

SECTION 1 – MATERIAL IDENTIFICATION AND USE**Material Name:** PROPANE**Use:** Process stream, sales**WHMIS Classification:** Class A; Class B, Div. 1**Fire:** 4 **Reactivity:** 0 **Health:** 1**TDG:** **UN:** 1978 **Class:** 2.1 **Packing Group:** N.Av.**Shipping Name:** PROPANE**Manufacturer/Supplier:** CENOVUS ENERGY INC.
421 - 7 Ave SW PO Box 766
Calgary, AB T2P 0M5**Emergency Telephone:** 1-877-458-8080**Chemical Family:** Aliphatic paraffinic hydrocarbon gas**SECTION 2 – HAZARDOUS INGREDIENTS OF MATERIAL**

Hazardous Ingredients	Approximate Concentrations %	C.A.S. Nos.	LD50/LC50 Specify Species & Route	Exposure Limits
Ethane	3 – 5	74-84-0	N.Av.	1000 ppm (OEL, TLV ¹)
Propane	95 - 97	74-98-6	N.Av.	1000 ppm (OEL, TLV ¹ see also section 6)

OEL = 8 hr. Alberta Occupational Exposure Limit

TLV = Threshold Limit Value (8 hrs) ¹ As Aliphatic hydrocarbon gases**SECTION 3 – PHYSICAL DATA FOR MATERIAL****Physical State:** Gas**Specific Gravity:** 0.5**Vapour Density (air=1):** 1.5**Percent Volatiles, by volume:** 100**Odour & Appearance:** colorless, odourless (or may have mercaptan odour)**Freezing Pt. (deg.C):** -188**pH:** N.App.**(N.AV. = not available N.App. = not applicable)****Vapour Pressure (mmHg):** Gas**Odour Threshold (ppm):** N.Av.**Evaporation Rate:** N.Av.**Boiling Pt. (deg.C):** -42**Coefficient of Water/Oil Distribution:** <0.1**SECTION 4 – FIRE AND EXPLOSION****Flammability:** Yes **Conditions:** Material will ignite at normal temperatures.**Means of Extinction:** Foam, CO₂, dry chemical. Explosive accumulations can build up in areas of poor ventilation.**Special Procedures:** Use water spray to cool fire-exposed containers, and to disperse gas if leak has not ignited. If safe to do so, cut off fuel and allow flame to burn out.**Flash Point (deg.C) & Method:** -104 deg.C.**Upper Explosive Limit (% by vol.):** 9.5**Lower Explosive Limit (% by vol.):** 2**Auto-Ignition Temp. (deg.C):** 450**Hazardous Combustion Products:** Carbon monoxide**Sensitivity to Impact:** No**Sensitivity to Static Discharge:** Yes, may ignite**TDG Flammability Classification:** 2.1

SECTION 5 – REACTIVITY DATA

Chemical Stability: Yes

Conditions: N.App.

Incompatibility: Yes

Substances: Chlorine and other strong oxidizing agents.

Reactivity: Yes

Conditions: Heat, strong sunlight

Hazardous Decomposition Products: Carbon dioxide, carbon monoxide

SECTION 6 – TOXICOLOGICAL PROPERTIES OF PRODUCT

Routes of Entry:

Skin Absorption: N.Av.

Skin Contact: Yes (liquid)

Eye Contact: Yes

Inhalation: Acute: Yes

Chronic: N.Av.

Ingestion: No

Effects of Acute Exposure: Inhalation can cause headache, disorientation, dizziness, drowsiness and possibly unconsciousness. Evidence exists that propane can cause these effects at concentrations below those required for oxygen deficiency, for example 10% LEL and above. As concentration increases, oxygen deficiency and asphyxiation may occur. Rapidly expanding gas or vaporized liquid may cause frostbite to skin and eyes.

Effects of Chronic Exposure: N.Av.

Sensitization to Product: No.

Exposure Limits of Product: 1000 ppm (OEL, TLV)

Irritancy: N.Av.

Synergistic Materials: None reported

Carcinogenicity: No

Reproductive Effects: No

Teratogenicity: No

Mutagenicity: No

SECTION 7 – PREVENTIVE MEASURES

Personal Protective Equipment: Use positive pressure self-contained breathing apparatus or supplied air breathing apparatus when entering areas where high concentrations may be present.

Gloves: Insulated gloves

Respiratory Protection: SCBA or SABA

Eye: Splash goggles and face shield if SCBA or SABA not worn.

Footwear: As per safety policy

Clothing: As per fire protection policy

Engineering Controls: Use only in well ventilated areas. Mechanical ventilation recommended in confined areas.

Equipment must be explosion proof.

Leaks & Spills: If safe to do so, stop gas flow. Remove all ignition sources. Provide clearing ventilation if possible. Prevent from entering confined spaces. Use personal protective equipment.

Waste Disposal: Controlled burning or venting in accordance with regulatory requirements.

Handling Procedures & Equipment: Avoid contact with liquid or liquid cooled equipment. Avoid inhalation.

Bond and ground all transfers. Avoid sparking conditions.

Storage Requirements: Store in a cool, dry, well ventilated area away from heat, strong sunlight, and ignition sources.

Special Shipping Information: N.Av.

SECTION 8 – FIRST AID MEASURES

Skin: If freeze burn occurs, gently bathe affected area in warm water (38 – 43 deg. C). Do not rub. Get medical attention.

Eye: Immediately flush with large amounts of luke warm water for 15 minutes, lifting upper and lower lids at intervals. Seek medical attention if irritation persists.

Inhalation: Remove to fresh air. Give oxygen, artificial respiration, or CPR if needed. Seek medical attention.

Ingestion: Usually no effect by this route.

SECTION 9 – PREPARATION DATE OF MSDS

Prepared By: Cenovus Energy Inc. Environment, Health and Safety (EHS)

Phone Number: 1-877-458-8080

Preparation Date: July 10, 2011 Expiry Date: July 10, 2014