes.

6. Accidental Release Measures

Personal precautions	Keep unnecessary personnel away. Do not touch or walk through spilled material. Do not touch damaged containers or spilled material unless wearing appropriate protective clothing. Keep people away from and upwind of spill/leak.
Environmental precautions	Do not discharge into lakes, streams, ponds or public waters.
Methods for containment	Stop leak if you can do so without risk. Prevent entry into waterways, sewers, basements or confined areas. This material is a water pollutant and should be prevented from contaminating soil or from entering sewage and drainage systems and bodies of water.
Methods for cleaning up	Before attempting clean up, refer to hazard data given above. Small spills may be absorbed with non-reactive absorbent and placed in suitable, covered, labelled containers. Prevent large spills from entering sewers or waterways. Contact emergency services and supplier for advice. Absorb with earth, sand or other non-combustible material and transfer to containers for later disposal.

7. Handling and Storage

Handling

Use good industrial hygiene practices in handling this material.
Non-sparking equipment. Explosion-proof ventilation. Intrinsically safe electrical equipment.
Ground and bond containers when transferring material.
Have clean emergency eye wash and shower available in work area.
When using do not eat or drink.
Avoid contact with skin and clothing.
Avoid contact with eyes.
Keep container tightly closed.
Use only with adequate ventilation.
Wash thoroughly after handling.
Avoid breathing vapors or mists of this product.

Storage

Keep out of reach of children.
Containers should be vented and equipped with a flame arrester.
Store in a cool, dry, well-ventilated place.
Keep away from heat, open flames or other sources of ignition.

Shipping: Stable during transport. May be transported hot.

8. Exposure Controls / Personal Protection

Exposure limits

Ingredient(s)	Exposure Limits
Benzene	**ACGIH-TLV** TWA: 0.5 ppm STEL: 2.5 ppm **OSHA-PEL** TWA: 10 ppm STEL: 5 ppm Ceiling: 25 ppm
Kerosene	**ACGIH-TLV** TWA: 200 mg/m3 Skin: 100 mg/m3 **OSHA-PEL** Not established

Engineering controls

Mechanical ventilation should be used when handling this product in enclosed spaces.
Local exhaust ventilation may be necessary.

Personal protective equipment

Eye / face protection

Face shield or chemical goggles. Eye wash fountain is recommended.

Hand protection

Nitrile rubber. Viton™. Polyethylene.

Skin and body protection

Use of protective coveralls and long sleeves is recommended.
If clothing or footwear becomes contaminated with the product, remove it and completely decontaminate it before re-use, or discard it.

Respiratory protection

For confined spaces, wear a NIOSH-approved (or equivalent) full-facepiece airline respirator in the positive pressure mode with emergency escape provisions.
Where exposure guideline levels may be exceeded, use an approved NIOSH respirator.
Respirator should be selected by and used under the direction of a trained health and safety professional following requirements found in OSHA's respirator standard (29 CFR 1910.134), CAN/CSA-Z94.4 and ANSI's standard for respiratory protection (Z88.2).

General hygiene considerations

Handle in accordance with good industrial hygiene and safety practice.
Wash hands before breaks and immediately after handling the product.
When using do not eat or drink.

9. Physical and Chemical Properties

Appearance Clear

Color Colorless to Pale yellow

Form Liquid

Odor Petroleum

Odor threshold	0.55 mg/m3 for sulphur free product
Physical state	Liquid
pH	Not applicable
Melting point	Not available
Freezing point	-52.60 - -76.00 °F (-47 - -60 °C)
Boiling point	314.60 - 572.00 °F (157 - 300 °C)
Pour point	Not available
Evaporation rate	Not available
Flash point	100.40 - 161.60 °F (38 - 72 °C) Closed Cup
Auto-ignition temperature	410.00 °F (210 °C)
Flammability limits in air, lower, % by volume	0.7
Flammability limits in air, upper, % by volume	5
Vapor pressure	10.5 mmHg @ 38°C
Vapor density	4.5 (Air=1)
Specific gravity	0.775 - 0.840 @ 15°C
Octanol/water coefficient	3.3 To > 6 (log Poct)
Solubility (H2O)	Not available
VOC (Weight %)	Not available
Viscosity	2.0 - 8.0 cST @ -20°C
Percent volatile	Not available

10. Stability and Reactivity

Reactivity	This product may react with strong oxidizing agents.
Possibility of hazardous reactions	Hazardous polymerization does not occur.
Chemical stability	Stable under recommended storage conditions.
Conditions to avoid	Heat, open flames, static discharge, sparks and other ignition sources. Avoid high temperatures. Do not mix with other chemicals.
Incompatible materials	Acids. Oxidizers.
Hazardous decomposition products	May include and are not limited to: Oxides of carbon. Oxides of nitrogen. Aromatic hydrocarbons.

11. Toxicological Information

Component analysis - LC50

Ingredient(s)	LC50
Benzene	13700 ppm rat; 13700 mg/l/4h rat
Kerosene	5.2801 mg/l/4h rat

Component analysis - Oral LD50

Ingredient(s)	LD50
Benzene	690 mg/kg rat; 4700 mg/kg mouse
Kerosene	5000 mg/kg rat; 20000 mg/kg guinea pig; 2835 mg/kg rabbit

Effects of acute exposure

Eye	Causes irritation.
Skin	Causes irritation. May be absorbed through the skin.

ACGIH - Threshold Limit Values - Skin Notations

Benzene	71-43-2	Skin - potential significant contribution to overall exposure by the cutaneous route
Kerosene	8008-20-6	Skin - potential significant contribution to overall exposure by the cutaneous route

Inhalation	Excessive intentional inhalation may cause respiratory tract irritation and central nervous system effects (headache, dizziness).
Ingestion	Harmful if swallowed. Aspiration of material into lungs can cause chemical pneumonitis. May cause stomach distress, nausea or vomiting.
Sensitization	Non-hazardous by WHMIS/OSHA criteria.

Chronic effects Blood and nervous system disorders may occur after prolonged skin contact. Prolonged or repeated exposure can cause kidney damage.

Carcinogenicity Benzene and certain polycyclic aromatic hydrocarbons (PAHs) are known carcinogens.

ACGIH - Threshold Limit Values - Carcinogens

Benzene	71-43-2	A1 - Confirmed Human Carcinogen
Kerosene	8008-20-6	A3 - Confirmed Animal Carcinogen with Unknown Relevance to Humans

IARC - Group 1 (Carcinogenic to Humans)

Benzene	71-43-2	Monograph 100F [in preparation]; Supplement 7 [1987]; Monograph 29 [1982]

NTP (National Toxicology Program) - Report on Carcinogens - Known Human Carcinogens

Benzene	71-43-2	Known Human Carcinogen

U.S. - California - Proposition 65 - Carcinogens List

Benzene	71-43-2	carcinogen, initial date 2/27/87

Mutagenicity Non-hazardous by WHMIS/OSHA criteria.

Reproductive effects Non-hazardous by WHMIS/OSHA criteria.

Teratogenicity Non-hazardous by WHMIS/OSHA criteria.

Name of Toxicologically Synergistic Products Other CNS depressants can be expected to produce additive or synergistic effects. May increase the photosensitizing ability of certain chemicals, such as dinitrochlorobenzene (DNCB).

12. Ecological Information

Ecotoxicity Components of this product have been identified as having potential environmental concerns.

Ecotoxicity - Freshwater Algae - Acute Toxicity Data

Benzene	71-43-2	72 Hr EC50 Pseudokirchneriella subcapitata: 29 mg/L

Ecotoxicity - Freshwater Fish - Acute Toxicity Data

Benzene	71-43-2	96 Hr LC50 Pimephales promelas: 10.7-14.7 mg/L [flow-through]; 96 Hr LC50 Oncorhynchus mykiss: 5.3 mg/L [flow-through]; 96 Hr LC50 Lepomis macrochirus: 22.49 mg/L [static]; 96 Hr LC50 Poecilia reticulata: 28.6 mg/L [static]; 96 Hr LC50 Pimephales promelas: 22330-41160 µg/L [static]; 96 Hr LC50 Lepomis macrochirus: 70000-142000 µg/L [static]

Ecotoxicity - Water Flea - Acute Toxicity Data

Benzene	71-43-2	48 Hr EC50 Daphnia magna: 8.76 - 15.6 mg/L [Static]; 48 Hr EC50 Daphnia magna: 10 mg/L

Persistence / degradability Non-persistent/ Group 1

Bioaccumulation / accumulation Not available

Mobility in environmental media Not available

Environmental effects Not available

Aquatic toxicity Not available

Partition coefficient 3.3 To > 6 (log Poct)

Chemical fate information Not available

Other adverse effects Not available

13. Disposal Considerations

Disposal instructions Review federal, provincial, and local government requirements prior to disposal. Dispose in accordance with all applicable regulations.

Waste from residues / unused products Not available

Contaminated packaging Not available

14. Transport Information

U.S. Department of Transportation (DOT)

Basic shipping requirements:

Proper shipping name	Kerosene
Hazard class	3
UN number	UN1223
Packing group	III
Additional information:	
Special provisions	144, B1, IB3, T2, TP2
Packaging exceptions	150
ERG number	128

Transportation of Dangerous Goods (TDG - Canada)

Basic shipping requirements:

Proper shipping name	KEROSENE
Hazard class	3
UN number	UN1223
Packing group	III

15. Regulatory Information

Canadian federal regulations 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.

Canada - CEPA - Schedule I - List of Toxic Substances

Benzene	71-43-2	Present

Canada - WHMIS - Ingredient Disclosure List

Benzene	71-43-2	0.1 %

WHMIS status Controlled

WHMIS classification Class B - Division 3 - Combustible Liquid, Class D - Division 2B

WHMIS labeling

Occupational Safety and Health Administration (OSHA)

29 CFR 1910.1200 hazardous chemical Yes

US Federal regulations

This product is a "Hazardous Chemical" as defined by the OSHA Hazard Communication Standard, 29 CFR 1910.1200.

U.S. - CAA (Clean Air Act) - 1990 Hazardous Air Pollutants

Benzene	71-43-2	Present (including Benzene from gasoline)

U.S. - CAA (Clean Air Act) - High Risk Hazardous Air Pollutants

Benzene	71-43-2	10 Weighting factor

U.S. - CAA (Clean Air Act) - HON Rule - Organic HAPs

Benzene	71-43-2	Present

U.S. - CAA (Clean Air Act) - HON Rule - SOCMI Chemicals

Benzene	71-43-2	Group I

U.S. - CAA (Clean Air Act) - Reactivity Factors for VOCs in Aerosol Coatings

Benzene	71-43-2	0.81 G Ozone/g VOC Reactivity Factor

U.S. - CAA (Clean Air Act) - Urban HAPs List (Integrated Urban Strategy)

Benzene	71-43-2	Present

U.S. - CAA (Clean Air Act) - Volatile Organic Compounds (VOCs) in SOCMI

Benzene	71-43-2	Present

U.S. - CERCLA/SARA - Hazardous Substances and their Reportable Quantities

Benzene	71-43-2	10 Lb final RQ (received an adjusted RQ of 10 lbs based on potential carcinogenicity in an August 14, 1989 final rule); 4.54 kg final RQ (received an adjusted RQ of 10 lbs based on potential carcinogenicity in an August 14, 1989 final rule)

U.S. - CERCLA/SARA - Section 313 - Emission Reporting

Benzene	71-43-2	0.1 % de minimis concentration

U.S. - CWA (Clean Water Act) - Hazardous Substances

Benzene	71-43-2	Present

U.S. - CWA (Clean Water Act) - Priority Pollutants

Benzene	71-43-2	Present

U.S. - CWA (Clean Water Act) - Toxic Pollutants

Benzene	71-43-2	Present

CERCLA (Superfund) reportable quantity

Benzene: 10.0000

Superfund Amendments and Reauthorization Act of 1986 (SARA)

Hazard categories

Immediate Hazard - Yes
Delayed Hazard - Yes
Fire Hazard - Yes
Pressure Hazard - No
Reactivity Hazard - No

Section 302 extremely hazardous substance

No

Section 311 hazardous chemical

Yes

Clean Water Act (CWA)

Not available

State regulations

WARNING: This product contains a chemical known to the State of California to cause cancer and birth defects or other reproductive harm.

U.S. - California - 8 CCR Section 339 - Director's List of Hazardous Substances

Benzene	71-43-2	Present

U.S. - California - Proposition 65 - Carcinogens List

Benzene	71-43-2	carcinogen, initial date 2/27/87

U.S. - California - Proposition 65 - Developmental Toxicity

Benzene	71-43-2	developmental toxicity, initial date 12/26/97

U.S. - California - Proposition 65 - Reproductive Toxicity - Male

Benzene	71-43-2	male reproductive toxicity, initial date 12/26/97

U.S. - Connecticut - Carcinogenic Substances

Benzene	71-43-2	Present

U.S. - Illinois - Toxic Air Contaminant Carcinogens

Benzene	71-43-2	ACGIH Carcinogen; IRIS A Carcinogen; NTP Known Carcinogen

U.S. - Illinois - Toxic Air Contaminants

Benzene	71-43-2	Present

U.S. - Louisiana - Reportable Quantity List for Pollutants

Benzene	71-43-2	10 Lb final RQ (received an adjusted RQ of 10 lb based on potential carcinogenicity in an August 14, 1989 final rule); 4.54 kg final RQ (received an adjusted RQ of 10 lb based on potential carcinogenicity in an August 14, 1989 final rule)

U.S. - Massachusetts - Right To Know List

Benzene	71-43-2	Carcinogen; Extraordinarily hazardous
Kerosene	8008-20-6	Present

U.S. - Michigan - Critical Materials List

Benzene	71-43-2	100 Lb Annual usage threshold

U.S. - Minnesota - Hazardous Substance List

Benzene	71-43-2	Carcinogen

U.S. - New Jersey - Right to Know Hazardous Substance List

Benzene	71-43-2	sn 0197
Kerosene	8008-20-6	sn 1091

U.S. - New York - Reporting of Releases Part 597 - List of Hazardous Substances

Benzene	71-43-2	10 Lb RQ (air); 1 lb RQ (land/water)

U.S. - North Carolina - Control of Toxic Air Pollutants

Benzene	71-43-2	0.00012 mg/m3 (carcinogens)

U.S. - Pennsylvania - RTK (Right to Know) - Special Hazardous Substances

Benzene	71-43-2	Present

U.S. - Pennsylvania - RTK (Right to Know) List

Benzene	71-43-2	Environmental hazard; Special hazardous substance
Kerosene	8008-20-6	Present

U.S. - Rhode Island - Hazardous Substance List

Benzene	71-43-2	Toxic (skin); Flammable (skin); Carcinogen (skin)
Kerosene	8008-20-6	Flammable

Inventory name

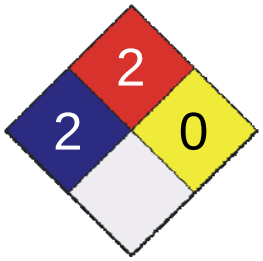
Country(s) or region	Inventory name	On inventory (yes/no)*
Canada	Domestic Substances List (DSL)	Yes
Canada	Non-Domestic Substances List (NDSL)	No
United States & Puerto Rico	Toxic Substances Control Act (TSCA) Inventory	Yes

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

16. Other Information

LEGEND HMIS/NFPA	
Severe	4
Serious	3
Moderate	2
Slight	1
Minimal	0

Health	/	2
Flammability		2
Physical Hazard		0
Personal Protection		X



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Issue date	27-Nov-2012
Effective date	15-Nov-2012
Expiry date	15-Nov-2015
Prepared by	Dell Tech Laboratories Ltd. (519) 858-5021
Other information	For an updated MSDS, please contact the supplier/manufacturer listed on the first page of the document. This MSDS conforms to the ANSI Z400.1/Z129.1-2010 Standard.

Kerosene

Combustible liquid. Eye and skin irritant.

Keep away from sources of ignition. No smoking. Avoid contact with eyes and skin. Wear rubber gloves and safety glasses with side shields. Keep out of reach of children.

EYE: Flush with cool water. Remove contact lenses, if applicable, and continue flushing. Obtain medical attention if irritation persists.

SKIN: Flush with cool water. Wash with soap and water. Obtain medical attention if irritation persists.

INHALATION: If symptoms develop, move victim to fresh air. If symptoms persist, obtain medical attention. If breathing has stopped, trained personnel should administer CPR immediately.

INGESTION: Do not induce vomiting. If vomiting occurs naturally, have victim lean forward to reduce risk of aspiration. Never give anything by mouth if victim is unconscious, or is convulsing. Obtain medical attention.

READ MATERIAL SAFETY DATA SHEET BEFORE USING PRODUCT

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Liquide combustible. Irritant pour les yeux et la peau.

Conserver à l'écart de toutes sources d'ignition. Ne pas fumer. Éviter le contact avec les yeux et la peau. Porter des gants en caoutchouc et des lunettes de sécurité pourvues de protections latérales. Tenir hors de la portée des enfants.

YEUX: Rincer à grande eau froide. Enlever les verres de contact, le cas échéant, et continuer à rincer. Obtenir de l'attention médicale si l'irritation persiste.

PEAU: Rincer à grande eau froide. Laver à l'eau et au savon. Obtenir de l'attention médicale si l'irritation persiste.

INHALATION: En cas de symptômes, placer la victime à l'air frais. Si les symptômes persistent, obtenir de l'attention médicale. Si la victime ne respire pas du personnel qualifié devrait immédiatement commencer la réanimation cardio-pulmonaire.

INGESTION: Ne pas provoquer le vomissement. Si le vomissement se produit spontanément, incliner la victime vers l'avant pour réduire le risque d'inhalation. Ne jamais rien faire boire ou avaler à une victime inconsciente, ou si la victime a des convulsions. Appeler un médecin.

LIRE LA FICHE SIGNALÉTIQUE AVANT D'UTILISER CE PRODUIT