1. IDENTIFICATION

Product Identifier	Wolf Lake Ultralite Condensate
Chemical Description	A combination of hydrocarbons (C5 to C8) separated and/or condensed from natural gas
Product Use	Solvent, crude oil diluent
Manufacturer/ Supplier	CENOVUS ENERGY INC. 500 Centre Street SE, PO Box 766 Calgary, AB T2P 0M5
Prepared By	Cenovus Energy Inc. Health and Safety
Phone Number	1-403-766-2000
Emergency Telephone	Cenovus 1-877-458-8080 CANUTEC 1-613-996-6666 (Canada) CHEMTREC 1-800-424-9300

2. HAZARDS IDENTIFICATION

Hazard Classifications

Flammable Liquids – 1
Acute Toxicity, Oral – 4
Skin Corrosion/Irritation – 2
Serious Eye Damage/Eye irritation – 2A
Germ Cell Mutagenicity – 2
Carcinogenicity – 1
Reproductive Toxicity – 2
STOT, Single Exposure – 3
STOT, Repeated Exposure – 2
Aspiration Hazard – 1

Label Elements

Hazard Pictogram(s)

Signal Word

Danger

Hazard Statement(s)

Extremely flammable liquid and vapour. Harmful if swallowed. Causes skin irritation. Causes serious eye irritation. Suspected of causing genetic defects. May cause cancer. Suspected of damaging fertility or the unborn child. May cause drowsiness or dizziness. May cause damage to organs (liver, kidneys, blood, nervous system, and skin) through prolonged or repeated exposure. May be fatal if swallowed and enters airways.

Prevention

Obtain special instructions before use. Do not handling until all safety precautions have been read and understood.
Avoid breahing gas/mist/vapours/spray. Use only outdoors or in a well-ventilated area. 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 equipment. Use non-sparking tools. Take action to prevent static discharges.
Wear protective gloves/protective clothing/eye protection/face protection.
Wash affected skin thoroughly after handling. Do not eat, drink or smoke when using this product.

Response

Get medical advice/attention if you feel unwell.
IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower. Wash with plenty water. If skin irritation occurs: Get medical advice/attention. Wash contaminated clothing before reuse.
IF SWALLOWED: Immediately call a POISON CENTER or doctor/physician. Rinse

	mouth. Do NOT induce vomiting. IF INHALED: Remove persont to fresh air and keep comfortable for breathing. Call a POISON CENTER or doctor/physician if you feel unwell. IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If eye irritation persists: Get medical advice/attention. IF exposed or concerned: Get medical advice/attention. In case of fire: Use water spray, fog or fire-fighting foam to extinguish.
Storage	Store locked up. Store in a well-ventilated place. Keep container tightly closed. Keep cool.
Disposal	Dispose of contents/container in accordance with local/regional/national/international regulations.

3. COMPOSITION/INFORMATION ON INGREDIENTS

Hazardous Ingredients	CAS Number	Approximate Concentration (w/w)
Natural Gas Condensates (Petroleum)	64741-47-5	100%
Which contains:		
Hydrogen Sulfide	7783-06-4	< 1 ppm
Hexanes	110-54-3	20-30%
iso - Pentane	78-78-4	0-30%
normal - Pentane	109-66-0	10-30%
Toluene	108-88-3	0-5%
Benzene	71-43-2	0-5%
Xylenes	1330-20-7	0-5%

4. FIRST AID MEASURES

Inhalation	Remove person to fresh air. If person is not breathing, give artificial respiration. If necessary, give additional oxygen once breathing is restored if trained to do so. Get prompt medical attention.
Eye Contact	Remove contact lenses if present and easily done. Flush eyes with large amounts of lukewarm water for 15 minutes, lifting upper and lower lids at intervals. Seek medical attention if irritation, redness or swelling occurs.
Skin Contact	Remove contaminated clothing. Wash affected skin thoroughly with soap and water. Seek medical attention if irritation, redness or swelling occurs.
Ingestion	DO NOT INDUCE VOMITING. Do not give liquids. Get prompt medical attention. If spontaneous vomiting occurs, lean person forward to reduce risk of aspiration. Monitor for breathing difficulties. Rinse product out of mouth.
Most Important Symptoms	Effects of overexposure may include irritation of the respiratory tract, digestive tract, skin and eyes. May cause nausea, vomiting and signs of nervous system depression (e.g., headaches, drowsiness, dizziness, loss of coordination, disorientation and fatigue).

5. FIRE FIGHTING MEASURES

General Fire Hazards	See Section 9 for Physical and Chemical Properties related to flammability. Vapours may be ignited rapidly when exposed to heat, spark, open flame or other source of ignition. When mixed with air and exposed to an ignition source, flammable vapours can burn in the open or explode in confined spaces. Being heavier than air, vapours may travel long distances to an ignition source and flash back. Runoff to sewer may cause fire or explosion hazard.
Hazardous Combustion Products	Carbon monoxide, carbon dioxide, sulfur oxides, nitrogen oxides, smoke particles.
Extinguishing Media	Foam, water fog or spray, carbon dioxide (CO_2), dry chemical. Use water spray to cool fire-exposed containers, and to disperse vapors if spill has not ignited. Water fog or spray may not extinguish the fire. Cut off fuel and allow flame to burn out.
Firefighting Equipment/ Instructions	Small fires in the incipient (beginning) stage may typically be extinguished using handheld portable fire extinguishers and other firefighting equipment. Firefighting activities that may result in potential exposure to high heat, smoke or toxic by-products of combustion should require NIOSH/MSHA- approved pressure-demand selfcontained breathing apparatus with full facepiece and full protective clothing. Isolate area around container involved in fire. Cool tanks, shells, and containers exposed to fire and excessive heat with water. For massive fires the use of unmanned hose holders or monitor nozzles may be advantageous to further minimize personnel exposure. Major fires may require withdrawal, allowing the tank to burn. Large storage tank fires typically require specially trained personnel and equipment to extinguish the fire, often including the need for properly applied firefighting foam.

6. ACCIDENTAL RELEASE MEASURES

Notification Procedures	In the event of a spill or accidental release, notify relevant authorities in accordance with applicable regulations.
Personal precautions and Protective Equipment	Avoid direct contact with material. Stay upwind of release; isolate the immediate hazard area; and keep unnecessary and unprotected people away. Response and clean-up crews must be properly trained and must utilize proper protective equipment (see Section 8). Use water spray to cool containers. Eliminate all sources of ignition. Provide explosion-proof clearing ventilation, if possible.
Environmental precautions	Prevent material from entering soil, waterways, drains, sewers, or confined areas.
Cleanup measures	Stop leak if safe to do so. Dyke and vacuum or take up with sand or other oil absorbing materials. Carefully pump, shovel, scoop or sweep up into a waste container for recycling or disposal. Contact appropriate regulatory authorities for disposal requirements (see Section 13). Notify the appropriate regulatory authorities of reportable releases (see Section 15).

7. HANDLING AND STORAGE

Handling	Handle as a flammable liquid. Keep away from heat, sparks, and open flame. Wear appropriate personal protective equipment. Avoid contact with liquid. Avoid inhalation. Do not enter storage areas or confined spaces unless adequately ventilated. Bond and ground all transfers. Avoid sparking conditions. Wash hands and face after handling and before eating, drinking or smoking.
Storage	Store material in a cool, well-ventilated area away from heat, hot metal surfaces and ignition sources. Use approved containers only. Empty product containers or vessels may contain explosive vapors. Do not pressurize, cut, heat, weld or expose such containers to

sources of ignition. Separate from incompatible material (see Section 10).

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Occupational Exposure Limits (8-hour TWA unless otherwise noted)

Hazardous Ingredients	Alberta	OSHA PEL	ACGIH TLV
Natural Gas Condensates (Petroleum)	-	-	--
Hexane	500 ppm 1000 ppm (15min)	500 ppm	500 ppm 1000 ppm (STEL)
Pentane	600 ppm	1000 ppm 750 ppm (STEL)	600 ppm
Benzene	0.5 ppm; 2.5 ppm (15min), Skin	1 ppm; 5 ppm (STEL); Petroleum Industry: 10 ppm; 25 ppm (C)	0.5 ppm; 2.5 ppm STEL, Skin
Toluene	50	200 ppm 300 ppm (C)	20 ppm

Engineering Controls: Use only in well-ventilated areas. Local exhaust ventilation required in confined areas. Equipment must be explosion proof.

Hygiene Measures: Emergency eye wash capability should be available in the near proximity to operations presenting a potential splash exposure. Avoid repeated and/or prolonged skin exposure. Wash hands with soap and water before eating, drinking, smoking, or using toilet facilities. Waterless hand cleaners are effective. Promptly remove contaminated clothing and launder before reuse. Use care when laundering to prevent the formation of flammable vapors which could ignite via washer or dryer. Consider the need to discard contaminated leather shoes and gloves.

PPE

Respirator: Where concentrations may exceed exposure limits, use full-face, positive pressure self-contained breathing apparatus; full-face, positive pressure supplied-air breathing apparatus; or cartridge air-purifying respirator approved for organic vapours (note: air-purifying respirator is not suitable for hydrogen sulfide, oxygen-deficient or IDLH situations).

Gloves: Chemical-resistant gloves: Viton (Nitrile or neoprene adequate for short exposure to liquid).

Eyewear: Chemical splash goggles. A face shield may also be necessary, depending on handling conditions.

Footwear: As per safety policy.

Clothing: As per fire protection policy.

9. PHYSICAL AND CHEMICAL PROPERTIES

Physical State:	Liquid	**Appearance:**	Colourless
Odour:	Petroleum	**Odour Threshold (ppm):**	Not Available
Specific Gravity:	0.64-0.68	**pH:**	Not Available
Vapour Pressure (mmHg, 38ºC):	Not Available	**RVP (kPa):**	112
Vapour Density (air=1):	Not Available	**Evaporation Rate:**	Not Available
Boiling Range (°C, D-7169):	32 -145	**Initial Boiling Pt. (°C, D-7169):**	32
Flash Point (°C) & Method:	<-5 (PMCC, D-93)	**Freezing Pt. (°C):**	Not available
Upper Explosive Limit (% v/v):	8 (estimated)	**Lower Explosive Limit (% v/v):**	0.8 (estimated)
Auto-Ignition Temp. (°C):	250 (estimated)		
Sensitivity to Impact:	No	**Sensitivity to Static Discharge:**	Yes, at normal temperatures.
Octanol/Water Coefficient:	Not available	**Solubility in Water**	Not available

10. STABILITY AND REACTIVITY

Chemical Stability	Stable under normal, ambient conditions.
Hazardous Reactions	Not known to occur.
Conditions to Avoid	High temperatures, open flames, sparks, welding, smoking and other ignition sources.
Incompatibility	Incompatible with strong oxidizing agents (e.g. chlorine, peroxide).
Hazardous Decomposition Products	Carbon monoxide, carbon dioxide, sulfur oxides, smoke.
Synergistic Materials/Products	None reported

11. TOXICOLOGICAL INFORMATION

Acute Exposure

At concentrations above recommended exposure levels, vapour may cause irritation of eyes, nose and throat, dizziness and drowsiness. May cause damage to organs (liver, kidneys, blood, nervous system and skin) through prolonged or repeated exposure. Contact with skin may cause irritation and possibly dermatitis. Contact of liquid with eyes may cause severe irritation or burns.

Ingestion may cause gastrointestinal disturbances, including irritation, nausea, vomiting and diarrhea, and central nervous system (brain) effects similar to alcohol intoxication. In severe cases, tremors, convulsions, loss of consciousness, coma, respiratory arrest, and death may occur.

The major health threat of ingestion occurs from the danger of aspiration (breathing) of liquid drops into the lungs, particularly from vomiting. Aspiration may result in chemical pneumonia (fluid in the lungs), severe lung damage, respiratory failure and even death.

Hazardous Ingredients	Result	Species	Dose	Exposure
Natural Gas Condensates (Petroleum)	LC50 Inhalation	Rat	600 mg/m^3	4 hours

Hexane	LD50 Oral LC50 Inhalation	Rat Rat	25,000 mg/kg 48,000 ppm	- 4 hours
Pentane	LD50 Oral LC50 Inhalation	Rat Rat	400 mg/kg 364,000 mg/m3	- 4 hours
Benzene	LD50 Oral LD50 Dermal LC50 Inhalation	Rat Rabbit Rat	1800 mg/kg >8260 mg/kg 13050-14380 ppm	- - 4 hours
Toluene	LC50 Inhalation LD50 Dermal	Rat Rabbit	30 mg/L 5,000 mg/kg BW	4 hours -

Chronic Exposure

May cause damage to organs (liver, kidneys, blood, nervous system and skin) through prolonged or repeated exposure. Due to presence of benzene, long term exposure may increase the risk of anemia and leukemia.

Health Effects

Irritant: Yes
Skin Sensitization: No
Respiratory Sensitization: No
Carcinogenicity: Yes
Reproductive Toxicity: Possibly
Teratogenicity: Possibly
Mutagenicity: Possibly

Carcinogenicity

Crude Oil
IARC – Crude oil is not classifiable as to its carcinogenicity to humans (Group 3).
ACGIH, OSHA, US NTP – not listed as a carcinogen.
Benzene
ACGIH A1-Confirmed Human Carcinogen
IARC, OSHA, US NTP – There is sufficient evidence that benzene is carcinogenic to man.
Toluene
ACGIH, IARC, OSHA, US NTP – not listed or classified as a carcinogen.

12. ECOLOGICAL INFORMATION

Ecotoxicity

Expected to be harmful to aquatic organisms. May cause long-term adverse effects in the aquatic environment. Keep out of sewers, drainage areas and waterways. Report spills and releases, as applicable, under Federal and State regulations.

Biodegradation

Low molecular weight component expected to be inherently biodegradable
High molecular weight component expected to biodegrade slowly.

Bioaccumulation

Has the potential to bioaccumulate.

Atmospheric Oxidation

More volatile component expected to degrade rapidly in air.

Photolysis

More water soluble component expected to degrade at a moderate rate in water when exposed to sunlight.

Mobility

More volatile component, highly volatile, will partition rapidly to air. Not expected to partition to sediment and wastewater solids.
Less volatile component, low solubility and floats and is expected to migrate from water to the land. Expected to partition to sediment and wastewater solids.

Ecological Data

Benzene (71-43-2) Test & Species	**Conditions**
Petroleum distillates (naphtha) (8002-05-9) Test & Species	**Conditions**
96 Hr LC50 Salmo gairdneri	258 mg/L [static]
24 Hr EC50 Daphnia magna	36 mg/L
48 Hr EC50 Daphnia magna	<0.26 mg/L [Static]

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]
72 Hr EC50 Pseudokirchneriella subcapitata	29 mg/L
48 Hr EC50 Daphnia magna	8.76 - 15.6 mg/L [Static]
48 Hr EC50 Daphnia magna	10 mg/L

13. DISPOSAL CONSIDERATIONS

Waste Disposal Disposal must be in accordance with current applicable laws and regulations, and material characteristics at time of disposal.
Empty containers or liners may retain a residue and can be dangerous. Do not attempt to refill or clean containers without proper instructions. Empty drums should be completely drained and safely stored until appropriately reconditioned or disposed. Empty containers should be taken for recycling, recovery, or disposal through suitably qualified or licensed contractor and in accordance with governmental regulations.

US EPA Waste Numbers
D001 – Ignitability characteristic, D018 – Toxicity characteristic (Benzene) (Regulatory Level = 0.5 mg/L)

14. TRANSPORT INFORMATION

Regulatory Information	UN Number	Proper Shipping Name	Class	PG	Label	Additional Information
TDG	UN1268	Petroleum Distillates, N.O.S.	3	I	Flammable Liquids	
DOT	UN1268	Petroleum Distillates, N.O.S.,	3	I	Flammable Liquid	49 CFR 173.150; 173.202;173.242
IMDG	UN1268	Petroleum Distillates, N.O.S.,	3	I	Flammable Liquid	EmS:F-E, S-E MARPOL Annex I
ICAO/IATA	UN1268	Petroleum Distillates, N.O.S.,	3	I	Flammable Liquid	ERG Code: 3L

North American Emergency Response Guide Number: 128
TDG Emergency Response Assistance Plan (For Rail Transport): ERP2-1933-006; 1-800-265-0212
Latest Proof of Classification: refer to http://www.cenovus.com/contractor/msds.html

15. REGULATORY INFORMATION

Canadian Classification

This product has been classified in accordance with the hazard criteria of the Hazardous Products Regulation (HPR) and the SDS contains all of the information required by the HPR.
WHMIS Ingredient Disclosure List:
Meets criteria for disclosure at 0.1% or greater of benzene.
CEPA Domestic Substance List: All components are either listed or exempt.

US Federal and State Regulations

The contents of this SDS comply with the OSHA Hazard Communication Standard 29 CFR 1910.1200.
CERCLA/SARA 311-312 (Title III Hazard Categories):
Produced Hydrocarbons – Fire, Sudden Release of Pressure, Immediate (Acute), Delayed (Chronic).
CERCLA/SARA 313, Reportable Quantity: Benzene: 10 lbs; RCRA Code U019.

Clean Air Act Section 112(b) Hazardous Air Pollutants: Exempt.
United States National Chemical Inventory: All components are listed or exempted.
California 65: This product contains benzene a chemical known to the State of California to cause cancer and developmental harm.
NFPA 704 Rating: Flammability:3, Instability/Reactivity:1, Health:2

16. OTHER INFORMATION

Guide to Abbreviations: ACGIH = American Conference of Governmental Hygienists; C = Ceiling; CAS = Chemical Abstracts Service Registry; CEPA = Canadian Environmental Protection Act; CERCLA = Comprehensive Environmental Response, Compensation, and Liability Act cSt = centistokes; DOT = Department of Transport; EmS = Environmental Management System; ERG = Emergency Response Guide IARC = International Agency for Research on Cancer; ICAO/IATA = International Civil Aviation Organization/International Air Transport Association; IMDG = International Marine Dangerous Goods; GHS = Globally Harmonized System of Classification and Labeling of Chemicals; lbs = pounds; MARPOL = The International Convention for the Prevention of Pollution from Ships; mm2/sec = millimeters squared per second; OEL = Occupational Exposure Limit; OSHA = Occupational Safety and Health Administration; PEL = Permissible Exposure Limit; PG = Packing Group; Skin = Danger of skin absorption; SARA = Superfund Amendments and Reauthorization Act; STEL = Short Term Exposure Limit; TDG = Transportation of Dangerous Goods; TLV = Threshold Limit Value; TPQ = Threshold Planning Quantity ; US NTP = United States National Toxicology Program; v/v = volume per volume; w/w = weight per weight; WHMIS = Workplace Hazardous Materials Information System.

Date of preparation is noted in the footer of this document.