Spills Contingency Plan (SCP)

Kugaaruk Solid Waste Facility

NWB Licence 3BM-PEL 1419



Aug 20, 2019

Prepared and submitted by

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TABLE OF CONTENTS

			Page #
1.0	INTI	RODUCTION	1
	1.1	Purpose and Scope	1
	1.2	Environmental policy and procedure	1
	1.3	Project and facility description	1
2.0	LOC	CATIONS of Spills hazards storage	3
		Map	3
3.0	ACTIO	ON PLAN	
	3.1	Potential sources of hazardous materials	4
	3.2	Potential Environmental Impacts of spills	4
	3.3	Procedure for Action	5
4.0	RESP	OND and Reporting	6
	4.1	Spills response training	6
5.0	ACTIO	ON PLAN by spills types	6
5	5.1	Chemical Spills	6
5	5.2	Petroleum products	7
5	.3	Initial Action procedure	7
5	.4	Follow up Actions	7
5	.5	Procedure for protection of human health	7
5.	6	Procedure for containing and controlling spills	8
5.	7	Procedure for Transferring, storing, managing wastes	9
6.0	SPILL	KITS	9
7.0	FIRST	AIDS	9
7	.1	Skin Contacts	9
7	.2	Inhalation	10
7	.3	Ingestion	10
7	.4	Eye Contacts	10
8.0	SPILL	S RESPONSE CONTACT LISTS	10

1. Introduction

This spill contingency (SC) plan describes the proper responses to any possible types of spills that may occur in the operation of the Kugaaruk Solid Waste and Metal Waste facilities. This plan included the Spills Response Contact List, related duties and responsibilities, equipment and other resources availability to clean up a spill and the reporting requirements in the event of any hazardous, contaminants, toxic, chemical, fuel or waste spills within the facility or within the community.

1.1 Purpose and Scope

The purpose of this SC plan is for awareness of the danger and response actions for potential spills of any type or level, including a worst case scenario for the Hamlet of Kugaaruk. The plan identifies key response personnel and their roles and responsibilities in the event of a spill, as well as the equipment and other resources available to clean up a spill. It details spill response procedures that will minimize potential health and safety hazards environmental damage and clean-up efforts. The plan has been prepared to ensure quick access to all the information required in responding to a spill.

1.2 Environmental Policy and Process

The Hamlet of Kugaaruk is committed to operating and managing the Solid Waste facility in an environmentally sensitive manner, complying with requirements of the Nunavut Water Board and in coordination with regulatory Organizations.

1.3 Project and facility Description

The Hamlet of Kugaaruk is located 68⁰ 32' N latitude and 89⁰ 49' W longitudes in the central Nunavut. The community Kugaaruk along the east coast of Pelly Bay, which is roughly nine hundred and sixty kilometers (960 km) west of the Nunavut capital of Iqaluit. The Spill Contingency Plan will be used by the Hamlet for activities associated with hamlet's operation to

- Solid waste and metal waste facilities;
- Sewage waste and effluent management facilities;
- Storage and handling of hazardous materials in and out of the facility.

The annual snowfall in Kugaaruk is approximately 125 cm and the annual rainfall approximately 11cm. In January the daily mean temperatures is approximately -33° C, while in July the daily mean temperature is approximately 6° C. Freeze up usually occurs during the month of Nov but may happen as early as Sep or Oct while spring thaw usually happens around late May

Steps in Spill Responses:

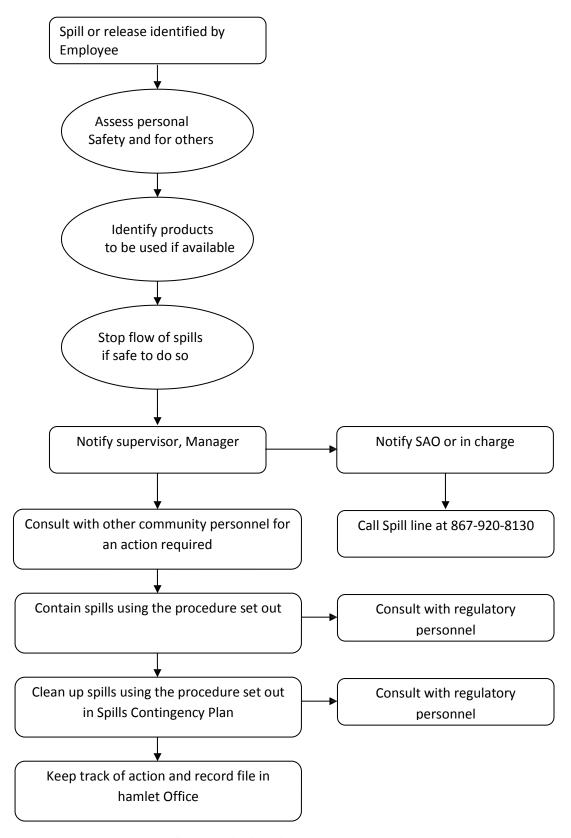


Figure: Flow-Chart of Communication Lines

2. Locations of Spills Hazards Storage

Hamlet of Kugaaruk uses sodium hypochlorite solution (12% strength) for the disinfection of the potable water at the pumphouse treatment plant. These chlorine solution pails of 20L store at the old WTP building. The empty pails (after uses) are store inside C-can at the Solid waste facility. Any residual of chlorine solution inside the pails at the Solid waste facility are concern to the operator or public (waste depositor) since chlorine is harmful to skin, eye and respiratory system irritation or burns.

The community Sewage disposal facility (lagoon) is to the close east and southeast vicinity to the Solid Waste facility. Raw sewage drop-off location is close near to the Solid Waste front entry and across the road. Sewage spills can be a concern to the Solid Waste facility user and operator.

Gasoline products and fuel oil are used for resident and facility building heating system, pump house and other equipment. This fuel stores in drums and pails at different location inside and outside of buildings. Spills of fuels and oils are severe concerns to environment and fire safety.



3.0 ACTION PLAN

3.1 Potential Sources of Hazardous material Spills on site

Materials	Storage Container and Location	Normally On-site	Maximum On-site	Uses
Oil	Stored in containers beside 4-bay garage	4 # 45 gallons drum	180 gallons	Servicing community vehicles
Gear oil	Stored in containers	3 # 45 gallons	135 gallons	Serving community vehicles
ATF (aviation Turbine fuel)	Stored in containers at airport garage	4 # 45 gallons	180 gallons	Serving charter and airport flights
Antifreeze	Stored in containers beside 4-bay garage	unknown	unknown	Serving community vehicles
Sodium hypochlorite solution	Stored in seal pails	4 # 20 L pails	80 L	Water treatment plant
Diesel	PPD Facility Tanks	2 large storage tanks	2,749,700 L	For heating fuel
Gasoline	PPD facility tanks	1 Large tank	923,000 L	Vehicles fuel
Jet Fuel A-1	PPD tank and airport tanks	1 large tank of 18,979 L and 1 vertical tank 1,600,205 L	1.638,196 L	Aircraft uses
propane	Co-op store	20 lbs BBQ tanks	Unknown numbers	Household uses

3.2 Potential Environmental Impacts of Spill

In general, for the hazardous materials that discussed here, environmental impacts are lower during the winter, as snow is a natural sorbent and ice forms a barrier lining for eliminating soil or water contamination. Spills can be more readily recovered when identified and reported.

Environmental Impacts by type of hazardous materials:

Gasoline:

- Harmful to wildlife and aquatic life
- Not readily biodegradable
- Has potential to bio-accumulate in environment
- Volatilizes easily
- Runoff into water bodies must be avoided

Worst Case Scenario: All fuel drums open simultaneously and contents pour onto ground and Surrounding environment.

Diesel:

- Harmful to wildlife and aquatic life
- Not readily biodegradable
- Has potential to bio-accumulate in environment
- Burns slowly (more readily contained than volatile fuels)
- Runoff into water bodies must be avoided

Worst Case Scenario: All fuel drums open simultaneously and contents pour onto ground and surrounding environment

Waste Oil and Miscellaneous Oils and Grease:

- Harmful to wildlife and aquatic life
- Not readily biodegradable
- Has potential to bio-accumulate in environment
- Runoff into water bodies must be avoided

Worst Case Scenario: All storage drums open simultaneously and contents pour onto ground and surrounding environment.

Sewage:

- Human health hazard, and unsightly appearance
- High nutrient concentrations could negatively impact water bodies and runoff into water bodies must be avoided

Worst Case Scenario: Full waste truck releases on ground and surrounding environment.

Sodium hypochlorite solution:

- Harmful if inhaled, corrosive, causes eye and skin burns, causes digestive and respiratory tract burns
- · Run-off into water bodies must be avoided
- Wear protective face masks to prevent inhalation of dust

Worst Case Scenario: All pails open simultaneously and contents pour onto ground and surrounding Environment

3.3 Procedure for Action:

It is important to stay calm and plan for personal safety first before jumping to an action plan in the event of a spill. Experience in taking effective action helps both the spilled materials and adverse effect to human health. The following steps and procedure can be followed by the first person on the scene:

- Ensure personal safety and safety of other personnel around the scene
- Determine the product that spilled and assess the rough order quantity
- Assess the hazardous risks and impact to persons in the vicinity of the spill
- If possible, control the danger of the spills to human life
- If possible, stop the spills, otherwise look for an action plan
- Gather information on the status of the situation and possibilities of spread of spills
- Contact the supervisor, manager or SAO

4.0 Respond and Reporting:

An effective respond and proper reporting is mandate in dealing with spills event. The designated personnel or experienced individual must make a report immediately and at least within 24 hours of the spills. It is expected the supervisor or SAO position can make such effective respond and report.

4.1 Spill Response Training

Hamlet operations personnel should have up-to-date spill training so they are prepared to respond and report in the event of a 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 GN Department of Environment.

If the Hamlet brings contractors on-site to 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 or likely will be exposed to a hazardous material at the workplace.

5.0 Action Plan for Spills by types:

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

5.1 Chemical Spills

The Hamlet uses a 12% solution of sodium hypochlorite to disinfect its intake raw water. This solution is stored and applied in the water treatment plant. 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 & 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.

5.2 Petroleum Product and Antifreeze Product Spills

Petroleum products have many operational uses in the Hamlet, and used petroleum product drums or other containers end up at the Hamlet's solid waste disposal facility. Petroleum product spills ranges 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 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

5.3 Initial Action Procedure

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

- Evacuate unnecessary personnel.
- Ventilate area of leak or spill (by opening all doors and windows).
- Wear personal protective equipment (gloves, safety glasses, impervious material long-sleeved shirt/coat).
- If available wear respiratory 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.
- Gather information on the status of the situation, including:
 - Estimated size of spill
 - Estimated migration route
- Contact Municipal Supervisor, as per flowchart
- 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.

Copies of the Spill Report form are available in each spill kit and at the back of this manual. The form will be filled out by the Public Works Foreman (or designate), and faxed or emailed to the NWT Spill Line. Contact information is as follows:

NWT 24-Hour Spill Line Phone: (867) 920-8130 Fax: (867) 873-6924 Email: spills@gov.nt.ca

5.4 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 the CIRNAC inspector within thirty (30) days of reporting the event.

5.5 Procedures for the Protection of Human Health and Safety

Following a spill, the health and safety of workers as well as the general public is a priority. Actions taken will depend on the type of spill.

In the event of a chemical spill:

Restrict public access to the spill area. Workers involved in the clean-up of the spill should wear personal protective equipment (PPE).

In the event of a flammable or combustible material spill:

Disconnect electrical equipment, evacuate adjacent area of spills and restrict public access to the spill area. Only spark-arresting equipment should be used during clean-up of the spill. PPE should also be worn by workers involved in the clean-up.

• In the event of a sewage spill:

Restrict public access (including pets and animals) to the spill area.

5.6 Procedures for Containing and Controlling Spill

General procedures noted below will be used to contain and control all spills. Specific procedures for spills on land, water, snow and ice follow.

- First anticipate what will be affected by the spill.
- Assess direction and speed of spill, and any factors that could affect these.
- Determine best location for containing spill.

Spills on Land:

Dykes and trenches can be constructed to contain spills on land. Soil surrounding the spill area can be dug out, and piled up, to create a barrier for the spill. A plastic tarp can be placed at the base of the dyke, so that the pooled material can be removed with sorbent materials. Conversely, trenches can be excavated to permafrost, which will provide a natural containment of the spill. Once the material is contained, it can be pumped out, or removed by using sorbent materials. If the spill is moving very slowly, such structures may not be necessary and the material can be removed before migrating away from the spill location.

Spills on Snow:

Snow acts as a natural sorbent for spilled fuel. Impacted snow is easily visible, and can be shoveled into empty drums or barrels for proper disposal. If the spill is migrating down a hill, a snow dyke can be constructed to contain the spill. A plastic tarp can be placed at the base of the dyke, where spilled fuel is expected to pool. The collected fuel and impacted snow ban be removed with absorbent materials, pumped out, or shoveled into barrels for disposal

Spills on Ice:

Ice is considered impermeable to fuel, so these spills are generally easy to clean up. Small spills can be cleaned up by placing absorbent materials on top of the ice. Impacted snow and slush can then be removed by shovels, and placed in barrels for disposal. For larger spills, dykes of snow and trenches can be constructed to contain the spill. Pooled fuel can then be removed by adsorbent materials or pumped out. Impacted snow and slush can be shoveled into barrels for disposal

5.7 Procedures for Transferring, Storing and Managing Spill related wastes

Spills are generally cleaned up starting at the outer limit of the spill, and working towards the point of the spill. Sorbent materials and hand tools such as cans and shovels are used for smaller spills. Larger spills can be contained with the use of a pump and/or heavy equipment. Spill wastes include used absorbent materials and containers of impacted water and snow. Sorbent materials should be placed in plastic bags for proper disposal. The containers of impacted water and snow should be sealed and stored until disposal at an approved facility can be arranged

6.0 Spill Kits

A spill kit should be on-hand in the operator 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

7.0 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.

7.1 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.

7.2 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.

7.3 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 Health Centre at (867) 769-6441 or the Regional Hospital Emergency Department at (867) 983-4500.

7.4 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

8.0 Spill Response Contact List

Organization	Contact	Phone/Fax
Northwest Territories/Nunavut		867-920-8130
24 Hour Spill Report Line		
Nunavut Department of Environment,		867-983-4164
Conservation Office		
CIRNAC Water Resources, Manager		867-975-4553
Kitikmeot Inuit Association		867-983-2458
Environment Canada		780-951-8861

Kugaaruk Solid Waste Facility

Spills Contingency Plan

APPENDIX - A

MSDS Blank

MATERIAL SAFETY DATA SHEET — 16 Sections

Product Identifier						[WHMIS Classification	on]
Product Use							
Manufacturer's Name				Supplier's Name			
Street Address				Street Address			
City		Province		City			Province
Postal Code	Emergency	Telephone		Postal Code		Emerge	ncy Telephone
		T				<u> </u>	
Date MSDS Prepared		MSDS Pre	pared By			Phone Number	
ECTION 3 — HAZARD	DS IDENT		ΓΙΟΝ Eye Contact	☐ Inhalation	☐ Inge	estion	
ergency Overview]							
HMIS Symbols]							
tential Health Effects							
ECTION 4 — FIRST A	ID MEAS	HIDES					
Skin Contact		JUILO					
Eye Contact							

SAMPLE FORMAT PROVIDED BY THE WORKERS' COMPENSATION BOARD OF BRITISH COLUMBIA

57M6 (6/99)

Ingestion

Please continue on reverse side



SECTION 5 — FIRE FIGHTING MEASURES

OLOTION O TINE HOLLIN	O MIL/NOOTYLO	
Flammable ☐ Yes ☐	If yes, under which conditions?	
Means of Extinction		
Flashpoint (° C) and Method	Upper Flammable Limit (% by volume)	Lower Flammable Limit (% by volume)
Autoignition Temperature (°C)	Explosion Data — Sensitivity to Impact	Explosion Data — Sensitivity to Static Discharge
Hazardous Combustion Products		
[NFPA]		
SECTION 6 — ACCIDENTAL	RELEASE MEASURES	
Leak and Spill Procedures		
SECTION 7 — HANDLING AN	ID STORAGE	
Handling Procedures and Equipment		
Storage Requirements		
SECTION 8 — EXPOSURE C	ONTROL / PERSONAL PRO	TECTION
Exposure Limits	HTLV 🗇 OSHA PEL	Other (once if d)
Specific Engineering Controls (such as ventilation,	□ OSHATEE	☐ Other (specify)
Personal Protective Equipment	Respirator	☐ Footwear ☐ Clothing ☐ Other
If checked, please specify type		

Reproductive toxicity

Name of synergistic products/effects

Embrotoxicity

Product Identifier-3-		
SECTION 9 — PHYSICAL AN	ND CHEMICAL PROP	PERTIES
Physical State	Odour and Appearance	Odour Threshold (ppm)
Specific Gravity	Vapour Density (air = 1)	Vapour Pressure (mmHg)
Evaporation Rate	Boiling Point (° C)	Freezing Point (° C)
pH	Coefficient of Water/Oil Dis	stribution [Solubility in Water]
L SECTION 10 — STABILITY A	AND REACTIVITY	
Chemical Stability Pes Pool	If no, under which conditions?	,
Incompatibility with Other Substances		
l N	0	
Reactivity, and under what conditions?		
Hazardous Decomposition Products		
SECTION 11 — TOXICOLOG	SICAL INFORMATION	N
Effects of Acute Exposure	7.07 (2 114) 014(17) (110)	. •
Effects of chronic exposure		
Irritancy of Product		
Skin sensitization		Respiratory sensitization
Carcinogenicity-IARC		Carcinogenicity - ACGIH

Blank form provided courtesy of www.ehso.com/msdscreate.php

Teratogenicity

Mutagenicity

SECTION 12 — ECOLOGICAL INFORMATION

[Aquatic Toxicity]	
SECTION 13 — DISPOSAL CONSIDERATIONS	
Waste Disposal	
SECTION 14 — TRANSPORT INFORMATION	
Special Shipping Information	
	PIN
TDG	[DOT]
[IMO]	[CAO]
SECTION 15 — REGULATORY INFORMATION	
[WHMIS Classification]	[OSHA]
[SERA]	[TSCA]
This product has been classif Controlled Products Regulations (CPR) an	ied in accordance with the hazard criteria of the d the MSDS contains all of the information required by CPR.
SECTION 16 — OTHER INFORMATION	

Kugaaruk Solid Waste Facility Spills Contingency Plan (SCP)

APPENDIX - B

MSDS Data Sheets



Revision Date: 01 Oct 2018

Page 1 of 15

SAFETY DATA SHEET

SECTION 1 IDENTIFICATION

PRODUCT

Product Name: UNLEADED GASOLINE

Product Description: Hydrocarbons and Additives

SDS Number: 8522

Intended Use: Fuel

Trade Names	Trade Names
AUTOMOTIVE GASOLINE	ESSO EXTRA GASOLINE
ESSO MIDGRADE GASOLINE	ESSO PREMIUM GASOLINE
ESSO REGULAR GASOLINE	ESSO SUPREME GASOLINE
EXXON MIDGRADE GASOLINE	EXXON PREMIUM GASOLINE
EXXON REGULAR GASOLINE	GASOLINE MIDGRADE UNLEADED MUL89
GASOLINE MIDGRADE UNLEADED MUL89 DCA	GASOLINE MIDGRADE UNLEADED MUL89 DCA
	DYED
GASOLINE MIDGRADE UNLEADED MUL89 LDCA	GASOLINE MIDGRADE UNLEADED MUL89 LDCA
	DYED
GASOLINE PREMIUM UNLEADED PUL91	GASOLINE PREMIUM UNLEADED PUL91 DCA
GASOLINE PREMIUM UNLEADED PUL91 DCA DYED	GASOLINE PREMIUM UNLEADED PUL91 LDCA
GASOLINE PREMIUM UNLEADED PUL91 LDCA DYED	GASOLINE RBOB BLENDSTOCK P91
GASOLINE RBOB BLENDSTOCK R87	GASOLINE REGULAR UNLEADED RUL87
GASOLINE REGULAR UNLEADED RUL87 DCA	GASOLINE REGULAR UNLEADED RUL87 DCA
	DYED
GASOLINE REGULAR UNLEADED RUL87 DYED	GASOLINE REGULAR UNLEADED RUL87 LDCA
GASOLINE REGULAR UNLEADED RUL87 LDCA DYED	

COMPANY IDENTIFICATION

Supplier: Imperial Oil Downstream

P.O. Box 2480, Station M

Calgary, ALBERTA T2P 3M9 Canada

 24 Hour Emergency Telephone
 1-866-232-9563

 Transportation Emergency Phone Number
 1-866-232-9563

 Product Technical Information
 1-800-268-3183

 Supplier General Contact
 1-800-567-3776

SECTION 2 HAZARD IDENTIFICATION

This material is considered to be hazardous according to regulatory guidelines.

This product has been classified in accordance with hazard criteria of the Hazardous Products Regulations (HPR) SOR/2015-17 and the SDS contains all the information required by the HPR SOR/2015-17.



Revision Date: 01 Oct 2018

Page 2 of 15

CLASSIFICATION:

Flammable Liquids — Category 1
Skin Irritation — Category 2
Germ Cell Mutagenicity — Category 1B
Carcinogenicity — Category 1B
Reproductive Toxicity (Developmental) — Category 2
Specific Target Organ Toxicity — Single Exposure (Central Nervous System) — Category 3
Aspiration Hazard — Category 1

LABEL:



Signal Word: Danger

Hazard Statements:

H224: Extremely flammable liquid and vapour. H304: May be fatal if swallowed and enters airways. H315: Causes skin irritation. H336: May cause drowsiness or dizziness. H340: May cause genetic defects. H350: May cause cancer. H361: Suspected of damaging the unborn child.

Precautionary Statements:

P101: If medical advice is needed, have product container or label at hand. P102: Keep out of reach of children. P103: Read label before use P201: Obtain special instructions before use. P202: Do not handle until all safety precautions have been read and understood. P210: Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking. P233: Keep container tightly closed. P240: Ground and bond container and receiving equipment. P241: Use explosion-proof electrical, ventilating and lighting equipment. P242: Use nonsparking tools. P243: Take action to prevent static discharges. P261: Avoid breathing mist / vapours. P264: Wash skin thoroughly after handling. P271: Use only outdoors or in a well-ventilated area. P273: Avoid release to the environment. P280: Wear protective gloves/protective clothing/eye protection/face protection.P301 + P310: IF SWALLOWED: Immediately call a POISON CENTER or doctor/physician. P302 + P352: IF ON SKIN: Wash with plenty of soap and water. P303 + P361 + P353: IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water or shower. P304 + P340: IF INHALED: Remove person to fresh air and keep comfortable for breathing. P308 + P313: IF exposed or concerned: Get medical advice/attention. P312: Call a POISON CENTER or doctor/physician if you feel unwell. P331: Do NOT induce vomiting. P332 + P313: If skin irritation occurs: Get medical advice/attention. P362 + P364: Take off contaminated clothing and wash it before reuse. P370 + P378: In case of fire: Use water fog, foam, dry chemical or carbon dioxide (CO2) to extinguish. P391: Collect spillage.P403 + P235: Store in a well-ventilated place. Keep cool. P405: Store locked up.P501: Dispose of contents and container in accordance with local regulations.

Contains: Benzene; GASOLINE; Toluene



Revision Date: 01 Oct 2018

Page 3 of 15

Other hazard information:

Health Hazards Not Otherwise Classified: None as defined under HPR SOR/2015-17.

Physical Hazards Not Otherwise Classified: None as defined under HPR SOR/2015-17.

PHYSICAL / CHEMICAL HAZARDS

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.

HEALTH HAZARDS

High-pressure injection under skin may cause serious damage. May be irritating to the eyes, nose, throat, and lungs. May cause central nervous system depression. Exposure to benzene is associated with cancer (acute myeloid leukaemia and myelodysplastic syndrome), damage to the blood-producing system, and serious blood disorders (see Section 11).

ENVIRONMENTAL HAZARDS

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

NFPA Hazard ID: Health: 2 Flammability: 3 Reactivity: 0 HMIS Hazard ID: Health: 2* 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 3

COMPOSITION / INFORMATION ON INGREDIENTS

This material is defined as a mixture.

Hazardous Substance(s) or Complex Substance(s) in Hazardous product

Name	CAS#	Concentration*	GHS Hazard Codes
ETHYL ALCOHOL	64-17-5	0 - 1%	H225, H319(2A)
GASOLINE	86290-81-5	98 - 100%	H224, H304, H336, H340(1B), H350(1B), H361(D), H315, H401, H411

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

initial desired of the state of							
Name	CAS#	Concentration*	GHS Hazard Codes				
Benzene	71-43-2	0 - 1.5%	H225, H303, H304, H340(1B), H350(1A), H315, H319(2A), H372, H401				
CUMENE	98-82-8	0 - 1%	H226, H304, H335, H351, H401, H411				
CYCLOHEXANE	110-82-7	0 - 1.5%	H225, H304, H336, H315, H400(M factor 1), H410(M factor 1)				
ETHYL BENZENE	100-41-4	0 - 3.5%	H225, H332, H373, H401,				



Revision Date: 01 Oct 2018

Page 4 of 15

			H412
n-Hexane	110-54-3	0 - 5%	H225, H304, H336, H361(F), H315, H373, H401, H411
Naphthalene	91-20-3	0 - 1%	H302, H351, H400(M factor 1), H410(M factor 1)
Toluene	108-88-3	0 - 20%	H225, H304, H336, H361(D), H315, H373, H401, H412
XYLENES	1330-20-7	0 - 20%	H226, H304, H312, H332, H335, H315, H320(2B), H373, H401

^{*} 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 4

FIRST-AID MEASURES

INHALATION

Immediately remove from further exposure. Get immediate medical assistance. For those providing assistance, avoid exposure to yourself or others. Use adequate respiratory protection. Give supplemental oxygen, if available. If breathing has stopped, assist ventilation with a mechanical device.

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. This material, or a component, may be associated with cardiac sensitization following very high exposures (well above occupational exposure limits) or with concurrent exposure to high stress levels or heart-stimulating substances like epinephrine. Administration of such substances should be avoided.

SECTION 5

FIRE-FIGHTING MEASURES

EXTINGUISHING MEDIA

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



Revision Date: 01 Oct 2018

Page 5 of 15

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 material. Firefighters should consider protective equipment indicated in Section 8.

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

FLAMMABILITY PROPERTIES

Flash Point [Method]: -40°C (-40°F) [ASTM D-92]

Flammable Limits (Approximate volume % in air): LEL: 1.4 UEL: 7.6

Autoignition Temperature: >250°C (482°F)

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 advice on the minimum requirements for personal protective equipment. Additional protective measures may be necessary, depending on the specific circumstances and/or the expert judgment of the emergency responders.

For emergency responders: Respiratory protection: half-face or full-face respirator with filter(s) for organic vapor and, when applicable, H2S, or Self Contained Breathing Apparatus (SCBA) can be used depending on the size of spill and potential level of exposure. If the exposure cannot be completely characterized or an oxygen deficient atmosphere is possible or anticipated, SCBA is recommended. Work gloves that are resistant to aromatic hydrocarbons are recommended. Note: gloves made of polyvinyl acetate (PVA) are not water-resistant and are not suitable for emergency use. Chemical goggles are recommended if splashes or contact with eyes is possible. Small spills: normal antistatic work clothes are usually adequate. Large spills: full body suit of chemical resistant, antistatic material is recommended.

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



Revision Date: 01 Oct 2018

Page 6 of 15

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 all personal contact. 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 type of container used to store the material may affect 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.



Revision Date: 01 Oct 2018

Page 7 of 15

Fixed storage containers, transfer containers and associated equipment should be grounded and bonded to prevent accumulation of static charge.

SECTION 8

EXPOSURE CONTROLS / PERSONAL PROTECTION

EXPOSURE LIMIT VALUES

Substance Name Form Lin		Limit/Sta	Limit/Standard		Source
Benzene		STEL	1 ppm		Supplier
Benzene		TWA	0.5 ppm		Supplier
Benzene		STEL	2.5 ppm	Skin	ACGIH
Benzene		TWA	0.5 ppm	Skin	ACGIH
CUMENE		TWA	5 ppm	Skin	Supplier
CUMENE		TWA	50 ppm		ACGIH
CYCLOHEXANE		TWA	100 ppm		ACGIH
ETHYL ALCOHOL		STEL	1000 ppm		ACGIH
ETHYL BENZENE		TWA	20 ppm		ACGIH
GASOLINE		STEL	200 ppm		Supplier
GASOLINE		TWA	100 ppm		Supplier
GASOLINE		STEL	500 ppm		ACGIH
GASOLINE		TWA	300 ppm		ACGIH
n-Hexane		TWA	50 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



Revision Date: 01 Oct 2018

Page 8 of 15

respirators to be considered for this material include:

No protection is ordinarily required under normal conditions of use and with adequate ventilation.

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:

Chemical resistant gloves are recommended.

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:

Chemical/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

Comply with applicable environmental regulations limiting discharge to air, water and soil. Protect the environment by applying appropriate control measures to prevent or limit emissions.

SECTION 9

PHYSICAL AND CHEMICAL PROPERTIES

Note: Physical and chemical properties are provided for safety, health and environmental considerations only and may not fully represent product specifications. Contact the Supplier for additional information.

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): 0.74 Flammability (Solid, Gas): N/A

Flash Point [Method]: -40°C (-40°F) [ASTM D-92]

Flammable Limits (Approximate volume % in air): LEL: 1.4 UEL: 7.6

Autoignition Temperature: >250°C (482°F)

Boiling Point / Range: $> 20^{\circ}\text{C} (68^{\circ}\text{F}) - 225^{\circ}\text{C} (437^{\circ}\text{F})$

Decomposition Temperature: N/D **Vapour Density (Air = 1):** 3.2 at 101 kPa



Revision Date: 01 Oct 2018

Page 9 of 15

Vapour Pressure: > 26.6 kPa (200 mm Hg) at 20°C | 76 kPa (570 mm Hg) at 38 °C - 103 kPa (772.5 mm

Hg) at 38°C

Evaporation Rate (n-butyl acetate = 1): > 10

pH: N/A

Log Pow (n-Octanol/Water Partition Coefficient): > 3

Solubility in Water: Negligible

Viscosity: <1 cSt (1 mm2/sec) at 40°C

Oxidizing Properties: See Hazards Identification Section.

OTHER INFORMATION

Freezing Point: N/D Melting Point: N/A

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: Alkalies, Halogens, Strong Acids, Strong oxidizers

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

POSSIBILITY OF HAZARDOUS REACTIONS: Hazardous polymerization will not occur.

SECTION 11 TOXICOLOGICAL INFORMATION

INFORMATION ON TOXICOLOGICAL EFFECTS

Hazard Class	Conclusion / Remarks	
Inhalation		
Acute Toxicity: (Rat) 4 hour(s) LC50 > 5000 mg/m3 (Vapour)	Minimally Toxic. Based on test data for structurally similar materials. Test(s) equivalent or similar to OECD Guideline 403	
Irritation: No end point data for material.	Elevated temperatures or mechanical action may form vapours, mist, or fumes which may be irritating to the eyes, nose, throat, or lungs.	
Ingestion		
Acute Toxicity (Rat): LD50 > 5000 mg/kg	Minimally Toxic. Based on test data for structurally similar materials. Test(s) equivalent or similar to OECD Guideline 401	
Skin		
Acute Toxicity (Rabbit): LD50 > 2000 mg/kg	Minimally Toxic. Based on test data for structurally similar materials. Test(s) equivalent or similar to OECD Guideline 402	
Skin Corrosion/Irritation: No end point data for material.	Irritating to the skin. Based on test data for structurally similar materials.	
Eye		
Serious Eye Damage/Irritation: No end point data for material.	May cause mild, short-lasting discomfort to eyes. Based on test data for structurally similar materials. Test(s) equivalent or similar to OECD Guideline 405	
Sensitisation		
Respiratory Sensitization: No end point data	Not expected to be a respiratory sensitizer.	



Revision Date: 01 Oct 2018

Page 10 of 15

for material.		
Skin Sensitization: Data available.	Not expected to be a skin sensitizer. Based on test data for structurally similar materials. Test(s) equivalent or similar to OECD Guideline 406	
Aspiration: Data available.	May be fatal if swallowed and enters airways. Based on physico- chemical properties of the material.	
Germ Cell Mutagenicity: Data available.	Caused genetic effects in laboratory animals, but the relevance to humans is uncertain. Based on test data for structurally similar materials. Test(s) equivalent or similar to OECD Guideline 471 475 476	
Carcinogenicity: Data available.	Caused cancer in laboratory animals. Based on test data for structurally similar materials. Test(s) equivalent or similar to OECD Guideline 451	
Reproductive Toxicity: Data available.	Caused damage to the fetus in laboratory animals, but the relevance to humans is uncertain. Based on assessment of the components.	
Lactation: No end point data for material.	Not expected to cause harm to breast-fed children.	
Specific Target Organ Toxicity (STOT)		
Single Exposure: No end point data for material.	May cause drowsiness or dizziness.	
Repeated Exposure: Data available.	Not expected to cause organ damage from prolonged or repeated exposure. Based on test data for structurally similar materials. Test(s) equivalent or similar to OECD Guideline 410 412 453	

TOXICITY FOR SUBSTANCES

NAME	ACUTE TOXICITY
ETHYL BENZENE	Inhalation Lethality: 4 hour(s) LC50 17.8 mg/l (Vapour) (Rat); Oral
	Lethality: LD 50 3.5 g/kg (Rat)
Naphthalene	Inhalation Lethality: 4 hour(s) LC50 > 0.4 mg/l (Max attainable
	vapor conc.) (Rat); Oral Lethality: LD 50 533 mg/kg (Mouse)

OTHER INFORMATION

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. Exposure to this material, or one of its components, in situations where there is the potential for high levels, such as in confined spaces or with abuse, may result in abnormal heart rhythm (arrhythmia). High-level exposure to hydrocarbons (above occupational exposure limits) may initiate arrhythmia in a worker that is undergoing stress or is taking a heart-stimulating substance such as epinephrine, a nasal decongestant, or an asthma or cardiovascular drug. **Contains:**

BENZENE: Caused cancer (acute myeloid leukemia and myelodysplastic syndrome), damage to the blood-producing system, and serious blood disorders in human studies. Caused genetic effects and effects on the immune system in laboratory animal and some human studies. Caused toxicity to the fetus and cancer in laboratory animal studies. CUMENE: Repeated inhalation exposure of cumene vapour produced damage in the kidney of male rats only.



Revision Date: 01 Oct 2018

Page 11 of 15

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). 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.

CMR Status:

Chemical Name	CAS Number	List Citations
Benzene	71-43-2	1, 4, 5
CUMENE	98-82-8	3, 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
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 3 = IARC 2B 5 = ACGIH A1 2 = IARC 2A 4 = ACGIH ALL 6 = ACGIH A2

SECTION 12 ECOLOGICAL INFORMATION

The information given is based on data for the material, components of the material, or for similar materials, through the application of bridging principals.

ECOTOXICITY



Revision Date: 01 Oct 2018

Page 12 of 15

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



Revision Date: 01 Oct 2018

Page 13 of 15

Packing Group: || Marine Pollutant: Yes

Special Provisions: 17, 88, 98, 150

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
Marine Pollutant: No

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

CEPA: All components of this product are either on the Domestic Substance List (DSL) or are exempt.

Listed or exempt from listing/notification on the following chemical inventories (May contain substance(s) subject to notification to the EPA Active TSCA inventory prior to import to USA): AICS, DSL, ENCS, KECI, PICCS, TSCA

The Following Ingredients are Cited on the Lists Below:



Revision Date: 01 Oct 2018

Page 14 of 15

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
n-Hexane	110-54-3	6
Naphthalene	91-20-3	6
Toluene	108-88-3	6
XYLENES	1330-20-7	6

-- REGULATORY LISTS SEARCHED--

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

SECTION 16

OTHER INFORMATION

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

KEY TO THE H-CODES CONTAINED IN SECTION 3 OF THIS DOCUMENT (for information only):

H224: Extremely flammable liquid and vapor; Flammable Liquid, Cat 1

H225: Highly flammable liquid and vapor; Flammable Liquid, Cat 2

H226: Flammable liquid and vapour; Flammable Liquid, Cat 3

H302: Harmful if swallowed; Acute Tox Oral, Cat 4

H303: May be harmful if swallowed; Acute Tox Oral, Cat 5

H304: May be fatal if swallowed and enters airways; Aspiration, Cat 1

H312: Harmful in contact with skin; Acute Tox Dermal, Cat 4

H315: Causes skin irritation; Skin Corr/Irritation, Cat 2

H319(2A): Causes serious eye irritation; Serious Eye Damage/Irr, Cat 2A

H320(2B): Causes eye irritation; Serious Eye Damage/Irr, Cat 2B

H332: Harmful if inhaled; Acute Tox Inh, Cat 4

H335: May cause respiratory irritation; Target Organ Single, Resp Irr

H336: May cause drowsiness or dizziness; Target Organ Single, Narcotic

H340(1B): May cause genetic defects; Germ Cell Mutagenicity, Cat 1B

H350(1A): May cause cancer; Carcinogenicity, Cat 1A

H350(1B): May cause cancer; Carcinogenicity, Cat 1B

H351: Suspected of causing cancer; GHS Carcinogenicity, Cat 2

H361(D): Suspected of damaging the unborn child; Repro Tox, Cat 2 (Develop)

H361(F): Suspected of damaging fertility: Repro Tox. Cat 2 (Fertility)

H372: Causes damage to organs through prolonged or repeated exposure; Target Organ, Repeated, Cat 1

H373: May cause damage to organs through prolonged or repeated exposure; Target Organ, Repeated, Cat 2

H400: Very toxic to aquatic life: Acute Env Tox. Cat 1

H401: Toxic to aquatic life; Acute Env Tox, Cat 2

H410: Very toxic to aquatic life with long lasting effects; Chronic Env Tox, Cat 1

H411: Toxic to aquatic life with long lasting effects; Chronic Env Tox, Cat 2

H412: Harmful to aquatic life with long lasting effects; Chronic Env Tox, Cat 3

THIS SAFETY DATA SHEET CONTAINS THE FOLLOWING REVISIONS:



Revision Date: 01 Oct 2018

DGN: 5007481 (1006754)

Page 15 of 15

Updates made in accordance with implementation of GHS requirements.

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LEHDER Environmental Services Limited has attempted to obtain an updated MSDS. No update is available for the following reason(s):

Product has been discontinued.

Obsolete (eg. product no longer manufactured under this name, manufactured or distributed by a different company and/or division).

Company no longer exists (sold, merged, receivership, etc.).

Contact information no longer valid.

Consequently no further updates will be issued. This MSDS should be used until the product is removed from your facility.

Please advise when product is no longer on site in order to remove it from your inventory.



Revision Date: 08 Nov 2010

Page 1 of 9

MATERIAL SAFETY DATA SHEET

SECTION 1

PRODUCT AND COMPANY IDENTIFICATION

PRODUCT

Product Name: HYDRAULIC OIL XD-3 30
Product Description: Base Oil and Additives

MSDS Number: 14848 Intended Use: Engine oil

COMPANY IDENTIFICATION

Supplier: Imperial Oil Products Division

240 4th Avenue

Calgary, ALBERTA. T2P 3M9 Canada

24 Hour Environmental / Health Emergency 519-339-2145

Telephone

Transportation Emergency Phone Number519-339-2145Product Technical Information1-800-268-3183Supplier General Contact1-800-567-3776

SECTION 2

COMPOSITION / INFORMATION ON INGREDIENTS

No Reportable Hazardous Substance(s) or Complex Substance(s).

SECTION 3

HAZARDS IDENTIFICATION

This material is not considered to be hazardous according to regulatory guidelines see Section 15.

HEALTH EFFECTS

Low order of toxicity. Excessive exposure may result in eye, skin, or respiratory irritation. High-pressure injection under skin may cause serious damage.

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



Revision Date: 08 Nov 2010

Page 2 of 9

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. 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

First aid is normally not required. Seek medical attention if discomfort occurs.

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. 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.

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

FLAMMABILITY PROPERTIES

Flash Point [Method]: 225C (437F) [ASTM D-92]

Flammable Limits (Approximate volume % in air): LEL: 0.9 UEL: 7.0

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.

SPILL MANAGEMENT

Land Spill: Stop leak if you can do so without risk. Recover by pumping or with suitable absorbent.



Revision Date: 08 Nov 2010

Page 3 of 9

Water Spill: Stop leak if you can do so without risk. Confine the spill immediately with booms. Warn other shipping. Remove from the surface by skimming or with suitable absorbents. 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 contact with used product. Prevent small spills and leakage to avoid slip hazard. Material can accumulate static charges which may cause an electrical spark (ignition source). When the material is handled in bulk, an electrical spark could ignite any flammable vapors from liquids or residues that may be present (e.g., during switch-loading operations). Use proper bonding and/or earthing procedures. However, bonding and earthing 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.

STORAGE

The container choice, for example storage vessel, may effect static accumulation and dissipation. Do not store in open or unlabelled containers.

SECTION 8

EXPOSURE CONTROLS / PERSONAL PROTECTION

Exposure limits/standards for materials that can be formed when handling this product: When mists / aerosols can occur, the following are recommended: 5 mg/m³ - ACGIH TLV, 10 mg/m³ - ACGIH STEL.

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:

No special requirements under ordinary conditions of use and with adequate ventilation.

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



Revision Date: 08 Nov 2010

Page 4 of 9

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:

No special requirements under ordinary conditions of use and with adequate ventilation.

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:

No protection is ordinarily required under normal conditions of use.

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:

No skin protection is ordinarily required under normal conditions of use. In accordance with good industrial hygiene practices, precautions should be taken to avoid skin contact.

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: Brown
Odour: Characteristic
Odour Threshold: N/D

IMPORTANT HEALTH, SAFETY, AND ENVIRONMENTAL INFORMATION

Relative Density (at 15 C): 0.889

Flash Point [Method]: 225C (437F) [ASTM D-92]

Flammable Limits (Approximate volume % in air): LEL: 0.9 UEL: 7.0

Autoignition Temperature: N/D

Boiling Point / Range: 310C (590F) - 600C (1112F)

Vapour Density (Air = 1): N/D



Revision Date: 08 Nov 2010

Page 5 of 9

Vapour Pressure: [N/D at 20°C] | < 0.1 kPa (0.75 mm Hg) at 38C

Evaporation Rate (n-butyl acetate = 1): < 1

pH: N/A

Log Pow (n-Octanol/Water Partition Coefficient): > 3.5

Solubility in Water: Negligible

Viscosity: [N/D at 40°C] | 12 cSt (12 mm2/sec) at 100C **Oxidizing Properties:** See Hazards Identification Section.

OTHER INFORMATION

Freezing Point: N/D Melting Point: N/A

Pour Point: -21°C (-6°F)

DMSO Extract (mineral oil only), IP-346: < 3 %wt

SECTION 10 STABILITY AND REACTIVITY

STABILITY: Material is stable under normal conditions.

CONDITIONS TO AVOID: Excessive heat. High energy sources of ignition.

MATERIALS TO AVOID: 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.	Negligible hazard at ambient/normal handling temperatures. Based on assessment of the components.	
Ingestion		
Toxicity (Rat): LD50 > 5000 mg/kg	Minimally Toxic. Based on test data for structurally similar materials.	
Skin		
Toxicity (Rabbit): LD50 > 5000 mg/kg	Minimally Toxic. Based on test data for structurally similar materials.	
Irritation (Rabbit): Data available.	Negligible irritation to skin at ambient temperatures. Based on test data for structurally similar materials.	
Eye		
Irritation (Rabbit): 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:

Diesel engine oils: Not carcinogenic in animals tests. Used and unused diesel engine oils did not produce any carcinogenic effects in chronic mouse skin painting studies. Oils that are used in gasoline engines may



Revision Date: 08 Nov 2010

Page 6 of 9

become hazardous and display the following properties: Carcinogenic in animal tests. Caused mutations in vitro. Possible allergen and photoallergen. Contains polycyclic aromatic compounds (PAC) from combustion products of gasoline and/or thermal degradation products.

Contains:

Base oil severely refined: Not carcinogenic in animal studies. Representative material passes IP-346, Modified Ames test, and/or other screening tests. Dermal and inhalation studies showed minimal effects; lung non-specific infiltration of immune cells, oil deposition and minimal granuloma formation. Not sensitising in test animals.

Additional information is available by request.

CMR Status: None.

-- REGULATORY LISTS SEARCHED--

1 = IARC 1 3 = IARC 2B 5 = ACGIH A1 2 = IARC 2A 4 = ACGIH ALL 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 -- Not expected to be harmful to aquatic organisms.

MOBILITY

Base oil 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:

Base oil component -- Expected to be inherently biodegradable

BIOACCUMULATION POTENTIAL

Base oil component -- 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



Revision Date: 08 Nov 2010

Page 7 of 9

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): Not Regulated for Land Transport

LAND (DOT): Not Regulated for Land Transport

SEA (IMDG): Not Regulated for Sea Transport according to IMDG-Code

AIR (IATA): Not Regulated for Air Transport

SECTION 15

REGULATORY INFORMATION

WHMIS Classification: Not controlled

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.

Complies with the following national/regional chemical inventory requirements: AICS, IECSC, DSL, EINECS, ENCS, KECI, PICCS, TSCA

The Following Ingredients are Cited on the Lists Below: None.

Chemical Name	CAS Number	List Citations
ZINC DITHIOPHOSPHATE	68649-42-3	6

-- REGULATORY LISTS SEARCHED--

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

SECTION 16	OTHER INFORMATION

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



Revision Date: 08 Nov 2010

Page 8 of 9

THIS SAFETY DATA SHEET CONTAINS THE FOLLOWING REVISIONS:

Revision Changes:

Section 04: First Aid Eve - Header was modified.

Section 04: First Aid Ingestion - Header was modified.

Section 06: Notification Procedures - Header was modified.

Section 11: Acute Toxicity Table Header was modified.

Section 09: Colour 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.

Section 11: Inhalation Lethality Test Data was modified.

Section 05: Hazardous Combustion Products was modified.

Section 06: Accidental Release- Spill Management- Water was modified.

Section 09 Viscosity was modified.

Section 09 Viscosity was modified.

Section 14: Sea (IMDG) - Header was modified.

Section 14: Air (IATA) - Header was modified.

Section 14: LAND (TDG) - Header was modified.

Section 14: LAND (DOT) - Header was modified.

Section 14: LAND (DOT) - Default was modified.

Section 14: LAND (TDG) Default was modified.

Section 14: Sea (IMDG) - Default was modified.

Section 14: Air (IATA) - Default was modified.

Section 15: National Chemical Inventory Listing - Header was modified.

Hazard Identification: Hazards Note was modified.

Section 16: CA Prepared by - Header was modified.

Section 09: Oxidizing Properties was modified.

Section 13: Regulatory Disposal Information - Header was modified.

Section 11: Chemical Name - Header was deleted.

Section 11: CAS Number - Header was deleted.

Section 11: List Citation - Header was deleted.

Section 11: Tox List Cited Table was deleted.

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WHMIS Classification: Not controlled

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DGN: 5013041 (1012409)



Product Name: HYDRAULIC OIL XD-3 30 Revision Date: 08 Nov 2010 Page 9 of 9

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Prepared by: Imperial Oil Limited, IH and Product Safety



Revision Date: 10 Oct 2013

Page 1 of 11

MATERIAL SAFETY DATA SHEET

SECTION 1

PRODUCT AND COMPANY IDENTIFICATION

PRODUCT

Product Name: (see Section 16 for Synonyms) MIDDLE DISTILLATE

Product Description: Hydrocarbons and Additives

MSDS Number: 826

Intended Use: Fuel

COMPANY IDENTIFICATION

Supplier: Imperial Oil Products Division

240 4th Avenue

Calgary, ALBERTA. T2P 3M9 Canada

24 Hour Environmental / Health Emergency 1-866-232-9563

Telephone

Transportation Emergency Phone Number1-866-232-9563Product Technical Information1-800-268-3183Supplier General Contact1-800-567-3776

SECTION 2

COMPOSITION / INFORMATION ON INGREDIENTS

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

Name	CAS#	Concentration*	Acute Toxicity
FUEL OIL NO. 2	68476-30-2	> 99 %	None

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

Name	CAS#	Concentration*	Acute Toxicity
NAPHTHALENE	91-20-3	< 1%	Dermal Lethality: LD50 >
			2500 mg/kg (Rat);
			Inhalation Lethality: LC50 >
			0.4 mg/l (Rat); Oral Lethality:
			LD50 622 mg/kg (Mouse)

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

SECTION 3 HAZARDS IDENTIFICATION

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

PHYSICAL/CHEMICAL EFFECTS

Combustible. In use, may form flammable/explosive vapour-air mixture. 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

Irritating to skin. If swallowed, may be aspirated and cause lung damage. Under conditions of poor personal hygiene and prolonged repeated contact, some polycyclic aromatic compounds (PACs) have been suspected as a cause of skin cancer in humans. May be irritating to the eyes, nose, throat, and lungs. High-pressure



Revision Date: 10 Oct 2013

Page 2 of 11

injection under skin may cause serious damage.

Target Organs: Skin |

NFPA Hazard ID: Health: 1 Flammability: 2 Reactivity: 0

HMIS Hazard ID: Health: 1 Flammability: 2 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

Remove contaminated clothing. Dry wipe exposed skin and cleanse with waterless hand cleaner and follow by washing thoroughly with soap and water. For those providing assistance, avoid further skin contact to yourself or others. Wear impervious gloves. Launder contaminated clothing separately before reuse. Discard contaminated articles that cannot be laundered. 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

Contains hydrocarbon solvent/petroleum hydrocarbons; skin contact may aggravate an existing dermatitis.

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. Prevent run-off from fire control or dilution from entering



Revision Date: 10 Oct 2013

Page 3 of 11

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: Combustible. Vapour is flammable and heavier than air. Vapour may travel across the ground and reach remote ignition sources, causing a flashback fire danger. Static discharge: material can accumulate static charges which may cause an incendiary electrical discharge. Hazardous material. Firefighters should consider protective equipment indicated in Section 8.

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

FLAMMABILITY PROPERTIES

Flash Point [Method]: >40°C (104°F) [ASTM D-93]

Flammable Limits (Approximate volume % in air): LEL: 0.7 UEL: 6.5

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 advice on the minimum requirements for personal protective equipment. Additional protective measures may be necessary, depending on the specific circumstances and/or the expert judgment of the emergency responders.

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: Stop leak if you can do so without risk. Confine the spill immediately with booms. Eliminate sources of ignition. Remove from the surface by skimming or with suitable absorbents. 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.



Product Name: MIDDLE DISTILLATE Revision Date: 10 Oct 2013

Page 4 of 11

SECTION 7

HANDLING AND STORAGE

HANDLING

Avoid breathing mists or vapour. Avoid contact with skin. Do not siphon by mouth. 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. 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

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. Storage containers should be earthed and bonded. Fixed storage containers, transfer containers and associated equipment should be grounded and bonded to prevent accumulation of static charge.

SECTION 8

EXPOSURE CONTROLS / PERSONAL PROTECTION

Substance Name	Form	Limit/Star	ndard	Note	Source
FUEL OIL NO. 2	Stable	TWA	5 mg/m3		Supplier
	Aerosol.				
FUEL OIL NO. 2	Vapour.	TWA	200 mg/m3		Supplier
FUEL OIL NO. 2 [total hydrocarb,	Inhalable	TWA	100 mg/m3	Skin	ACGIH
vapor&aerosol]	fraction and				
	vapour				
NAPHTHALENE		STEL	15 ppm	Skin	ACGIH
NAPHTHALENE		TWA	10 ppm	Skin	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:

Adequate ventilation should be provided so that exposure limits are not exceeded.



Product Name: MIDDLE DISTILLATE
Revision Date: 10 Oct 2013

Page 5 of 11

Page 5 of 11

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:

No special requirements under ordinary conditions of use and with adequate ventilation.

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

Comply with applicable environmental regulations limiting discharge to air, water and soil. Protect the environment by applying appropriate control measures to prevent or limit emissions.

SECTION 9

PHYSICAL AND CHEMICAL PROPERTIES

Note: Physical and chemical properties are provided for safety, health and environmental considerations only and may not fully represent product specifications. Contact the Supplier for additional information.

GENERAL INFORMATION

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

IMPORTANT HEALTH, SAFETY, AND ENVIRONMENTAL INFORMATION



Revision Date: 10 Oct 2013

Page 6 of 11

Relative Density (at 15.5 °C): 0.82 - 0.9

Flash Point [Method]: >40°C (104°F) [ASTM D-93]

Flammable Limits (Approximate volume % in air): LEL: 0.7 UEL: 6.5

Autoignition Temperature: N/D

Boiling Point / Range: 150°C (302°F) - 370°C (698°F)

Vapour Density (Air = 1): 4 at 101 kPa

Vapour Pressure: [N/D at 20 °C] | 4 kPa (30 mm Hg) at 38°C

Evaporation Rate (n-butyl acetate = 1): < 1

pH: N/A

Log Pow (n-Octanol/Water Partition Coefficient): N/D

Solubility in Water: Negligible

Viscosity: 1.3 cSt (1.3 mm2/sec) at 40°C - 11 cSt (11 mm2/sec) at 40°C

Oxidizing Properties: See Hazards Identification Section.

OTHER INFORMATION

Freezing Point: N/D Melting Point: N/A

Pour Point: -4°C (25°F) - -39°C (-38°F)

Decomposition Temperature: N/D

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: 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 assessment of the components.	
Irritation: No end point data for material.	Negligible hazard at ambient/normal handling temperatures.	
	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: Data available.	Moderately irritating to skin with prolonged exposure.	
Eye		
Irritation (Rabbit): Data available.	May cause mild, short-lasting discomfort to eyes. Based on assessment of the components.	



Revision Date: 10 Oct 2013

Page 7 of 11

CHRONIC/OTHER EFFECTS

For the product itself:

Small amounts of liquid aspirated into the lungs during ingestion or from vomiting may cause chemical pneumonitis or pulmonary edema.

Diesel fuel: Carcinogenic in animal tests. Caused mutations in-vitro. Repeated dermal exposures to high concentrations in test animals resulted in reduced litter size and litter weight, and increased fetal resorptions at maternally toxic doses. Dermal exposure to high concentrations resulted in severe skin irritation with weight loss and some mortality. Inhalation exposure to high concentrations resulted in respiratory tract irritation, lung changes/infiltration/accumulation, and reduction in lung function.

Contains:

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.

CMR Status:

Chemical Name	CAS Number	List Citations
FUEL OIL NO. 2	68476-30-2	4
NAPHTHALENE	91-20-3	3, 4

-- REGULATORY LISTS SEARCHED--

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

High molecular wt. 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:

Hydrocarbon component -- Expected to be inherently biodegradable

Atmospheric Oxidation:

More volatile component -- Expected to degrade rapidly in air

BIOACCUMULATION POTENTIAL

Hydrocarbon component -- Has the potential to bioaccumulate, however metabolism or physical properties



Revision Date: 10 Oct 2013

Page 8 of 11

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: FUEL OIL **Hazard Class & Division:** 3

UN Number: 1202 Packing Group: III

LAND (DOT)

Proper Shipping Name: HEATING OIL, LIGHT

Hazard Class & Division: 3

ID Number: 1202 Packing Group: III ERG Number: 128

Label(s): 3

Transport Document Name: UN1202, HEATING OIL, LIGHT, 3, PG III

Footnote: The flash point of this material is greater than 38°C/100°F. Regulatory classification of this material varies. DOT: Flammable liquid or combustible liquid. OSHA: Combustible liquid. IATA/IMO: Flammable liquid.

SEA (IMDG)

Proper Shipping Name: HEATING OIL, LIGHT

Hazard Class & Division: 3 EMS Number: F-E, S-E UN Number: 1202



Revision Date: 10 Oct 2013

Page 9 of 11

Packing Group:

Label(s): 3

Transport Document Name:

AIR (IATA)

Proper Shipping Name: HEATING OIL, LIGHT

Hazard Class & Division: 3

UN Number: 1202
Packing Group: III
Label(s) / Mark(s): 3
Transport Document Name:

SECTION 15 REGULATORY INFORMATION

WHMIS Classification: Class B, Division 3: Combustible Liquids Class D, Division 2, Subdivision B: 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.

Complies with the following national/regional chemical inventory requirements DSL, TSCA

The Following Ingredients are Cited on the Lists Below:

Chemical Name	CAS Number	List Citations
NAPHTHALENE	91-20-3	5

-- REGULATORY LISTS SEARCHED--

1 = TSCA 4 3 = TSCA 5e 5 = TSCA 12b 2 = TSCA 5a2 4 = TSCA 6 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 16: Synonyms information was modified.

SYNONYMS: DIESEL MARINE CGSB DYED, NAVAL DISTILLATE FUEL, ULTRA LOW SULPHUR DIESEL, DIESEL MARINE, DIESEL LOW SULPHUR RAIL, DIESEL LOW SULPHUR, DIESEL LOW SULPHUR DYED, DIESEL MARINE GAS OIL, DIESEL REGULAR SULPHUR, DIESEL REGULAR SULPHUR RAIL, DIESEL REGULAR SULPHUR DYED, DIESEL REGULAR SULPHUR RAIL #3, ESSO DIESEL FUEL, DIESEL REGULAR SULPHUR RAIL DYED, ESSO HEATING OIL, FURNACE FUEL DYED, FURNACE FUEL, ISO 8217 DMA, ISO 8217 DMB, NO. 2 FUEL



Revision Date: 10 Oct 2013

Page 10 of 11

OIL, REGULAR SULPHUR DIESEL FUEL, DIESEL MARINE DYED, DIESEL MARINE GAS OIL INTERNATIONAL, DIESEL MARINE GAS OIL DYED, DIESEL FUEL, AUTOMOTIVE (ON-ROAD) DIESEL FUEL, FURNACE LOW S DYED, FURNACE LOW S, DIESEL MARINE - NLA DYED, DIESEL LOW SULPHUR RAIL DYED, DIESEL MARINE CGSB-3.11

.....

PRECAUTIONARY LABEL TEXT:

WHMIS Classification: Class B, Division 3: Combustible Liquids Class D, Division 2, Subdivision B: Toxic Material

HEALTH HAZARDS

Irritating to skin. If swallowed, may be aspirated and cause lung damage.

Target Organs: Skin |

PHYSICAL HAZARDS

In use, may form flammable/explosive vapour-air mixture. Combustible. Material can accumulate static charges which may cause an ignition.

PRECAUTIONS

Avoid contact with skin. Do not siphon by mouth. Use proper bonding and/or earthing procedures. However, bonding and earthing may not eliminate the hazard from static accumulation.

FIRST AID

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

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

Skin: Remove contaminated clothing. Dry wipe exposed skin and cleanse with waterless hand cleaner and follow by washing thoroughly with soap and water. For those providing assistance, avoid further skin contact to yourself or others. Wear impervious gloves. Launder contaminated clothing separately before reuse. Discard contaminated articles that cannot be laundered. 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: Stop leak if you can do so without risk. Confine the spill immediately with booms. Eliminate sources of ignition. Remove from the surface by skimming or with suitable absorbents. Report spills as required to appropriate authorities. Seek the advice of a specialist before using dispersants.

The information and recommendations contained herein are, to the best of Imperial Oil's knowledge and belief, accurate and reliable as of the date issued. Imperial Oil assumes no responsibility for accuracy of information unless the document is the most current available from an official Imperial Oil distribution system. The information and



Product Name: MIDDLE DISTILLATE Revision Date: 10 Oct 2013

Page 11 of 11

recommendations are offered for the user's consideration and examination, and it is the user's responsibility to satisfy itself that they are suitable and complete for its particular use. If buyer repackages this product, legal counsel should be consulted to insure proper health, safety and other necessary information is included on the container. Appropriate warnings and safe-handling procedures should be provided to handlers and users. Alteration of this document is strictly prohibited. Except to the extent required by law, republication or retransmission of this document, in whole or in part, is not permitted.

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Page 1 of 9

MATERIAL SAFETY DATA SHEET

SECTION 1

PRODUCT AND COMPANY IDENTIFICATION

PRODUCT

Product Name: MOBIL 1 10W-30

Product Description: Synthetic Base Stocks and Additives

MSDS Number: 17648

Product Code: 2015101010J2 Intended Use: Engine oil

COMPANY IDENTIFICATION

Supplier: Imperial Oil Products Division

240 4th Avenue

Calgary, ALBERTA. T2P 3M9 Canada

24 Hour Environmental / Health Emergency

1-866-232-9563

Telephone

Transportation Emergency Phone Number1-866-232-9563Product Technical Information1-800-268-3183Supplier General Contact1-800-567-3776

SECTION 2

COMPOSITION / INFORMATION ON INGREDIENTS

No Reportable Hazardous Substance(s) or Complex Substance(s).

SECTION 3

HAZARDS IDENTIFICATION

This material is not considered to be hazardous according to regulatory guidelines see Section 15.

HEALTH EFFECTS

Excessive exposure may result in eye, skin, or respiratory irritation. High-pressure injection under skin may cause serious damage.

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



Page 2 of 9

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. 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

First aid is normally not required. Seek medical attention if discomfort occurs.

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. 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.

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

FLAMMABILITY PROPERTIES

Flash Point [Method]: >200°C (392°F) [ASTM D-92]

Flammable Limits (Approximate volume % in air): LEL: 0.9 UEL: 7.0

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. 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 advice on the minimum



Page 3 of 9

requirements for personal protective equipment. Additional protective measures may be necessary, depending on the specific circumstances and/or the expert judgment of the emergency responders.

SPILL MANAGEMENT

Land Spill: Stop leak if you can do so without risk. Recover by pumping or with suitable absorbent.

Water Spill: Stop leak if you can do so without risk. Confine the spill immediately with booms. Warn other shipping. Remove from the surface by skimming or with suitable absorbents. 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 contact with used product. Prevent small spills and leakage to avoid slip hazard. Material can accumulate static charges which may cause an electrical spark (ignition source). When the material is handled in bulk, an electrical spark could ignite any flammable vapors from liquids or residues that may be present (e.g., during switch-loading operations). Use proper bonding and/or earthing procedures. However, bonding and earthing 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.

STORAGE

The container choice, for example storage vessel, may effect static accumulation and dissipation. Do not store in open or unlabelled containers. Keep away from incompatible materials.

SECTION 8

EXPOSURE CONTROLS / PERSONAL PROTECTION

Exposure limits/standards for materials that can be formed when handling this product: When mists/aerosols can occur the following is recommended: 5 mg/m³ - ACGIH TLV (inhalable fraction).

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

ENGINEERING CONTROLS



Page 4 of 9

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

No special requirements under ordinary conditions of use and with adequate ventilation.

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:

No special requirements under ordinary conditions of use and with adequate ventilation.

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:

No protection is ordinarily required under normal conditions of use.

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:

No skin protection is ordinarily required under normal conditions of use. In accordance with good industrial hygiene practices, precautions should be taken to avoid skin contact.

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

Comply with applicable environmental regulations limiting discharge to air, water and soil. Protect the environment by applying appropriate control measures to prevent or limit emissions.

SECTION 9

PHYSICAL AND CHEMICAL PROPERTIES

Note: Physical and chemical properties are provided for safety, health and environmental considerations only and may not fully represent product specifications. Contact the Supplier for additional information.

GENERAL INFORMATION

Physical State: Liquid

Colour: Amber



Page 5 of 9

Odour: Characteristic
Odour Threshold: N/D

IMPORTANT HEALTH, SAFETY, AND ENVIRONMENTAL INFORMATION

Relative Density (at 15 °C): 0.86

Flash Point [Method]: >200°C (392°F) [ASTM D-92]

Flammable Limits (Approximate volume % in air): LEL: 0.9 UEL: 7.0

Autoignition Temperature: N/D **Boiling Point / Range:** N/D

Vapour Density (Air = 1): > 2 at 101 kPa [Estimated]

Vapour Pressure: < 0.013 kPa (0.1 mm Hg) at 20°C [Estimated]

Evaporation Rate (n-butyl acetate = 1): N/D

pH: N/A

Log Pow (n-Octanol/Water Partition Coefficient): N/D

Solubility in Water: Negligible

Viscosity: 67.4 cSt (67.4 mm2/sec) at 40°C | 10.7 cSt (10.7 mm2/sec) at 100°C

Oxidizing Properties: See Hazards Identification Section.

OTHER INFORMATION

Freezing Point: N/D Melting Point: N/A

Pour Point: -36°C (-33°F)

Decomposition Temperature: N/D

SECTION 10

STABILITY AND REACTIVITY

STABILITY: Material is stable under normal conditions.

CONDITIONS TO AVOID: Excessive heat. High energy sources of ignition.

MATERIALS TO AVOID: 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: No end point data for material.	Minimally Toxic. Based on assessment of the components.
Irritation: No end point data for material.	Negligible hazard at ambient/normal handling temperatures.
	Based on assessment of the components.
Ingestion	
Toxicity: No end point data for material.	Minimally Toxic. Based on assessment of the components.
Skin	
Toxicity: No end point data for material.	Minimally Toxic. Based on assessment of the components.
Irritation: No end point data for material.	Negligible irritation to skin at ambient temperatures. Based on assessment of the components.



Page 6 of 9

Eye	
Irritation: No end point data for material.	May cause mild, short-lasting discomfort to eyes. Based on
	assessment of the components.

CHRONIC/OTHER EFFECTS

For the product itself:

Diesel engine oils: Not carcinogenic in animals tests. Used and unused diesel engine oils did not produce any carcinogenic effects in chronic mouse skin painting studies. Oils that are used in gasoline engines may become hazardous and display the following properties: Carcinogenic in animal tests. Caused mutations in vitro. Possible allergen and photoallergen. Contains polycyclic aromatic compounds (PAC) from combustion products of gasoline and/or thermal degradation products.

Contains:

Synthetic base oils: Not expected to cause significant health effects under conditions of normal use, based on laboratory studies with the same or similar materials. Not mutagenic or genotoxic. Not sensitising in test animals and humans.

CMR Status: None.

-- REGULATORY LISTS SEARCHED--

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 -- Not expected to be harmful to aquatic organisms.

MOBILITY

Base oil component -- Low solubility and floats and is expected to migrate from water to the land. Expected to partition to sediment and wastewater solids.

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. Protect the



Page 7 of 9

environment. Dispose of used oil at designated sites. Minimize skin contact. Do not mix used oils with solvents, brake fluids or coolants.

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): Not Regulated for Land Transport

LAND (DOT): Not Regulated for Land Transport

SEA (IMDG): Not Regulated for Sea Transport according to IMDG-Code

AIR (IATA): Not Regulated for Air Transport

SECTION 15

REGULATORY INFORMATION

WHMIS Classification: Not controlled

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.

Complies with the following national/regional chemical inventory requirements: AICS, DSL, IECSC, KECI, PICCS, TSCA

Special Cases:

Inventory	Status
ENCS	Restrictions Apply

The Following Ingredients are Cited on the Lists Below:

Chemical Name	CAS Number	List Citations
DIPHENYLAMINE	122-39-4	6
PHENOL, 4,4-	118-82-1	1
METHYLENEBIS(2,6-BIS(1,1-		



Page 8 of 9

DIMETHYLETHYL)-

-- REGULATORY LISTS SEARCHED --

1 = TSCA 4 3 = TSCA 5e 5 = TSCA 12b 2 = TSCA 5a2 4 = TSCA 6 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 06: Protective Measures was modified.

Section 09: Phys/Chem Properties Note was modified.

Section 09: Pour Point C(F) was modified.

Section 08: Comply with applicable regulations phrase was modified.

Section 09: Vapour Pressure was modified.

Hazard Identification: Health Hazards was modified.

Section 11: Dermal Lethality Test Data was modified.

Section 11: Dermal Lethality Test Comment was modified.

Section 11: Oral Lethality Test Data was modified.

Section 11: Inhalation Lethality Test Data was modified.

Section 11: Dermal Irritation Test Data was modified.

Section 11: Eye Irritation Test Data was modified.

Section 11: Oral Lethality Test Comment was modified.

Section 11: Inhalation Lethality Test Comment was modified.

Section 11: Dermal Irritation Test Comment was modified.

Section 11: Eye Irritation Test Comment was modified.

Section 11: Inhalation Irritation Test Data was modified.

Section 09: Relative Density - Header was modified.

Section 09: Flash Point C(F) was modified.

Section 09 Viscosity was modified.

Section 09 Viscosity was modified.

Section 14: LAND (TDG) - Header was modified.

Section 15: National Chemical Inventory Listing was modified.

Section 09: Relative Density was modified.

Section 11: Additional Health Information was modified.

Section 08: Exposure limits/standards was modified.

Section 15: Special Cases Table was modified.

Section 15: Canadian List Citations Table was modified.

Section 01: Company Contact Methods Sorted by Priority was modified.

Section 01: Product Code was added.

Section 01: Product Code - Header was added.

WHMIS Classification: Not controlled

The information and recommendations contained herein are, to the best of Imperial Oil's knowledge and belief, accurate and reliable as of the date issued. Imperial Oil assumes no responsibility for accuracy of information unless the



Page 9 of 9

document is the most current available from an official Imperial Oil distribution system. The information and recommendations are offered for the user's consideration and examination, and it is the user's responsibility to satisfy itself that they are suitable and complete for its particular use. If buyer repackages this product, legal counsel should be consulted to insure proper health, safety and other necessary information is included on the container. Appropriate warnings and safe-handling procedures should be provided to handlers and users. Alteration of this document is strictly prohibited. Except to the extent required by law, republication or retransmission of this document, in whole or in part, is not permitted.

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Prepared by: Imperial Oil Limited, IH and Product Safety



Revision Date: 26 Apr 2017

Page 1 of 15

SAFETY DATA SHEET

SECTION 1 IDENTIFICATION

PRODUCT

Product Name: (see Section 16 for Synonyms) GASOLINE UNLEADED WITH ETHANOL (GASOHOL)

Product Description: Hydrocarbons and Additives

SDS Number: 12443

Intended Use: Fuel

COMPANY IDENTIFICATION

Supplier: Imperial Oil Downstream

P.O. Box 2480, Station M

Calgary, ALBERTA T2P 3M9 Canada

24 Hour Emergency Telephone1-866-232-9563Transportation Emergency Phone Number1-866-232-9563Product Technical Information1-800-268-3183Supplier General Contact1-800-567-3776

SECTION 2

HAZARD IDENTIFICATION

This material is considered to be hazardous according to regulatory guidelines.

This product has been classified in accordance with hazard criteria of the Hazardous Products Regulations (HPR) SOR/2015-17 and the SDS contains all the information required by the HPR SOR/2015-17.

CLASSIFICATION:

Flammable Liquids — Category 1
Skin Irritation — Category 2
Germ Cell Mutagenicity — Category 1B
Carcinogenicity — Category 1A
Specific Target Organ Toxicity — Single Exposure (Central Nervous System) — Category 3
Specific Target Organ Toxicity — Single Exposure (Respiratory Irritant) — Category 3
Aspiration Hazard — Category 1

LABEL: Pictogram





Revision Date: 26 Apr 2017

Page 2 of 15



Signal Word: Danger

Hazard Statements:

H224: Extremely flammable liquid and vapor. H304: May be fatal if swallowed and enters airways. H315: Causes skin irritation. H335: May cause respiratory irritation. H336: May cause drowsiness or dizziness. H340: May cause genetic defects. H350: May cause cancer.

Precautionary Statements:

P101: If medical advice is needed, have product container or label at hand. P102: Keep out of reach of children. P103: Read label before use.P201: Obtain special instructions before use. P202: Do not handle until all safety precautions have been read and understood. P210: Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking. P233: Keep container tightly closed. P240: Ground and bond container and receiving equipment. P241: Use explosion-proof electrical, ventilating, and lighting equipment. P242: Use nonsparking tools. P243: Take action to prevent static discharges. P261: Avoid breathing mist / vapours. P264: Wash skin thoroughly after handling. P271: Use only outdoors or in a well-ventilated area. P273: Avoid release to the environment. P280: Wear protective gloves/protective clothing/eye protection/face protection.P301 + P310: IF SWALLOWED: Immediately call a POISON CENTER or doctor/physician. P302 + P352: IF ON SKIN: Wash with plenty of soap and water. P303 + P361 + P353: IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water or shower. P304 + P340: IF INHALED: Remove person to fresh air and keep comfortable for breathing. P308 + P313: IF exposed or concerned: Get medical advice/attention. P312: Call a POISON CENTER or doctor/physician if you feel unwell. P331: Do NOT induce vomiting. P332 + P313: If skin irritation occurs: Get medical advice/attention. P362 + P364: Take off contaminated clothing and wash it before reuse. P370 + P378: In case of fire: Use water fog, foam, dry chemical or carbon dioxide (CO2) to extinguish. P391: Collect spillage.P403 + P235: Store in a well-ventilated place. Keep cool. P405: Store locked up.P501: Dispose of contents and container in accordance with local regulations.

Contains: GASOLINE; Toluene; XYLENES

Other hazard information:

Health Hazards Not Otherwise Classified: None as defined under HPR SOR/2015-17.

Physical Hazards Not Otherwise Classified: None as defined under HPR SOR/2015-17.

PHYSICAL / CHEMICAL HAZARDS

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.

HEALTH HAZARDS

High-pressure injection under skin may cause serious damage. May be irritating to the eyes, nose, throat, and lungs. May cause central nervous system depression. Exposure to benzene is associated with cancer (acute myeloid leukaemia and myelodysplastic syndrome), damage to the blood-producing system, and serious blood disorders (see Section 11).

ENVIRONMENTAL HAZARDS



Revision Date: 26 Apr 2017

Page 3 of 15

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

NFPA Hazard ID: Health: 2 Flammability: 3 Reactivity: 0

HMIS Hazard ID: Health: 2* 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 3

COMPOSITION / INFORMATION ON INGREDIENTS

This material is defined as a mixture.

Hazardous Substance(s) or Complex Substance(s) in Hazardous product

Name	CAS#	Concentration*	GHS Hazard Codes
ETHYL ALCOHOL	64-17-5	0 - 10%	H225, H319(2A)
GASOLINE	86290-81-5	89 - 100%	H224, H304, H336, H340(1B), H350(1B), H361(D), H315, H401, H411

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

Name	CAS#	Concentration*	GHS Hazard Codes
Benzene	71-43-2	0 - 1.5%	H225, H303, H304, H340(1B), H350(1A), H315, H319(2A), H372, H401
CUMENE	98-82-8	0 - 1%	H226, H304, H335, H351, H401, H411
CYCLOHEXANE	110-82-7	0 - 1.5%	H225, H304, H336, H315, H400(M factor 1), H410(M factor 1)
ETHYL BENZENE	100-41-4	0 - 3.5%	H225, H332, H373, H401, H412
n-Hexane	110-54-3	0 - 5%	H225, H304, H336, H361(F), H315, H373, H401, H411
Naphthalene	91-20-3	0 - 1%	H302, H351, H400(M factor 1), H410(M factor 1)
Toluene	108-88-3	0 - 20%	H225, H304, H336, H361(D), H315, H373, H401, H412
XYLENES	1330-20-7	0 - 20%	H226, H304, H312, H332, H335, H315, H320(2B), H373, H401

^{*} 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



Revision Date: 26 Apr 2017

Page 4 of 15

ingredients section, are based on API's evaluation of a typical gasoline mixture.

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. This light hydrocarbon material, or a component, may be associated with cardiac sensitisation following very high exposures (well above occupational exposure limits) or with concurrent exposure to high stress levels or heart-stimulating substances like epinephrine. Administration of such substances should be avoided.

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 material. Firefighters should consider protective equipment indicated in Section 8.

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



Revision Date: 26 Apr 2017

Page 5 of 15

Fume, Sulphur oxides

FLAMMABILITY PROPERTIES

Flash Point [Method]: -40°C (-40°F) [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 advice on the minimum requirements for personal protective equipment. Additional protective measures may be necessary, depending on the specific circumstances and/or the expert judgment of the emergency responders.

For emergency responders: Respiratory protection: half-face or full-face respirator with filter(s) for organic vapor and, when applicable, H2S, or Self Contained Breathing Apparatus (SCBA) can be used depending on the size of spill and potential level of exposure. If the exposure cannot be completely characterized or an oxygen deficient atmosphere is possible or anticipated, SCBA is recommended. Work gloves that are resistant to aromatic hydrocarbons are recommended. Note: gloves made of polyvinyl acetate (PVA) are not water-resistant and are not suitable for emergency use. Chemical goggles are recommended if splashes or contact with eyes is possible. Small spills: normal antistatic work clothes are usually adequate. Large spills: full body suit of chemical resistant, antistatic material is recommended.

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,



Revision Date: 26 Apr 2017

Page 6 of 15

sewers, basements or confined areas.

SECTION 7

HANDLING AND STORAGE

HANDLING

Avoid breathing mists or vapour. Avoid all personal contact. 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 type of container used to store the material may affect 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. Fixed storage containers, transfer containers and associated equipment should be grounded and bonded to prevent accumulation of static charge.

SECTION 8

EXPOSURE CONTROLS / PERSONAL PROTECTION

EXPOSURE LIMIT VALUES

Substance Name	Form	Limit/Sta	Limit/Standard Note		
Benzene		STEL	1 ppm		Supplier
Benzene		TWA	0.5 ppm		Supplier
Benzene		STEL	2.5 ppm	Skin	ACGIH
Benzene		TWA	0.5 ppm	Skin	ACGIH
CUMENE		TWA	50 ppm		ACGIH
CYCLOHEXANE		TWA	100 ppm		ACGIH



Revision Date: 26 Apr 2017

Page 7 of 15

ETHYL ALCOHOL	STEL	1000 ppm		ACGIH
ETHYL BENZENE	TWA	20 ppm		ACGIH
GASOLINE	STEL	200 ppm		Supplier
GASOLINE	TWA	100 ppm		Supplier
GASOLINE	STEL	500 ppm		ACGIH
GASOLINE	TWA	300 ppm		ACGIH
n-Hexane	TWA	50 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:

No special requirements under ordinary conditions of use and with adequate ventilation.

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:

Chemical resistant gloves are recommended.

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



Revision Date: 26 Apr 2017

Page 8 of 15

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:

Chemical/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

Comply with applicable environmental regulations limiting discharge to air, water and soil. Protect the environment by applying appropriate control measures to prevent or limit emissions.

SECTION 9

PHYSICAL AND CHEMICAL PROPERTIES

Note: Physical and chemical properties are provided for safety, health and environmental considerations only and may not fully represent product specifications. Contact the Supplier for additional information.

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): 0.74 Flammability (Solid, Gas): N/A

Flash Point [Method]: -40°C (-40°F) [ASTM D-92]

Flammable Limits (Approximate volume % in air): LEL: 1.5 UEL: 7.6

Autoignition Temperature: N/D

Boiling Point / Range: > 20°C (68°F) - 225°C (437°F)

Decomposition Temperature: N/D **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 20°C

Oxidizing Properties: See Hazards Identification Section.

OTHER INFORMATION

Freezing Point: N/D Melting Point: N/A

Pour Point: $< -60^{\circ}\text{C}$ (-76°F)

SECTION 10

STABILITY AND REACTIVITY



Revision Date: 26 Apr 2017 Page 9 of 15

STABILITY: Material is stable under normal conditions.

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

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

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

POSSIBILITY OF HAZARDOUS REACTIONS: Hazardous polymerization will not occur.

SECTION 11 TOXICOLOGICAL INFORMATION

INFORMATION ON TOXICOLOGICAL EFFECTS

Hazard Class	Conclusion / Remarks
Inhalation	
Acute Toxicity: (Rat) 4 hour(s) Data available.	Minimally Toxic. Based on test data for structurally similar materials. Test(s) equivalent or similar to OECD Guideline 403
Irritation: No end point data for material.	Elevated temperatures or mechanical action may form vapours, mist, or fumes which may be irritating to the eyes, nose, throat, or lungs.
Ingestion	
Acute Toxicity: Data available.	Minimally Toxic. Based on test data for structurally similar materials. Test(s) equivalent or similar to OECD Guideline 401
Skin	
Acute Toxicity: Data available.	Minimally Toxic. Based on test data for structurally similar materials. Test(s) equivalent or similar to OECD Guideline 402
Skin Corrosion/Irritation: Data available.	Irritating to the skin. Based on test data for structurally similar materials. Test(s) equivalent or similar to OECD Guideline 404
Eye	
Serious Eye Damage/Irritation: Data available.	May cause mild, short-lasting discomfort to eyes. Based on test data for structurally similar materials. Test(s) equivalent or similar to OECD Guideline 405
Sensitisation	
Respiratory Sensitization: No end point data for material.	Not expected to be a respiratory sensitizer.
Skin Sensitization: Data available.	Not expected to be a skin sensitizer. Based on chemical structure (polymers). Test(s) equivalent or similar to OECD Guideline 406
Aspiration: Data available.	May be fatal if swallowed and enters airways. Based on physico- chemical properties of the material.
Germ Cell Mutagenicity: Data available.	Caused genetic effects in laboratory animals, but the relevance to humans is uncertain. Based on test data for structurally similar materials. Test(s) equivalent or similar to OECD Guideline 471 475 476
Carcinogenicity: Data available.	Caused cancer from prolonged, high exposure. Based on human epidemiology studies. Based on test data for structurally similar materials. Test(s) equivalent or similar to OECD Guideline 451
Reproductive Toxicity: Data available.	Not expected to be a reproductive toxicant. Based on test data for structurally similar materials. Test(s) equivalent or similar to OECD Guideline 416 421
Lactation: No end point data for material.	Not expected to cause harm to breast-fed children.
Specific Target Organ Toxicity (STOT)	



Revision Date: 26 Apr 2017

Page 10 of 15

Single Exposure: No end point data for	May cause drowsiness or dizziness. May be irritating to the
material.	respiratory tract.
Repeated Exposure: Data available.	Not expected to cause organ damage from prolonged or repeated
	exposure. Based on test data for structurally similar materials.
	Test(s) equivalent or similar to OECD Guideline 410 412 453

TOXICITY FOR SUBSTANCES

NAME	ACUTE TOXICITY
ETHYL BENZENE	Inhalation Lethality: 4 hour(s) LC50 17.8 mg/l (Vapour) (Rat); Oral
	Lethality: LD 50 3.5 g/kg (Rat)
Naphthalene	Inhalation Lethality: 4 hour(s) LC50 > 0.4 mg/l (Max attainable
	vapor conc.) (Rat); Oral Lethality: LD 50 533 mg/kg (Mouse)

OTHER INFORMATION

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. Very high exposure (confined spaces / abuse) to light hydrocarbons may result in abnormal heart rhythm (arrhythmias). Concurrent high stress levels and/or co-exposure to high levels of hydrocarbons (above occupational exposure limits), and to heart-stimulating substances like epinephrine, nasal decongestants, asthma drugs, or cardiovascular drugs may initiate arrhythmias.

Contains:

BENZENE: Caused cancer (acute myeloid leukemia and myelodysplastic syndrome), damage to the blood-producing system, and serious blood disorders in human studies. Caused genetic effects and effects on the immune system in laboratory animal and some human studies. Caused toxicity to the fetus and cancer in laboratory animal studies. 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). 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)



Revision Date: 26 Apr 2017

Page 11 of 15

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.

CMR Status:

Chemical Name	CAS Number	List Citations
Benzene	71-43-2	1, 4, 5
CUMENE	98-82-8	3, 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
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 3 = IARC 2B 5 = ACGIH A1 2 = IARC 2A 4 = ACGIH ALL 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.



Revision Date: 26 Apr 2017

Page 12 of 15

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:

1203 **p:** II

Packing Group: II ERG Number: 128

Label(s): 3

ID Number:

Transport Document Name: UN1203, GASOLINE, 3, PG II

SEA (IMDG)

Proper Shipping Name: MOTOR SPIRIT or GASOLINE or PETROL

Hazard Class & Division: 3



Revision Date: 26 Apr 2017

Page 13 of 15

EMS Number: F-E, S-E UN Number: 1203 Packing Group: II Marine Pollutant: No

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

CEPA: All components of this product are either on the Domestic Substance List (DSL) or are exempt.

Listed or exempt from listing/notification on the following chemical inventories: AICS, DSL, 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
n-Hexane	110-54-3	6
Naphthalene	91-20-3	6
Toluene	108-88-3	6
XYLENES	1330-20-7	6

-- REGULATORY LISTS SEARCHED--

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

SECTION 16	OTHER INFORMATION	
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Revision Date: 26 Apr 2017

Page 14 of 15

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

KEY TO THE H-CODES CONTAINED IN SECTION 3 OF THIS DOCUMENT (for information only):

H224: Extremely flammable liquid and vapor; Flammable Liquid, Cat 1

H225: Highly flammable liquid and vapor; Flammable Liquid, Cat 2

H226: Flammable liquid and vapour; Flammable Liquid, Cat 3

H302: Harmful if swallowed; Acute Tox Oral, Cat 4

H303: May be harmful if swallowed; Acute Tox Oral, Cat 5

H304: May be fatal if swallowed and enters airways; Aspiration, Cat 1

H312: Harmful in contact with skin; Acute Tox Dermal, Cat 4

H315: Causes skin irritation; Skin Corr/Irritation, Cat 2

H319(2A): Causes serious eye irritation; Serious Eye Damage/Irr, Cat 2A

H320(2B): Causes eye irritation; Serious Eye Damage/Irr, Cat 2B

H332: Harmful if inhaled; Acute Tox Inh, Cat 4

H335: May cause respiratory irritation; Target Organ Single, Resp Irr

H336: May cause drowsiness or dizziness; Target Organ Single, Narcotic

H340(1B): May cause genetic defects: Germ Cell Mutagenicity. Cat 1B

H350(1A): May cause cancer; Carcinogenicity, Cat 1A

H350(1B): May cause cancer; Carcinogenicity, Cat 1B

H351: Suspected of causing cancer; GHS Carcinogenicity, Cat 2

H361(D): Suspected of damaging the unborn child; Repro Tox, Cat 2 (Develop)

H361(F): Suspected of damaging fertility; Repro Tox, Cat 2 (Fertility)

H372: Causes damage to organs through prolonged or repeated exposure; Target Organ, Repeated, Cat 1

H373: May cause damage to organs through prolonged or repeated exposure; Target Organ, Repeated, Cat 2

H400: Very toxic to aquatic life; Acute Env Tox, Cat 1

H401: Toxic to aquatic life; Acute Env Tox, Cat 2

H410: Very toxic to aquatic life with long lasting effects; Chronic Env Tox, Cat 1

H411: Toxic to aquatic life with long lasting effects; Chronic Env Tox, Cat 2

H412: Harmful to aquatic life with long lasting effects; Chronic Env Tox, Cat 3

THIS SAFETY DATA SHEET CONTAINS THE FOLLOWING REVISIONS:

Updates made in accordance with implementation of GHS requirements.

SYNONYMS: ESSO EXTRA GASOLINE WITH ETHANOL, ESSO MIDGRADE GASOLINE WITH ETHANOL, ESSO PREMIUM GASOLINE WITH ETHANOL, ESSO SUPREME GASOLINE WITH ETHANOL, ESSO SUPER-PREMIUM GASOLINE WITH ETHANOL, ESSO SUPREME+ GASOLINE WITH ETHANOL, GASOLINE PREMIUM UNLEADED PUL91 DCA WITH ETHANOL, GASOLINE SUPER PREMIUM UNLEADED PUL91 DCA WITH ETHANOL, ESSO REGULAR GASOLINE WITH ETHANOL, GASOLINE REGULAR UNLEADED RUL87 DCA DYED WITH ETHANOL, GASOLINE REGULAR UNLEADED RUL87 WITH ETHANOL, GASOLINE MIDGRADE UNLEADED MUL89 LDCA WITH ETHANOL, EXXON REGULAR GASOLINE WITH ETHANOL, OXYGENATED AUTOMOTIVE GASOLINE CONTAINING ETHANOL, GASOLINE MIDGRADE UNLEADED MUL89 DCA WITH ETHANOL, GASOLINE REGULAR UNLEADED RUL87 DYED WITH ETHANOL, GASOLINE REGULAR UNLEADED RUL87 DCA WITH ETHANOL, EXXON PREMIUM GASOLINE WITH ETHANOL, EXXON PREMIUM GASOLINE WITH ETHANOL

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Revision Date: 26 Apr 2017

Page 15 of 15

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