16B Journey, Suite 260,
Aliso Viejo, CA 92656

January 4, 2016

West Virginia Department of Environmental Protection
Division of Air Quality
601 57th Street SE
Charleston, WV 25304
Phone 304-926-0475

RUSH

RE: **Submission of two identical PERMIT DETERMINATION FORMS For a Proposed Methanol Plant in West Virginia**

Attention: PDF Intake Administration

Dear Madam/Sir:

US Methanol Corp. ("USM") intends to relocate an existing methanol plant to West Virginia. The name of the plant will be US Methanol - LibertyONE Methanol Plant. It is a small sized chemical manufacturing facility occupying a process plant footprint of approximately 400 feet by 400 feet.

USM is in discussions with Covestro at their New Martinsville Industrial Park and with Dow Chemicals at their Institute Industrial Park site. At this time we are in negotiations with both parties and it is uncertain where the plant will ultimately be located.

I called the WV DAQ in the second week of December 2015 and talked with Ms. Beverly D. McKeone about submitting two identical PDF applications for the two sites - and at the time - disclosing that only one site will go ahead. This approach was verbally approved by Ms. McKeone.

We comprehend in submitting these PDF that the findings of the DAQ shall be that the proposed methanol plant shall be subject to construction/operating permits issued by the DAQ as per WV Title 45 statutes, but anticipate that it will not require a Title V Federal Application. It may thus seem redundant to submit these PDFs at this time. Nonetheless, our banking and financial fiduciary due diligence processes require us to make the PDF submissions and receive your departments ruling.

I can be reached directly at 1-403-870-6960 (Cel/Text) and at Richard.wolfli@usmeoh.com regarding any matters related to this submission. We appreciate and support the principles and mandate of the WV DEP and look forward to further interactions with your department.

Yours sincerely,

Richard J. Wolfli
Chief Operating Officer and Director
US Methanol Corp.

WEST VIRGINIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
DIVISION OF AIR QUALITY
601 57th Street, SE
Charleston, WV 25304
Phone: (304) 926-0475
www.dep.wv.gov/daq

PERMIT DETERMINATION FORM (PDF)

FOR AGENCY USE ONLY: PLANT I.D. # _____

PDF # _____ PERMIT WRITER: _____

1. NAME OF APPLICANT (AS REGISTERED WITH THE WV SECRETARY OF STATE'S OFFICE):
United States Methanol Corporation

2. NAME OF FACILITY (IF DIFFERENT FROM ABOVE):
US Methanol - LibertyONE Methanol Plant

3. NORTH AMERICAN INDUSTRY CLASSIFICATION SYSTEM (**NAICS**) CODE:
325199

4A. MAILING ADDRESS:
16B Journey, Suite 260
Aliso Viejo CA 92656

4B. PHYSICAL ADDRESS:
16B Journey, Suite 260
Aliso Viejo CA 92656

5A. DIRECTIONS TO FACILITY (PLEASE PROVIDE **MAP** AS **ATTACHMENT A**): From the town of Proctor in the county of Wetzel, proceed north on route 2 for 1.1 miles. Turn west into Bayer Material Science New Martinsville Industrial Park (now called Covestro LLC). Exact site shown in Attachment A.

5B. NEAREST ROAD:	5C. NEAREST CITY OR TOWN:	5D. COUNTY:
Highway 2	Proctor	Marshall
5E. UTM NORTHING (KM):	**5F. UTM EASTING (KM):**	**5G. UTM ZONE:**
4397.7	514.2	17 S

6A. INDIVIDUAL TO CONTACT IF MORE INFORMATION IS REQUIRED:		6B. TITLE:
Richard Wolfli		C.O.O.
6C. TELEPHONE:	**6D. FAX:**	**6E. E-MAIL:**
1-403-870-6960		richard.wolfli@usmeoh.com

7A. DAQ PLANT I.D. NO. (FOR AN EXISTING FACILITY ONLY):
N/A _ ___ ___ - ___ ___ ___ ___ ___

7B. PLEASE LIST ALL CURRENT 45CSR13, 45CSR14, 45CSR19 AND/OR TITLE V (45CSR30) PERMIT NUMBERS ASSOCIATED WITH **THIS** PROCESS (FOR AN EXISTING FACILITY ONLY):
N/A

7C. IS THIS PDF BEING SUBMITTED AS THE RESULT OF AN ENFORCEMENT ACTION? IF YES, PLEASE LIST: **NO**

8A. TYPE OF EMISSION SOURCE (CHECK ONE):
X **NEW SOURCE** ☐ **ADMINISTRATIVE UPDATE**
☐ **MODIFICATION** ☐ **OTHER** (PLEASE EXPLAIN IN 11B)

8B. IF ADMINISTRATIVE UPDATE, DOES DAQ HAVE THE APPLICANT'S CONSENT TO UPDATE THE EXISTING PERMIT WITH THE INFORMATION CONTAINED HEREIN?
☐ **YES** ☐ **NO** N/A

9. IS *DEMOLITION* OR PHYSICAL *RENOVATION* AT AN EXISTING FACILITY INVOLVED? ☐ **YES** X **NO**

10A. DATE OF ANTICIPATED INSTALLATION OR CHANGE:	10B. DATE OF ANTICIPATED START-UP:
04 / 15 / 2016	05 / 15 /2017

11A. PLEASE PROVIDE A **DETAILED PROCESS FLOW DIAGRAM** SHOWING EACH PROPOSED OR MODIFIED PROCESS EMISSION POINT AS **ATTACHMENT B**.

11B. PLEASE PROVIDE A **DETAILED PROCESS DESCRIPTION** AS **ATTACHMENT C**.

12. PLEASE PROVIDE **MATERIAL SAFETY DATA SHEETS (MSDS)** FOR ALL MATERIALS PROCESSED, USED OR PRODUCED AS **ATTACHMENT D**. FOR CHEMICAL PROCESSE, PLEASE PROVIDE A MSDS FOR EACH COMPOUND EMITTED TO AIR.

13A. **REGULATED AIR POLLUTANT EMISSIONS:**

⇒ **FOR A NEW FACILITY,** PLEASE PROVIDE PLANT WIDE EMISSIONS BASED ON THE POTENTIAL TO EMIT (PTE) FOR THE FOLLOWING AIR POLLUTANTS INCLUDING ALL PROCESSES.

⇒ **FOR AN EXISTING FACILITY,** PLEASE PROVIDE THE PROPOSED CHANGE IN EMISSIONS BASED ON THE PTE OF ALL PROCESS CHANGES FOR THE FOLLOWING AIR POLLUTANTS.

PTE FOR A GIVEN POLLUTANT IS TYPICALLY BEFORE AIR POLLUTION CONTROL DEVICES AND IS COLLECTED BASED ON THE MAXIMUM DESIGN CAPACITY OF PROCESS EQUIPMENT.

POLLUTANT	**HOURLY PTE** (LB/HR)	**YEARLY PTE** (TON/YR) (HOURLY PTE MULTIPLIED BY 8760 HR/YR) DIVIDED BY 2000 LB/TON
PM	10.61	4.03
PM_{10}	10.61	4.03
VOCs	0.69	2.92
CO	10.61	44.55
NO_x	17.68	74.24
SO_2	0.08	0.320
Pb	0.000	0.000
HAPs (AGGREGATE AMOUNT)	0.566	2.377
TAPs (INDIVIDUALLY)*	N/A	N/A
OTHER (INDIVIDUALLY)*	See attached	See attached

* ATTACH ADDITIONAL PAGES AS NEEDED **Above calculations as per US EPA AP-42**

13B. PLEASE PROVIDE ALL **SUPPORTING CALCULATIONS** AS **ATTACHMENT E**.

CALCULATE AN HOURLY AND YEARLY PTE OF EACH PROCESS EMISSION POINT (SHOWN IN YOUR DETAILED PROCESS FLOW DIAGRAM) FOR ALL AIR POLLUTANTS LISTED ABOVE INCLUDING INDIVIDUAL HAP'S (LISTED IN SECTION 112[b] OF THE 1990 CAAA), TAP'S (LISTED IN 45CSR27), AND OTHER AIR POLLUTANTS (E.G. POLLUTANTS LISTED IN TABLE 45-13A OF 45CSR13, MINERAL ACIDS PER 45CSR7, ETC.).

14. **CERTIFICATION OF DATA**

I, RICHARD WOLFLI (*TYPE NAME*) ATTEST THAT ALL THE REPRESENTATIONS CONTAINED IN THIS APPLICATION, OR APPENDED HERETO, ARE TRUE, ACCURATE, AND COMPLETE TO THE BEST OF MY KNOWLEDGE BASED ON INFORMATION AND BELIEF AFTER REASONABLE INQUIRY, AND THAT I AM A ***RESPONSIBLE OFFICIAL**** (*PRESIDENT, VICE PRESIDENT, SECRETARY OR TREASURER, GENERAL PARTNER OR SOLE PROPRIETOR*) OF THE APPLICANT.

SIGNATURE OF RESPONSIBLE OFFICIAL: _____

TITLE: CHIEF OPERATING OFFICER

DATE: 01/04/2016.

** THE DEFINITION OF THE PHRASE '***RESPONSIBLE OFFICIAL***' CAN BE FOUND AT 45CSR13, SECTION 2.23.

NOTE: PLEASE CHECK ENCLOSED ATTACHMENTS:

X ATTACHMENT A **X ATTACHMENT B** **X ATTACHMENT C** **X ATTACHMENT D** **X ATTACHMENT E**

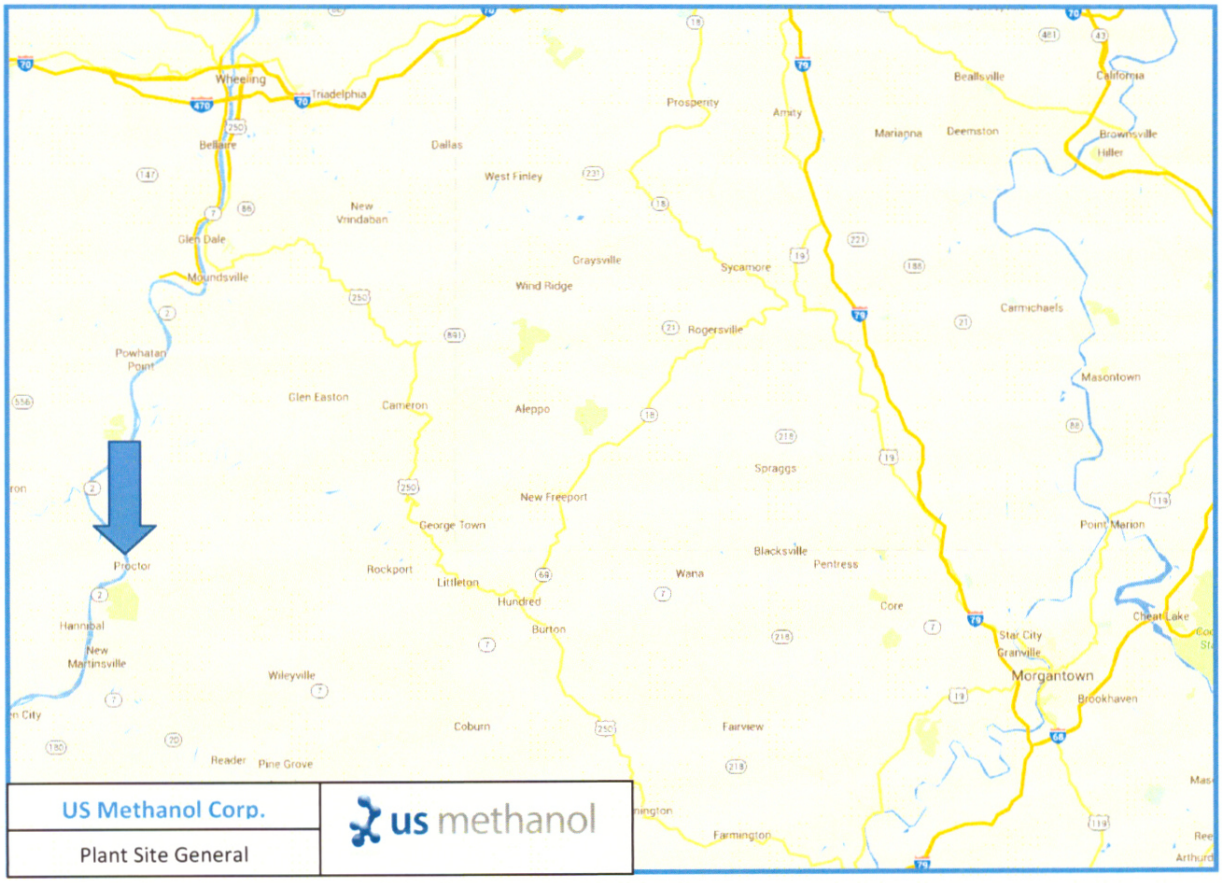
RECORDS ON ALL CHANGES ARE REQUIRED TO BE KEPT AND MAINTAINED ON-SITE FOR TWO (2) YEARS.

THE PERMIT DETERMINATION FORM WITH THE INSTRUCTIONS CAN BE FOUND ON DAQ'S PERMITTING SECTION WEB SITE:

www.dep.wv.gov/daq

Attachment A – Maps

The US Methanol Plant shall be located inside the boundary of the New Martinsville Industrial Park, State Route 2 North, New Martinsville, Marshall County, WV 26155-0500. The site is owned and managed by Bayer Material Sciences. US Methanol shall be a tenant on the site. Please refer to the blue arrow on the map below.



Photograph of northern portion of the Bayer New Martinsville Industrial Park showing the US Methanol process plant footprint in yellow.

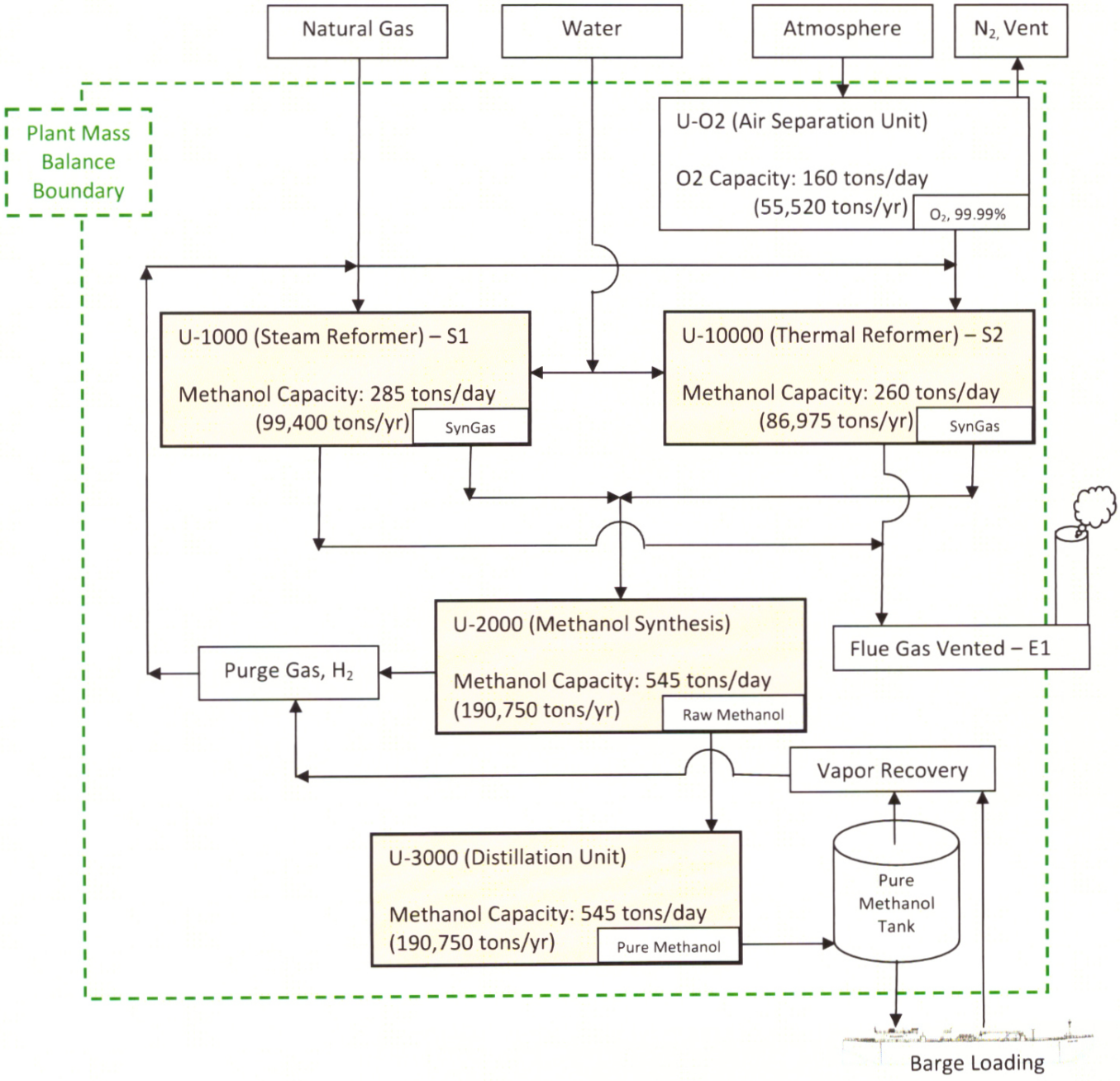
/end-of-attachment-A

Attachment B – Process Flow Diagram
AND
Attachment C – Process Description

Overview Section

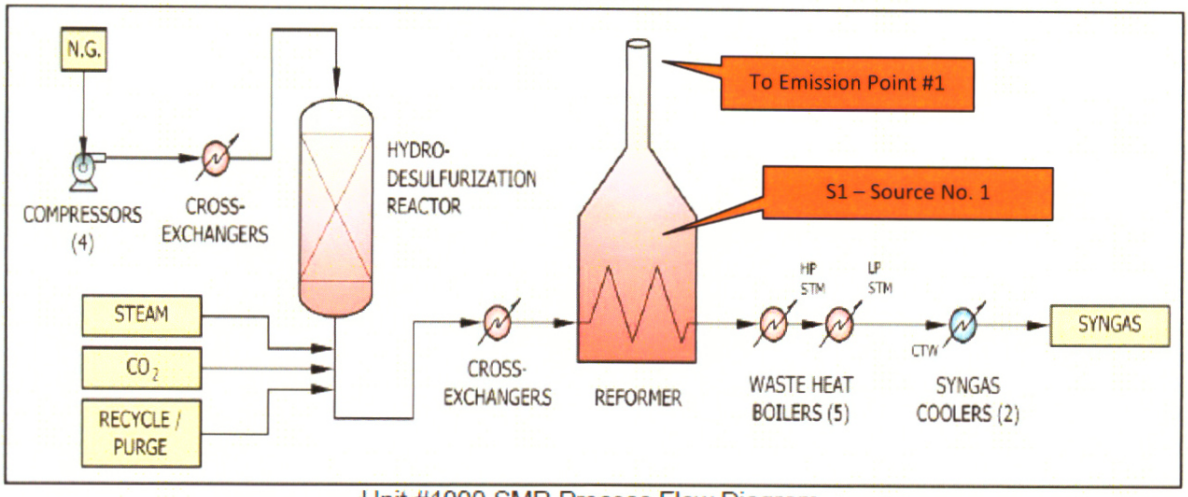
The below Process Flow Block Diagram (Fig. B-1) illustrates the entire process of the US Methanol LibertyONE plant. Below Figure B-1 are detailed PFDs of each unit and detailed descriptions thereof.

Figure B-1: Plant Process Flow Overview



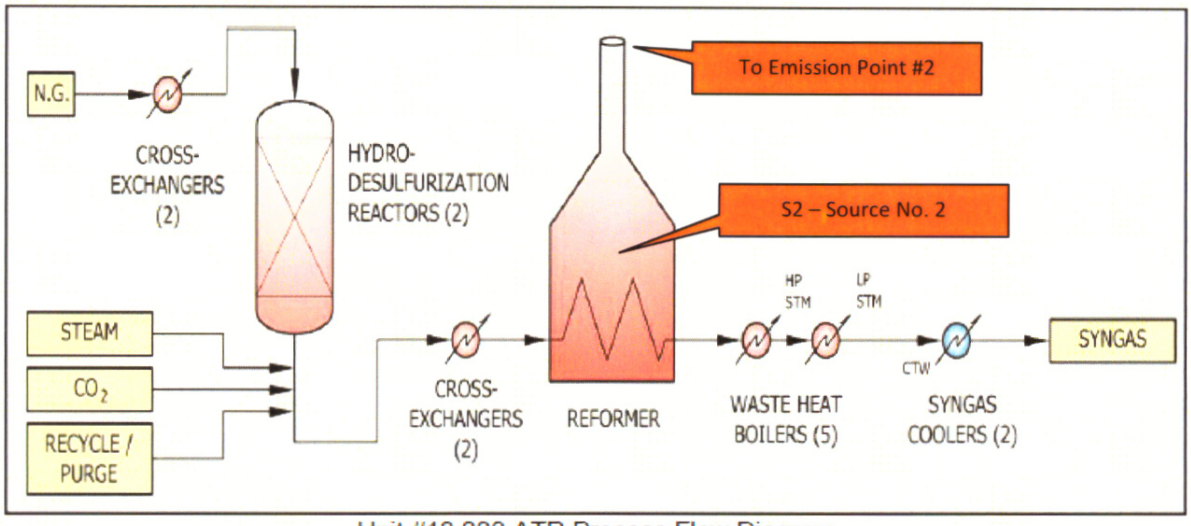
Detail description section:

Figure B-2: Unit 1000



Unit #1000 SMR Process Flow Diagram

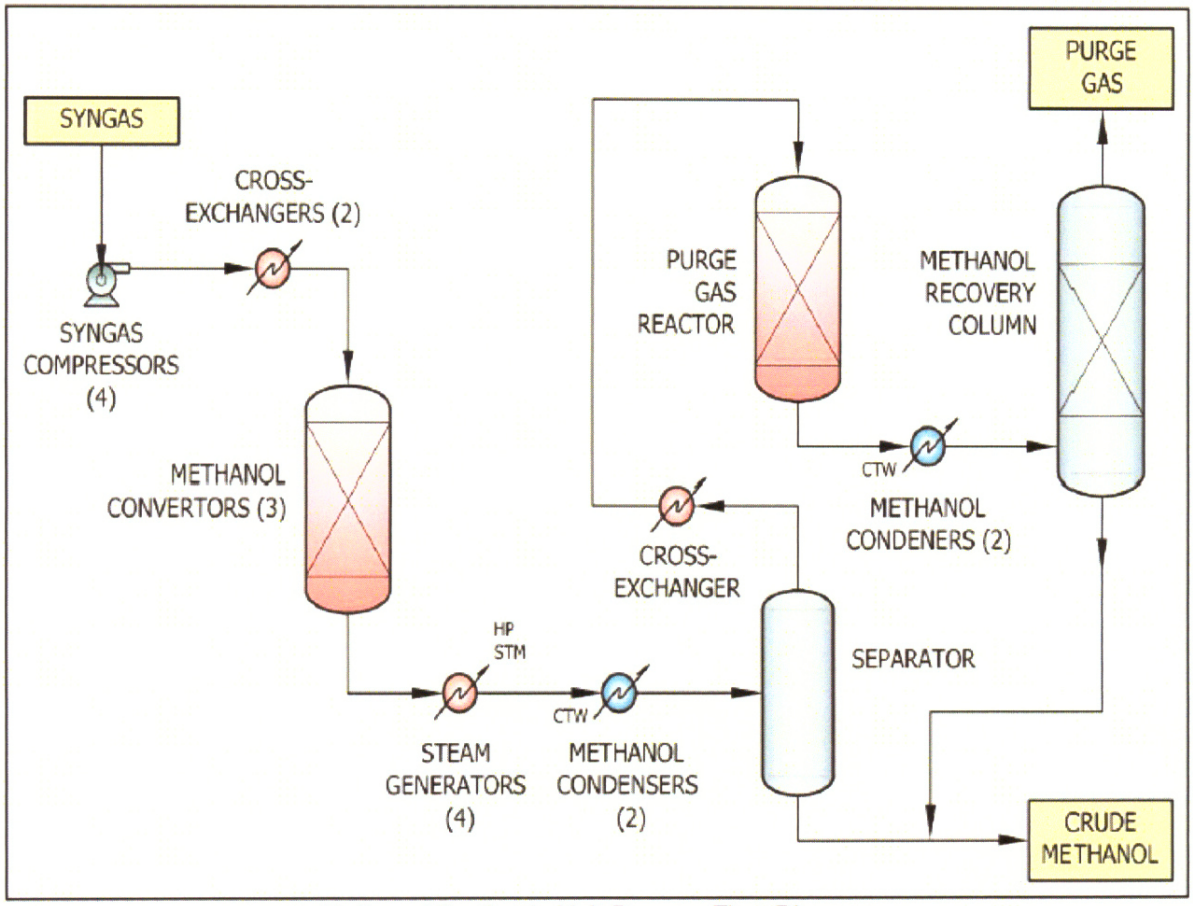
Figure B-3: Unit 10000



Unit #10,000 ATR Process Flow Diagram

Two reformer trains will be employed: U-1000 (S1) and U-10000 (S2). These units combust only natural gas and recycled purge gas (primarily Hydrogen). The units are self sufficient in steam, and in addition, produce excess steam employed in U-2000 and U-3000. Flue gases from the reformers are comingled in a heat recovery unit and flow to one stack (not shown) that is the single point of emissions (E1). All motors and compressors in these units are driven by electric motors. Natural gas is pipeline spec gas. Sulfur is removed in each train before combustion as shown in the PFDs above. The only source of combustion emissions are the natural gas fired reformers. The reformer catalyst is of the non-regenerating type requiring non-cyclic operation. The catalyst in the reformer is a solid and there is no carryover. The product of both units is Syngas, which is a mixture of CO and H2. Syngas is comingled from the two reformer trains and passed to the methanol synthesis unit (U-2000). No venting of Syngas takes place.

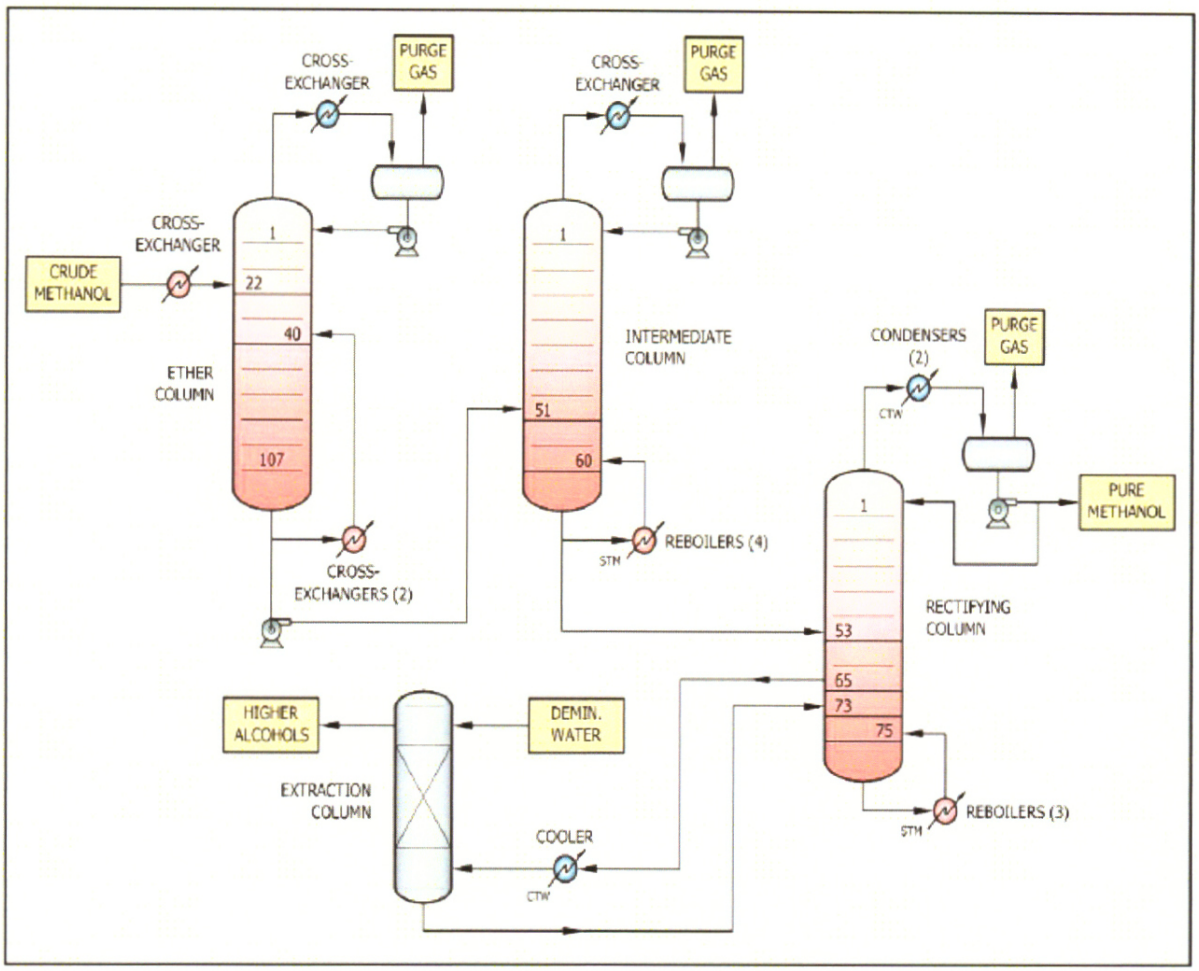
Figure B-4: Unit -2000



Methanol Synthesis Unit Process Flow Diagram

The methanol synthesis unit above converts Syngas, received from Units 1000 and 10000, primarily into crude methanol. Crude methanol is passed to the Distillation Unit (U-3000). All purge gas is recycled into the combustion stream in the Reformer Units as shown in Figures #1 and #2 (no purge gas is vented). No combustion takes place in this unit. All heat for U-2000 is provided by steam from the Reformer Units. Under normal operating conditions, no atmospheric emissions are generated by this unit. All compressors and pumps are driven by steam turbines or electrical motors. Steam is recycled back to Units 1000 and 10000 in a closed loop system.

Figure B-5: Unit 3000



Methanol Distillation Process Flow Diagram

Crude Methanol is passed to the Distillation Unit (U-3000). All heat required for the operations of these units are provided by excess steam from the Reformer Units. No combustion takes place in this unit. All motors are driven by electric motors. All purge gases are returned to the Reformer Units for combustion (no distillation venting). Under normal operating conditions, no atmospheric emissions are generated by this unit. A very small amount (less than 1% of the volume of methanol produced) of higher alcohols (primarily ethanol) are produced as a liquid byproduct. This is also sold as a marketable feedstock product to the chemical industry. The Distillation Unit produces approximately 72 gallons per hour of water that this distilled from the raw methanol; this water is returned to the plant water feed and used in the reformers as steam.

Utilities

Pure Methanol is stored in tanks under nitrogen pressure management and the plant employs vapor recovery equipment that returns tank gasses to the Purge Gas System. No venting of tank gasses exists.

Steam is recycled throughout the plant and regenerated into low pressure and high pressure steam in the reformer units. Cooling water is employed in the plant. It is on a closed and isolated loop from any plant liquids and contaminants. Cooling water is heated in various heat exchangers in the plant and then pumped to cooling towers where some water vapor is vented. This water vapor contains no contaminants.

The LibertyONE Methanol Plant incorporates an Oxygen plant (named U-O2). It exclusively employs electric motors and has no regulated emissions or pollutants. The plant will vent near pure nitrogen to the atmosphere until a commercial buyer can be established in the region. Thereafter, the nitrogen will be sold as a Plant product.

The plant incorporates many relief valves only in case of extra-ordinary emergency conditions. These relief valves are not employed during the startup, commissioning, normal shut down, nor emergency shutdown of the plant. The plant has a blow down flare stack for U-10000 if required.

Boiler feed water and other consumed water is supplied and purchased from industrial park co-located third parties. Electricity is supplied by and purchased from industrial park co-located third parties.

Fugitive emission sources are minor. It is anticipated that the Plant will ship methanol exclusively by barge. Rail and truck shipments are not anticipated to take place on a regular basis. US Methanol shall employ a Marine Vapor Emission Control System. The methanol loading of barges shall employ a vapor recovery system that will capture gases from the barges and from specialized vapor encasing loading nozzles and returns vapors back to the Vapor Recovery System thus nearly eliminating the release of methanol vapor to the atmosphere.

/end of Appendix B and C

Appendix D

MSDS – Methanol
MSDS – Natural Gas
MSDS – Lubricating Oil (used for rotating equipment)

MATERIAL SAFETY DATA SHEET

Methanex Corporation encourages the user of this product to read and understand the entire MSDS, and expects the user to follow the precautions specified unless the conditions of use necessitate particular procedures or methods.

1. Identification

Product Name: Methanol
CAS Number: 67-56-1

Recommended Use: Solvent, fuel, feedstock

Prepared by: TOXI.COMM INC. 5815 Plantagenet St., Montreal, QC, H3S 2K4
Revision: March 1, 2013

Product: **Synonyms:**	**Methanol (CH_3OH)** Methanol, methyl hydrate, wood spirit, methyl hydroxide	**EMERGENCY NUMBERS** **24-hour**
Company Identification:	**Methanex Corporation** **1800 Waterfront Centre** **200 Burrard Street** **Vancouver, B.C.** **V6C 3M1** **Tel. #: (604)-661-2600** **Methanex Methanol Company** **15301 Dallas Parkway, Ste 900** **Addison, TX 75001** **Tel#: (972) 702-0909**	**CANUTEC Emergency Tel.# (613)-996-6666** (Canada) ***666 (cellular)** **OR** **CHEMTREC Emergency Tel. #: 1-800-262-8200** (Canada and USA)

2. Hazard identification

Emergency Overview

Colourless liquid, with a mild, characteristic alcohol odour when pure. Readily absorbs moisture.
Flammable liquid and vapour: Burns with a clean, clear flame, which is almost invisible in daylight, or a light blue flame. Can decompose at high temperatures forming carbon monoxide and formaldehyde. Confined space hazard.
Toxic: May be harmful if inhaled, absorbed through the skin or swallowed. Mild central nervous system depressant. May cause headache, nausea, dizziness, drowsiness, and incoordination. Severe vision effects, including increased sensitivity to light, blurred vision, and blindness may develop following an 8-24 hour symptom-free period. Coma and death may result.
Irritant: Causes eye irritation.
Possible teratogen/embryotoxin: May harm the unborn child, based on animal information.

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

Potential Health Effects

Inhalation: Causes mild central nervous system (CNS) depression with nausea, headache, vomiting, dizziness, incoordination and an appearance of drunkenness. Metabolic acidosis and severe visual effects can occur following an 8-24 hour latent period. Coma and death, usually due to respiratory failure, may occur if medical treatment is not received. Visual effects may include reduced reactivity and/or increased sensitivity to light, blurred, double and/or snowy vision, and blindness.
Eye Contact: Moderate eye irritant.
Skin Contact: In general, primary alcohols such as methanol are not considered to be irritant to the skin. Repeated or prolonged exposure to methanol may cause dry, itchy, scaling skin (dermatitis).
Skin Absorption: Can be absorbed through the skin and cause harmful effects as described in "Inhalation" above.
Skin Sensitization: Not considered to be a sensitizer.
Respiratory Sensitization: Not considered to be a sensitizer
Ingestion: There have been reports of accidental or intentional ingestion of methanol although ingestion is not a typical route of occupational exposure. Ingestion of as little as 10 ml of methanol can cause blindness and 30 ml (1 ounce) can cause death if victim is not treated. Ingestion causes mild central nervous system (CNS) depression with nausea, headache, vomiting, dizziness, incoordination and an appearance of drunkenness. Metabolic acidosis and severe visual effects can occur following an 8-24 hour latent period. Coma and death, usually due to respiratory failure, may occur if medical treatment is not received. Visual effects may include reduced reactivity and/or increased sensitivity to light, blurred, double and/or snowy vision, and blindness.

Birth Defects/Developmental Effects: has caused teratogenic and fetotoxic effects, in the absence of maternal toxicity in animal studies.
Reproductive Effects: Not considered a reproductive toxin.

3. Composition/information on ingredients

Component	CAS #	Amount%
Methanol	67-56-1	99-100

4. First-aid measures

Inhalation: Methanol is toxic and flammable. Take proper precautions to ensure your own safety before attempting rescue (e.g. wear appropriate protective equipment and remove any sources of ignition). Remove source of contamination or move victim to fresh air, provide oxygen therapy if available. Immediately transport victim to an emergency care facility.
Skin Contact: Avoid direct contact. Wear chemical protective clothing, if necessary. As quickly as possible, remove contaminated clothing, shoes and leather goods (e.g. watchbands, belts). Immediately flush with lukewarm, gently flowing water for 15-20 minutes. Immediately obtain medical attention. Completely decontaminate clothing, shoes and leather goods before re-use or discard.
Eye Contact: Avoid direct contact. Wear chemical protective goggles, if necessary. Immediately flush the contaminated eye(s) with lukewarm, gently flowing water for 15-20 minutes, while

holding the eyelid(s) open. If a contact lens is present, **Do not** delay irrigation or attempt to remove the lens until flushing is done. Take care not to rinse contaminated water into the unaffected eye or onto the face. Immediately obtain medical attention.
Ingestion: Never give anything by mouth if victim is rapidly losing consciousness, is unconscious or convulsing. Have victim rinse mouth thoroughly with water. **Do not induce vomiting**. If vomiting occurs naturally, have victim rinse mouth with water again. Quickly transport victim to an emergency care facility.
First Aid Comments: Provide general supportive measures (comfort, warmth, rest). Consult a physician and/or the nearest Poison Control Centre for all exposures.
All first-aid procedures should be periodically reviewed by a physician familiar with the material and its conditions of use in the workplace.
Note to Physicians: The severity of outcome following methanol ingestion may be more related to the time between ingestion and treatment, rather than the amount ingested. Therefore, there is a need for rapid treatment of any ingestion exposure. Both ethanol and fomepizole are effective antidotes for methanol poisoning, although fomepizole is preferred.

5. Fire-fighting measures

Suitable Extinguishing Media: Synthetic Fire fighting foam AR-FFF (3% solution), carbon dioxide, dry chemical powder, water spray or fog. Water may be effective for cooling, diluting, or dispersing methanol, but may not be effective for extinguishing a fire because it will not cool methanol below its flash point. Fire-fighting foams, such as multipurpose alcohol-resistant foams, are recommended for most flammable liquid fires. If water is used for cooling, the solution will spread if not contained. Mixtures of methanol and water at concentrations greater than 20% methanol can burn.

Special Hazards Arising from the Chemical
Hazardous Combustion Products: During a fire, carbon monoxide, carbon dioxide and irritating and toxic gases such as formaldehyde may be generated.
Unusual Fire and Explosion Hazards: Can accumulate in confined spaces, resulting in a toxicity and flammability hazard. Closed containers may rupture violently and suddenly release large amounts of product when exposed to fire or excessive heat for a sufficient period of time. Flame may be invisible during the day. The use of infrared and or heat detection devices is recommended.

Advice for Firefighters
Fire-Fighting Procedures: Evacuate area and fight fire from a safe distance or protected location. Approach fire from upwind. Cool fire-exposed containers, tanks or equipment by applying hose streams.
Special Protective Equipment for Firefighters: Full face, positive pressure, self-contained breathing apparatus (NIOSH approved or equivalent) or airline and appropriate chemical protective fire-fighting clothing.
NOTE: The use of cartridge masks is NOT recommended.

6. Accidental release measures

Personal Precautions, Protective Equipment and Emergency Procedures: Restrict access to area until completion of cleanup. Ensure cleanup is conducted by trained personnel only. Wear adequate personal protective equipment. Extinguish or remove all sources of ignition. Notify government occupational health and safety and environmental authorities.

Methods and Materials for Containment and Cleaning up: Do not touch spilled material. Prevent material from entering sewers, waterways or confined spaces. Stop or reduce leak if safe to do so. Contain spill with earth, sand, or absorbent material which does not react with spilled

material. Remove liquid by intrinsically safe pumps or vacuum equipment designed for vacuuming flammable materials (i.e. equipped with inert gases and ignition sources controlled). Place in suitable, covered, labelled containers.
SMALL SPILLS: Soak up spill with absorbent material which does not react with spilled chemical. Put material in suitable, covered, labelled containers. Flush area with water.
Contaminated absorbent material may pose the same hazards as the spilled product.
LARGE SPILLS: If necessary, contain spill by diking. Alcohol resistant foams may be applied to spill to diminish vapour and fire hazard. Collect liquid with explosion proof pumps.

7. Handling and storage

Precautions for Handling: No smoking or open flame in storage, use or handling areas. Use explosion proof electrical equipment. Ensure proper electrical grounding and bonding equipment procedures are in place.

Storage: Store this material in a cool, dry, well-ventilated area away from oxidizing materials and corrosive atmospheres, in a fireproof area. Keep amount in storage to a minimum.
Storage area should be clearly identified, clear of obstruction and accessible only to trained and authorized personnel. It is recommended that storage procedures be evaluated using NFPA 70E standard and NFPA 497 practice. Do not store below ground level, or in confined spaces. Have appropriate fire extinguishers and spill cleanup equipment in or near storage area. Store away from strong oxidizers, mineral acids and metals. See Section 10, **Stability and reactivity** for more information.
Ground and bond all containers and storage vessels. Store away from heat and ignition sources and out of direct sunlight. Post storage area as a "No Smoking" area.

8. Exposure controls/personal protection

Exposure Limits
ACGIH

Time-Weighted Average (TLV-TWA):	200 ppm - Skin
Short-Term Exposure Limit (TLV-STEL):	250 ppm - Skin
TLV Basis - Critical Effect(s):	Headache; Eye damage; Dizziness; Nausea

Personal Protection
Eye/face Protection: Chemical safety goggles. A face shield may also be necessary.
Skin Protection: Chemical protective gloves, coveralls, boots, and/or other chemical protective clothing. Safety shower/eye-wash fountain should be readily available in the immediate work area.
Hand protection: Butyl or Viton ®. Since methanol is recognized as a skin absorption hazard, check with glove manufacturers for appropriate glove material, thickness and resistance to breakthrough.
Respiratory Protection: Respiratory protection should be worn when there is a potential to exceed the exposure limit requirements or guidelines. Use an approved positive-pressure full-face self-contained breathing apparatus or a full-face supplied air respirator. The person wearing the respirator should be medically approved, fit tested and trained to operate the breathing apparatus.

Engineering Controls
Ventilation: Engineering methods to control hazardous conditions are preferred. Methods include

mechanical (local exhaust) ventilation, process or personnel enclosure and control of process conditions. Administrative controls and personal protective equipment may also be required. Because of the high potential hazard associated with this substance, stringent control measures such as enclosure (closed handling systems) should be considered. To reduce the fire/explosion hazard, consider the use of an inert gas in the process system.
Use approved explosion-proof equipment and intrinsically safe electrical systems in areas of use.
For large-scale operations, consider the installation of leak and fire detection equipment along with a suitable, automatic fire suppression system.
Use a non-sparking, grounded, ventilation system separate from other exhaust ventilation systems. Exhaust directly to the outside.
Supply sufficient replacement air to make up for air removed by exhaust system.

9. Physical and chemical properties

Appearance: Liquid, clear, colourless
Odour: Mild characteristic alcohol odour
Odour Threshold: detection: 4.2 - 5960 ppm
(geometric mean) 160 ppm
recognition: 53 – 8940 ppm
(geometric mean) 690 ppm
pH: Not applicable
Freezing Point: -97.8°C
Boiling Point: 64.7°C
Boiling Range: Not determined
Flash Point: 11.0°C
Solubility: Completely soluble
Partial Coefficient: Log P (oct) = -0.82
Vapour Pressure: 12.8 kPa @ 20°C
Viscosity: 0.3 cP@ 25°C
Upper Explosive Limit (UEL): 36.5 %
Lower Explosive Limit (LEL): 6%
Auto Ignition Temperature: 464°C
Solvent Solubility: Soluble in all proportions in ethanol, benzene, other alcohols, chloroform, diethyl ether, other ethers, esters, ketones and most organic solvents
Critical Temperature: 239.4°C
Specific Gravity: 0.791-0.793 @ 20°C
Evaporation Rate: 4.1 (n-butyl acetate =1)
Vapour Density: 1.105 @ 15°C (air = 1)
Decomposition Temperature: Not determined
Sensitivity to Impact: No
Sensitivity to Static Charge: Low
Percent Volatility: 100

10. Stability and reactivity

Chemical Stability: Stable as supplied.
Possibility of Hazardous Reactions: Polymerisation will not occur
Conditions to Avoid: Heat, open flames, static discharge, sparks and other ignition sources.
Incompatible Materials: Avoid contact with strong oxidizers, strong mineral or organic acids, and strong bases. Contact with these materials may cause a violent or explosive reaction.
Methanol is not compatible with gasket and O-rings materials made of Buna-N and Nitrile.
Methanol is corrosive to type 12L14 carbon steel at room temperature and type 3003 aluminum,

copper (10-100% methanol solution) and admiralty brass, at 93 deg C. Methanol is not corrosive to most metals.
Methanol attacks some forms of plastic, rubber and coatings.
Hazardous Decomposition Products: Decomposes on heating to produce carbon monoxide and formaldehyde.

11. Toxicological information

Acute toxicity
Ingestion
LD50 (oral, rat): 5600 mg/kg
LD50 (oral, rabbit): 14200 mg/kg
Dermal
LD50 (dermal, rabbit): 15800 mg/kg
Inhalation
LC50 (rabbit): 81000 mg/m^3/14h
LC50 (rat): 64000 ppm/4h
Eye Damage/Irritation
Moderate eye irritant.
Skin Corrosion/Irritation
Not considered to be an irritant.
Sensitization
Not considered to be a sensitizer.
Repeated Dose Toxicity
No relevant data found
Chronic Toxicity and Carcinogenicity
Not listed by IARC, NTP, ACGIH OR OSHA as a carcinogen.
Teratogenicity, Embryotoxicity and/or Fetotoxicity
Methanol has produced fetotoxicity in rats and teratogenicity in mice exposed by inhalation to high concentrations that did not produce significant maternal toxicity.
Reproductive Toxicity
Not considered to be a reproductive toxin.
Mutagenicity
There is insufficient information available to conclude that methanol is mutagenic.

12. Ecological information

LC50 (96h, fish): 15400 -29400 mg/l
EC50 (48h, daphnia): > 10000 mg/l
EC50 (72h, algae): 22000 mg/l Selenastrum carpricornutum (*Pseudokichnerela subcapitata*)

Persistence and degradability
Readily biodegradable
Bioaccumulation
Does not bioaccumulate. Partition coefficient: n-octanol/water 0.77
Mobility in Soil
Mobile in soils
PBT/vPvB

This substance is not considered to be persistent, bioaccumulating nor toxic (PBT). This substance is not considered to be very persistent nor very bioaccumulating (vPvB).

Terrestial Fate

The mobility of methanol in the subsurface will not be significantly limited by adsorption. Sorption of methanol to organic carbon in soil will be minor, and methanol will tend to remain in soil pore water.

Aquatic Fate

Methanol is completely miscible with water. Accordingly, its mobility in the subsurface will not be limited by solubility. Methanol has been shown to undergo rapid biodegradation in a variety of screening studies using sewage seed and activated sludge inoculum, which suggests that biodegradation will occur in aquatic environments where the concentration does not inhibit bacterial activity.

Atmospheric Fate

Methanol has a vapour pressure of 127 mm Hg at 25°C and is expected to exist solely as a vapour in the ambient atmosphere. Vapour-phase methanol is degraded in the atmosphere by reaction with photo chemically-produced hydroxyl radicals; the half-life for this reaction in air is estimated to be 17 days.

Other Adverse Effects

Do not flush into surface water or sanitary sewer system.

13. Disposal considerations

Review federal, provincial or state, and local government requirements prior to disposal. Store material for disposal as indicated in Section 7, **Handling and storage**. Disposal by controlled incineration or by secure land fill may be acceptable.

Recycle wherever possible. Large volumes may be suitable for re-distillation or, if contaminated, incineration. Can be disposed of in a sewage treatment facility. Methanol levels of up to 0.1% act as a food source for bacteria; above this level may be toxic to bacteria. When pumping through sewage collection systems, the level of methanol should be kept below the flammable range (a 25% methanol/water mixture is non-flammable at temperatures below 39°C). 1 ppm of methanol is equivalent to 1.5 ppm BOD loading in the sewage plant.

Container disposal

Empty containers may contain hazardous residue. Return to supplier for reuse if possible. Never weld, cut or grind empty containers. If disposing of containers, ensure they are well rinsed with water, then disposed of at an authorised landfill. After cleaning, all existing labels should be removed.

14. Transport information

Canada Transportation of Dangerous Goods (TDG):
UN Number: UN1230
Proper Shipping Name: Methanol
Hazard Class: 3(6.1)
Packing Group: II
Labels required: Flammable Liquid and Toxic
Limited Quantity: ≤ 1 litre
ERG Guide Number: 131

United States Department of Transport (49CFR):
(Domestic Only)
UN Number: UN1230
Proper Shipping Name: Methanol
Hazard Class: 3(6.1)
Packing Group: II
Labels required: Flammable Liquid and Toxic
Limited Quantity: ≤ 1 litre
ERG Guide Number: 131

International Air Transport Association (IATA):
UN Number: UN1230
Proper Shipping Name: Methanol
Hazard Class: 3(6.1)
Packing Group: II
Labels required: Flammable Liquid and Toxic (Toxic label may be eliminated under SP 104)

International Maritime Organization (IMO):
UN Number: UN1230
Proper Shipping Name: Methanol
Hazard Class: 3(6.1)
Packing Group: II
Labels required: Flammable Liquid and Toxic
Flash Point = 11°C
EmS No. F-E, S-D
Stowage Category "B", Clear of living quarters

Marine Pollutant:
No

15. Regulatory information

CANADIAN FEDERAL REGULATIONS

Hazardous Products Act Information: CPR Compliance
This product has been classified in accordance with the hazard criteria of the Canadian Controlled Products Regulations (CPR) and the MSDS contains all the information required by the CPR.

WHMIS Classification
B2 - Flammable and combustible material - Flammable liquid
D1B - Poisonous and infectious material - Immediate and serious effects - Toxic
D2A - Poisonous and infectious material - Other effects - Very toxic
D2B - Poisonous and infectious material - Other effects - Toxic

CEPA, Domestic Substances List
Methanol is listed on the Domestic Substances List.

WHMIS Ingredient Disclosure List
Listed at 1%

UNITED STATES REGULATIONS

29CFR 1910.1200 (OSHA):	Hazardous
40CFR 116-117 (EPA):	Hazardous
40CFR 355, Appendices A and B:	Subject to Emergency Planning and Notification
40CFR 372 (SARA Title III):	Listed
40CFR 302 (CERCLA):	Listed

TOXIC SUBSTANCES CONTROL ACT (TSCA): Listed in the inventory

CALIFORNIA SAFE DRINKING WATER AND TOXIC ENFORCEMENT ACT OF 1986: Not listed

OEHHA/CALIFORNIA Title 27, Sec. 25306: Listed

16. Other Information

Hazard Rating System

NFPA	Health	Fire	Reactivity
	1	3	0

References:

1. International Programme on Chemical Safety, Methanol, Environmental Health Criteria, World Health Organization 1997
2. Patty's Industrial Hygiene and Toxicology, 5th Edition
3. Fire Protection Guide to Hazardous Materials, 13th Edition
4. Lanigan, S., Final report on the Safety Assessment of Methyl Alcohol, International Journal of Toxicology., Volume 20, Supplement 1 (2001)
5. Forsberg, K., Quick Selection Guide to Chemical Protective Clothing
6. Nelson, B.K., Teratological assessment of Methanol and Ethanol at high inhalation levels in rats, Fundamental and Applied Toxicology, Volume 5
7. NIOSH Guide to Chemical Hazards
8. Hazardous Substance Data Base (HSDB)
9. CCOHS Cheminfo.
10. RTECS

Original Preparation Date: September 22, 2005

Disclaimer: The information above is believed to be accurate and represents the best information currently available to us. Users should make their own investigations to determine the suitability of the information for their particular purposes. This document is intended as a guide to the appropriate precautionary handling of the material by a properly trained person using this product.

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MSDS version: 2.0
Revisions: Revised and re-issued March 1, 2013

ConocoPhillips

Natural Gas

Safety Data Sheet

Section 1: Identification of the substance or mixture and of the supplier

Product Name:	Natural Gas
SDS Number:	724330
Synonyms/Other Means of Identification:	Fuel Gas Residue Gas Processed Gas Natural Gas, Dry Compressed Natural Gas
Intended Use:	Fuel
Manufacturer:	ConocoPhillips 600 N. Dairy Ashford Houston, Texas 77079-1175
Emergency Health and Safety Number:	Chemtrec: 800-424-9300 (24 Hours)
SDS Information:	Phone: 855-244-0762 Email: SDS@conocophillips.com URL: www.conocophillips.com

Section 2: Hazard(s) Identification

GHS Classification
H220 -- Flammable gases -- Category 1
H280 -- Gases under pressure -- Compressed gas

Label Elements

DANGER
Extremely flammable gas. (H220)*
Contains gas under pressure. May explode if heated. (H280)*
Gas may reduce oxygen in confined spaces.

Precautionary Statement(s):
Keep away from heat/sparks/open flames/hot surfaces. - No smoking. (P210)*
Leaking gas fire: Do not extinguish, unless leak can be stopped safely. (P377)*
Eliminate all ignition sources if safe to do so. (P381)*
Protect from sunlight. Store in a well ventilated place. (P410+P403)*

** (Applicable GHS hazard code.)*

Section 3: Composition / Information on Ingredients

Component	CASRN	Concentration[1]
Natural gas, dried	68410-63-9	100

[1] All concentrations are percent by weight unless ingredient is a gas. Gas concentrations are in percent by volume.

Section 4: First Aid Measures

Eye Contact: If irritation or redness develops from exposure, flush eyes with clean water. If symptoms persist, seek medical attention.

Skin Contact: First aid is not normally required. However, it is good practice to wash any chemical from the skin.

Inhalation (Breathing): If respiratory symptoms develop, move victim away from source of exposure and into fresh air in a position comfortable for breathing. If breathing is difficult, oxygen or artificial respiration should be administered by qualified personnel. If symptoms persist, seek medical attention.

Ingestion (Swallowing): This material is a gas under normal atmospheric conditions and ingestion is unlikely.

Most important symptoms and effects

Acute: Anesthetic effects at high concentrations.

Delayed: None known or anticipated. See Section 11 for information on effects from chronic exposure, if any.

Notes to Physician: Epinephrine and other sympathomimetic drugs may initiate cardiac arrhythmias in persons exposed to high concentrations of hydrocarbon solvents (e.g., in enclosed spaces or with deliberate abuse). The use of other drugs with less arrhythmogenic potential should be considered. If sympathomimetic drugs are administered, observe for the development of cardiac arrhythmias.

Section 5: Fire-Fighting Measures

NFPA 704 Hazard Class

Health: 1 **Flammability:** 4 **Instability:** 0 (0-Minimal, 1-Slight, 2-Moderate, 3-Serious, 4-Severe)

Unusual Fire & Explosion Hazards: Extremely flammable. This material can be ignited by heat, sparks, flames, or other sources of ignition (e.g., static electricity, pilot lights, mechanical/electrical equipment, and electronic devices such as cell phones, computers, calculators, and pagers which have not been certified as intrinsically safe). Vapors may travel considerable distances to a source of ignition where they can ignite, flash back, or explode. May create vapor/air explosion hazard indoors, in confined spaces, outdoors, or in sewers. If container is not properly cooled, it can rupture in the heat of a fire. Contents under pressure.

Extinguishing Media: Dry chemical or carbon dioxide is recommended. Carbon dioxide can displace oxygen. Use caution when applying carbon dioxide in confined spaces.

Fire Fighting Instructions: For fires beyond the initial stage, emergency responders in the immediate hazard area should wear protective clothing. When the potential chemical hazard is unknown, in enclosed or confined spaces, a self contained breathing apparatus should be worn. In addition, wear other appropriate protective equipment as conditions warrant (see Section 8).

Isolate immediate hazard area and keep unauthorized personnel out. Stop spill/release if it can be done safely. If this cannot be done, allow fire to burn. Move undamaged containers from immediate hazard area if it can be done safely. Stay away from ends of container. Water spray may be useful in minimizing or dispersing vapors and to protect personnel. Cool equipment exposed to fire with water, if it can be done safely.

Hazardous Combustion Products: Combustion may yield smoke, carbon monoxide, and other products of incomplete combustion. Oxides of nitrogen and sulfur may also be formed.

See Section 9 for Flammable Properties including Flash Point and Flammable (Explosive) Limits

Section 6: Accidental Release Measures

Personal Precautions: Extremely flammable. Spillages of liquid product will create a fire hazard and may form an explosive atmosphere. Keep all sources of ignition and hot metal surfaces away from spill/release if safe to do so. The use of explosion-proof electrical equipment is recommended. Beware of accumulation of gas in low areas or contained areas, where explosive concentrations may occur. Prevent from entering drains or any place where accumulation may occur. Ventilate area and allow to evaporate. Stay upwind and away from spill/release. Avoid direct contact with material. For large spillages, notify persons down wind of the spill/release, isolate immediate hazard area and keep unauthorized personnel out. Wear appropriate protective equipment, including respiratory protection, as conditions warrant (see Section 8). See Sections 2 and 7 for additional information on hazards and precautionary measures.

Environmental Precautions: Stop spill/release if it can be done safely. Water spray may be useful in minimizing or dispersing vapors. If spill occurs on water notify appropriate authorities and advise shipping of any hazard.

Methods for Containment and Clean-Up: Notify relevant authorities in accordance with all applicable regulations.

Recommended measures are based on the most likely spillage scenarios for this material; however local conditions and regulations may influence or limit the choice of appropriate actions to be taken.

Section 7: Handling and Storage

Precautions for safe handling: Keep away from ignition sources such as heat/sparks/open flame – No smoking. Take precautionary measures against static discharge. Use good personal hygiene practices and wear appropriate personal protective equipment (see section 8).

Contents under pressure. Gas can accumulate in confined spaces and limit oxygen available for breathing. Use only with adequate ventilation. The use of explosion-proof electrical equipment is recommended and may be required (see appropriate fire codes). Refer to NFPA-70 and/or API RP 2003 for specific bonding/grounding requirements. Electrostatic charge may accumulate and create a hazardous condition when handling or processing this material. To avoid fire or explosion, dissipate static electricity during transfer by grounding and bonding containers and equipment before transferring material. Do not enter confined spaces such as tanks or pits without following proper entry procedures such as ASTM D-4276 and 29CFR 1910.146. Cold burns may occur during filling operations. Containers and delivery lines may become cold enough to present cold burn hazard.

The use of hydrocarbon fuel in an area without adequate ventilation may result in hazardous levels of incomplete combustion products (e.g. carbon monoxide, oxides of sulfur and nitrogen, benzene and other hydrocarbons) and/or dangerously low oxygen levels.

Conditions for safe storage: Keep container(s) tightly closed and properly labeled. Use and store this material in cool, dry, well-ventilated areas away from heat, direct sunlight, hot metal surfaces, and all sources of ignition. Store only in approved containers. Post area "No Smoking or Open Flame." Keep away from any incompatible material (see Section 10). Protect container(s) against physical damage. Outdoor or detached storage is preferred. Indoor storage should meet OSHA standards and appropriate fire codes.

"Empty" containers retain residue and may be dangerous. Do not pressurize, cut, weld, braze, solder, drill, grind, or expose such containers to heat, flame, sparks, or other sources of ignition. They may explode and cause injury or death. Avoid exposing any part of a compressed-gas cylinder to temperatures above 125F(51.6C). Gas cylinders should be stored outdoors or in well ventilated storerooms at no lower than ground level and should be quickly removable in an emergency.

Section 8: Exposure Controls / Personal Protection

Component	ACGIH	OSHA	Other
Natural gas, dried	1000 ppm TWA as Aliphatic Hydrocarbons C1-4	---	---

Note: State, local or other agencies or advisory groups may have established more stringent limits. Consult an industrial hygienist or similar professional, or your local agencies, for further information.

Engineering controls: If current ventilation practices are not adequate to maintain airborne concentrations below the established exposure limits, additional engineering controls may be required.

Eye/Face Protection: The use of eye/face protection is not normally required; however, good industrial hygiene practice suggests the use of eye protection that meets or exceeds ANSI Z.87.1 whenever working with chemicals.

Skin/Hand Protection: The use of skin protection is not normally required; however, good industrial hygiene practice suggests the use of gloves or other appropriate skin protection whenever working with chemicals.

Respiratory Protection: A NIOSH approved, self-contained breathing apparatus (SCBA) or equivalent operated in a pressure demand or other positive pressure mode should be used in situations of oxygen deficiency (oxygen content less than 19.5 percent), unknown exposure concentrations, or situations that are immediately dangerous to life or health (IDLH).

A respiratory protection program that meets or is equivalent to OSHA 29 CFR 1910.134 and ANSI Z88.2 should be followed whenever workplace conditions warrant a respirator's use.

Suggestions provided in this section for exposure control and specific types of protective equipment are based on readily available information. Users should consult with the specific manufacturer to confirm the performance of their protective equipment. Specific situations may require consultation with industrial hygiene, safety, or engineering professionals.

Section 9: Physical and Chemical Properties

Note: Unless otherwise stated, values are determined at 20°C (68°F) and 760 mm Hg (1 atm). Data represent typical values and are not intended to be specifications.

Appearance:	Colorless
Physical Form:	Compressed Gas
Odor:	Slight hydrocarbon
Odor Threshold:	No data
pH:	Not applicable
Vapor Density (air=1):	0.5
Initial Boiling Point/Range:	No data
Melting/Freezing Point:	No data
Solubility in Water:	Slight
Partition Coefficient (n-octanol/water) (Kow):	No data
Percent Volatile:	100%
Flammability (solid, gas):	Extremely Flammable
Evaporation Rate (nBuAc=1):	No data
Flash Point:	-299 °F / -184 °C
Test Method:	(estimate)
Lower Explosive Limits (vol % in air):	2.0
Upper Explosive Limits (vol % in air):	10.0
Auto-ignition Temperature:	999 °F / 537 °C

Section 10: Stability and Reactivity

Stability: Stable under normal ambient and anticipated conditions of use.

Conditions to Avoid: Avoid all possible sources of ignition. Heat will increase pressure in the storage tank.

Materials to Avoid (Incompatible Materials): Avoid contact with acids, aluminum chloride, chlorine, chlorine dioxide, halogens and oxidizing agents.

Hazardous Decomposition Products: Not anticipated under normal conditions of use.

Hazardous Polymerization: Not known to occur.

Section 11: Toxicological Information

Information on Toxicological Effects of Substance/Mixture

Acute Toxicity	Hazard	Additional Information	LC50/LD50 Data
Inhalation	Unlikely to be harmful	Asphyxiant. High concentrations in confined spaces may limit oxygen available for breathing. See Signs and Symptoms.	> 20,000 ppm (gas)
Skin Absorption	Skin absorption is not anticipated		Not Applicable
Ingestion (Swallowing)	Ingestion is not anticipated		Not Applicable

Aspiration Hazard: Not applicable

Skin Corrosion/Irritation: Skin exposure is not anticipated.

Serious Eye Damage/Irritation: Not expected to be irritating.

Signs and Symptoms: Light hydrocarbon gases are simple asphyxiants and can cause anesthetic effects at high concentrations. Symptoms of overexposure, which are reversible if exposure is stopped, can include shortness of breath, drowsiness, headaches, confusion, decreased coordination, visual disturbances and vomiting. Continued exposure can lead to hypoxia (inadequate oxygen), rapid breathing, cyanosis (bluish discoloration of the skin), numbness of the extremities, unconsciousness and death.

Skin Sensitization: Skin contact is not anticipated.

Respiratory Sensitization: Not expected to be a respiratory sensitizer.

Specific Target Organ Toxicity (Single Exposure): Not expected to cause organ effects from single exposure.

Specific Target Organ Toxicity (Repeated Exposure): Not expected to cause organ effects from repeated exposure.

Carcinogenicity: Not expected to cause cancer. This substance is not listed as a carcinogen by IARC, NTP or OSHA.

Germ Cell Mutagenicity: Not expected to cause heritable genetic effects.

Reproductive Toxicity: Not expected to cause reproductive toxicity.

Other Comments: High concentrations may reduce the amount of oxygen available for breathing, especially in confined spaces. Hypoxia (inadequate oxygen) during pregnancy may have adverse effects on the developing fetus.

Section 12: Ecological Information

Toxicity: Petroleum gases will readily evaporate from the surface and would not be expected to have significant adverse effects in the aquatic environment. Classification: No classified hazards.

Persistence and Degradability: The hydrocarbons in this material are expected to be inherently biodegradable. In practice, hydrocarbon gases are not likely to remain in solution long enough for biodegradation to be a significant loss process. Hydrogen sulfide, if present in refinery gas streams, will be rapidly oxidized in water and insoluble sulfides precipitated from water when metallic radicals are present.

Bioaccumulative Potential: Since the log Kow values measured for refinery gas constituents are below 3, they are not regarded as having the potential to bioaccumulate.

Mobility in Soil: Due to the extreme volatility of petroleum gases, air is the only environmental compartment in which they will be found. In air, these hydrocarbons undergo photodegradation by reaction with hydroxyl radicals with half-lives ranging from 3.2 days for n-butane to 7 days for propane.

Other Adverse Effects: None anticipated.

Section 13: Disposal Considerations

This material is a gas and would not typically be managed as a waste.

Section 14: Transport Information

U.S. Department of Transportation (DOT)

Shipping Description:	UN1971, Natural gas, compressed, 2.1
Non-Bulk Package Marking:	Natural gas, compressed, UN1971
Non-Bulk Package Labeling:	Flammable gas
Bulk Package/Placard Marking:	Flammable gas / 1971
Packaging - References:	49 CFR 173.306; 173.302; 173.302 ***(Exceptions; Non-bulk; Bulk)***
Hazardous Substance:	None
Emergency Response Guide:	115
Note:	***Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code:*** *Not applicable*

International Maritime Dangerous Goods (IMDG)

Shipping Description:	UN1971, Natural gas, compressed, 2.1
Non-Bulk Package Marking:	Natural gas, compressed, UN1971
Labels:	Flammable gas
Placards/Marking (Bulk):	Flammable gas / 1971
Packaging - Non-Bulk:	P200
EMS:	F-D, S-U

International Civil Aviation Org. / International Air Transport Assoc. (ICAO/IATA)

UN/ID #:	UN1971
Proper Shipping Name:	Natural gas, compressed
Hazard Class/Division:	2.1
Subsidiary risk:	None
Packing Group:	None
Non-Bulk Package Marking:	Natural gas, compressed, UN1971
Labels:	Flammable gas , Cargo Aircraft Only
ERG Code:	10L

	LTD. QTY	Passenger Aircraft	Cargo Aircraft Only
Packaging Instruction #:	*Forbidden*	*Forbidden*	200
Max. Net Qty. Per Package:	*Forbidden*	*Forbidden*	150 kg

Section 15: Regulatory Information

CERCLA/SARA - Section 302 Extremely Hazardous Substances and TPQs (in pounds):
This material does not contain any chemicals subject to the reporting requirements of SARA 302 and 40 CFR 372.

CERCLA/SARA - Section 311/312 (Title III Hazard Categories)

Acute Health:	Yes
Chronic Health:	No
Fire Hazard:	Yes
Pressure Hazard:	Yes
Reactive Hazard:	No

CERCLA/SARA - Section 313 and 40 CFR 372:
This material does not contain any chemicals subject to the reporting requirements of SARA 313 and 40 CFR 372.

EPA (CERCLA) Reportable Quantity (in pounds):
EPA's Petroleum Exclusion applies to this material - (CERCLA 101(14)).

California Proposition 65:
This material does not contain any chemicals which are known to the State of California to cause cancer, birth defects or other reproductive harm at concentrations that trigger the warning requirements of California Proposition 65.

International Hazard Classification

Canada:
This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations (CPR) and the MSDS contains all the information required by the Regulations.

WHMIS Hazard Class:
A - Compressed Gas
B1 - Flammable Gases

National Chemical Inventories
All components are either listed on the US TSCA Inventory, or are not regulated under TSCA
All components are either on the DSL, or are exempt from DSL listing requirements

U.S. Export Control Classification Number: EAR99

Section 16: Other Information

Date of Issue:	02-Apr-2012
Status:	FINAL
Previous Issue Date:	09-Feb-2012
Revised Sections or Basis for Revision:	Identified Hazards (Section 2) Precautionary Statement(s) (Section 2) First Aid (Section 4) Shipping information (Section 14) Regulatory information (Section 15)
SDS Number:	724330

Guide to Abbreviations:
ACGIH = American Conference of Governmental Industrial Hygienists; CASRN = Chemical Abstracts Service Registry Number; CEILING = Ceiling Limit (15 minutes); CERCLA = The Comprehensive Environmental Response, Compensation, and Liability Act; EPA = Environmental Protection Agency; GHS = Globally Harmonized System; IARC = International Agency for Research on Cancer; INSHT = National Institute for Health and Safety at Work; IOPC = International Oil Pollution Compensation; LEL = Lower Explosive Limit; NE = Not Established; NFPA = National Fire Protection Association; NTP = National Toxicology Program; OSHA = Occupational Safety and Health Administration; PEL = Permissible Exposure Limit (OSHA); SARA = Superfund Amendments and Reauthorization Act; STEL = Short Term Exposure Limit (15 minutes); TLV = Threshold Limit Value (ACGIH); TWA = Time Weighted Average (8 hours); UEL = Upper Explosive Limit; WHMIS = Worker Hazardous Materials Information System (Canada)

Disclaimer of Expressed and implied Warranties:
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Safety Data Sheet

SECTION 1 PRODUCT AND COMPANY IDENTIFICATION

Chevron Lubricating Oil FM 32, 46, 68

Product Use: Food grade lubricant
Product Number(s): 232103, 255110, 255150
Company Identification
Chevron Products Company
a division of Chevron U.S.A. Inc.
6001 Bollinger Canyon Rd.
San Ramon, CA 94583
United States of America
www.chevronlubricants.com

Transportation Emergency Response
CHEMTREC: (800) 424-9300 or (703) 527-3887
Health Emergency
Chevron Emergency Information Center: Located in the USA. International collect calls accepted. (800) 231-0623 or (510) 231-0623
Product Information
email : lubemsds@chevron.com
Product Information: 1 (800) 582-3835, LUBETEK@chevron.com

SECTION 2 HAZARDS IDENTIFICATION

CLASSIFICATION: Not classified as hazardous according to 29 CFR 1910.1200 (2012).

SECTION 3 COMPOSITION/ INFORMATION ON INGREDIENTS

COMPONENTS	CAS NUMBER	AMOUNT
White mineral oil	8042-47-5	70 - 99 %wt/wt

SECTION 4 FIRST AID MEASURES

Description of first aid measures
Eye: No specific first aid measures are required. As a precaution, remove contact lenses, if worn, and flush eyes with water.
Skin: No specific first aid measures are required. As a precaution, remove clothing and shoes if

contaminated. To remove the material from skin, use soap and water. Discard contaminated clothing and shoes or thoroughly clean before reuse.
Ingestion: No specific first aid measures are required. Do not induce vomiting. As a precaution, get medical advice.
Inhalation: No specific first aid measures are required. If exposed to excessive levels of material in the air, move the exposed person to fresh air. Get medical attention if coughing or respiratory discomfort occurs.

Most important symptoms and effects, both acute and delayed
IMMEDIATE SYMPTOMS AND HEALTH EFFECTS
Eye: Not expected to cause prolonged or significant eye irritation.
Skin: Contact with the skin is not expected to cause prolonged or significant irritation. Contact with the skin is not expected to cause an allergic skin response. Not expected to be harmful to internal organs if absorbed through the skin. High-Pressure Equipment Information: Accidental high-velocity injection under the skin of materials of this type may result in serious injury. Seek medical attention at once should an accident like this occur. The initial wound at the injection site may not appear to be serious at first; but, if left untreated, could result in disfigurement or amputation of the affected part.

Ingestion: Not expected to be harmful if swallowed.
Inhalation: Not expected to be harmful if inhaled. Contains a petroleum-based mineral oil. May cause respiratory irritation or other pulmonary effects following prolonged or repeated inhalation of oil mist at airborne levels above the recommended mineral oil mist exposure limit. Symptoms of respiratory irritation may include coughing and difficulty breathing.

DELAYED OR OTHER SYMPTOMS AND HEALTH EFFECTS: Not classified.

Indication of any immediate medical attention and special treatment needed
Note to Physicians: In an accident involving high-pressure equipment, this product may be injected under the skin. Such an accident may result in a small, sometimes bloodless, puncture wound. However, because of its driving force, material injected into a fingertip can be deposited into the palm of the hand. Within 24 hours, there is usually a great deal of swelling, discoloration, and intense throbbing pain. Immediate treatment at a surgical emergency center is recommended.

SECTION 5 FIRE FIGHTING MEASURES

Leaks/ruptures in high pressure system using materials of this type can create a fire hazard when in the vicinity of ignition sources (eg. open flame, pilot lights, sparks, or electric arcs).

EXTINGUISHING MEDIA: Use water fog, foam, dry chemical or carbon dioxide (CO2) to extinguish flames.

PROTECTION OF FIRE FIGHTERS:
Fire Fighting Instructions: This material will burn although it is not easily ignited. See Section 7 for proper handling and storage. For fires involving this material, do not enter any enclosed or confined fire space without proper protective equipment, including self-contained breathing apparatus.
Combustion Products: Highly dependent on combustion conditions. A complex mixture of airborne solids, liquids, and gases including carbon monoxide, carbon dioxide, and unidentified organic compounds will be evolved when this material undergoes combustion.

SECTION 6 ACCIDENTAL RELEASE MEASURES

Protective Measures: Eliminate all sources of ignition in vicinity of spilled material.
Spill Management: Stop the source of the release if you can do it without risk. Contain release to prevent further contamination of soil, surface water or groundwater. Clean up spill as soon as possible, observing precautions in Exposure Controls/Personal Protection. Use appropriate techniques such as applying non-combustible absorbent materials or pumping. Where feasible and appropriate, remove contaminated

soil. Place contaminated materials in disposable containers and dispose of in a manner consistent with applicable regulations.
Reporting: Report spills to local authorities as appropriate or required.

SECTION 7 HANDLING AND STORAGE

Precautionary Measures: Do not get in eyes, on skin, or on clothing. DO NOT USE IN HIGH PRESSURE SYSTEMS in the vicinity of flames, sparks and hot surfaces. Use only in well ventilated areas. Keep container closed.
Wash thoroughly after handling.
General Handling Information: Avoid contaminating soil or releasing this material into sewage and drainage systems and bodies of water.
Static Hazard: Electrostatic charge may accumulate and create a hazardous condition when handling this material. To minimize this hazard, bonding and grounding may be necessary but may not, by themselves, be sufficient. Review all operations which have the potential of generating and accumulating an electrostatic charge and/or a flammable atmosphere (including tank and container filling, splash filling, tank cleaning, sampling, gauging, switch loading, filtering, mixing, agitation, and vacuum truck operations) and use appropriate mitigating procedures. For more information, refer to OSHA Standard 29 CFR 1910.106, 'Flammable and Combustible Liquids', National Fire Protection Association (NFPA 77, 'Recommended Practice on Static Electricity', and/or the American Petroleum Institute (API) Recommended Practice 2003, 'Protection Against Ignitions Arising Out of Static, Lightning, and Stray Currents'.
Container Warnings: Container is not designed to contain pressure. Do not use pressure to empty container or it may rupture with explosive force. Empty containers retain product residue (solid, liquid, and/or vapor) and can be dangerous. Do not pressurize, cut, weld, braze, solder, drill, grind, or expose such containers to heat, flame, sparks, static electricity, or other sources of ignition. They may explode and cause injury or death. Empty containers should be completely drained, properly closed, and promptly returned to a drum reconditioner or disposed of properly.

SECTION 8 EXPOSURE CONTROLS/PERSONAL PROTECTION

GENERAL CONSIDERATIONS:
Consider the potential hazards of this material (see Section 3), applicable exposure limits, job activities, and other substances in the work place when designing engineering controls and selecting personal protective equipment. If engineering controls or work practices are not adequate to prevent exposure to harmful levels of this material, the personal protective equipment listed below is recommended. The user should read and understand all instructions and limitations supplied with the equipment since protection is usually provided for a limited time or under certain circumstances.

ENGINEERING CONTROLS:
Use in a well-ventilated area.

PERSONAL PROTECTIVE EQUIPMENT
Eye/Face Protection: No special eye protection is normally required. Where splashing is possible, wear safety glasses with side shields as a good safety practice.
Skin Protection: No special protective clothing is normally required. Where splashing is possible, select protective clothing depending on operations conducted, physical requirements and other substances in the workplace. Suggested materials for protective gloves include: Neoprene, Nitrile Rubber, Silver Shield, Viton.
Respiratory Protection: No respiratory protection is normally required.
If user operations generate an oil mist, determine if airborne concentrations are below the occupational exposure limit for mineral oil mist. If not, wear an approved respirator that provides adequate protection from the measured concentrations of this material. For air-purifying respirators use a particulate cartridge. Use a positive pressure air-supplying respirator in circumstances where air-purifying respirators may not provide adequate protection.

Occupational Exposure Limits:

Component	Agency	TWA	STEL	Ceiling	Notation
White mineral oil	ACGIH	5 mg/m3	10 mg/m3	--	--
White mineral oil	OSHA Z-1	5 mg/m3	--	--	--

Consult local authorities for appropriate values.

SECTION 9 PHYSICAL AND CHEMICAL PROPERTIES

Attention: the data below are typical values and do not constitute a specification.

Color: Colorless
Physical State: Liquid
Odor: Petroleum odor
Odor Threshold: No data available
pH: Not Applicable
Vapor Pressure: <0.01 mmHg @ 37.8 °C (100 °F)
Vapor Density (Air = 1): >1
Initial Boiling Point: 315°C (599°F)
Solubility: Soluble in hydrocarbons; insoluble in water
Freezing Point: Not Applicable
Melting Point: No data available
Specific Gravity: 0.867 kg/l
Density: 0.867 kg/l @ 15.6°C (60.1°F) (Typical)
Viscosity: 61.2 mm2/s @ 40°C (104°F) Minimum
Evaporation Rate: No data available
Decomposition temperature: No Data Available
Octanol/Water Partition Coefficient: No data available

FLAMMABLE PROPERTIES:
Flammability (solid, gas): No Data Available
Flashpoint: (Cleveland Open Cup) 192 °C (378 °F) Minimum
Autoignition: No data available
Flammability (Explosive) Limits (% by volume in air): Lower: Not Applicable Upper: Not Applicable

SECTION 10 STABILITY AND REACTIVITY

Reactivity: This material is not expected to react.
Chemical Stability: This material is considered stable under normal ambient and anticipated storage and handling conditions of temperature and pressure.
Incompatibility With Other Materials: May react with strong acids or strong oxidizing agents, such as chlorates, nitrates, peroxides, etc.
Hazardous Decomposition Products: None known (None expected)
Hazardous Polymerization: Hazardous polymerization will not occur.

SECTION 11 TOXICOLOGICAL INFORMATION

Information on toxicological effects
Serious Eye Damage/Irritation: The eye irritation hazard is based on evaluation of data for product components.

Skin Corrosion/Irritation: The skin irritation hazard is based on evaluation of data for product

components.

Skin Sensitization: The skin sensitization hazard is based on evaluation of data for product components.

Acute Dermal Toxicity: The acute dermal toxicity hazard is based on evaluation of data for product components.

Acute Oral Toxicity: The acute oral toxicity hazard is based on evaluation of data for product components.

Acute Inhalation Toxicity: The acute inhalation toxicity hazard is based on evaluation of data for product components.

Acute Toxicity Estimate: Not Determined

Germ Cell Mutagenicity: The hazard evaluation is based on data for components or a similar material.
Carcinogenicity: The hazard evaluation is based on data for components or a similar material.
Reproductive Toxicity: The hazard evaluation is based on data for components or a similar material.

Specific Target Organ Toxicity - Single Exposure: The hazard evaluation is based on data for components or a similar material.
Specific Target Organ Toxicity - Repeated Exposure: The hazard evaluation is based on data for components or a similar material.

SECTION 12 ECOLOGICAL INFORMATION

ECOTOXICITY
This material is not expected to be harmful to aquatic organisms. The ecotoxicity hazard is based on an evaluation of data for the components or a similar material. The product has not been tested. The statement has been derived from the properties of the individual components.

MOBILITY
No data available.

PERSISTENCE AND DEGRADABILITY
This material is not expected to be readily biodegradable. The biodegradability of this material is based on an evaluation of data for the components or a similar material.The product has not been tested. The statement has been derived from the properties of the individual components.

POTENTIAL TO BIOACCUMULATE
Bioconcentration Factor: No data available.
Octanol/Water Partition Coefficient: No data available

SECTION 13 DISPOSAL CONSIDERATIONS

Use material for its intended purpose or recycle if possible. Oil collection services are available for used oil recycling or disposal. Place contaminated materials in containers and dispose of in a manner consistent with applicable regulations. Contact your sales representative or local environmental or health authorities for approved disposal or recycling methods.

SECTION 14 TRANSPORT INFORMATION

The description shown may not apply to all shipping situations. Consult 49CFR, or appropriate Dangerous

Goods Regulations, for additional description requirements (e.g., technical name) and mode-specific or quantity-specific shipping requirements.

DOT Shipping Description: PETROLEUM LUBRICATING OIL, NOT REGULATED AS A HAZARDOUS MATERIAL FOR TRANSPORTATION UNDER 49 CFR

IMO/IMDG Shipping Description: PETROLEUM LUBRICATING OIL; NOT REGULATED AS DANGEROUS GOODS FOR TRANSPORT UNDER THE IMDG CODE

ICAO/IATA Shipping Description: PETROLEUM LUBRICATING OIL; NOT REGULATED AS DANGEROUS GOODS FOR TRANSPORT UNDER ICAO TI OR IATA DGR

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC code:
Not applicable

SECTION 15 REGULATORY INFORMATION

EPCRA 311/312 CATEGORIES:

1.	Immediate (Acute) Health Effects:	NO
2.	Delayed (Chronic) Health Effects:	NO
3.	Fire Hazard:	NO
4.	Sudden Release of Pressure Hazard:	NO
5.	Reactivity Hazard:	NO

REGULATORY LISTS SEARCHED:

01-1=IARC Group 1	03=EPCRA 313
01-2A=IARC Group 2A	04=CA Proposition 65
01-2B=IARC Group 2B	05=MA RTK
02=NTP Carcinogen	06=NJ RTK
	07=PA RTK

The following components of this material are found on the regulatory lists indicated.

White mineral oil	01-1, 02, 05, 06, 07

CHEMICAL INVENTORIES:
All components comply with the following chemical inventory requirements: AICS (Australia), DSL (Canada), EINECS (European Union), ENCS (Japan), IECSC (China), KECI (Korea), PICCS (Philippines), TSCA (United States).

NEW JERSEY RTK CLASSIFICATION:
Under the New Jersey Right-to-Know Act L. 1983 Chapter 315 N.J.S.A. 34:5A-1 et. seq., the product is to be identified as follows: PETROLEUM OIL

SECTION 16 OTHER INFORMATION

NFPA RATINGS: Health: 0 Flammability: 1 Reactivity: 0

HMIS RATINGS: Health: 0 Flammability: 1 Reactivity: 0
(0-Least, 1-Slight, 2-Moderate, 3-High, 4-Extreme, PPE:- Personal Protection Equipment Index recommendation, *- Chronic Effect Indicator). These values are obtained using the guidelines or published evaluations prepared by the National Fire Protection Association (NFPA) or the National Paint and Coating Association (for HMIS ratings).

LABEL RECOMMENDATION:
Label Category : INDUSTRIAL OIL 1 - IND1

REVISION STATEMENT: This revision updates the following sections of this Safety Data Sheet: 1-16
Revision Date: MAY 27, 2014

ABBREVIATIONS THAT MAY HAVE BEEN USED IN THIS DOCUMENT:

TLV - Threshold Limit Value	TWA - Time Weighted Average
STEL - Short-term Exposure Limit	PEL - Permissible Exposure Limit
GHS - Globally Harmonized System	CAS - Chemical Abstract Service Number
ACGIH - American Conference of Governmental Industrial Hygienists	IMO/IMDG - International Maritime Dangerous Goods Code
API - American Petroleum Institute	SDS - Safety Data Sheet
HMIS - Hazardous Materials Information System	NFPA - National Fire Protection Association (USA)
DOT - Department of Transportation (USA)	NTP - National Toxicology Program (USA)
IARC - International Agency for Research on Cancer	OSHA - Occupational Safety and Health Administration
NCEL - New Chemical Exposure Limit	EPA - Environmental Protection Agency
SCBA - Self-Contained Breathing Apparatus	

Prepared according to the 29 CFR 1910.1200 (2012) by Chevron Energy Technology Company, 6001 Bollinger Canyon Road San Ramon, CA 94583.

The above information is based on the data of which we are aware and is believed to be correct as of the date hereof. Since this information may be applied under conditions beyond our control and with which we may be unfamiliar and since data made available subsequent to the date hereof may suggest modifications of the information, we do not assume any responsibility for the results of its use. This information is furnished upon condition that the person receiving it shall make his own determination of the suitability of the material for his particular purpose.

Appendix E - US Methanol LibertyONE Plant - Pollutants Detail Calcualtions

Maximum Design Capacity

	Emission Factor lbs/mmscf	Gas rate mmsdf/hr	Potential to Emit Pollutants lbs/hr	lbs/yr	tons/yr
2-Methylnaphthalene	2.40E-05	0.13	3.03E-06	0.0255	1.27E-05
3-Methylchloranthrene	1.80E-06	0.13	2.27E-07	0.0019	9.55E-07
7,12-Dimethylbenz(a)anthracene	1.60E-05	0.13	2.02E-06	0.0170	8.48E-06
Acenaphthene	1.80E-06	0.13	2.27E-07	0.0019	9.55E-07
Acenaphthylene	1.80E-06	0.13	2.27E-07	0.0019	9.55E-07
Anthracene	2.40E-06	0.13	3.03E-07	0.0025	1.27E-06
Benz(a)anthracene	1.80E-06	0.13	2.27E-07	0.0019	9.55E-07
Benzene	2.10E-03	0.13	2.65E-04	2.2273	1.11E-03
Benzo(a)pyrene	1.20E-06	0.13	1.52E-07	0.0013	6.36E-07
Benzo(b)fluoranthene	1.80E-06	0.13	2.27E-07	0.0019	9.55E-07
Benzo(g,h,i)perylene	1.20E-06	0.13	1.52E-07	0.0013	6.36E-07
Benzo(k)fluoranthene	1.80E-06	0.13	2.27E-07	0.0019	9.55E-07
Chrysene	1.80E-06	0.13	2.27E-07	0.0019	9.55E-07
Dibenzo(a,h)anthracene	1.20E-06	0.13	1.52E-07	0.0013	6.36E-07
Dichlorobenzene	1.20E-03	0.13	1.52E-04	1.2727	6.36E-04
Fluoranthene	3.00E-06	0.13	3.79E-07	0.0032	1.59E-06
Fluorene	2.80E-06	0.13	3.54E-07	0.0030	1.48E-06
Formaldehyde	7.50E-02	0.13	9.47E-03	79.5449	3.98E-02
Hexane	1.80E+00	0.13	2.27E-01	1909.0764	9.55E-01
Indeno(1,2,3-cd)pyrene	1.80E-06	0.13	2.27E-07	0.0019	9.55E-07
Naphthalene	6.10E-04	0.13	7.70E-05	0.6470	3.23E-04
Pentane	2.60E+00	0.13	3.28E-01	2757.5548	1.38E+00
Phenanathrene	1.70E-05	0.13	2.15E-06	0.0180	9.02E-06
Pyrene	5.00E-06	0.13	6.31E-07	0.0053	2.65E-06
Toluene	3.40E-03	0.13	4.29E-04	3.6060	1.80E-03
Total HAPs			0.5659551	4754.0226	2.377
NOx	140	0.13	17.68	148,483.7	74.24
CO	84	0.13	10.61	89,090.2	44.55
SO2	0.6	0.13	0.08	636.4	0.32
PM Total	7.6	0.13	0.96	8,060.5	4.03
VOC	5.5	0.13	0.69	5,833.3	2.92
Lead	0.0005	0.13	0.000	0.5	0.000
N2O	2.2	0.13	0.28	2,333.3	1.17
TOC	11	0.13	1.39	11,666.6	5.83
Methane	2.3	0.13	0.29	2,439.4	1.22
CO2	120,000	0.13	15151.40	1.3E+08	63,636

All other Table 45-13A Not present

All other from 45CSR27 Not present