Appendix E

Spill Contingency Plan

Hamlet of Cambridge Bay

Spill Contingency Plan

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AECOM: 2012-01-06

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1. Introduction

This spill contingency plan describes the proper responses to several types of spills that may occur in the operation of the Hamlet of Cambridge Bay's (Hamlet) water and waste facilities. Included in the plan is a spill response Contact List for Nunavut, and the reporting requirements in the event of a chemical, fuel, or waste spill.

2. Locations of Contaminant Storage Areas

Cambridge Bay's water and waste management facilities include a raw water distribution pumphouse next to Water Lake, and a sewage disposal facility (lagoon) and solid waste disposal facility northeast of the Hamlet.

The Hamlet stores a 12% solution of sodium hypochlorite in the raw water pumphouse, which is used to disinfect drinking water.

At Cambridge Bay's water and waste facilities, fuel oil is used for heating and to run pumps and other equipment. The fuel storage areas are listed below; tank volumes were unavailable:

- Raw water pumphouse at Water Lake (69°08'18N, 105°03'56W)
- Truckfill station in Cambridge Bay (69°07'07N, 105°03'17W)
- Garage (69°07'07N, 105°03'17W)

These locations are shown in the figure below, along with the Municipal Solid Waste Facility.

Figure 2-1: Fuel Storage Facilities and Municipal Solid Waste Facility

3. Spill Response Training

Hamlet operations personnel should have up-to-date spill training so they are prepared in the event of a chemical, fuel or waste spill. This training will at least include on-the-job training, and may include formal spill training courses and on-site spill training exercises (mock spills). Hamlet personnel may receive formal spill response training from the Department of Environment, GN in Iqaluit.

If the Hamlet brings contractors on-site to make modifications to the water and waste facilities, the contractors should be made aware of procedures to be followed in the event of a spill.

Workplace Hazardous Materials Information System (WHMIS) training should be given to employees. WHMIS training is legally required in Canada for all employees who are exposed/likely will be exposed to a hazardous material at the workplace.

4. Action Plan in the Event of a Spill

This section contains an outline of the steps to take for reporting, clean-up, and disposal of any spilled contaminants and contaminated soil or water.

4.1 Chemical Spills

The Hamlet uses a 12% solution of sodium hypochlorite to disinfect its raw source water. This solution is stored and applied in the pumphouse next to Water Lake. Possible sodium hypochlorite spills range from a small leak or spillage during normal operation, to a major spill caused by damage to a storage drum.

Sodium hypochlorite can cause several adverse health effects, including skin, eye and respiratory system irritation or burns. If ingested in significant amounts, this chemical can cause a wide range of symptoms, from nausea to death. Sodium hypochlorite can cause dangerous reactions with some chemicals, and therefore should not be allowed to mix with other chemicals.

The action plan laid out here for sodium hypochlorite spills is generally applicable to any other chemical spills that the Hamlet may deal with, but some chemicals may have special handling and disposal requirements. Refer to WHMIS (Workplace Hazardous Materials Information System) labels and MSDS (material safety data sheets) for chemical-specific information.

4.1.1 Initial Action

In the event of a chemical spill, the following measures should be taken immediately:

- Evacuate unnecessary personnel.
- Ventilate area of leak or spill (opening all doors and windows).
- Wear personal protective equipment (gloves, safety glasses, impervious material long-sleeved shirt/coat).
- If available wear respirator/self-contained breathing apparatus (SCBA), especially for large spills.
- Remove all other chemicals from the area if safe to do so.
- For small spills, dilute with water, mop or wipe up and place in proper container.
- For large spills, contain by diking (soil/dry sand/kitty litter), absorb with inert material (soil/dry sand/kitty litter) and place in chemical waste container.
- After mopping up chemical, wash area well with soap and water, mopping into spill container and not to the ground.

- Do not use combustible materials! (i.e. sawdust or cardboard).
- Contain runoff from spill clean-up.
- Notify the Northwest Territories/Nunavut twenty-four (24) hour spill reporting centre at (867) 920-8130 and receive disposal information.

4.1.2 Follow-Up Action

After the spill has been cleaned up, other reporting, disposal, and follow-up activities may be required. The following measures should be taken if applicable:

- Dispose of chemical, inert absorbent material, and mop-up water as directed by Spill Reporting Line personnel
- Arrange for repair or replacement of chemical containers, pipelines and equipment, if damaged or leaking.
- Submit a detailed report on the occurrence to an AANDC Inspector, within thirty (30) days of reporting the event.

4.1.3 Spill Kit

A spill kit should be on-hand in the pumphouse in the event of a sodium hypochlorite spill. The kit should include:

- Heavy-duty gloves
- Safety glasses
- Mop/wringer/spill squeegee
- Shovel/ broom/dustpan
- Chemical spill container with sealable lid
- Sand/kitty litter (absorbent, non-flammable material).

Alternatively, a 50 Gallon Universal Sorbent Spill Kit can be provided, which includes:

- (10)–3" x 48" socks
- (4)–3" x 10' socks
- (50)–15" x 17" pads
- (4)–pillows
- (50)–wipers
- (5)–disposal bags and ties
- (5)–tamperproof seals
- (2)–pair nitrile gloves
- (1)–emergency response guidebook

4.1.4 First Aid

The following first aid recommendations relate to spills of sodium hypochlorite. For first aid with other chemicals, follow any chemical-specific instructions or call the twenty-four (24) hour Spill Reporting Line for assistance.

Skin Contact

Immediately flush skin with water for at least twenty (20) minutes while removing all exposed clothing. Get medical attention immediately. Wash all exposed clothing with soap and water and dry before reuse, thoroughly clean exposed shoes.

Inhalation

Remove person to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Ensure the person is at rest – no physical exertion. Get medical attention immediately.

Ingestion

If swallowed, **DO NOT INDUCE VOMITING**. If the person is conscious, have the person rinse their mouth with water. Have the person drink large quantities of water. If milk is available, have person drink milk AFTER the water. Never give anything by mouth to an unconscious person. Get medical attention immediately.
Information on poison control should sodium hypochlorite or other hazardous chemicals be ingested can be obtained by calling the Cambridge Bay Health Centre at (867) 983-2531 or the Baffin Regional Hospital Emergency Department at (867) 979-7350.

Eye Contact

Immediately flush eyes with plenty of water for at least twenty (20) minutes, lifting lower and upper eyelids occasionally at eye wash station. Get medical attention immediately.

Note to Physician:

> Consider oral administration of sodium thiosulfate solutions if sodium hypochlorite is ingested. Do not administer neutralizing substances since the resultant exothermic reaction could further damage tissue. Endotracheal intubation could be needed if glottic edema compromises the airway. For individuals with significant inhalation exposure, monitor arterial blood gases and chest x-ray.

4.2 Petroleum Product and Antifreeze Product Spills

Petroleum products have many operational uses in the Hamlet's water and waste systems, and used petroleum product drums or other containers end up at the Hamlet's solid waste disposal facility. Petroleum product spills range from minor spills during operations such as gas tank filling, to constant leakage from pipelines in need of repair, to major spills causing large contaminated soil/water issues.

Depending on the location of the spill, a petroleum product spill may result in contaminated soil, snow, ice or water. The contaminated material must be cleaned up and removed for disposal along with the spilled petroleum product.

Antifreeze or engine coolant products are used in automotive engines and generally consist of ethylene glycol or propylene glycol mixed with distilled water; of the two, propylene glycol is significantly less toxic. Like petroleum products, used antifreeze product drums or other containers end up at the Hamlet's solid waste disposal facility, and can range from minor spills to large spills from punctured drums.

Petroleum and antifreeze product spills can be handled in the same manner. Refer to WHMIS (Workplace Hazardous Materials Information System) labels and MSDS (material safety data sheets) for chemical-specific information.

4.2.1 Initial Action

In the event of a petroleum or antifreeze product spill, the following measures should be taken immediately:

- Shut off ignition sources, if safe to do so.
- Identify the spilled material and locate the source.
- Stop the spill at the source, if safe to do so.
- Take actions to contain/clean up spilled material.
- Record relevant information for reporting: this includes quantity of material spilled, product type, location, date, weather, and other relevant information.
- Notify the Northwest Territories/Nunavut twenty-four (24) hour spill reporting centre at (867) 920-8130 and receive disposal information.

4.2.2 Follow-Up Action

After the initial clean-up and reporting procedures, other activities may be required such as reporting and disposal. The following measures should be taken if applicable:

- Dispose of soil as directed by twenty-four (24) hour Spill Reporting Line personnel or an AANDC Inspector.
- Arrange for repair or replacement of petroleum product containers, pipelines and equipment, if damaged or leaking.
- Submit a detailed report on the occurrence to an AANDC Inspector, within thirty (30) days of reporting the event.
- For large spills, install wells to monitor the groundwater for signs of contamination as explained in the Subsurface Monitoring Plan (Earth Tech, 2008). Determine the level of final clean-up in consultation with an AANDC inspector.

4.2.3 Spill Kit

One spill kit should be on-hand in at each of the fuel storage areas and the municipal solid waste facility. The kit should include:

- Heavy-duty gloves
- Safety glasses
- Mop/wringer/spill squeegee
- Shovel/ broom/dustpan
- Chemical spill container with sealable lid
- Sand/kitty litter (absorbent, non-flammable material).

Alternatively, a 50 Gallon Universal Sorbent Spill Kit can be provided, which includes:

- (10)–3" x 48" socks
- (4)–3" x 10' socks
- (50)–15" x 17" pads
- (4)–pillows
- (50)–wipers
- (5)–disposal bags and ties
- (5)–tamperproof seals
- (2)–pair nitrile gloves
- (1)–emergency response guidebook

4.3 Waste Spills

The Hamlet's lagoon and landfill sites are monitored through the Monitoring Program. The wastewater lagoon will discharge on an annual basis over an approximately 3 week period, beginning normally around the end August; this requires the use of a temporary pump. Outside of this period, low flows could be expected at the Sewage Wetland outfall, as part of normal operation since the main Retention Sewage Lagoon berm is composed of low permeability materials. Spill reporting requirements for a normal lagoon discharge are not required, though additional testing requirements for annual discharge, as part of the Monitoring Program, are.

Waste may, however, be spilled before reaching the waste disposal facilities. There may also be chemical or fuel product spills at the landfill, contaminating the surrounding soil. These spill situations should be handled with the same procedures as for Petroleum or Antifreeze Product Spills above.

5. Spill Response Contact List

Table 5-1: Contact List

Organization	Contact	Phone Number
AANDC Water Resources	Water Resource Officers in Iqaluit	(867) 975-4295
Northwest Territories/Nunavut 24 Hour Spill Report Line		(867) 920-8130
Nunavut Department of Environment Cambridge Bay Conservation Office		(867) 983-4164
Environment Canada	Environmental Protection Operations, Environmental Emergencies	(780) 951-8861
Kitikmeot Inuit Association – Cambridge Bay		(867) 983-2458

6. Reporting Requirements

The Hamlet's Water License (2001, amended 2005 and 2009) calls for any chemical or petroleum product spill or unauthorized discharge of waste to be reported immediately to both the twenty-four (24) hour Spill Reporting Line and an AANDC Water Resources Inspector (see contact details in previous section). Spills to be reported include spills that have already occurred, or potential spills that are about to occur. Spills must be reported if the amount is greater than or equal to the amount listed in the Nunavut (or interim GNWT) Spill Contingency Planning and Reporting Regulations for each contaminant.

Environment Canada requires that spills or environmental accidents be reported to the twenty-four (24) hour Spill Report Line. A phone number for Environment Canada's Environmental Emergencies office in Edmonton is listed above, in case Hamlet staff need more information.

When reporting a spill to the twenty-four (24) Hour Report Line, give as much of the following information as possible:

- Date and time of spill,
- Location of spill,
- Direction spill is moving,
- Name and phone number of a contact person close to the location of spill,

- Type and quantity of contaminant spilled,
- Whether spill is continuing or stopped,
- Actions taken to contain, recover, clean-up and dispose of contaminant,
- Name and phone number of person reporting spill and person in charge of the facility.

The Hamlet must also submit to an Inspector a detailed report on the occurrence within thirty (30) days of reporting the event.

A Nunavut spill report is included at the back of this plan.

7. References

- AANDC. "Guidelines for Spill Contingency Planning".
- Northwest Territories Water Board. "Guidelines for Contingency Planning" 1987.
- GNWT. "Consolidation of Regulation R-068-93 Spill Contingency Planning and Reporting Regulations", 1993.
- Nunavut Water Board. "Water License NWB3CAM0914", 2009
- Canexus Material Safety Data Sheet. "Sodium Hypochlorite". December, 2006. http://www.canexus.ca/site/assets/pdf/MSDS/hypochlorite/2006%20Na%20Hypochlorite%20E.pdf
- Clear Tech Technical Department, Material Safety Data Sheet. "Sodium Hypochlorite". Saskatoon, SK. November, 2000. http://www.rockyview.ab.ca/pdfs/ClearTech%20bleach.pdf
- CSBP Material Safety Data Sheet. "Sodium Hypchlorite". June, 2005. http://www.csbp.com.au/downloads/chemicals/1139359082_Sodium_Hypochlorite_(12.5_Solution).pdf
- J.T. Baker Material Safety Data Sheet. "Sodium Hypochlorite". Phillipsburg, NJ. January, 2007. http://www.jtbaker.com/msds/englishhtml/S4106.htm

8. Material Safety Data Sheets (MSDSs)

Material Safety Data Sheets have been provided for the following possible contaminants:

- Diesel / Fuel Oil
- Ethylene Glycol
- Gasoline
- Motor Oil
- Propylene Glycol
- Sodium Hypochlorite

These MSDSs are presented for informational purposes only and should not be used for WHMIS purposes; MSDSs from the Hamlets vendors should be acquired and maintained for WHMIS compliance and, if applicable, should replace the sheets in this plan.

The list of contaminants presented above is not intended to be a comprehensive list of potential contaminants the Hamlet might face, but merely present the common contaminants that the Hamlet might encounter on a regular basis. Always review the MSDS for any of any chemical you are unfamiliar with.

Section 1: PRODUCT AND COMPANY IDENTIFICATION

Product Name: Diesel Max

Seasonal Diesel - LS

Seasonal Diesel - LS (Dyed or Clear)

Seasonal Diesel - RS

Seasonal Diesel - RS (Dyed or Clear)

Light Diesel (Low Sulphur, LS, Regular Sulphur, RS, Dyed or Clear)

Light Diesel LS P-50

Regular Sulphur Diesel (Dyed or Clear)

Synonyms: CASRN 68334-30-5.

Product Use: Motor fuel. Heating fuel.

Manufacturer/Supplier: Husky Oil Marketing Company
PO Box 6525 Station 'D'
Calgary, Alberta
T2P 3G7

Phone Number: 403-298-6111

Emergency Phone: 403-262-2111

Date of Preparation: March 19, 2012

Section 2: HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW

DANGER
COMBUSTIBLE LI□UID AND VAPOR. HARMFUL OR FATAL IF SWALLOWED. CAN ENTER LUNGS AND CAUSE DAMAGE. IRRITATING TO EYES AND SKIN.

Colour: Clear to pale yellow.
Physical State: Liquid.
Odour: Petroleum.

WHMIS	Personal Protection Equipment	TDG (Ground)
		

Potential Health Effects: See Section 11 for more information.

Likely Routes of Exposure: Eye contact. Skin contact. Inhalation. Ingestion.

Eye: Irritating to eyes. Signs/symptoms may include redness, swelling, pain, tearing, and blurred or hazy vision. Hydrogen sulphide may cause eye irritation at 1-20 ppm and acute conjunctivitis at higher concentrations. Above 50 ppm H2S, eye irritation may include symptoms of redness, severe swelling, tearing, sensitivity to light and the appearance of 'Halos' around lights.

Skin: Irritating to skin. Signs/symptoms may include localized redness, swelling, and itching.

Ingestion: Harmful or fatal: may cause lung damage if swallowed. Swallowing the liquid may cause aspiration into the lungs with the risk of chemical pneumonitis. May cause gastrointestinal irritation. Signs/symptoms may include abdominal pain, stomach upset, nausea, vomiting and diarrhea.

Inhalation: May cause respiratory tract irritation. Signs/symptoms may include cough, sneezing, nasal discharge, headache, hoarseness, and nose and throat pain. May cause headache, dizziness, confusion, loss of appetite and loss of consciousness. Hydrogen sulphide may cause symptoms such as digestive upset and loss of appetite, loss of sense of smell and pulmonary edema. At 500-1000 ppm Hydrogen sulphide may cause respiratory paralysis, collapse and death without rescue.

Chronic Effects: See Section 11 for more information.

Medical Conditions Aggravated By Exposure: Not available.

Target Organs: Skin. Eyes. Gastrointestinal tract. Respiratory system. Nervous system.

Potential Environmental Effects: See Section 12 for more information.

This material is considered hazardous by the OSHA Hazard Communication Standard, (29 CFR 1910.1200).

Section 3: COMPOSITION / INFORMATION ON INGREDIENTS

Component	CAS No.	Wt. %
Fuels, diesel	68334-30-5	60 - 100
Distillates (petroleum), hydrotreated middle	64742-46-7	60 - 100
Distillates (petroleum), hydrotreated light	64742-47-8	30 - 60
Additives *	(Various)	< 0.1

* May contain additives such as alkyl nitrate, polyisobutenyl succinic anhydride nitrogen functionalized dispersant, and mixed cyclic amines.

Section 4: FIRST AID MEASURES

Eye Contact: Flush eyes with plenty of water for at least 15 minutes. If signs/symptoms persist, get medical attention.

Skin Contact: Wash skin with soap and water for at least 15 minutes while removing contaminated clothing and shoes. If signs/symptoms develop, get medical attention.

Ingestion: Do NOT induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person. Get medical attention immediately.

Inhalation: Remove person to fresh air. If breathing has stopped apply artificial respiration. If signs/symptoms develop, get medical attention.

General Advice: In case of accident or if you feel unwell, seek medical advice immediately (show the label or MSDS where possible).

Note to Physicians: Symptoms may not appear immediately. For inhalation of Hydrogen Sulphide, consider oxygen.

Section 5: FIRE FIGHTING MEASURES

Flammability: Combustible liquid by WHMIS criteria. Combustible liquid by OSHA criteria. Released vapours may form flammable/explosive mixtures at or above the flash point. Vapours may travel considerable distances to ignition sources and cause a flash fire. Cool

containing vessels with water jet in order to prevent pressure build-up, auto-ignition or explosion.

Means of Extinction

Suitable Extinguishing Media:	Dry chemical, foam, or carbon dioxide.
Unsuitable Extinguishing Media:	Water may not be an effective medium to extinguish fire.
Products of Combustion:	Oxides of carbon. Oxides of sulphur. Oxides of nitrogen.
Protection of Firefighters:	Keep upwind of fire. Wear full fire fighting turn-out gear (full Bunker gear) and respiratory protection (SCBA). Hydrogen sulphide is heavier than air and may collect in low lying areas and confined spaces.

Explosion Data

Sensitivity to Mechanical Impact:	This material is not sensitive to mechanical impact.
Sensitivity to Static Discharge:	This material is sensitive to static discharge at temperatures above the flash point.

Section 6: ACCIDENTAL RELEASE MEASURES

Personal Precautions:	Evacuate all unnecessary personnel. Stay upwind. Eliminate all ignition sources. Use personal protection recommended in Section 8. Isolate the hazard area and deny entry to unnecessary and unprotected personnel. Don full-face, positive pressure, self-contained breathing apparatus.
Environmental Precautions:	Keep out of drains, sewers, ditches, and waterways.
Methods for Containment:	Stop leak if without risk. Contain spill and absorb with inert absorbent. Large pools may be covered with foam to prevent vapour evolution. Do not flush to sewer or allow to enter waterways.
Methods for Clean-Up:	Absorb or cover with dry earth, sand or other non-combustible material and transfer to containers. Use clean non-sparking tools to collect absorbed material. Large spills should be removed with explosion proof vacuum equipment.
Other Information:	Dispose of in accordance with all federal, provincial and local regulations. Comply with federal, provincial, and local requirements for spill and/or release notification.

Section 7: HANDLING AND STORAGE

Handling:
Do not swallow. Do not get in eyes, or on skin. All equipment used when handling the product must be grounded. Handle and open container with care. When using do not eat or drink. Wash hands before eating, drinking, or smoking. See Section 8 for information on Personal Protective Equipment.

Storage:
Store in cool, dry, well-ventilated area away from incompatible materials, heat, and sources of ignition. All storage containers and pumping equipment should be grounded. Keep out of the reach of children. Head spaces in storage containers may contain toxic hydrogen sulphide gas. Structural materials and lighting and ventilation systems should be corrosion resistant.

Section 8: EXPOSURE CONTROLS / PERSONAL PROTECTION

Exposure Guidelines
Component

Fuels, diesel

(68334-30-5) **ACGIH:** 100 mg/m□(TWA); Skin; A3; Inhalable fraction and vapor (2007)

(68334-30-5) **OSHA:** No PEL established.

Distillates (petroleum), hydrotreated middle

(64742-46-7) **ACGIH:** A2; Exposure by all routes should be carefully controlled to levels as low as possible (2009); For Mineral oil, excluding metal working fluids; Poorly and mildly refined

(64742-46-7) **OSHA:** 5 mg/m□(TWA); For Oil mist, mineral.

Distillates (petroleum), hydrotreated light

(64742-47-8) **ACGIH:** 100 ppm (TWA); (1980); For Stoddard solvent

(64742-47-8) **OSHA:** 500 ppm (TWA), 2900 mg/m□(TWA); For Stoddard solvent.

Hydrogen sulfide (H2S)

(7783-06-4) **ACGIH:** 1 ppm (TWA); 5 ppm (STEL); (2009)

(7783-06-4) **OSHA:** 20 ppm (C); 50 ppm (Peak) (Maximum duration: 10 mins. once only if no other meas. exp. occurs.)
10 ppm (TWA); 15 ppm (STEL) [Vacated]

PEL: Permissible Exposure Limit
TLV: Threshold Limit Value
TWA: Time-Weighted Average
STEL: Short-Term Exposure Limit
C: Ceiling

Engineering Controls:	Use ventilation adequate to keep exposures (airborne levels of dust, fume, vapour, gas, etc.) below recommended exposure limits. Use explosion-proof ventilation equipment.
Personal Protective Equipment	
Eye/Face Protection:	Wear safety glasses. Ensure that eyewash stations are close to the workstation location.
Hand Protection:	Wear impervious gloves. Consult manufacturer specifications for further information.
Skin and Body Protection:	Wear suitable protective clothing. Flame resistant clothing such as Nomex □ is recommended in areas where material is stored or handled.
Respiratory Protection:	If engineering controls and ventilation are not sufficient to control exposure to below the allowable limits then an appropriate NIOSH/MSHA approved air-purifying respirator or self-contained breathing apparatus (SCBA) should be used. Supplied air breathing apparatus must be used when oxygen concentrations are low or if airborne concentrations exceed the limits of the air-purifying respirators.
General Hygiene Considerations:	Handle according to established industrial hygiene and safety practices.

Section 9: PHYSICAL AND CHEMICAL PROPERTIES

Appearance:	Clear to pale yellow liquid.

Colour:	Clear to pale yellow.
Odour:	Petroleum.
Odour Threshold:	Not available.
Physical State:	Liquid.
pH:	Not available.
Viscosity:	Not available.
Melting Point:	-42 °C
Boiling Point:	170 to 370 °C
Flash Point:	44 °C to 60 °C (typically 53 °C) (PMCC)
Evaporation Rate:	Not available.
Lower Flammability Limit:	Not available.
Upper Flammability Limit:	Not available.
Vapor Pressure:	Not available.
Vapor Density:	4 (Air = 1)
Specific Gravity:	0.846 (Water = 1)
Density:	Not available.
Solubility in Water:	Insoluble.
Coefficient of Water/Oil Distribution:	Not available.
Auto-ignition Temperature:	Not available.
Percent Volatile, wt. %:	Not available.
VOC content, wt. %:	Not available.

Section 10: STABILITY AND REACTIVITY

Stability:	Stable under normal storage conditions.
Conditions of Reactivity:	Contact with incompatible materials. Sources of ignition. Exposure to heat.
Incompatible Materials:	Strong oxidizers.
Hazardous Decomposition Products:	Not available.
Possibility of Hazardous Reactions:	None known.

Section 11: TOXICOLOGICAL INFORMATION

EFFECTS OF ACUTE EXPOSURE

Component Toxicity

Component	CAS No.	LD_{50} oral	LD_{50} dermal	LC_{50}
Fuels, diesel	68334-30-5	7500 mg/kg, (rat)	>5000 □l/kg, (rabbit)	Not available.
Distillates (petroleum), hydrotreated middle	64742-46-7	Not available.	Not available.	Not available.
Distillates (petroleum), hydrotreated light	64742-47-8	Not available.	Not available.	Not available.
Hydrogen sulfide (H2S)	7783-06-4	Not available.	Not available.	444 ppm, (rat),

Eye: Irritating to eyes. Signs/symptoms may include redness, swelling, pain, tearing, and blurred or hazy vision. Hydrogen sulphide may cause eye irritation at 1-20 ppm and acute conjunctivitis at higher concentrations. Above 50 ppm H2S, eye irritation may include symptoms of redness, severe swelling, tearing, sensitivity to light and the appearance of 'Halos' around lights.

Skin: Irritating to skin. Signs/symptoms may include localized redness, swelling, and itching.

Ingestion: Harmful or fatal: may cause lung damage if swallowed. Swallowing the liquid may cause aspiration into the lungs with the risk of chemical pneumonitis. May cause gastrointestinal irritation. Signs/symptoms may include abdominal pain, stomach upset, nausea, vomiting and diarrhea.

Inhalation: May cause respiratory tract irritation. Signs/symptoms may include cough, sneezing, nasal discharge, headache, hoarseness, and nose and throat pain. May cause headache, dizziness, confusion, loss of appetite and loss of consciousness. Hydrogen sulphide may cause symptoms such as digestive upset and loss of appetite, loss of sense of smell and pulmonary edema. At 500-1000 ppm Hydrogen sulphide may cause respiratory paralysis, collapse and death without rescue.

Skin Sensitization: Not hazardous by OSHA/WHMIS criteria.

Respiratory Sensitization: Not hazardous by OSHA/WHMIS criteria.

EFFECTS OF CHRONIC EXPOSURE

Target Organs: Skin. Eyes. Gastrointestinal tract. Respiratory system. Blood. Liver. Nervous system. Thymus.

Chronic Effects: Prolonged or repeated contact may dry skin and cause irritation. Diesel fuel may cause damage to the blood, thymus and liver through prolonged or repeated exposure. Hydrogen sulphide may reduce lung function; cause neurological effects such as headaches, nausea, depression and personality changes; eye and mucous membrane irritation: damage to cardiovascular system.

Carcinogenicity: Repeated skin contact with Diesel fuel has resulted in irritation and skin cancer in animals.

Component Carcinogenicity

Component	ACGIH	IARC	NTP	OSHA	Prop 65
Fuels, diesel	A3	Group 3	Not listed.	Not listed.	Not listed.

Distillates (petroleum), hydrotreated middle	A2	Not listed.	Not listed.	Not listed.	Not listed.
Distillates (petroleum), hydrotreated light	Not listed.	Not listed.	Not listed.	Not listed.	Not listed.
Hydrogen sulfide (H2S)	Not listed.	Not listed.	Not listed.	Not listed.	Not listed.

Reproductive Effects: Not hazardous by OSHA/WHMIS criteria.

Developmental Effects
Teratogenicity: Not hazardous by OSHA/WHMIS criteria.

Embryotoxicity: Not hazardous by OSHA/WHMIS criteria.

Toxicologically Synergistic Materials: Not available.

Section 12: ECOLOGICAL INFORMATION

Ecotoxicity: Not available.

Persistence / Degradability: Not available.

Bioaccumulation / Accumulation: Not available.

Mobility in Environment: Not available.

Section 13: DISPOSAL CONSIDERATIONS

Disposal Instructions: Disposal should be in accordance with applicable regional, national and local laws and regulations. Local regulations may be more stringent than regional or national requirements.

Section 14: TRANSPORTATION INFORMATION

CFR
Proper Shipping Name: UN 1202, DIESEL FUEL, 3, PG III

Class: 3

UN Number: 1202

Packing Group: III

Label Code:

TDG
Proper Shipping Name: UN 1202, DIESEL FUEL, 3, PG III

Class: 3

UN Number: 1202

Packing Group: III

Label Code:

Section 15: REGULATORY INFORMATION

Chemical Inventories

US (TSCA)
The components of this product are in compliance with the chemical notification requirements of TSCA.

Canada (DSL)
The components of this product are in compliance with the chemical notification requirements of the NSN Regulations under CEPA, 1999.

Federal Regulations

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

WHMIS Classification:
Class B3 - Combustible Liquids.
Class D2B - Skin irritant.
Class D2B - Eye irritant.

Hazard Symbols:

United States
This MSDS has been prepared to meet the U.S. OSHA Hazard Communication Standard, 29 CFR 1910.1200.

SARA Title III

Component	Section 302 (EHS) TPQ (lbs.)	Section 304 EHS RQ (lbs.)	CERCLA RQ (lbs.)	Section 313	RCRA CODE	CAA 112(r) TQ (lbs.)
Fuels, diesel	Not listed.	Not listed.	Not listed.	Not listed.	Not listed.	Not listed.
Distillates (petroleum), hydrotreated middle	Not listed.	Not listed.	Not listed.	Not listed.	Not listed.	Not listed.
Distillates (petroleum), hydrotreated light	Not listed.	Not listed.	Not listed.	Not listed.	Not listed.	Not listed.
Hydrogen sulfide (H2S)	500	100	100	313s	U135	10000

State Regulations
Massachusetts

US Massachusetts Commonwealth's Right-to-Know Law (Appendix A to 105 Code of Massachusetts Regulations Section 670.000)

Component	CAS No.	RTK List
Fuels, diesel	68334-30-5	Not listed.
Distillates (petroleum), hydrotreated middle	64742-46-7	Not listed.
Distillates (petroleum), hydrotreated light	64742-47-8	Not listed.
Hydrogen sulfide (H2S)	7783-06-4	E

Note: E = Extraordinarily Hazardous Substance

New Jersey

US New Jersey Worker and Community Right-to-Know Act (New Jersey Statute Annotated Section 34:5A-5)

Component	CAS No.	RTK List
Fuels, diesel	68334-30-5	Not listed.
Distillates (petroleum), hydrotreated middle	64742-46-7	Not listed.
Distillates (petroleum), hydrotreated light	64742-47-8	Not listed.
Hydrogen sulfide (H2S)	7783-06-4	SHHS

Note: SHHS = Special Health Hazard Substance

Pennsylvania

US Pennsylvania Worker and Community Right-to-Know Law (34 Pa. Code Chap. 301-323)

Component	CAS No.	RTK List
Fuels, diesel	68334-30-5	Not listed.
Distillates (petroleum), hydrotreated middle	64742-46-7	Not listed.
Distillates (petroleum), hydrotreated light	64742-47-8	Not listed.
Hydrogen sulfide (H2S)	7783-06-4	E

Note: E = Environmental Hazard; S = Special Hazardous Substance

California

California Prop 65: This product does not contain chemicals known to the State of California to cause cancer, birth defects or other reproductive harm.

Section 16: OTHER INFORMATION

Disclaimer:

The information contained in this document applies to this specific material as supplied. It may not be valid for this material if it is used in combination with any other materials. It is the user's responsibility to satisfy oneself as to the suitability and completeness of this information for his own particular use.

Expiry Date: March 18, 2015

Version: 1.0

MSDS Prepared by: **Deerfoot Consulting Inc.**

Phone: (403) 720-3700

Anachemia

255 Norman.
Lachine (Montreal), □ue
H8R 1A3

Material Safety Data Sheet

EMERGENCY NUMBERS:

(USA) CHEMTREC : 1(800) 424-9300 (24hrs)
(CAN) CANUTEC : 1(613) 996-6666 (24hrs)
(USA) Anachemia : 1(518) 297-4444
(CAN) Anachemia : 1(514) 489-5711

WHMIS	Protective Clothing	TDG Road/Rail
WHMIS CLASS: D-2A		Not controlled under TDG (Canada). PIN: Not applicable. PG: Not applicable.
		

Section I. Product Identification and Uses

Product name	**ETHYLENE GLYCOL**
Chemical formula	HOCH2CH2OH
Synonyms	Ethylene alcohol, EG, Glycol, 1,2-Dihydroxyethane, 1,2-Ethanediol, Glycol alcohol, Monoethylene glycol, Ethylene dihydrate, AC-4242, AC-4242P, 39560, 39572
Supplier	Anachemia Canada. 255 Norman. Lachine (Montreal), □ue H8R 1A3
Material uses	For laboratory use only.

CI#	Not available.
CAS#	107-21-1
Code	AC-4242
Formula weight	62.07
Supersedes	

Section II. Ingredients

Name	CAS #	%	TLV
1) ETHYLENE GLYCOL	107-21-1	70-100	Exposure limits: ACGIH (Aerosol) Ceiling limit 39.4 ppm (100 mg/m3)
2) DIETHYLENE GLYCOL	111-46-6	0-5	Not established by ACGIH

Toxicity values of the hazardous ingredients

ETHYLENE GLYCOL:
ORAL (LD50): Acute: 4700 mg/kg (Rat). 5500 mg/kg (Mouse). 1650 mg/kg (Cat).
ORAL (LDLo): Acute: 398 mg/kg (Human).
DERMAL (LD50): Acute: 9530 ul/kg (Rabbit).

Section III. Physical Data

Physical state and appearance / Odor	Colorless liquid with mild odor.
pH (1% soln/water)	Not available.
Odor threshold	Not available.
Percent volatile	100% (V/V)
Freezing point	-13°C
Boiling point	198°C
Specific gravity	1.12 (Water = 1)
Vapor density	2.14 (Air = 1)
Vapor pressure	0.12 mm Hg □ 25°C
Water/oil dist. coeff.	Not available.
Evaporation rate	<0.1 (n-Butyl acetate = 1).
Solubility	Miscible in water.

Section IV. Fire and Explosion Data

Flash point	CLOSED CUP: 111 to 119°C
Flammable limits	LOWER: 3.2% UPPER: 15.3%
Auto-ignition temperature	398 to 412°C
Fire degradation products	Oxides of carbon, various hydrocarbons, etc... Aldehydes, ketones, acids and unidentified organic compounds on combustion.
Fire extinguishing procedures	Apply aqueous film forming foam (AFFF) according to manufacturer's recommended techniques or water in the form of a fog for large fires. Use carbon dioxide or dry chemical media for small fires. Water or foam may cause frothing. Use water spray to disperse vapors; re-ignition is possible. Wear adequate personal protection to prevent contact with material or its combustion products. Self contained breathing apparatus with a full facepiece operated in a pressure demand or other positive pressure mode. Cool containing vessels with flooding quantities of water until well after fire is out.
Fire and Explosion Hazards	Vapor may travel considerable distance to source of ignition and flash back, eliminate all sources of ignition. Contact with oxidizers may cause fire and/or explosion. Vapor forms explosive mixture with air. Not expected to be sensitive to static discharge. Not expected to be sensitive to mechanical impact. Emits toxic fumes under fire conditions. Container explosion may occur under fire conditions or when heated.

Section V. Toxicological Properties

Routes of entry	Inhalation and ingestion. Eye contact. Skin contact. Skin absorption.
Effects of Acute Exposure	Harmful by ingestion, inhalation or skin absorption. May be fatal. Target organs: eyes, skin, respiratory system, central nervous system.
Eye	Causes irritation, redness, and pain. Conjunctivitis.
Skin	Causes skin irritation. Prolonged or repeated contact may lead to dermatitis. May cause defatting, drying, and cracking of the skin. Readily absorbed through intact skin. See ingestion.
Inhalation	Material is irritating to mucous membranes and upper respiratory tract. High vapor concentrations may produce nausea, vomiting, headache, dizziness, irregular eye movements, and central nervous system depression. See ingestion.
Ingestion	Causes gastrointestinal irritation. May cause abdominal pain, central nervous system depression (headache, nausea, vomiting, dizziness, drowsiness, malaise, incoordination, etc..), blurring of vision, irritability, hypotension, cyanosis, tachypnea, tachycardia, anuria, prostration, hypoglycemia, oliguria, uremia, irregular eye movements, repiratory failure, cardiac failure, pulmonary edema, bronchopneumonia, liver damage, severe kidney damage, metabolic acidosis, coma, convulsions and death. If a small amount of the liquid is aspirated into the lungs, very severe lung damage or death could result.

Section V. Toxicological Properties

Effects of Chronic Overexposure	Inhalation of mist may produce signs of central nervous system involvement, particularly dizziness and nystagmus. Repeated skin contact may, in a very small proportion of cases, cause sensitization with the development of allergic contact dermatitis. Ethylene glycol may cause teratogenic/embryotoxic effects based on studies in laboratory animals. Passes through the placental barrier in animal. Ingestion of large amounts has been shown to interfere with repoduction in animals. Specifically, growth retardation and decreased litter size in rats and mice and mating frequency in mice were observed. Carcinogenic effects: Not available. Mutagenic effects: Not available. To the best of our knowledge, the chemical, physical, and toxicity of this substance has not been fully investigated.

Section VI. First Aid Measures

Eye contact	Immediately flush eyes with copious quantities of water for at least 20 minutes holding lids apart to ensure flushing of the entire surface. If irritation persists, repeat flushing. Seek immediate medical attention.
Skin contact	Immediately flush skin with plenty of water and soap for at least 15 minutes while removing contaminated clothing and shoes. Call a physician. Wash contaminated clothing before reusing.
Inhalation	Remove patient to fresh air. Administer approved oxygen supply if breathing is difficult. Administer artificial respiration or CPR if breathing has ceased. Seek immediate medical attention.
Ingestion	Never give anything by mouth to an unconscious or convulsing person. If victim is alert and not convulsing, rinse mouth out and give 1/2 to 1 glass of water to dilute material. DO NOT induce vomiting. If spontaneous vomiting occurs, have victim lean forward with head down to avoid breathing in of vomitus, rinse mouth and administer more water. Immediately transport victim to an emergency facility. EMERGENCY MEDICAL CARE: This product containes materials that may cause severe pneumonitis if aspirated. If ingestion has occurred less than 2 hours earlier, carry out careful gastric lavage; use endotracheal cuff if available, to prevent aspiration. Observe patient for respiratory difficulty from aspiration pneumonitis. Give artificial resuscitation and appropriate chemotherapy if respiration is depressed. See section 10.

Section VII. Reactivity Data

Stability	Stable. Conditions to avoid: High temperatures, sparks, open flames and all other sources of ignition, contamination.
Hazardous decomp. products	Not available.
Incompatibility	Explosive decomposition may occur if combined with strong acids or bases subjected to elevated temperatures. Oxidizing agents, phosphorus (V) sulfide, chromium trioxide, sodium peroxide, potassium permanganate, aluminum metal and materials reactive with hydroxyl compounds. Reducing agents.
Reaction Products	Not available. Hazardous polymerization will not occur.

Section VIII. Preventive Measures

Protective Clothing in case of spill and leak

Wear self-contained breathing apparatus, rubber boots and heavy rubber gloves.

Spill and leak

Evacuate the area. Eliminate all sources of ignition. Absorb on sand or vermiculite and place in a closed container for disposal. Ventilate area and wash spill site after material pick up is complete. DO NOT empty into drains. DO NOT touch damaged container or spilled material. Avoid run off.

Waste disposal

Dissolve or mix the material with a combustible solvent and burn in a chemical incinerator equipped with an after burner and scrubber. According to all applicable regulations. Harmful to aquatic life at low concentrations. Can be dangerous if allowed to enter drinking water intakes. Do not contaminate domestic or irrigation water supplies, lakes, streams, ponds, or rivers.

Storage and Handling

Keep at temperature not exceeding 40°C. Store in a cool place away from heated areas, sparks, and flame. Store in a well ventilated area. Store away from incompatible materials. Do not add any other material to the container. Do not wash down the drain. Do not breathe gas/fumes/vapor/spray. In case of insufficient ventilation, wear suitable respiratory equipment. Keep container tightly closed and dry. Manipulate in a well ventilated area or under an adequate fume hood. Take precautionary measures against electrostatic discharges. Ground the container while dispensing. Ground all equipment containing material. Use explosion proof equipment. Use non-sparking tools. Watch for accumulation in low confined areas. Empty containers may contain a hazardous residue. Do not use pressure to dispense. Handle and open container with care. Take off immediately all contaminated clothing. This product must be manipulated by qualified personnel. Do not get in eyes, on skin, or on clothing. Wash well after use. In accordance with good storage and handling practices. Do not allow smoking and food consumption while handling. In case of accident or if you feel unwell, seek medical advice immediately (show the label when possible.). Never use welding or cutting torch on or near drum (even empty) because product (even just residue) can ignite explosively. May develop pressure. Do not use handling equipment or containers composed of magnesium, aluminum or their alloys.

Section IX. Protective Measures

Protective clothing

Splash goggles. Impervious nitrile rubber, neoprene or PVC gloves, apron, coveralls, and/or other resistant protective clothing. Sufficient to protect skin. Prior to use, user should confirm impermeability. A NIOSH/MSHA-approved air-purifying respirator equipped with organic vapor cartridges for concentrations up to 50 ppm. An air-supplied respirator if concentrations are higher or unkown. Have available and use as appropriate: face shields, rubber suits, aprons, and boots. Do not wear contact lenses. Make eye bath and emergency shower available. Ensure that eyewash station and safety shower is proximal to the work-station location.

Engineering controls

Use in a chemical fume hood to keep airborne levels below recommended exposure limits. Use explosion-proof ventilation equipment. Do not use in unventilated spaces. Vapors are heavier than air and may travel along the ground or pool in low areas. Because vapor is heavy, ventilation must be provided at floor level as well as at higher levels.

Section X. Other Information

Special Precautions or comments

Irritant□Teratogen/Embryotoxic□Harmful or fatal if swallowed□Do not breathe vapor. Avoid all contact with the product. Avoid prolonged or repeated exposure. Use in a chemical fume hood. Keep away from heat, sparks and flame. Handle and open container with care. Container should be opened only by a technically qualified person. RTECS NO: KW2975000 (Ethylene glycol).

NOTES TO PHYSICIAN: Ethylene glycol is metabolized by alcohol dehydrogenase to various metabolites including glycoaldehyde, glycolic acid, and oxalic acid which cause an elevated anion-gap metabolic acidosis and renal tubular injury. Urinalysis may show albuminuria, hematuria and oxaluria. Clinical chemistry may reveal anion-gap metabolic acidosis and uremia. The currently recommended medical management of poisoning includes elimination of Ethylene glycol and metabolites, correction of metabolic acidosis and prevention of kidney injury. It is essential to have immediate and follow-up urinalysis and clinical chemistry. There should be particular emphasis on acid-base balance and renal function tests. A continous infusion of 5% Sodium carbonate with frequent monitoring of electrolytes and fluid balance is used to achieve correction of metabolic acidosis and forced diuresis. As a competitive substrate for alcohol dehydrogenase. Ethanol is antidotal, and its early administration may block the formation of nephrotoxic metabolites of ethylene glycol in the liver. A therapeutically effecive blood concentration of ethanol is in the range of 100-150 mg/dl, and should be achieved by a rapid loading dose and maintained by intravenous infusion. For severe and/or deteriorating cases, hemodialysis may be required. Dialysis should be considered for patients who are symptomatic, have severe metabolic acidosis, a blood Ethylene Glycol concentration greater than 25 mg/dl, or compromise of renal function. 4-Methylpyrazole, a potent inhibitor of alcohol dehydrogenase, has been effectively used to decrease the metabolic consequences of Ethylene Glycol poisoning before metabolic acidosis, coma, seizure, and renal failure have occurred. Additional therapeutic measures may include the administration of confactors involved in the metabolism of Ethylene Glycol. Thiamine (100 mg) and pyridoxine (50 mg) should be given every six hours. Pulmonary edema with hypoxemia has been described in a number of patients following poisoning with ethylene glycol. The mechanism of production has not been elucidated, but it appears to be noncardiogenic in origin in several cases. Respiratory support with mechanical ventilation and positive end-expiratory pressure may be required. There may be cranial nerve involvement in the late stages of toxicity from swallowed ethylene glycol. In particular, effects have been reported involving seventh, eighth and ninth cranial nerves presenting with bilateral facial paralysis, diminished hearing, and dysphagia.

Synergistic materials: Alcohols/glycols may interact synergistically with chlorinated solvents (example: carbon tetrachloride, chloroform, bromotrichloromethane), dithiocarbamates (example: disulfiram), dimethylnitrosamine and thioacetamide.

NFPA

Prepared by MSDS Department/Département de F.S..

Validated 05-Feb-2010

MATERIAL SAFETY DATA SHEET

SECTION 1 PRODUCT AND COMPANY IDENTIFICATION

PRODUCT

Product Name: (see Section 16 for Synonyms) **GASOLINE UNLEADED WITH ETHANOL (GASOHOL)**
Product Description: Hydrocarbons and Additives
MSDS Number: 12443
Intended Use: Fuel

COMPANY IDENTIFICATION

Supplier: **Imperial Oil Products Division**
240 4th Avenue
Calgary, ALBERTA. T2P 3M9 Canada

24 Hour Environmental / Health Emergency Telephone	519-339-2145
Transportation Emergency Phone Number	519-339-2145
Product Technical Information	1-800-268-3183
Supplier General Contact	1-800-567-3776

SECTION 2 COMPOSITION / INFORMATION ON INGREDIENTS

Reportable Hazardous Substance(s) or Complex Substance(s)

Name	CAS#	Concentration*	Acute Toxicity
ETHYL ALCOHOL	64-17-5	5 - 10%	Inhalation Lethality: LC50 20000 ppm (Rat); Oral Lethality: LD50 7.06 g/kg (Rat)
GASOLINE	86290-81-5	85 - 95%	None
METHYL-TERT-BUTYL ETHER	1634-04-4	0 - 7%	Dermal Lethality: LD50 > 10.0 g/kg (Rabbit); Inhalation Lethality: LC50 23576 ppm (Rat); Oral Lethality: LD50 4.0 g/kg (Rat)

Hazardous Constituent(s) Contained in Complex Substance(s)

Name	CAS#	Concentration*	Acute Toxicity
BENZENE	71-43-2	0 - 1.5%	Dermal Lethality: LD50 > 9.4 g/kg (Rabbit); Inhalation Lethality: LC50 13328 ppm (Rat); Oral Lethality: LD50 0.93 g/kg (Rat)
CUMENE	98-82-8	0 - 1%	Dermal Lethality: LD50 10.6 g/kg (Rabbit); Inhalation Lethality: LC50 8000 ppm (Rat); Oral Lethality: LD50 1.4 g/kg (Rat)
CYCLOHEXANE	110-82-7	0 - 1%	Dermal Lethality: LD50 > 18 g/kg (Rabbit); Oral Lethality: 12 g/kg (Rat)
ETHYL BENZENE	100-41-4	0 - 3%	Dermal Lethality: LD50 15 g/kg (Rabbit); Inhalation Lethality: LC50 4000 ppm (Rat); Oral Lethality: LD50 3.5 g/kg (Rat)

n-Hexane	110-54-3	0 - 3%	Dermal Lethality: LD50 3.295 g/kg (Rabbit); Inhalation Lethality: LC50 97469 ppm (Rat); Oral Lethality: LD50 28.7 g/kg (Rat)
NAPHTHALENE	91-20-3	0 - 1%	Dermal Lethality: LD50 > 20 g/kg (Rabbit); Oral Lethality: LD50 0.49 g/kg (Rat)
TOLUENE	108-88-3	0 - 20%	Dermal Lethality: LD50 12.10 g/kg (Rabbit); Inhalation Lethality: LC50 8000 ppm (Rat); Oral Lethality: LD50 5.0 g/kg (Rat)
XYLENES	1330-20-7	0 - 10%	Dermal Lethality: LD50 4.5 g/kg (Rabbit); Inhalation Lethality: LC50 5000 ppm (Rat); Oral Lethality: LD50 4.3 g/kg (Rat)

* All concentrations are percent by weight unless ingredient is a gas. Gas concentrations are in percent by volume.

NOTE: The concentration of the components shown above may vary substantially. In certain countries, benzene content may be limited to lower levels. Oxygenates such as tertiary-amyl-methyl ether, ethanol, di-isopropyl ether, and ethyl-tertiary-butyl ether may be present. Because of volatility considerations, gasoline vapor may have concentrations of components very different from those of liquid gasoline. The major components of gasoline vapor are: butane, isobutane, pentane, and isopentane. The reportable component percentages, shown in the composition/information on ingredients section, are based on API's evaluation of a typical gasoline mixture.

SECTION 3 HAZARDS IDENTIFICATION

This material is considered to be hazardous according to regulatory guidelines (see (M)SDS Section 15).

PHYSICAL/CHEMICAL EFFECTS

FLAMMABLE. Material can release vapours that readily form flammable mixtures. Vapour accumulation could flash and/or explode if ignited. Material can accumulate static charges which may cause an ignition.

HEALTH EFFECTS

May cause cancer. Repeated exposure may cause skin dryness or cracking. If swallowed, may be aspirated and cause lung damage. May be irritating to the eyes, nose, throat, and lungs. May cause central nervous system depression. High-pressure injection under skin may cause serious damage. Prolonged and repeated exposure to benzene may cause serious injury to blood forming organs and is associated with anaemia and to the later development of acute myelogenous leukaemia (AML).

Target Organs: Blood and/or blood-forming organs |

NFPA Hazard ID:	Health:	1	Flammability:	3	Reactivity: 0
HMIS Hazard ID:	Health:	1*	Flammability:	3	Reactivity: 0

NOTE: This material should not be used for any other purpose than the intended use in Section 1 without expert advice. Health studies have shown that chemical exposure may cause potential human health risks which may vary from person to person.

SECTION 4 FIRST AID MEASURES

INHALATION

Remove from further exposure. For those providing assistance, avoid exposure to yourself or others. Use adequate respiratory protection. If respiratory irritation, dizziness, nausea, or unconsciousness occurs, seek immediate medical assistance. If breathing has stopped, assist ventilation with a mechanical device or use mouth-to-mouth resuscitation.

SKIN CONTACT

Wash contact areas with soap and water. Remove contaminated clothing. Launder contaminated clothing before reuse. If product is injected into or under the skin, or into any part of the body, regardless of the appearance of the wound or its size, the individual should be evaluated immediately by a physician as a surgical emergency. Even though initial symptoms from high pressure injection may be minimal or absent, early surgical treatment within the first few hours may significantly reduce the ultimate extent of injury.

EYE CONTACT

Flush thoroughly with water. If irritation occurs, get medical assistance.

INGESTION

Seek immediate medical attention. Do not induce vomiting.

NOTE TO PHYSICIAN

If ingested, material may be aspirated into the lungs and cause chemical pneumonitis. Treat appropriately.

PRE-EXISTING MEDICAL CONDITIONS WHICH MAY BE AGGRAVATED BY EXPOSURE

Benzene- Individuals with liver disease may be more susceptible to toxic effects.

SECTION 5 FIRE FIGHTING MEASURES

EXTINGUISHING MEDIA

Appropriate Extinguishing Media: Use water fog, foam, dry chemical or carbon dioxide (CO2) to extinguish flames.

Inappropriate Extinguishing Media: Straight streams of water

FIRE FIGHTING

Fire Fighting Instructions: Evacuate area. If a leak or spill has not ignited, use water spray to disperse the vapours and to protect personnel attempting to stop a leak. Prevent run-off from fire control or dilution from entering streams, sewers or drinking water supply. Fire-fighters should use standard protective equipment and in enclosed spaces, self-contained breathing apparatus (SCBA). Use water spray to cool fire exposed surfaces and to protect personnel.

Unusual Fire Hazards: Extremely Flammable. Vapour is flammable and heavier than air. Vapour may travel across the ground and reach remote ignition sources, causing a flashback fire danger.

Hazardous Combustion Products: Smoke, Fume, Aldehydes, Sulphur oxides, Incomplete combustion products, Oxides of carbon

FLAMMABILITY PROPERTIES

Flash Point [Method]: -40C (-40F) [ASTM D-92]
Flammable Limits (Approximate volume % in air): LEL: 1.5 UEL: 7.6
Autoignition Temperature: N/D

SECTION 6 ACCIDENTAL RELEASE MEASURES

NOTIFICATION PROCEDURES

In the event of a spill or accidental release, notify relevant authorities in accordance with all applicable regulations.

PROTECTIVE MEASURES

Avoid contact with spilled material. Warn or evacuate occupants in surrounding and downwind areas if required, due to toxicity or flammability of the material. See Section 5 for fire fighting information. See the Hazard Identification Section for Significant Hazards. See Section 4 for First Aid Advice. See Section 8 for Personal Protective Equipment.

SPILL MANAGEMENT

Land Spill: Eliminate all ignition sources (no smoking, flares, sparks or flames in immediate area). Stop leak if you can do so without risk. All equipment used when handling the product must be grounded. Do not touch or walk through spilled material. Prevent entry into waterways, sewer, basements or confined areas. A vapour-suppressing foam may be used to reduce vapour. Use clean non-sparking tools to collect absorbed material. Absorb or cover with dry earth, sand or other non-combustible material and transfer to containers. Large Spills: Water spray may reduce vapour, but may not prevent ignition in enclosed spaces.

Water Spill: Eliminate all ignition sources (no smoking, flares, sparks or flames in immediate area). Stop leak if you can do so without risk. Do not confine in area of spill. Advise occupants and shipping in downwind areas of fire and explosion hazard and warn them to stay clear. Allow liquid to evaporate from the surface. Seek the advice of a specialist before using dispersants.

Water spill and land spill recommendations are based on the most likely spill scenario for this material; however, geographic conditions, wind, temperature, (and in the case of a water spill) wave and current direction and speed may greatly influence the appropriate action to be taken. For this reason, local experts should be consulted. Note: Local regulations may prescribe or limit action to be taken.

ENVIRONMENTAL PRECAUTIONS

Large Spills: Dyke far ahead of liquid spill for later recovery and disposal. Prevent entry into waterways, sewers, basements or confined areas.

SECTION 7 HANDLING AND STORAGE

HANDLING

Avoid breathing mists or vapour. Avoid contact with skin. Prevent exposure to ignition sources, for example use non-sparking tools and explosion-proof equipment. Potentially toxic/irritating fumes/vapour may be evolved from heated or agitated material. Do not siphon by mouth. Use only with adequate ventilation. Do not use as a cleaning solvent or other non-motor fuel uses. For use as a motor fuel only. It is dangerous and/or unlawful to put petrol into unapproved containers. Do not fill container while it is in or on a vehicle. Static electricity may ignite vapour and cause fire. Place container on ground when filling and keep nozzle in contact with container. Do not use electronic devices (including but not limited to cellular phones, computers, calculators, pagers or other electronic devices etc) in or around any fuelling operation or storage area unless the devices are certified intrinsically safe by an approved national testing agency and to the safety standards required by national and/or local laws and regulations. Prevent small spills and leakage to avoid slip hazard. Material can accumulate static charges which may cause an electrical spark (ignition source). Use proper bonding and/or ground procedures. However, bonding and grounds may not eliminate the hazard from static accumulation. Consult local applicable standards for guidance. Additional references include American Petroleum Institute 2003 (Protection Against Ignitions Arising out of Static, Lightning and Stray Currents) or National Fire Protection Agency 77 (Recommended Practice on Static Electricity) or CENELEC CLC/TR 50404 (Electrostatics - Code of

practice for the avoidance of hazards due to static electricity).

Static Accumulator: This material is a static accumulator. A liquid is typically considered a nonconductive, static accumulator if its conductivity is below 100 pS/m (100x10E-12 Siemens per meter) and is considered a semiconductive, static accumulator if its conductivity is below 10,000 pS/m. Whether a liquid is nonconductive or semiconductive, the precautions are the same. A number of factors, for example liquid temperature, presence of contaminants, anti-static additives and filtration can greatly influence the conductivity of a liquid.

STORAGE

Ample fire water supply should be available. A fixed sprinkler/deluge system is recommended. The container choice, for example storage vessel, may effect static accumulation and dissipation. Keep container closed. Handle containers with care. Open slowly in order to control possible pressure release. Store in a cool, well-ventilated area. Outside or detached storage preferred. Storage containers should be earthed and bonded. Drums must be earthed and bonded and equipped with self-closing valves, pressure vacuum bungs and flame arresters.

SECTION 8 EXPOSURE CONTROLS / PERSONAL PROTECTION

Substance Name	Form	Limit/Standard			Note	Source
BENZENE		STEL	2.5 ppm		Skin	ACGIH
BENZENE		TWA	0.5 ppm		Skin	ACGIH
CUMENE		TWA	50 ppm			ACGIH
CYCLOHEXANE		TWA	100 ppm			ACGIH
ETHYL ALCOHOL		STEL	1000 ppm			ACGIH
ETHYL BENZENE		STEL	125 ppm			ACGIH
ETHYL BENZENE		TWA	100 ppm			ACGIH
GASOLINE		STEL	200 ppm			Supplier
GASOLINE		TWA	100 ppm			Supplier
GASOLINE	Vapour.	TWA	300 mg/m3	100 ppm		Supplier
METHYL-TERT-BUTYL ETHER		TWA	50 ppm			ACGIH
n-Hexane		TWA	50 ppm		Skin	ACGIH
NAPHTHALENE		STEL	15 ppm		Skin	ACGIH
NAPHTHALENE		TWA	10 ppm		Skin	ACGIH
TOLUENE		TWA	20 ppm			ACGIH
XYLENES		STEL	150 ppm			ACGIH
XYLENES		TWA	100 ppm			ACGIH

NOTE: Limits/standards shown for guidance only. Follow applicable regulations.

ENGINEERING CONTROLS

The level of protection and types of controls necessary will vary depending upon potential exposure conditions. Control measures to consider:

Use explosion-proof ventilation equipment to stay below exposure limits.

PERSONAL PROTECTION

Personal protective equipment selections vary based on potential exposure conditions such as applications, handling practices, concentration and ventilation. Information on the selection of protective equipment for use with this material, as provided below, is based upon intended, normal usage.

Respiratory Protection: If engineering controls do not maintain airborne contaminant concentrations at a level which is adequate to protect worker health, an approved respirator may be appropriate. Respirator selection, use, and maintenance must be in accordance with regulatory requirements, if applicable. Types of respirators to be considered for this material include:

Half-face filter respirator

For high airborne concentrations, use an approved supplied-air respirator, operated in positive pressure mode. Supplied air respirators with an escape bottle may be appropriate when oxygen levels are inadequate, gas/vapour warning properties are poor, or if air purifying filter capacity/rating may be exceeded.

Hand Protection: Any specific glove information provided is based on published literature and glove manufacturer data. Glove suitability and breakthrough time will differ depending on the specific use conditions. Contact the glove manufacturer for specific advice on glove selection and breakthrough times for your use conditions. Inspect and replace worn or damaged gloves. The types of gloves to be considered for this material include:

If prolonged or repeated contact is likely, chemical-resistant gloves are recommended. If contact with forearms is likely, wear gauntlet-style gloves.

Eye Protection: If contact is likely, safety glasses with side shields are recommended.

Skin and Body Protection: Any specific clothing information provided is based on published literature or manufacturer data. The types of clothing to be considered for this material include:

If prolonged or repeated contact is likely, chemical, and oil resistant clothing is recommended.

Specific Hygiene Measures: Always observe good personal hygiene measures, such as washing after handling the material and before eating, drinking, and/or smoking. Routinely wash work clothing and protective equipment to remove contaminants. Discard contaminated clothing and footwear that cannot be cleaned. Practise good housekeeping.

ENVIRONMENTAL CONTROLS

See Sections 6, 7, 12, 13.

SECTION 9 PHYSICAL AND CHEMICAL PROPERTIES

Typical physical and chemical properties are given below. Consult the Supplier in Section 1 for additional data.

GENERAL INFORMATION

Physical State: Liquid
Colour: Clear (May Be Dyed)
Odour: Petroleum/Solvent
Odour Threshold: N/D

IMPORTANT HEALTH, SAFETY, AND ENVIRONMENTAL INFORMATION

Relative Density (at 15 C): 0.751
Flash Point [Method]: -40C (-40F) [ASTM D-92]
Flammable Limits (Approximate volume % in air): LEL: 1.5 UEL: 7.6
Autoignition Temperature: N/D
Boiling Point / Range: 35C (95F) - 225C (437F)
Vapour Density (Air = 1): 4 at 101 kPa
Vapour Pressure: 45 kPa (337.5 mm Hg) at 20°C - 74 kPa (555 mm Hg) at 20°C

Evaporation Rate (n-butyl acetate = 1): > 10
pH: N/A
Log Pow (n-Octanol/Water Partition Coefficient): > 3
Solubility in Water: Appreciable
Viscosity: <1 cSt (1 mm2/sec) at 40°C | 0.8 cSt (0.8 mm2/sec) at 20C
Oxidizing Properties: See Hazards Identification Section.

OTHER INFORMATION

Freezing Point: N/D
Melting Point: N/A
Pour Point: < -60°C (-76°F)

SECTION 10 STABILITY AND REACTIVITY

STABILITY: Material is stable under normal conditions.

CONDITIONS TO AVOID: Avoid heat, sparks, open flames and other ignition sources.

MATERIALS TO AVOID: Halogens, Strong Acids, Alkalies, Strong oxidizers

HAZARDOUS DECOMPOSITION PRODUCTS: Material does not decompose at ambient temperatures.

HAZARDOUS POLYMERIZATION: Will not occur.

SECTION 11 TOXICOLOGICAL INFORMATION

ACUTE TOXICITY

Route of Exposure	Conclusion / Remarks
Inhalation	
Toxicity (Rat): LC50 > 5000 mg/m3	Minimally Toxic. Based on test data for structurally similar materials.
Irritation: No end point data.	Elevated temperatures or mechanical action may form vapours, mist, or fumes which may be irritating to the eyes, nose, throat, or lungs. Based on assessment of the components.
Ingestion	
Toxicity (Rat): LD50 > 2000 mg/kg	Minimally Toxic. Based on test data for structurally similar materials.
Skin	
Toxicity (Rabbit): LD50 > 2000 mg/kg	Minimally Toxic. Based on test data for structurally similar materials.
Irritation: No end point data.	Mildly irritating to skin with prolonged exposure. Based on test data for structurally similar materials.
Eye	
Irritation: Data available.	May cause mild, short-lasting discomfort to eyes. Based on test data for structurally similar materials.

CHRONIC/OTHER EFFECTS

For the product itself:

Laboratory animal studies have shown that prolonged and repeated inhalation exposure to light hydrocarbon vapours in the same boiling range as this product can produce adverse kidney effects in male rats. However, these effects were not observed in similar studies with female rats, male and female mice, or in limited studies

with other animal species. Additionally, in a number of human studies, there was no clinical evidence of such effects at normal occupational levels. In 1991, The U.S. EPA determined that the male rat kidney is not useful for assessing human risk. Vapour concentrations above recommended exposure levels are irritating to the eyes and the respiratory tract, may cause headaches and dizziness, are anaesthetic and may have other central nervous system effects. Small amounts of liquid aspirated into the lungs during ingestion or from vomiting may cause chemical pneumonitis or pulmonary edema.

Contains:

BENZENE: Caused cancer (leukemia), damage to the blood-producing system, and serious blood disorders from prolonged, high exposure based on human epidemiology studies. Caused genetic effects and effects on the immune system in laboratory animal and some human studies. Caused toxicity to the fetus in laboratory animal studies.

CUMENE: Repeated inhalation exposure of cumene vapour produced damage in the kidney of male rats only. These effects are believed to be species specific and are not relevant to humans. ETHANOL: Prolonged or repeated exposure to high concentrations of ethanol vapour or overexposure by ingestion may produce adverse effects to brain, kidney, liver, and reproductive organs, birth defects in offspring, and developmental toxicity in offspring. GASOLINE UNLEADED: Carcinogenic in animal tests. Chronic inhalation studies resulted in liver tumours in female mice and kidney tumours in male rats. Neither result considered significant for human health risk assessment by the United States EPA and others. Did not cause mutations in-vitro or in-vivo. Negative in inhalation developmental studies and reproductive tox studies. Inhalation of high concentrations in animals resulted in reversible central nervous system depression, but no persistent toxic effect on the nervous system. Non-sensitizing in test animals. Caused nerve damage in humans from abusive use (sniffing). METHYL TERTIARY BUTYL ETHER (MTBE): Carcinogenic in animal tests. Inhalation exposure to high concentrations resulted in higher than expected mortality in male mice due to urinary tract obstructions and female mice displayed benign liver tumours. Inhalation exposure to high concentrations resulted in higher than expected mortality in male rats due to progressive kidney damage as well as increased benign and malignant kidney tumours, and benign testicular tumours. Did not cause mutations in-vitro or in-vivo. Rabbits exposed to high vapour concentrations did not have any offspring with adverse developmental effects. Mice exposed to high vapour concentrations (maternally toxic) had offspring with embryo/fetal toxicity and birth defects. Rats exposed to high vapour concentrations did not display any treatment-related effects in a two generation reproduction study.The significance of the animal findings at high exposures are not believed to be directly related to potential human health hazards in the workplace. NAPHTHALENE: Exposure to high concentrations of naphthalene may cause destruction of red blood cells, anemia, and cataracts. Naphthalene caused cancer in laboratory animal studies, but the relevance of these findings to humans is uncertain.

N-HEXANE: Prolonged and/or repeated exposures to n-Hexane can cause progressive and potentially irreversible damage to the peripheral nervous system (e.g. fingers, feet, arms, legs, etc.). Simultaneous exposure to Methyl Ethyl Ketone (MEK) or Methyl Isobutyl Ketone (MIBK) and n-Hexane can potentiate the risk of adverse effects from n-Hexane on the peripheral nervous system. n-Hexane has been shown to cause testicular damage at high doses in male rats. The relevance of this effect for humans is unknown. TOLUENE : Concentrated, prolonged or deliberate inhalation may cause brain and nervous system damage. Prolonged and repeated exposure of pregnant animals (> 1500 ppm) have been reported to cause adverse fetal developmental effects. ETHYLBENZENE: Caused cancer in laboratory animal studies. The relevance of these findings to humans is uncertain.

XYLENES: High exposures to xylenes in some animal studies have been reported to cause health effects on the developing embryo/fetus. These effects were often at levels toxic to the mother. The significance of these findings to humans has not been determined.

Additional information is available by request.

CMR Status:

Chemical Name	CAS Number	List Citations
BENZENE	71-43-2	1, 4, 5
CUMENE	98-82-8	4

CYCLOHEXANE	110-82-7	4
ETHYL ALCOHOL	64-17-5	4
ETHYL BENZENE	100-41-4	3, 4
GASOLINE	86290-81-5	3, 4
METHYL-TERT-BUTYL ETHER	1634-04-4	4
n-Hexane	110-54-3	4
NAPHTHALENE	91-20-3	3, 4
TOLUENE	108-88-3	4
XYLENES	1330-20-7	4

--REGULATORY LISTS SEARCHED--

1 = IARC 1
2 = IARC 2A
3 = IARC 2B
4 = ACGIH ALL
5 = ACGIH A1
6 = ACGIH A2

SECTION 12 ECOLOGICAL INFORMATION

The information given is based on data available for the material, the components of the material, and similar materials.

ECOTOXICITY

Material -- Expected to be toxic to aquatic organisms. May cause long-term adverse effects in the aquatic environment.

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.

PERSISTENCE AND DEGRADABILITY

Biodegradation:

Majority of components -- Expected to be inherently biodegradable

Atmospheric Oxidation:

More volatile component -- Expected to degrade rapidly in air

BIOACCUMULATION POTENTIAL

Majority of components -- Has the potential to bioaccumulate, however metabolism or physical properties may reduce the bioconcentration or limit bioavailability.

SECTION 13 DISPOSAL CONSIDERATIONS

Disposal recommendations based on material as supplied. Disposal must be in accordance with current applicable laws and regulations, and material characteristics at time of disposal.

DISPOSAL RECOMMENDATIONS

Product is suitable for burning in an enclosed controlled burner for fuel value or disposal by supervised incineration at very high temperatures to prevent formation of undesirable combustion products.

REGULATORY DISPOSAL INFORMATION

Empty Container Warning Empty Container Warning (where applicable): Empty containers may contain 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. DO NOT PRESSURISE, 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.

SECTION 14 TRANSPORT INFORMATION

LAND (TDG)

Proper Shipping Name: GASOLINE
Hazard Class & Division: 3
UN Number: 1203
Packing Group: II
Marine Pollutant: Yes
Special Provisions: 17

Footnote: Marine Pollutant designation is applicable only if shipped over water.

LAND (DOT)

Proper Shipping Name: GASOLINE
Hazard Class & Division: 3
ID Number: 1203
Packing Group: II
ERG Number: 128
Label(s): 3
Transport Document Name: UN1203, GASOLINE, 3, PG II

SEA (IMDG)

Proper Shipping Name: MOTOR SPIRIT or GASOLINE or PETROL
Hazard Class & Division: 3
EMS Number: F-E, S-E
UN Number: 1203
Packing Group: II
Label(s): 3
Transport Document Name: UN1203, MOTOR SPIRIT or GASOLINE or PETROL, 3, PG II, (-40°C c.c.)

AIR (IATA)

Proper Shipping Name: MOTOR SPIRIT or GASOLINE or PETROL
Hazard Class & Division: 3
UN Number: 1203
Packing Group: II
Label(s) / Mark(s): 3
Transport Document Name: UN1203, GASOLINE, 3, PG II

SECTION 15 REGULATORY INFORMATION

WHMIS Classification: Class B, Division 2: Flammable Liquids Class D, Division 2, Subdivision A: Very Toxic Material

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

CEPA: All components of this material are either on the Canadian Domestic Substances List (DSL), exempt, or have been notified under CEPA.

NATIONAL CHEMICAL INVENTORY LISTING: AICS, DSL, EINECS, ENCS, KECI, PICCS, TSCA

The Following Ingredients are Cited on the Lists Below:

Chemical Name	CAS Number	List Citations
BENZENE	71-43-2	6
CUMENE	98-82-8	6
CYCLOHEXANE	110-82-7	6
ETHYL BENZENE	100-41-4	6
METHYL-TERT-BUTYL ETHER	1634-04-4	6
n-Hexane	110-54-3	6
NAPHTHALENE	91-20-3	1, 6
TOLUENE	108-88-3	6
XYLENES	1330-20-7	1, 6

--REGULATORY LISTS SEARCHED--

1 = TSCA 4
2 = TSCA 5a2
3 = TSCA 5e
4 = TSCA 6
5 = TSCA 12b
6 = NPRI

SECTION 16 OTHER INFORMATION

N/D = Not determined, N/A = Not applicable

THIS SAFETY DATA SHEET CONTAINS THE FOLLOWING REVISIONS:

Revision Changes:
Section 04: First Aid Skin - Header was modified.
Section 04: First Aid Eye - Header was modified.
Section 04: First Aid Ingestion - Header was modified.
Section 05: Fire Fighting Measures - Unusual Fire Hazards was modified.
Section 06: Notification Procedures - Header was modified.
Section 10: Materials To Avoid - Header was modified.
Section 11: Acute Toxicity Table Header was modified.
Section 09: Physical State was modified.
Section 11: Inhalation - Header was modified.
Section 09: Evaporation Rate - Header was modified.
Section 09: Vapour Pressure - Header was modified.
Section 07: Handling and Storage-Handling was modified.
Section 07: Handling and Storage-Storage Phrases was modified.
Hazard Identification: Physical/Chemical Hazard was modified.

Section 07: Static Accumulator was modified.
Section 11: Inhalation Lethality Test Data was modified.
Section 05: Hazardous Combustion Products was modified.
Section 09 Viscosity was modified.
Section 09 Viscosity was modified.
Section 14: Proper Shipping Name was modified.
Section 14: Marine Pollutant was modified.
Section 15: National Chemical Inventory Listing - Header was modified.
Section 16: Synonyms was modified.
Hazard Identification: Hazards Note was modified.
Section 16: Health Hazards - Header was modified.
Section 16: Physical Hazards - Header was modified.
Section 16: CA Prepared by - Header was modified.
Composition: Component table was modified.
Section 08: Exposure Limits Table was modified.
Section 16: Physical Hazards additional was modified.
Section 16: First Aid Inhalation - Header was modified.
Section 16: Precautions was modified.
Section 16: Precautionary Label Text - Header was modified.
Section 09: Oxidizing Properties was modified.
Section 15: Canadian List Citations Table was modified.
Section 11: Tox List Cited Table was modified.
Composition: Footnotes was modified.
Section 13: Regulatory Disposal Information - Header was modified.
Section 14: TDG Footnote was added.

SYNONYMS: EXXON PREMIUM GASOLINE WITH ETHANOL, EXXON REGULAR GASOLINE WITH ETHANOL, GASOLINE REGULAR UNLEADED RUL87 DYED WITH ETHANOL, GASOLINE REGULAR UNLEADED RUL87 DCA DYED WITH ETHANOL, GASOLINE REGULAR UNLEADED RUL87 LDCA WITH ETHANOL, GASOLINE MIDGRADE UNLEADED MUL89 LDCA WITH ETHANOL, GASOLINE REGULAR UNLEADED RUL87 LDCA DYED WITH ETHANOL, GASOLINE MIDGRADE UNLEADED MUL89 DCA WITH ETHANOL, GASOLINE REGULAR UNLEADED RUL87 WITH ETHANOL, GASOLINE REGULAR UNLEADED RUL87 DCA WITH ETHANOL, OXYGENATED UNLEADED AUTOMOTIVE GASOLINE CONTAINING ETHANOL, ESSO EXTRA MIDGRADE GASOLINE WITH ETHANOL, ESSO MIDGRADE GASOLINE WITH ETHANOL, ESSO PREMIUM GASOLINE WITH ETHANOL, ESSO REGULAR GASOLINE WITH ETHANOL, EXXON MIDGRADE GASOLINE WITH ETHANOL

PRECAUTIONARY LABEL TEXT:

WHMIS Classification: Class B, Division 2: Flammable Liquids Class D, Division 2, Subdivision A: Very Toxic Material

HEALTH HAZARDS

May cause cancer. Repeated exposure may cause skin dryness or cracking. If swallowed, may be aspirated and cause lung damage. May cause central nervous system depression.

Target Organs: Blood and/or blood-forming organs |

PHYSICAL HAZARDS

FLAMMABLE. Material can accumulate static charges which may cause an ignition. Material can release vapours that readily form flammable mixtures. Vapour accumulation could flash and/or explode if ignited.

PRECAUTIONS

Avoid breathing mists or vapour. Avoid contact with skin. Prevent exposure to ignition sources, for example use non-sparking tools and explosion-proof equipment. Potentially toxic/irritating fumes/vapour may be evolved from heated or

agitated material. Do not siphon by mouth. Use only with adequate ventilation. Use proper bonding and/or earthing procedures.However, bonding and earthing may not eliminate the hazard from static accumulation.

FIRST AID

Inhalation: Remove from further exposure. For those providing assistance, avoid exposure to yourself or others. Use adequate respiratory protection. If respiratory irritation, dizziness, nausea, or unconsciousness occurs, seek immediate medical assistance. If breathing has stopped, assist ventilation with a mechanical device or use mouth-to-mouth resuscitation.

Eye: Flush thoroughly with water. If irritation occurs, get medical assistance.

Oral: Seek immediate medical attention. Do not induce vomiting.

Skin: Wash contact areas with soap and water. Remove contaminated clothing. Launder contaminated clothing before reuse. If product is injected into or under the skin, or into any part of the body, regardless of the appearance of the wound or its size, the individual should be evaluated immediately by a physician as a surgical emergency. Even though initial symptoms from high pressure injection may be minimal or absent, early surgical treatment within the first few hours may significantly reduce the ultimate extent of injury.

FIRE FIGHTING MEDIA

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

SPILL/LEAK

Land Spill: Eliminate all ignition sources (no smoking, flares, sparks or flames in immediate area). Stop leak if you can do so without risk. Prevent entry into waterways, sewer, basements or confined areas. A vapour-suppressing foam may be used to reduce vapour. Absorb or cover with dry earth, sand or other non-combustible material and transfer to containers.

Water Spill: Eliminate all ignition sources (no smoking, flares, sparks or flames in immediate area). Stop leak if you can do so without risk. Do not confine in area of spill. Advise occupants and shipping in downwind areas of fire and explosion hazard and warn them to stay clear. Allow liquid to evaporate from the surface. Seek the advice of a specialist before using dispersants.

DGN: 5010466 (1012958)

Prepared by: Imperial Oil Limited, IH and Product Safety

Non-Detergent Motor Oil

Material Safety Data Sheet

1. Product and Company Identification

Product Name: Non-Detergent Motor Oil

MSDS Number: 726220

Synonyms/Other Means of Identification: Kendall Non-Detergent Motor Oil, SAE 10W
Kendall Non-Detergent Motor Oil, SAE 20W-20
Kendall Non-Detergent Motor Oil, SAE 30

Intended Use: Automotive Engine Oil

Manufacturer: ConocoPhillips Lubricants
600 N. Dairy Ashford, 2W900
Houston, Texas 77079-1175

Emergency Health and Safety Number: Chemtrec: 800-424-9300 (24 Hours)

Customer Service: U.S.: 800-368-7128 or International: 1-83-2486-3363

Technical Information: 800-368-1267

MSDS Information: Phone: 800-762-0942
Email: MSDS conocophillips.com
www.conocophillips.com

2. Hazards Identification

Emergency Overview

This material is not considered hazardous according to OSHA criteria.

NFPA

Appearance: Clear Amber
Physical Form: Liquid
Odor: Petroleum

Potential Health Effects

Eye: Contact may cause mild eye irritation including stinging, watering, and redness.

Skin: Contact may cause mild skin irritation including redness and a burning sensation. Repeated exposure may cause skin dryness or cracking. No harmful effects from skin absorption are expected.

Inhalation (Breathing): Not expected to be toxic.

Ingestion (Swallowing): No harmful effects expected from ingestion.

Signs and Symptoms: Inhalation of oil mists or vapors generated at elevated temperatures may cause respiratory irritation. Accidental ingestion can result in minor irritation of the digestive tract, nausea and diarrhea.

Pre-Existing Medical Conditions: Conditions which may be aggravated by exposure include skin disorders.

See Section 11 for additional Toxicity Information.

3. Composition / Information on Ingredients

Component	CASRN	Concentration[1]
Lubricant Base Oil (Petroleum)	VARIOUS	>99
Additives	PROPRIETARY	<1

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

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: Remove contaminated shoes and clothing and cleanse affected area(s) thoroughly by washing with mild soap and water or a waterless hand cleaner. If irritation or redness develops and persists, seek medical attention.

Inhalation (Breathing): First aid is not normally required. If breathing difficulties develop, move victim away from source of exposure and into fresh air in a position comfortable for breathing. Seek immediate medical attention.

Ingestion (Swallowing): First aid is not normally required; however, if swallowed and symptoms develop, seek medical attention.

Notes to Physician: Acute aspirations of large amounts of oil-laden material may produce a serious aspiration pneumonia. Patients who aspirate these oils should be followed for the development of long-term sequelae. Inhalation exposure to oil mists below current workplace exposure limits is unlikely to cause pulmonary abnormalities.

5. Fire-Fighting Measures

NFPA 704 Hazard Class

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

Unusual Fire & Explosion Hazards: This material may burn, but will not ignite readily. If container is not properly cooled, it can rupture in the heat of a fire.

Extinguishing Media: Dry chemical, carbon dioxide, foam, or water spray is recommended. Water or foam may cause frothing of materials heated above 212°F / 100°C. 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. Move undamaged containers from immediate hazard area if it can be done safely. 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. Avoid spreading burning liquid with water used for cooling purposes.

Hazardous Combustion Products: Combustion may yield smoke, carbon monoxide, and other products of incomplete combustion. Oxides of sulfur, nitrogen or phosphorus may also be formed.
See Section 9 for Flammable Properties including Flash Point and Flammable (Explosive) Limits

6. Accidental Release Measures

Personal Precautions: This material may burn, but will not ignite readily. Keep all sources of ignition away from spill/release. Stay upwind and away from spill/release. 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. Prevent spilled material from entering sewers, storm drains, other unauthorized drainage systems, and natural waterways. Use water sparingly to minimize environmental contamination and reduce disposal requirements. If spill occurs on water notify appropriate authorities and advise shipping of any hazard. Spills into or upon navigable waters, the contiguous zone, or adjoining shorelines that cause a sheen or discoloration on the surface of the water, may require notification of the National Response Center (phone number 800-424-8802). If spill/release in excess of EPA reportable quantity (see Section 15) is made into the environment, immediately notify the National Response Center (phone number 800-424-8802).

Methods for Containment and Clean-Up: Notify relevant authorities in accordance with all applicable regulations. Immediate cleanup of any spill is recommended. Dike far ahead of spill for later recovery or disposal. Absorb spill with inert material such as sand or vermiculite, and place in suitable container for disposal. If spilled on water remove with appropriate methods (e.g. skimming, booms or absorbents).

7. Handling and Storage

Precautions for safe handling: Keep away from flames and hot surfaces. Wash thoroughly after handling. Use good personal hygiene practices and wear appropriate personal protective equipment.

Used motor oils have been shown to cause skin cancer in mice after repeated application to the skin without washing. Brief or intermittent skin contact with used motor oil is not expected to cause harm if the oil is thoroughly removed by washing with soap and water.

Do not enter confined spaces such as tanks or pits without following proper entry procedures such as ASTM D-4276 and 29CFR 1910.146. Do not wear contaminated clothing or shoes.

Conditions for safe storage: Use and store this material in cool, dry, well-ventilated area away from heat and all sources of ignition. Keep container(s) tightly closed. Store only in approved containers. Keep away from any incompatible material (see Section 10). Protect container(s) against physical damage.

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. Empty drums should be completely drained, properly bunged, and promptly shipped to the supplier or a drum reconditioner. All containers should be disposed of in an environmentally safe manner and in accordance with governmental regulations. Before working on or in tanks which contain or have contained this material, refer to OSHA regulations, ANSI Z49.1, and other references pertaining to cleaning, repairing, welding, or other contemplated operations.

8. Exposure Controls / Personal Protection

Component	US-ACGIH	OSHA	Other
Lubricant Base Oil (Petroleum)	TWA: 5mg/m^3 STEL: 10 mg/m^3 as Oil Mist, if generated	TWA: 5 mg/m^3 as Oil Mist, if generated	---

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 protection that meets or exceeds ANSI Z.87.1 is recommended to protect against potential eye contact, irritation, or injury. Depending on conditions of use, a face shield may be necessary.

Skin/Hand Protection: The use of gloves impervious to the specific material handled is advised to prevent skin contact. Users should check with manufacturers to confirm the breakthrough performance of their products. Suggested protective materials: Nitrile

Respiratory Protection: Where there is potential for airborne exposure above the exposure limit a NIOSH certified air purifying respirator equipped with R or P95 filters may be used.

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. Air purifying respirators provide limited protection and cannot be used in atmospheres that exceed the maximum use concentration (as directed by regulation or the manufacturer's instructions), in oxygen deficient (less than 19.5 percent oxygen) situations, or under conditions that are immediately dangerous to life and health (IDLH).

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.

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:	Clear Amber
Physical Form:	Liquid
Odor:	Petroleum
Odor Threshold:	No data
pH:	Not applicable
Vapor Pressure:	<1 mm Hg
Vapor Density (air=1):	>1
Initial Boiling Point/Range:	No data
Melting/Freezing Point:	No data
Solubility in Water:	Negligible
Partition Coefficient (n-octanol/water) (Kow):	No data
Specific Gravity (water=1):	0.86 - 0.88 □ 60□F (15.6□C)
Bulk Density:	7.16 - 7.33 lbs/gal
Viscosity:	4.3 - 12.0 cSt □ 100°C; 27 - 100 cSt □ 40°C
Evaporation Rate (nBuAc=1):	<1
Flash Point:	Minimum 365°F / 185°C
Test Method:	Pensky-Martens Closed Cup (PMCC), ASTM D93, EPA 1010
Lower Explosive Limits (vol % in air):	No data
Upper Explosive Limits (vol % in air):	No data
Auto-ignition Temperature:	No data

10. Stability and Reactivity

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

Conditions to Avoid: Avoid all possible sources of ignition. Extended exposure to high temperatures can cause decomposition.

Materials to Avoid (Incompatible Materials): Avoid contact with strong oxidizing agents and strong reducing agents.

Hazardous Decomposition Products: Not anticipated under normal conditions of use. During use in engines, contamination of oil with low levels of hazardous fuel combustion by-products (e.g. polycyclic aromatic hydrocarbons) may occur.

Hazardous Polymerization: Not known to occur.

11. Toxicological Information

Chronic Toxicity:

Lubricant Base Oil (Petroleum)

Carcinogenicity: The petroleum base oils contained in this product have been highly refined by a variety of processes including severe hydrocracking/hydroprocessing to reduce aromatics and improve performance characteristics. All of the oils meet the IP-346 criteria of less than 3 percent PAH's and are not considered carcinogens by NTP, IARC, or OSHA.

Acute Toxicity:

Component	Oral LD50	Dermal LD50	Inhalation LC50
Lubricant Base Oil (Petroleum)	> 5 g/kg	> 2 g/kg	> 5 mg/L

12. Ecological Information

Ecotoxicity: Experimental studies show that acute aquatic toxicity values are greater than 1000 mg/l. These values are consistent with the predicted aquatic toxicity of these substances based on their hydrocarbon compositions.

Mobility: Volatilization to air is not expected to be a significant fate process due to the low vapor pressure of this material. In water, base oils will float and spread over the surface at a rate dependent upon viscosity. There will be significant removal of hydrocarbons from the water by sediment adsorption. In soil and sediment, hydrocarbon components will show low mobility with adsorption to sediments being the predominant physical process. The main fate process is expected to be slow biodegradation of base oil components in soil and sediment.

Persistence and degradability: The hydrocarbons in this material are not readily biodegradable, but since they can be degraded by microorganisms, they are regarded as inherently biodegradable.

Bioaccumulation Potential: Log Kow values measured for the hydrocarbon components of this material range from 4 to over 6, and therefore regarded as having the potential to bioaccumulate. In practice, metabolic processes may reduce bioconcentration.

13. Disposal Considerations

The generator of a waste is always responsible for making proper hazardous waste determinations and needs to consider state and local requirements in addition to federal regulations.

This material, if discarded as produced, would not be a federally regulated RCRA listed hazardous waste and is not believed to exhibit characteristics of hazardous waste. See Sections 7 and 8 for information on handling, storage and personal protection and Section 9 for physical/chemical properties. It is possible that the material as produced contains constituents which are not required to be listed in the MSDS but could affect the hazardous waste determination. Additionally, use which results in chemical or physical change of this material could subject it to regulation as a hazardous waste.

This material under most intended uses would become Used Oil due to contamination by physical or chemical impurities. Whenever possible, Recycle Used Oil in accordance with applicable federal and state or local regulations. Container contents should be completely used and containers should be emptied prior to discard.

14. Transportation Information

U.S. Department of Transportation (DOT)

Shipping Description: ***Not regulated***
Note: ***If shipped by land in a packaging having a capacity of 3,500 gallons or more, the provisions of 49 CFR, Part 130 apply. (Contains oil)***

International Maritime Dangerous Goods (IMDG)

Shipping Description: ***Not regulated***
Note: ***U.S. DOT compliance requirements may apply. See 49 CFR 171.22, 23 & 25.***

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

UN/ID #: ***Not regulated***
Note: ***U.S. DOT compliance requirements may apply. See 49 CFR 171.22, 23 & 24.***

	LTD. QTY	Passenger Aircraft	Cargo Aircraft Only
Packaging Instruction #:	---	---	---
Max. Net Qty. Per Package:	---	---	---
Packaging Instruction # after 12/31/2010:	---	---	---

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:	No
Chronic Health:	No
Fire Hazard:	No
Pressure Hazard:	No
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):
This material does not contain any chemicals with CERCLA Reportable □uantities.

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.

Canadian Regulations:
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
None

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

16. Other Information

Date of Issue:	22-Jun-2010
Status:	FINAL
Previous Issue Date:	22-Oct-2007
Revised Sections or Basis for Revision:	Stability and Reactivity (Section 10) Environmental hazards (Section 12) Regulatory information (Section 15)
MSDS Number:	726220

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; IARC = International Agency for Research on Cancer; 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)

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HALL CHEM MFG. INC.
1270 rue Nobel
Boucherville Qc J4B 5H1
Tel. : (450) 645-0296
Fax : (450) 645-0444

MATERIAL SAFETY DATA SHEET

EMERGENCY : CANUTEC (613) 996-6666

MSDS : 300-2

PRODUCT IDENTIFICATION AND USE

NAME OF PRODUCT : Propylene glycol
USE OF PRODUCT : solvents, lubricants and antifreeze.

TRANSPORTATION OF DANGEROUS GOODS

SHIPPING NAME :
P.N.I. :
PACKING GROUP :
WHMIS CLASSIFICATION: NOT REGULATED
PRIMARY CLASS : No toxic
SUBSIDIARY CLASS :

COMPONENTS

COMPOSITION	% V/V	CASE #	LD_{50}mg/kg Oral/rat	LC_{50}	TLV ppm 8h
Propylene glycol	99	57-55-6	20 000-34 000		

PHYSICAL CARACTERISTICS

PHYSICAL STATE : Liquid	**APPEARANCE :** Slightly viscous, colorless or custom dyed	**ODOR :** Odorless	**ODORTRESHOLD :** Not available
VAPOR TENSION : 0,08 mmHg (20°C))	**VAPOR DENSITY :** 2,62	**EVAPORATING RATE :** Slight	
BOILING RANGE : 188°C (370°F)	**FREEZING POINT :** <-60°C	**pH :** Not available	
DENSITY : 1,038 at 20°C (68°F)	**DISTRIBUTION FACTOR WATER/OIL :** Not available	**SOLUBILITY IN WATER (25°C) :** 100%	

REACTIVITY DATA

CHEMICAL STABILITY : Stable under normal storage conditions.
INCOMPATIBILITY WITH OTHER PRODUCTS : Avoid heat and severe oxidizing conditions.

REACTIVITY CONDITIONS : No hazardous polymerization.

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MATERIAL SAFETY DATA SHEET

EMERGENCY : CANUTEC (613) 996-6666

EXPLOSION AND FIRE RISKS

FLAMMABILITY :
EXTINGUISHING METHODS : Water fog, alcohol foam, carbon dioxide, dry chemical. Do not use a continuous stream of water because this will be propagate fire.
FLASH POINT : 103°C (218°F) **AUTO-IGNITION TEMPS. :** Not available
FLAMMABILITY (% per volume)
SUPERIOR LIMIT : 12,5 **LOWER LIMIT :** 2,6
HAZARDOUS COMBUSTION PRODUCT : When available oxygen id limited, as in a fire or when heated to very high temperatures by hot wire or plate, propionaldehyde, carbon monoxide, hazardous compounds such as aldehydes, toxic gas and not identified toxic or irritating compounds or the both might be generated.
EXPLOSIBILITY DATA : Not available

TOXICOLOGICAL PROPERTIES

ABSORPTION WAYS			CONTACT	
SKIN √	INHALATION √	INGESTION √	WITH SKIN √	EYES √

EFFECTS OF EXPOSURE TO PRODUCT : Product can irritate mucus glands. High doses can provoke headaches, drowsiness, nausea, dizziness and fainting. Inhalation may aggravate cases of emphysema and bronchitis. Repeated contact with skin provokes irritations, dryness of the skin and cracking of the skin.

PREVENTIVE MEASURES

PROTECTIVE EQUIPMENT : Gloves, security glasses and protective apron.
GLOVES : Impervious
RESPIRATORY SYSTEM : Atmospheric levels should be maintained below the exposure guideline. When respiratory protection is required for certain operations , use an approved air-purifying respirator. In misty atmospheres, use an approved mist respirator.
OCULAR INSTRUMENT : Chemical splash glasses and face shield. For misty operations, wear chemical goggles.
CLOTHING : Impervious apron
TECHNICAL CONTROL : At elevated temperatures, special ventilation may be required even of the flash point has not been exceeded. Flammable mists or aerosols can be generated below the flash point of high boiling liquids. Provide general and/or local exhaust ventilation to control airborne levels below the exposure guidelines.
PROCEDURE IN CASE OF LEAKS/SPILLS : Combustible liquid. Spill may contaminate water supplies or pollute public waters. Evacuate and limit access to area. Supply cleanup crew with proper protective equipment. Stop release and prevent flow to sewers or public waters. Notify fire and environmental authorities. Restrict water use for cleanup. This material can create a dangerous slipping hazard on any hard surface. Spread a granular cover

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EMERGENCY : CANUTEC (613) 996-6666

(such as sand) or provide open grating on walkways. Impound and recover large land spill. Soak up small spills with inert solids and collect in suitable disposal containers. This material is water soluble and may float or sink. Diluted material may biodegrade. Contain and minimize dispersion; collect and contain in suitable disposal containers. Disperse remaining residue to reduce aquatic harm. Report as per regulatory requirements.

WASTE DISPOSAL : Contaminated product, soil, water is potentially combustible. Solids may be landfilled at permitted sites in compliance with federal, provincial, local solid waste regulations. Burn concentrated liquid waste. Avoid flameouts and assure emissions comply with regulations. Dilute aqueous wastes may be biodegradable. Avoid overloading and poisoning plant biomass. Effluent must comply with applicable regulations.

STORAGE AND HANDLING : This product will absorb water if exposed to air (hygroscopic). Store in tightly closed containers away from heat, moisture or strong oxidizing agents. Use dry nitrogen to low dew point air for tank padding. Do not heat higher than 10°C below flash point unless in a closed system away from air. Do not handle near heat, sparks or open flame. Handle empty containers with care as residue can burn if heated. Store in containers lined with stainless steel, aluminum, Plasite 3066 or stainless steel 316

FIRST AID

SKIN : Wash off in flowing water or shower. Wash clothing before re-use. See a doctor if irritation develops or persists.

EYES : Remove contact lenses. Wash with running water for 29 to 30 minutes; lift eyelids often. See a doctor if redness, pain or blinking develops or persists.

INHALATION : Remove to fresh air if effects occur. Give oxygen of artificial respiration as needed. Obtain emergency medical attention. Prompt action is essential.

INGESTION : If a large quantity is swallowed, induce vomiting. Do not give by mouth to an unconscious person. Seek medical attention.

NOTES TO PHYSICIAN : No specific antidote. Supporting care, treatment based on judgement of the physician on response to reactions of the patient.

INFORMATION ON THE M.S.D.S. PREPARATION

PREPARED BY : **TELEPHONE : (450) 645-0296** **REVISED – January 2012**
Hall Chem Mfg. Inc.

NOTE :

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Material Safety Data Sheet

LA2764
Sodium Hypochlorite 12%

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

Product Id: LA2764
Product Name: Sodium Hypochlorite 12%
Synonyms: Sodium oxychloride; Soda bleach liquor; Javel water; Clorox; Javex.
Chemical Family: Hydrochlorous acid, sodium salt.
Application: Chemical intermediate. Laboratory reagent. Water treatment. Pulp and paper. Bleaching agent. Disinfectant.

Distributed By:
Univar Canada Ltd.
9800 Van Horne Way
Richmond, BC
V6X 1W5

Prepared By: The Safety, Health and Environment Department of Univar Canada Ltd.
Preparation date of MSDS: 18 February 2011
Telephone number of preparer: 1-866-686-4827

24-Hour Emergency Telephone Number (CANUTEC): (613) 996-6666

2. COMPOSITION/INFORMATION ON INGREDIENTS

Ingredients	Percentage (W/W)	LD50s and LC50s Route & Species:
Water 7732-18-5	Balance	Oral LD50 (Rat) >90 mL/kg
Sodium Hypochlorite, Solution 7681-52-9	12-14	Oral LD50 (Rat) = 8200 mg/kg Dermal LD50 (Rabbit) > 10000 mg/kg

Note: Drug Identification Number (DIN) - 02265729

3. HAZARDS IDENTIFICATION

Potential Acute Health Effects:
Eye Contact: Corrosive to eye tissue and may cause severe damage and blindness.
Skin Contact: Corrosive. May cause severe skin irritation. Prolonged contact may lead to burns and blisters and may aggravate dermatitis. May cause whitening or bleaching of the skin.
Inhalation: Corrosive to the respiratory passage. Causes irritation of the mouth, nose and throat. Repeated and/or prolonged exposures may cause productive cough, running nose, bronchopneumonia, pulmonary edema (fluid build-up in lungs) and reduction of pulmonary function. If mixed with acids or warmed to temperatures greater than 40 degrees Celcius, Sodium hypochlorite solutions release chlorine gas. This gas can cause severe irritation of the nose and throat. Exposures to high levels of chlorine gas may result in severe lung damage.

3. HAZARDS IDENTIFICATION

Ingestion: Corrosive. Causes burns to the mouth, throat and stomach. Causes vomiting, nausea, and diarrhea. Coma, shock and death may occur.

4. FIRST AID MEASURES

Eye Contact: Wash eyes with water for a minimum of 30 minutes or until no evidence of the chemical remains. Hold eyelids open during flushing. Seek immediate medical attention.
Skin Contact: In case of contact, immediately flush skin with plenty of water for at least 30 minutes. Get medical attention.
Inhalation: Remove person to fresh air. If not breathing, give artificial respiration. If breathing is difficult, get immediate medical attention.
Ingestion: Rinse mouth with water. Do not induce vomiting. Do not give anything by mouth to an unconscious person. If vomiting occurs spontaneously, keep head below hips to prevent aspiration of liquid into the lungs. Seek immediate medical attention.
Notes to Physician: Due to the severely irritating or corrosive nature of the material, swallowing may lead to ulceration and inflammation of the upper alimentary tract with hemorrhage and fluid loss. Also, perforation of the esophagus or stomach may occur, leading to mediastinitis or peritonitis and the resultant complications.

5. FIRE FIGHTING MEASURES

Flash Point: None.
Flash Point Method: Not applicable.
Autoignition Temperature: Not available.
Flammable Limits in Air (%): Not Available.
Extinguishing Media: Use extinguishing media appropriate for surrounding fire.
Special Exposure Hazards: Keep containers cool to prevent rupture and release of material. Closed containers may explode in fire. Spilled material may cause floors and contact surfaces to become slippery.
Hazardous Decomposition/Combustion Materials (under fire conditions): Chlorine. Oxygen. Oxides of sodium.
Special Protective Equipment: Fire fighters should wear full protective clothing, including self-contained breathing equipment.
NFPA RATINGS FOR THIS PRODUCT ARE: Not Available.
HMIS RATINGS FOR THIS PRODUCT ARE: Not Available.

6. ACCIDENTAL RELEASE MEASURES

Personal Precautionary Measures: Wear appropriate protective equipment.
Environmental Precautionary Measures: Prevent entry into sewers or streams, dike if needed. Consult local authorities.
Procedure for Clean Up: Ventilate area. Small spills: soak up with absorbent material and scoop into containers. Large spills : prevent contamination of waterways. Dike and pump into suitable containers. Clean up residual with absorbent material, place in appropriate container and flush with water. Spilled material may cause floors and contact surfaces to become slippery.

7. HANDLING AND STORAGE

Handling: For industrial use only. Handle and open containers with care. Avoid contact with eyes, skin and clothing. Do not ingest. Avoid inhalation of chemical. Empty containers may contain hazardous product residues. Keep the containers closed when not in use. Protect against physical damage. Use appropriate personnel protective equipment. When diluting, add this product to water in small amounts to avoid spattering. Never add water to this material.
Storage: Store in a cool, dry, well ventilated area, away from heat and ignition sources. Store below 29 °C. Do not freeze. Keep away from direct sunlight. Store away from organic chemicals, strong bases, metal powders, carbides, sulfides, and any readily oxidizable material. Storage area should be equipped with corrosion-resistant floors, sumps and should have controlled drainage to a recovery tank. Store in a sealed polyethylene lined container.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Engineering Controls:

Local exhaust ventilation as necessary to maintain exposures to within applicable limits. Make up air should always be supplied to balance air exhausted (either generally or locally). Ventilation required when spraying or applying in a confined area. Ventilation should be explosion proof. Eliminate ignition sources.

Respiratory Protection: Wear a Niosh approved full facepiece respirator for acid gases or a self-contained breathing apparatus for air concentration levels up to 5 ppm. NIOSH approved supplied air respirator when airborne concentrations exceed exposure limits.

Gloves:

Impervious gloves. Neoprene gloves. Nitrile gloves. Rubber gloves.

Skin Protection: Neoprene coated apron or chemical resistant clothing. Impervious boots.

Eyes: Chemical safety goggles and/or full face shield to protect eyes and face, if product is handled such that it could be splashed into eyes.

Other Personal Protection Data: Ensure that eyewash stations and safety showers are proximal to the work-station location.

Ingredients	Exposure Limit - ACGIH	Exposure Limit - OSHA	Immediately Dangerous to Life or Health - IDLH
Water	Not available.	Not available.	Not Available.
Sodium Hypochlorite, Solution	0.5 ppm As For Chlorine.	Not available.	Not Available.

9. PHYSICAL AND CHEMICAL PROPERTIES

Physical State: Liquid.
Colour: Clear Green to yellow.
Odour: Chlorine.
pH 11.5 - 13
Specific Gravity: 1.21
Boiling Point: Decomposition at 40°C / 104°F
Freezing/Melting Point: -25°C / -12°F
Vapour Pressure: 17.5 mmHg
Vapour Density: Not Available.
% Volatile by Volume: Not Available.
Evaporation Rate: Not Available.
Solubility: Miscible in water.
VOCs: Not Available.
Viscosity: Not Available.
Molecular Weight: Not Available.
Other: Not Available.

10. STABILITY AND REACTIVITY

Chemical Stability: Unstable above 40°C / 104 °F.
Hazardous Polymerization: Will not occur.
Conditions to Avoid: High temperatures. Exposure to light.
Materials to Avoid: Acids. Ammonia. Strong oxidizers. Reducing agents. Metals.
Hazardous Decomposition Products: When heated to decomposition, it emits acrid smoke and irritating fumes. Chlorine. Oxides of sodium. Oxygen.

Additional Information:

Hypochlorites may react with primary amines to form nitrogen trichloride which explodes spontaneously in air. Hypochlorite bleach reacts with urea to form nitrogen trichloride whic explodes spontaneously in air. Some metals accelarate the decomposition of Sodium Hypochlorite. Nickel. Copper. Tin. Iron and its alloys. Manganese.

11. TOXICOLOGICAL INFORMATION

Principle Routes of Exposure

Ingestion: Corrosive. Causes burns to the mouth, throat and stomach. Causes vomiting, nausea, and diarrhea. Coma, shock and death may occur.

11. TOXICOLOGICAL INFORMATION

Skin Contact: Corrosive. May cause severe skin irritation. Prolonged contact may lead to burns and blisters and may aggravate dermatitis. May cause whitening or bleaching of the skin.
Inhalation: Corrosive to the respiratory passage. Causes irritation of the mouth, nose and throat. Repeated and/or prolonged exposures may cause productive cough, running nose, bronchopneumonia, pulmonary edema (fluid build-up in lungs) and reduction of pulmonary function. If mixed with acids or warmed to temperatures greater than 40 degrees Celcius, Sodium hypochlorite solutions release chlorine gas. This gas can cause severe irritation of the nose and throat. Exposures to high levels of chlorine gas may result in severe lung damage.
Eye Contact: Corrosive to eye tissue and may cause severe damage and blindness.

Additional Information: Aspiration may cause lung damage. Corrosive effects on the skin and eyes may be delayed, and damage may occur without the sensation or onset of pain.
Acute Test of Product:
Acute Oral LD50: Not Available.
Acute Dermal LD50: Not Available.
Acute Inhalation LC50: Not Available.

Carcinogenicity:

Ingredients	IARC - Carcinogens	ACGIH - Carcinogens
Water	Not listed.	Not listed.
Sodium Hypochlorite, Solution	Group 3	Not listed.

Carcinogenicity Comment: No additional information available.

Reproductive Toxicity/ Teratogenicity/ Embryotoxicity/ Mutagenicity: Not Available.

12. ECOLOGICAL INFORMATION

Ecotoxicological Information:

Ingredients	Ecotoxicity - Fish Species Data	Acute Crustaceans Toxicity:	Ecotoxicity - Freshwater Algae Data
Water	Not Available.	Not Available.	Not Available.
Sodium Hypochlorite, Solution	LC50 96 h (Pimephales promelas) 0.06-0.11 mg/L flow-through LC50 96 h (Pimephales promelas) 4.5-7.6 mg/L static LC50 96 h (Lepomis macrochirus) 0.4-0.8 mg/L static LC50 96 h (Lepomis macrochirus) 0.28-1 mg/L flow-through LC50 96 h (Oncorhynchus mykiss) 0.05-0.771 mg/L flow-through LC50 96 h (Oncorhynchus mykiss) >0.03-<0.19 mg/L semi-static LC50 96 h (Oncorhynchus mykiss) 0.18-0.22 mg/L static	Not Available.	EC50 24 h Skeletonema costatum 0.095 mg/L

Other Information:
Harmful to aquatic life at low concentrations. Toxicity is primarily associated with pH.

13. DISPOSAL CONSIDERATIONS

Disposal of Waste Method: Disposal of all wastes must be done in accordance with municipal, provincial and federal regulations.
Contaminated Packaging: Empty containers should be recycled or disposed of through an approved waste management facility.

14. TRANSPORT INFORMATION

DOT (U.S.):
DOT Shipping Name: HYPOCHLORITE SOLUTION
DOT Hazardous Class 8
DOT UN Number: UN1791
DOT Packing Group: III
DOT Reportable Quantity (lbs): Not Available.
Note: No additional remark.
Marine Pollutant: No.

TDG (Canada):
TDG Shipping Name: HYPOCHLORITE SOLUTION
Hazard Class: 8
UN Number: UN1791
Packing Group: III
Note: No additional remark.
Marine Pollutant: No.

15. REGULATORY INFORMATION

U.S. TSCA Inventory Status: All components of this product are either on the Toxic Substances Control Act (TSCA) Inventory List or exempt.

Canadian DSL Inventory Status: All components of this product are either on the Domestic Substances List (DSL), the Non-Domestic Substances List (NDSL) or exempt.

Note: Not available.

U.S. Regulatory Rules

Ingredients	CERCLA/SARA - Section 302:	SARA (311, 312) Hazard Class:	CERCLA/SARA - Section 313:
Water	Not Listed.	Not Listed.	Not Listed.
Sodium Hypochlorite, Solution	Not Listed.	Listed	Not Listed.

California Proposition 65: Not Listed.
MA Right to Know List: Listed.
New Jersey Right-to-Know List: Listed.
Pennsylvania Right to Know List: Listed.

WHMIS Hazardous Class:
E CORROSIVE MATERIAL

16. OTHER INFORMATION

Additional Information: 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.

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*****END OF MSDS*****