Safety Data Sheet (CANADA)

1. Identification

Product Identifier:	Crude Oil
Other Means of Identification:	Crude, petroleum crude
Product use:	Refinery feedstock for fuel and lubricant production
Restrictions on use:	Do not use for purposes other than those listed above
Manufacturer:	Keyera and Affiliates
Address:	Suite 600, Sunlife Plaza West 144 – 4th Avenue SW Calgary, AB, T2P 3N4
SDS Information:	1-780-449-7910
Emergency Contact (24 hours):	1-613-996-6666 (CANUTEC, Canada) 1-800-424-9300 (CHEMTREC, U.S.)

2. Hazards Identification

GHS Hazards

Pictogram	Classification	Hazard Statements
	Flammable Liquids – Category 2	Highly flammable liquid and vapor.
	Acute Toxicity, Inhalation – Category 4 Specific Target Organ Toxicity, Single Exposure – Category 1 Skin corrosion/irritation – Category 2 Eye damage/irritation – Category 2A	Harmful if inhaled. Causes damage to CNS Central Nervous System, respiratory tract, heart. Causes skin irritation. Causes serious eye irritation.
	Aspiration hazard – Category 1 Carcinogenicity – Category 1A Toxic to reproduction – Category 1B Specific Target Organ Toxicity, Repeated Exposure – Cat 1	May be fatal if swallowed and enters airways. May cause cancer. May damage fertility or the unborn child. Causes damage to CNS, lungs, skin. kidney and blood through prolonged or repeated exposure.

Signal Word: Danger

Precautionary Statements:

Prevention

- Keep away from heat, hot surfaces, sparks, open flames and other ignition sources – No smoking.
- Keep container tightly closed.
- Ground and bond container and receiving equipment.
- Use explosion-proof electrical/ventilating/lighting equipment.
- Use non-sparking tools.
- Take action to prevent static discharges.

- Avoid breathing gas/vapors.
- Wash hands thoroughly after handling.
- Wear protective gloves/protective clothing/eye protection/face protection.
- Do not eat, drink or smoke when using this product.
- Use only outdoors or in a well-ventilated area.
- Obtain special instructions before use.
- Do not handle until all safety precautions have been read and understood.

Response

- In case of fire: Use dry chemical, carbon dioxide, water fog or foam to extinguish.

- If inhaled: Remove person to fresh air and keep comfortable for breathing.
- Call a doctor/physician if you feel unwell.

- If on skin (or hair): Take off immediately all contaminated clothing and wash it before reuse. Rinse skin with water/shower.
- If skin irritation occurs:. Get medical advice/attention.
- If exposed or concerned or if you feel unwell: Get medical advice/attention.

- If in eyes: Rinse cautiously with water for several minutes. Remove contact lens, if present and easy to do. Continue rinsing.
- If eye irritation persists: Get medical advice/attention.

- If swallowed: Immediately call a doctor. Do not induce vomiting.

Storage

- Store in a well-ventilated place. Keep cool.
- Keep container tightly closed.
- Store locked up.

Disposal

- Dispose of contents/container in accordance with applicable local, provincial/state, and federal regulations.

3. Composition/Information on Ingredients

Chemical Name: Crude oil

Common Name/Synonyms: Crude, petroleum crude

Crude oil (CAS #8002-05-9) consists predominantly of aliphatic, alicyclic and aromatic hydrocarbons. It may also contain small amounts of nitrogen, oxygen and sulfur compounds. The Keyera crude is a co-mingled stream from various crude producers.

Ingredient Name	Weight %	CAS No.
C1-C3 total	Trace (0-0.5)	
n-Butane	0.2 – 1.0 %	106-97-8
Iso-Butane	0.1 – 1.5 %	75-28-5
n-Pentane	~1.5 %	109-66-0
Iso-Pentane	1.0 – 2.0 %	78-78-4
Hexanes	3.0 – 3.5 %	
Heptanes	~ 4.0 %	
Octanes	4.0 – 4.5 %	
Nonanes	3.5 – 4.0 %	
Decanes	3.5 – 4.0 %	
C11 +	67 – 71 %	
Benzene (C_6H_6)	0.3 – 0.4 %	71-43-2
Toluene (C_7H_8)	0.5 – 1.5 %	108-88-3
Methylcyclohexane (C_7H_{14})	1.5 – 2.5 %	108-87-2
Xylenes (C_8H_{10})	0.9 – 2.0 %	1330-20-7
Ethylbenzene (C_8H_{10})	0.9 – 2.0 %	100-41-4
1,2,4-Trimethylbenzene (C_9H_{12})	~ 0.5 %	25551-13-7
Total Sulfur	0 – 1.0 %	
H_2S	< 1.0 wt. ppm	
Methyl mercaptan	< 1.0 wt. ppm	

4. First Aid Measures

Immediate Medical Attention and Special Treatment:
Treat symptomatically and supportively. Refer also to Table below.

First Aid:	
Inhalation:	Remove person to fresh air and keep comfortable for breathing. Call a doctor/physician if you feel unwell.
Skin:	Take off immediately all contaminated clothing and wash it before reuse. Rinse skin with water/shower. If skin irritation occurs: get medical advice/attention.
Eyes:	Rinse cautiously with water for several minutes. Remove contact lens, if present and easy to do. Continue rinsing. If eye irritation persists: get medical advice/attention.
Ingestion:	Do not induce vomiting. Immediately call a doctor. **Note to Physician:** Ingestion of this product or subsequent vomiting can result in aspiration of light hydrocarbon liquid, which can cause pneumonitis.

Most Important Effects and Symptoms, Acute or Delayed:
An aspiration hazard: may enter directly into the lungs if swallowed or when vomiting the substance.

Benzene, one of the component, may cause cancer (leukemia) through skin exposure.

2 components, xylenes and ethylbenzene, may damage fertility or the unborn child.

Exposure Route	Health Effects	Symptoms of Exposure
Inhalation:	May cause damage to CNS Central Nervous System, respiratory tract, heart	Coughing, itchy throat, dizziness, drowsiness.
Skin:	Causes irritation. Prolonged or frequently repeated contact may cause the defatting of skin. See also exposure (skin) to benzene being carcinogen.	Itchiness, redness. Prolonged or repeated exposure causes dryness and skin cracking.
Eyes:	May cause serious irritation to the eyes.	Pain, tears, swelling, redness, and blurred vision.
Ingestion:	Because of the low viscosity of this substance, it can directly enter the lungs if it is swallowed (this is called aspiration). This can occur during the act of swallowing or when vomiting the substance. Once in the lungs, the substance is very difficult to remove and can cause severe injury to the lungs and death.	Signs and symptoms of aspiration may include coughing, difficulty breathing, “gurgling” lung sounds when breathing, coughing up phlegm (sputum) that isyellow or green in color or bad smelling, change in voice (hoarseness), skin turning bluish due to lack of oxygen.

5. Fire Fighting Measures

Flammability: Yes. Highly flammable liquid and vapor.	**Hazardous Combustion Products:** Carbon monoxide (CO), carbon dioxide (CO_2), and acrid smoke.
Explosion: Sensitive to impact: No	**Sensitive to static discharge:** Yes
Extinguishing Media: Small Fire: dry chemical, CO_2, water spray or regular foam. Large Fire: water spray, fog or regular foam.	
Unsuitable Extinguishing Media: • Water jet: Do not use straight streams. Water may spread fire and inefficient for extinguishment especially for large fire.	
Special Protective Equipment for Firefighters: • Wear full protective clothing and Self-Contained Breathing Apparatus SCBA with full face-piece.	
Precautions for Firefighters: • If tank, rail car or tank truck is involved in a fire, ISOLATE and consider initial evacuation in all directions for 800 meters (½ mile). • Move container from fire area if you can do it without risk. • Cool fire-exposed containers with flooding quantities of water applied from as far a distance as possible, until well after fire is out. • Stay away from tanks engulfed in fire. • Containers exposed to fire may explode or vent through pressure-relief devices. • For massive fire, use unmanned hose holders or monitor nozzles; if this is impossible, withdraw from area and let fire burn. • Refer to Guide 128 of the Emergency Response Guidebook (Transport Canada/US Dept. of Transportation).	
Unusual Fire and Explosion Hazards: • Due to low electroconductivity of the substance, liquid can accumulate or generate static charge by flow or agitation. Vapors can be ignited by static discharge or form explosive mixtures with air. • The highly flammable vapors are heavier than air and may accumulate in low areas and /or spread along ground to distant ignition sources and flash back. • The product is not soluble in (and floats on top of) water. Using water as an extinguishment may spread the fire rapidly.	

6. Accidental Release Measures

Protective Equipment:

Gloves:	Recommended: neoprene and nitrile. Not recommended: polyvinyl chloride PVC, latex, rubber.
Clothing:	Flame-retardant coverall e.g. Nomex, Proban. Protective apron and trousers worn over coveralls for handling NGL.
Respirator:	Air-purifying respirator equipped with organic-vapor filter. Use air-supplying respirator or Self-Contained Breathing Apparatus SCBA where large quantities are released, and the exposure level is unknown or where an oxygen-deficient atmosphere may exist.
Eye:	Safety glasses with side shields, safety goggles or face shields.

Precautions:

- Avoid breathing gas/vapors.
- The highly flammable vapors are heavier than air and may accumulate in low areas and /or spread along ground to distant ignition sources and flash back.
- Ventilate closed spaces before entering.

Emergency Procedures:

- Shut off leak source, if it can be done safely.
- Remove all sources of ignition.
- Isolate hazard area.
- Evacuate area of all unnecessary personnel.
  Small spill: consider downwind evacuation of at least 50 meters (150 feet)
  Large spill: consider downwind evacuation of at least 300 meters (1000 feet)
  If tank, rail car or tank truck is involved in a fire, evacuate in all directions of at least 800 meters (1/2 mile)
- Keep unnecessary and unprotected personnel from entering.
- Emergency personnel must wear appropriate personal protective equipment.
- Ventilate area of leak or spill.

Containment and Clean-up:

- Use non-sparking tools and equipment.
- All equipment used when handling the product must be grounded and transfer of the product bonded.
- Contain and recover liquid if it can be done safely: Collect spillage with an inert material (e.g., vermiculite, dry sand, earth), and place in metal container which can be grounded.
- Do not use combustible materials, such as sawdust, as absorbent.
- If a leak or spill has not ignited, use water spray to disperse the vapors or divert vapor cloud draft. Do not direct water at spill or source of leak.
- A vapour-supressing foan may be used to reduce vapours.
- Prevent liquid from spreading to sewers, ventilation systems, confined spaces.
- Dispose of contents/container in accordance with applicable local, provincial/state, and federal regulations.
- Refer to Guide 128 of the Emergency Response Guidebook (Transport Canada/US Dept. of Transportation).

7. Handling and Storage

Handling Precautions :

- Obtain special instructions before use.
- Do not handle until all safety precautions have been read and understood.
- Use only outdoors or in a well-ventilated area.
- Keep away from heat/sparks/open flames/hot surfaces – No smoking.
- Keep container tightly closed.
- Avoid breathing gas/vapors.
- Use only non-sparking tools.
- Use explosion-proof electrical/ventilating/lighting equipment.
- Ground/bond containers when transferring this product.
- Take precautionary measures against static discharges.
- Do not eat, drink or smoke when using this product.
- Wash hands thoroughly after handling.
- Wear protective gloves/ protective clothing/ eye protection/ face protection.

Storage Precautions:

Locations

- Store in a cool, dry, well-ventilated location, away from any area of fire-hazard.
- Outside or detached storage is preferred.
- Keep away from heat/sparks/open flames/hot surfaces.
- Storage and use areas should be No Smoking areas.
- Store locked-up.

Containers

- Keep container tightly closed.
- Do not pressurize, cut, weld, braze, solder, drill, grind or expose such containers to heat, sparks, flame, static electricity or other sources of ignition: they may explode and cause injury or death.

.

Other precautions

- Separate from incompatibles like oxidizers e.g. chlorine gas and oxygen.

8. Exposure Controls / Personal Protection

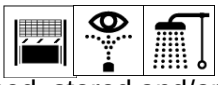
EXPOSURE LIMITS

Since there is no Occupational Exposure Limits listed for crude oil (CAS# 8002-05-9), the OEL of some major components are listed here.

	Authority	15 MINS STEL or Ceiling	8-HOURS
Butane (all isomers)	Alberta	-	1000 ppm (2370 mg/m^3)
	Ontario	-	800 ppm (1900 mg/m^3)
	BC	750 ppm (1778 mg/m^3)	600 ppm (1422 mg/m^3)
Pentane (all isomers)	Alberta, Ontario	-	600 ppm (1770 mg/m^3)
	BC	-	600 ppm
n-Hexane (CAS 110-54-3)	Alberta	-	50 ppm (176 mg/m^3)
	BC	-	20 ppm (skin)
	Ontario	-	50 ppm (skin)
Hexane (all other isomers)	Alberta, Ontario	1000 ppm (3500 mg/m^3)	500 ppm (1760 mg/m^3)
	BC	-	200 ppm (680 mg/m^3)
Heptane (all isomers)	Alberta, Ontario, BC	500 ppm (2050 mg/m^3)	400 ppm (1640 mg/m^3)
Octane (all isomers)	Alberta, Ontario, BC	-	300 ppm (1400 mg/m^3)
Nonane (all isomers)	Alberta, Ontario, BC	-	200 ppm (1050 mg/m^3)

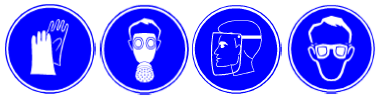
Benzene (CAS 71-43-2)	Alberta	2.5 ppm (8 mg/m^3) – skin	0.5 ppm (1.6 mg/m^3) – skin
	Ontario, BC	2.5 ppm – skin	0.5 ppm – skin
Toluene (CAS 108-88-3)	Alberta	-	50 ppm (188 mg/ m^3)
	Ontario, BC	-	20 ppm (75 mg/ m^3)
Xylene (o-,m-,p- isomers) (CAS 1330-20-7)	Alberta	150 ppm (650 mg/ m^3)	100 ppm (434 mg/m^3)
	Ontario, BC	150 ppm	100 ppm
Methylcyclohexane (CAS 108-87-2)	Alberta, Ontario, BC	-	400 ppm (1610 mg/m^3)
Ethylbenzene (CAS 100-41-4)	Alberta	125 ppm (543 mg/ m^3)	100 ppm (434 mg/ m^3)
	Ontario, BC	-	20 ppm (87 mg/ m^3)
1,2,4-Trimethylbenzene (all isomers) (CAS 25551-13-7)	Alberta, Ontario, BC	-	25 ppm (123 mg/ m^3)

ENGINEERING CONTROLS



- Ventilate area where product is used, stored and/or handled to maintain airborne concentrations below the LEL and OEL, especially in confined spaces.
- Exhaust/ventilate to the outside.
- Supply sufficient replacement air to replace air removed by exhaust systems.
- Ventilation equipment must be explosion proof.
- Ventilation system should be grounded and separate from other exhaust ventilation systems. Adequate make-up air must be provided.
- Emergency eyewash fountain and safety shower must be located in the immediate work area

PERSONAL PROTECTIVE EQUIPMENT



Gloves:	Recommended: neoprene and nitrile; Not recommended: polyvinyl chloride PVC.
Clothing:	Flame-retardant coverall e.g. Nomex, Proban. Impervious protective clothing to prevent repeated or prolonged skin contact. Keep contaminated clothing in closed containers.
Respirator:	NIOSH Approved Supplied-Air Respirator or SCBA where large concentration is anticipated, and the exposure level is unknown or where an oxygen-deficient atmosphere may exist.
Eye:	Safety glasses with side shields, safety goggles or face shields.

9. Physical and Chemical Properties

Chemical Formula: Not available	**Molecular Weight:** Not available	**Chemical Family:** Hydrocarbon
Appearance: Dark yellow to brown liquid	**Odor:** Hydrocarbon/ gasoline odor	**Odor Threshold:** Not available
pH: Not applicable	**Melting/Freezing Point:** Not available	**Boiling Point:** ~ 30-80°C (86-176°F)
Boiling Range: 40-700°C (104-1300°F)	**Vapor Density:** >1 (air=1)	**Specific Gravity:** ~ 0.82-0.86 @STP
Flash Point: <-5 - 8°C (23-14.4°F) Closed cup	**Flammability:** Yes	**Evaporation Rate:** Not available
Upper-Lower Explosive Limit: Not available	**Vapor Pressure:** Not available	**Percent Volatile:** Not available
Soluble in water (@20°C): Insoluble (negligible solubility)	**Others:** Soluble in organic solvents such as alcohol, ether, chloroform	
Partition Coefficient n-octanol/water: Not available	**Auto-Ignition Temperature:** Not available	**Decomposition Temp.:** Not available
Viscosity: Not available	**Henry's Law Constant:** Not available	**Isobaric Heat Capacity:** Not available

10. Stability and Reactivity

Reactivity:
Avoid incompatible materials: may react violently with oxidizers.

Avoid heat, sparks, open flames and other sources of ignition. Conditions to avoid: Static discharge, friction. Use only in well ventilated areas.

Chemical Stability:
Stable under normal temperatures and pressures.

Possibility of Hazardous Reactions:
Polymerization has not been reported to occur under normal temperature and pressure conditions.

Conditions to Avoid:
Extreme temperatures and incompatible materials.

Incompatible Materials:

- Oxidizers: may react violently with oxidizers such as chlorates, nitrates, peroxides, etc.

Hazardous Decomposition Products:

- No decomposition if stored and applied as directed.
- Combustion forms carbon monoxide, carbon dioxide, irritating and toxic fumes/gases.

11. Toxicological Information

Exposure Route	Acute Health Effects	Symptoms of Exposure
Inhalation:	May cause damage to CNS Central Nervous System, respiratory tract, heart.	Coughing, itchy throat, dizziness, drowsiness.
Skin:	Causes irritation. Prolonged or frequently repeated contact may cause the defatting of skin.	Itchiness, redness. Prolonged or repeated exposure causes dryness and skin cracking.
Eye:	May cause serious irritation to the eyes.	Pain, tears, swelling, redness, and blurred vision.
Ingestion:	Because of the low viscosity of this substance, it can directly enter the lungs if it is swallowed (this is called aspiration). This can occur during the act of swallowing or when vomiting the substance. Once in the lungs, the substance is very difficult to remove and can cause severe injury to the lungs and death.	Signs and symptoms of aspiration may include coughing, difficulty breathing, "gurgling" lung sounds when breathing, coughing up phlegm (sputum) that isyellow or green in color or bad smelling, change in voice (hoarseness), skin turning bluish due to lack of oxygen.

Chronic Exposure:

Inhalation:
Repeated or prolonged exposure cause damage to the lung, the Central Nervous System (CNS), kidney and the blood system.

Benzene may cause cancer (leukemia).

Xylene and ethylbenzene are both toxic to the reproductive system and May damage fertility or the unborn child; n-Hexane is suspected of damaging fertility or the unborn child.

Skin:
Not known to be a skin-sensitizer. Chronic exposure may cause skin dryness and cracking. Benzene may cause cancer (leukemia).

Xylene and ethylbenzene are both toxic to the reproductive system and may damage fertility or the unborn child; n-Hexane is suspected of damaging fertility or the unborn child.

Medical Conditions Aggravated by Exposure:
Possibly asthma.

Sensitization:	**Teratogenicity:**	**Mutagenicity:**	**Irritancy:**
No	No	No	Yes

Reproductive Toxicology:
Yes

Xylene and ethylbenzene are both toxic to the reproductive system (Category 1) and may damage fertility or the unborn child; n-Hexane is toxic to the reproductive system (Category 2) and suspected of damaging fertility or the unborn child

Carcinogenicity:	**Target Organs:**
Yes: benzene ACGIH: A1 – confirmed human carcinogen IARC: Group 1 – carcinogenic to human NIOSH: potential occupational carcinogen NTP: Known human carcinogen	Single exposure: CNS Central Nervous System, respiratory tract, heart. Repeated exposure: CNS, lungs, skin. kidney and blood through prolonged or repeated exposure.

Lethality Tests:

Chemical Name	CAS No.	LD50	LC50
Isobutane	75-28-5	Not available	Rat, inhalation: 658 mg/L 4 hr Rat, inhalation: 570,000 ppm 15 mins Mouse, inhalation: 52 mg/L 1 hr
n-Butane	106-97-8	Not available	Rat, inhalation: 658 mg/L 4 hr Mouse, inhalation: 680 mg/L 2 hr
iso-Pentane	78-78-4	Not available	Rat, inhalation: 280 g/m^3 4 hr
n-Pentane	109-66-0	Rabbit, dermal: 3000 mg/kg Mouse, oral: 5000 mg/kg	Rat, inhalation: 364 mg/L 4hr
n-Hexane	110-54-3	Adult rats 29700 mg/kg	Rat & Mice, inhalation: 48000 ppm 4 hr
Heptane	142-82-5	Mouse, iv 222 mg/kg	Rat inhalation: 103 g/cu m/4 hr.
Benzene	71-43-2	Rabbit, dermal:>8200 mg/kg Rat, oral: 810 mg/kg	Rat, inhalation: 44.66 mg/L 4 hr
Toluene	108-88-3	Rabbit, dermal: 12000 mg/kg Rat, oral: 2600 mg/kg	Rat, inhalation: 12.5 mg/L 4 hrs.
Xylene (o-,m-,p-Isomers)	1330-20-7	Rabbit, dermal: >4350 mg/kg Rat, oral: 3500 mg/kg	Rat, inhalation, vapor: 29.08 mg/L 4 hr
Methylcyclohexane	108-87-2	Rat oral >5000 mg/kg	Rat, inhalation: >23.3 mg/L 4hr
Ethylbenzene	100-41-4	Rat, oral: 3500 mg/kg Rabbit, dermal: >5000 mg/kg	Not available
1, 2, 4 – Trimethylbenzene	25551-13-7	Rat, oral 5600-8970 mg/kg	Rat, inhalation: 10200 mg/m^3 4hr
Hydrogen sulphide	7783-06-4	-	Rat, inhalation 0.99 mg/L, 1 hr.
Ethyl Mercaptan (Ethanethiol)	75-08-1	Rat, ip: 226 mg/kg Rat, oral: 682 mg/kg	Rat, inhalation: 2770 ppm/4hr. Mouse, inhalation: 4420 ppm/4hr

12. Ecological Information

Persistence & Degradability: Both n-pentane and isopentane components are biodegradable. The rest may under biodegradation but very slowly.	**Bioaccumulative Potential:** No.
Mobility: No data available.	**Other Adverse Effects:** Oil spills are hazardous to the environment.

Terrestrial Fate:

- Photolysis and hydrolysis are not expected to be important in soil.
- Not expected to bioaccumulate.
- The lighter, volatile butanes will evaporate leaving heavier components behind to undergo slow biodegrdation in soil.
- Spills may contaminate groundwater depending on groundwater level & local geology.

Aquatic Fate:

- As oil is lighter than, and insoluble in water, spills will spread on the water surface and the majority from C2-C5 will evaporate. The heavier components may form sediment in the water systems.
- Hydrolysis is not expected to be an important environmental fate process since the alkanes lack functional groups that hydrolyze under environmental conditions.
- This crude oil has been identified as hazardous to the aquatic environment under GHS (Globally Harmonized System): Acute Hazard category 2, as toxic to aquatic life, due to the components hexane, benzene, toluene, xylenes, ethylbenzene, methylcyclohexane, 1,2,4-trimethylbenzene, octane and decane.
- Isopentane, n-pentane, and neopentane have been identified as hazardous to the aquatic environment under GHS (Globally Harmonized System): Chronic Hazard category 2, as toxic to aquatic life with long-lasting effects.

Atmospheric Fate:

- The Volatile Organic Compound (VOC) components such as butanes and pentanes have the potential to partake in photochemical reactions to produce ozone pollutant.

Eco Toxicity Tests:

Chemical Name	CAS No.		
n-Pentane	109-66-0	Fish	Oncorhynchus mykiss LC50: 9.87 mg/L 96 hr. Pimephales promelas LC50: 11.59 mg/L 96 hrs. Lepomis macrochirus LC50: 9.99 mg/L 96 hrs.
		Invertebrate	Daphnia magna EC50: 9.74 mg/L 48 hrs.
iso-Pentane	78-78-4	Invertebrate	Daphnia magna EC50: 2.3 mg/L 48 hrs.
Hexane	110-54-3	Fish	Pimephales promelas LC50: 96 h 2.1 - 2.98 mg/L flow-through
n-Heptane	142-82-5	Fish	Cichlid fish LC50: 96 h 375 mg/L
Octane	111-65-9	Invertebrate	EC50 48 h water flea 0.38 mg/L

Eco Toxicity Tests (continue):

Chemical Name	CAS No.		
Benzene	71-43-2	Fish	Oncorhynchus mykiss LC50: 5.3 mg/L 96 hr. flow-through Pimephales promelas LC50: 10.7-14.7 mg/L 96 hrs. flow-through Lepomis macrochirus LC50: 22.4 mg/L 96 hrs. static Lepomis macrochirus LC50: 70000-142000 ug/L 96 hrs. static Precilla reticulata LC50: 28.6 mg/L 96 hrs. static
		Algae	Pseudokirchneriella subcapitata EC50: 29 mg/L 72 hrs.
		Invertebrate	Daphnia magna EC50: 8.76-15.6 mg/L 48 hrs. static Daphnia magna EC50: 10 mg/L 48 hrs.
Toluene	108-88-3	Fish	Oncorhynchus mykiss LC50: 5.89-7.81 mg/L 96 hr. flow-through Oncorhynchus mykiss LC50: 14.1-17.16 mg/L 96 hr. static Oncorhynchus mykiss LC50: 5.8 mg/L 96 hr. semi-static Pimephales promelas LC50: 15.22-19.05 mg/L 96 hrs. flow-through (1 day old) Pimephales promelas LC50: 12.6 mg/L 96 hrs. static Lepomis macrochirus LC50: 11.0-15.0 mg/L 96 hrs. static Oryzias latipes LC50: 54 mg/L 96 hrs. static Precilla reticulata LC50: 28.2 mg/L 96 hrs. semi-static Precilla reticulata LC50: 50.87-70.34 mg/L 96 hrs. static
		Algae	Pseudokirchneriella subcapitata EC50: >433 mg/L 72 hrs.
		Invertebrate	Daphnia magna EC50: 5.46-9.83 mg/L 48 hrs. static
Xylene (o-,m-,p-Isomers)	1330-20-7	Fish	Oncorhynchus mykiss LC50: 13.5-17.3 mg/L 96 hr. Oncorhynchus mykiss LC50: 2.661-4.093 mg/L 96 hr. static Pimephales promelas LC50: 13.4 mg/L 96 hrs. flow-through Pimephales promelas LC50: 23.53-29.97 mg/L 96 hrs. static Lepomis macrochirus LC50: 13.1-16.5 mg/L 96 hrs. flow-through Lepomis macrochirus LC50: 19 mg/L 96 hrs. Lepomis macrochirus LC50: 7.711-9.591 mg/L 96 hrs. static Cyprinus carpio LC50: 780 mg/L 96 hrs. semi-static Cyprinus carpio LC50: >780 mg/L 96 hrs. Precilla reticulata LC50: 30.26-40.75 mg/L 96 hrs. static
		Invertebrate	Water flea EC50: 3.82 mg/L 48 hrs. Gammarus lacustris LC50: 0.6 mg/L 48 hrs.

13. Disposal Considerations

Waste Disposal:

- Dispose of waste material at an approved waste treatment/disposal facility in accordance with applicable local, provincial, and federal regulations.

14. Transport Information

TDG (CANADA) CLASSIFICATION

PROPER SHIPPING NAME: Petroleum Crude Oil
CLASS: 3 **UN NUMBER:** UN1267

PACKING GROUP:

- I (if boiling point is ≤ 35°C @101.3 kPa absolute pressure and any flash point)
- II (if boiling point is > 35°C @101.3 kPa absolute pressure and flash point < 23°C)
- III (if the criteria for PGI and II are not met)

LABEL/PLACARD: 

TDG SPECIAL PROVISIONS: 92, 106

MARINE POLLUTANT: Yes.

15. Regulatory Information

CANADA

	iButane	nButane	iPentane	nPentane	nHexane	nHeptane	nNonane	nDecane
CAS	75-28-5	106-97-8	78-78-4	109-66-0	110-54-3	142-82-5	111-84-2	124-18-5
DSL	yes	yes	yes	yes	yes	no	no	no
NPRI	yes	yes	yes	yes	yes	no	no	no
E2	yes	yes	yes	yes	no	no	no	no

	Benzene	Toluene	Methyl-cyclohexane	Xylenes	Ethylbenzene	1,2,4-Trimethylbenzene
CAS	71-43-2	108-88-3	108-87-2	1330-20-7	100-41-4	25551-13-7
DSL	yes	yes	no	yes	yes	yes
NPRI	yes	yes	no	yes	yes	yes
E2	yes	yes	no	yes	yes	no

16. Other Information

Prepared for: Keyera Health and Safety
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Revisions:	Dates:	Main Changes
• Original:	January 3, 2011	
• 1st revision:	March 15, 2014	Minor changes
• 2nd revision	August 15, 2015	GHS/WHMIS-2015 format
• 3rd revision	August 31,2015	Changed emergency contact number

Glossary

ACGIH – American Conference of Governmental Industrial Hygiene
DOT – US Department of Transportation
DSL – Domestic Substance List (Canada)
E2 – Environmental Emergencies (Canada)
GHS – Globally Harmonized System
IARC – International Agency for Research on Cancer
IDLH – Immediately Dangerous to Life and Health
NIOSH – National Institute for Occupational Safety & Health
NPRI – National Pollutant Release Inventory (Canada)
NTP – National Toxicology Program
OSHA – Occupational Safety & Health Administration of the US Depart of Labour
PEL – Permissible Exposure Limit
SARA – Superfund Amendments and Reauthorization Act of 1986
STEL – Short Term Exposure Limit
TRI – US Toxic Release Inventory
TSCA – Toxic Substance Control Act
TWA – Time Weighed Average

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~ End of Safety Data Sheet ~