MSDS

Canadian Centre for Occupational Health and Safety
Issue : 97-1 (February, 1997)

*** IDENTIFICATION ***

MSDS RECORD NUMBER : 1313472
PRODUCT NAME(S) : COMMERCIAL PROPANE (ODORIZED)
PRODUCT IDENTIFICATION : MSDS Number : 010012
DATE OF MSDS : 1996-04-03

*** MANUFACTURER INFORMATION ***

MANUFACTURER : Imperial Oil (Products Division)
ADDRESS : 111 St Clair Avenue West
Toronto Ontario
Canada M5W 1K3
Telephone: 416-968-4111

*** SUPPLIER/DISTRIBUTOR INFORMATION ***

SUPPLIER/DISTRIBUTOR : Imperial Oil (Products Division)
ADDRESS : 111 St Clair Avenue West
Toronto Ontario
Canada M5W 1K3
Telephone: 416-968-4111

*** MATERIAL SAFETY DATA ***

Date Prepared: April 03, 1996
Supersedes: June 27, 1995
MSDS Number : 010012

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1. PRODUCT INFORMATION

Product Identifier: COMMERCIAL PROPANE (ODORIZED)

Application and Use:
Chemical feedstock, fuel for space heating or auto fuel for low severity engines, and crop drying.

Product Description:

Colourless gases composed mainly of C3 hydrocarbons stored and handled as liquids under pressure.

REGULATORY CLASSIFICATION

WHMIS:
Class A - Compressed Gas
Class B, Division 1: Flammable Gases.

CEPA: CANADIAN ENVIRONMENTAL PROTECTION ACT
All components of this product are either on the Domestic Substances List (DSL) or are exempt.

TRANSPORTATION OF DANGEROUS GOODS INFORMATION

Shipping Name: Liquified Petroleum Gas (Propane)
Class: Flammable Gas 2.1 Packing Group: Not regulated
PIN Number: UN1075 Guide Number: 102

Please be aware that other regulations may apply.

TELEPHONE NUMBERS

Emergency 24 hr. (519) 339-2145
Technical Info. (800) 268-3183

MANUFACTURER/SUPPLIER:

IMPERIAL OIL
Products Division
111 St Clair Avenue West
Toronto, Ontario
M5W 1K3
(416) 968-4111

REGULATED COMPONENTS

The following components are defined in accordance with sub-paragraph 13(a)(i) to (iv) or paragraph 14(a) of the Hazardous Products Act:

NAME	%	CAS #
Ethane	0- 5 V/V	74-84-0
Propane	90-99 V/V	74-98-6
Propylene	1-10 V/V	115-07-1
Isobutane	0-2.5 V/V	75-28-5
Butanes	0-2.5 V/V	68513-65-5

TYPICAL PHYSICAL & CHEMICAL PROPERTIES

Physical State: Gas
Specific gravity: not available
Viscosity: 0.50 cSt at 15 deg C
Vapour Density: 1.52
Boiling Point: -42 deg C
Evaporation rate: >1 (1= n-butylacetate)
Solubility in water: negligible
Freezing/Pour Point: not available
Odour Threshold: not available

Vapour Pressure: 92 [illegible]a at 16 deg C
Density: 0.51 g/cc at 15 deg C
Appearance/odour: Colourless gas, stenched to allow detection of leaks.

HEALTH HAZARD INFORMATION

NATURE OF HAZARD

INHALATION:

May cause central nervous system disorder (e.g. loss of coordination, weakness, fatigue, mental confusion and blurred vision) and/or damage. Breathing high vapour concentrations (saturated vapours) for a few minutes may be fatal. Saturated vapours can be encountered in confined spaces and/or under conditions of poor ventilation.
May cause irritation, breathing failure, coma and death without any warning odour being sensed.
Inhalation exposure to this product at extremely high concentrations, as in accidental releases in which concentrations reach or exceed the flammable range, may result in cardiac arrhythmias.

EYE CONTACT:

Exposure to rapidly expanding gas or vapourizing liquid may cause frostbite (cold burns) and permanent eye damage.

SKIN CONTACT:

Exposure to rapidly expanding gas or vapourizing liquid may cause frostbite (cold burn).

INGESTION:

Not considered to be a hazard.

ACUTE TOXICITY DATA:

The above evaluation of hazard is based on knowledge of the toxicity of the material's components.

OCCUPATIONAL EXPOSURE LIMIT:

Manufacturer recommends:
For Isobutane, 800 ppm.
For Propane, 1000 ppm TWA for 8 hours/day, and 1500 ppm for a 15 minute short term exposure (STEL).

ACGIH recommends:
For Butane, 800 ppm (1900 mg/m3).

Local regulated limits may vary.

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5. FIRST AID MEASURES

INHALATION:

In emergency situations use proper respiratory protection to immediately remove the affected victim from exposure. Administer artificial respiration if breathing has stopped. Keep at rest. Call for prompt medical attention.

EYE CONTACT:

In case of cold burns caused by rapidly expanding gas or vapourizing liquid, get prompt medical attention.

SKIN CONTACT:

In case of cold burns caused by rapidly expanding gas or vapourizing liquid, get prompt medical attention.

INGESTION:

First aid is not applicable.

PREVENTIVE AND CORRECTIVE MEASURES

PERSONAL PROTECTION:

The selection of personal protective equipment varies, depending upon conditions of use.
In open systems where contact is likely, wear gas-proof goggles, face shiel chemical-resistant overalls, and appropriate thermal/chemical gloves.
Where skin and eye contact is unlikely, but may occur as a result of short and/or periodic exposures, wear long sleeves, chemical resistant gloves, gas-proof goggles, and a face shield.
Where concentrations in air may exceed the occupational exposure limits given in Section 4 and where engineering, work practices or other means of exposure reduction are not adequate, approved respirators may be necessary to prevent overexposure by inhalation.

ENGINEERING CONTROLS:

The use of local exhaust ventilation is recommended to control emissions near the source. Laboratory samples should be handled in a fumehood. Provide mechanical ventilation of confined spaces.
Use explosion-proof ventilation equipment.

HANDLING, STORAGE AND SHIPPING:

Keep containers closed. Handle and open containers with care.
Store in a cool, well ventilated place away from incompatible materials.
Store as pressurized liquid in a pressure vessel.
Store and load the container at normal (up to 38 deg C) temperature and at atmospheric pressure.
Empty containers may contain product residue. Do not pressurize cut, heat, or weld empty containers. Do not reuse empty containers without commercial cleaning or reconditioning.

LAND SPILL:

Eliminate source of ignition. Keep public away. Prevent additional discharge of material, if possible to do so without hazard.
Vapours or dust may be harmful or fatal. Warn occupants of downwind areas.
Allow to evaporate.
Consult an expert on disposal of recovered material. Ensure disposal in compliance with government requirements and ensure conformity to local disposal regulations. Notify the appropriate authorities immediately.
Take all additional action necessary to prevent and remedy the adverse effects of the spill.

WATER SPILL:

Eliminate all sources of ignition. Vapours or dust may be harmful or fatal. Warn occupants and shipping in downwind areas.
Allow to evaporate from surface.
Consult an expert on disposal of recovered material. Ensure disposal in compliance with government requirements and ensure conformity to local disposal regulations. Notify the appropriate authorities immediately.
Take all additional action necessary to prevent and remedy the adverse effects of the spill.

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7. FIRE AND EXPLOSION HAZARD

Flashpoint and method: -103 deg C COC

Autoignition: 432 deg C Flammable Limits: LEL: 2.4% UEL: 9.5%

GENERAL HAZARDS:

Extremely flammable; material will readily ignite at normal temperatures.
Flammable Gas; may readily form flammable mixtures at or above the flash point.
Toxic gases will form upon combustion.
Static Discharge; material may accumulate static charges which may cause a fire.
Auto-refrigeration; drains may become plugged and valves may become inoperable because of the formation of ice due to expanding vapours or vapourizing liquids.

FIRE FIGHTING:

Use water spray to cool fire exposed surfaces and to protect personnel.
Shut off fuel to fire if possible to do so without hazard. If a leak or spill has not ignited use water spray to disperse the vapours.
Either allow fire to burn out under controlled conditions or extinguish with foam or dry chemical. Try to cover liquid spills with foam.
Respiratory and eye protection required for fire fighting personnel.
A self-contained breathing apparatus (SCBA) should be used for all indoor fires and any significant outdoor fires. For small outdoor fires, which may easily be extinguished with a portable fire extinguisher, use of an SCBA may not be required.

HAZARDOUS COMBUSTION PRODUCTS:

Smoke, carbon monoxide, carbon dioxide under thermal decomposition.

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5. REACTIVITY DATA

STABILITY:

This product is stable. Hazardous polymerization will not occur.

INCOMPATIBLE MATERIALS AND CONDITIONS TO AVOID:

Strong oxidizing agents

HAZARDOUS DECOMPOSITION:

none

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6. NOTES

Imperial Oil has no knowledge how its customers will handle, store, transfer, distribute or use odourized propane or non-odourized propane and therefore makes no warranty regarding the propane or the odourant after the custody of these materials passes to the customers. It is recommended that Imperial Oil's customers provide their employees and subsequent customers with information regarding the characteristics of propane, how those characteristics relate to the employees or customers use including the limitation in detecting non-odourized or odourized propan and the limitations of any odourant such as ethyl mercaptan that may be adc during subsequent distribution.
With proper handling, transportation and storage, adding a chemical odourant such as ethyl mercaptan has proven to be a very effective warning device but all odourants have certain limitations. The effectiveness of the odourant may be diminished by a person's sense of smell, by competing odours and by oxidation which may cause a potentially dangerous situation. Further safety related information is contained on the Material Safety Data Sheet.
Industry experience has shown that natural gas streams may contain trace amounts of radon, a naturally occurring radioactive gas, and radioactive particulate decay products which can accumulate in process equipment and storage vessels. These materials emit gamma, alpha, and beta forms of radiation. Since gamma radiation can penetrate the walls of intact equipmer a potential for exposure could exist at or adjacent to the external surface of process equipment that contain radon-enriched process streams or accumulated deposits of radon decay products. Equipment emitting gamma radiation at dose rates above background should be assumed to be contaminat with internal deposits of alpha-and beta-emitting radon decay products. Measures should be taken to preclude the inhalation or ingestion of alpha-beta-emitting materials. Before performing maintenance on contaminated equipment, all process shut-down safety and "gas freeing" procedures should be followed and at least a 4 hour lapse should be allowed between process stream shut-down and the opening of equipment for repair operations. This

time will allow the amma radiation dose rates be reduced to background levels. Maintenance personnel should wear appropriate personal protective equipment and follow recommended industrial hygiene/safety and environmenta procedures in accordance with prevailing regulations and industry guideline

This msds has been revised in Sections 2,4 and 5.

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10. PREPARATION

Date Prepared: January 11, 1996
Prepared by: Lubricants & Specialties
IMPERIAL OIL
Products Division
111 St Clair Avenue West
Toronto, Ontario
M5W 1K3
(800) 268-3183

M S D S

Canadian Centre for Occupational Health and Safety

Issue : 97-1 (February, 1997)

*** IDENTIFICATION ***

MSDS RECORD NUMBER : 421419
PRODUCT NAME(S) : DIESEL FUEL
Other Names: Diesel 20X, 0, 15, 20, 25, 30, 40, 40S, 50, 60
Diesel AA, Diesel GM 35, 45
Domestic Marine Diesel
PRODUCT IDENTIFICATION : W104E(9204)
DATE OF MSDS : 1992-04-01
CURRENCY NOTE : This MSDS is currently under revision by Petro-Canada and a more updated version is, or may be, available from Petro-Canada directly. Petro-Canada will be updating their MSDS collection in the CCOHS MSDS database in the near future.

*** MANUFACTURER INFORMATION ***

MANUFACTURER : PETRO-CANADA
ADDRESS : POST OFFICE BOX 2844
PETRO-CANADA CENTRE
CALGARY ALBERTA
CANADA T2P 3E3
EMERGENCY TELEPHONE NO. 403-296-3000

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MESSAGE FROM PETRO-CANADA: PETRO-CANADA AND ITS AFFILIATES ASSUME NO RESPONSIBILITY FOR INJURY TO ANYONE CAUSED BY THE MATERIAL IF REASONABLE SAFETY PROCEDURES ARE NOT ADHERED TO AS STIPULATED IN THE DATA SHEET. ADDITIONALLY, PETRO-CANADA AND ITS AFFILIATES ASSUME NO RESPONSIBILITY FOR INJURY TO ANYONE CAUSED BY ABNORMAL USE OF THE MATERIAL EVEN IF REASONABLE SAFETY PROCEDURES ARE FOLLOWED. FURTHERMORE, VENDEE AND THIRD PERSONS ASSUME THE RISK IN THEIR USE OF THE MATERIAL.

*** SUPPLIER/DISTRIBUTOR INFORMATION ***

SUPPLIER/DISTRIBUTOR : PETRO-CANADA
ADDRESS : POST OFFICE BOX 2844
PETRO-CANADA CENTRE
CALGARY ALBERTA
CANADA T2P 3E3
EMERGENCY TELEPHONE NO. 403-296-3000

*** MATERIAL SAFETY DATA ***

MATERIAL SAFETY DATA SHEET

WHMIS CLASSIFICATION

Combustible Liquid (Class B3) PRODUCT CODE: N/A
Poisonous Material (D2) DATE PREPARED: April 1, 1992

SECTION I MATERIAL IDENTIFICATION

Trade Name:	DIESEL FUEL
Other Names:	Diesel 20X, 0, 15, 20, 25, 30, 40, 40S, 50, 60 Diesel AA, Diesel GM 35, 45 Domestic Marine Diesel
Chemical Synonyms and Family:	Petroleum hydrocarbon
Poison Control Centre Numbers:	Consult local telephone directory for emergency numbers.
Application:	Diesel fuels are distillate fuels suitable for use in high and medium speed internal combustion engines of the compression ignition type.

SECTION II TRANSPORTATION

UN Number: 1202
Primary Classification: 3.3
Subsidiary Classification: NR
Compatibility Groups: N/A
CANUTEC Transport Emergency No.: (613) 996-6666

SECTION III COMPOSITION

COMPONENTS	% (VOL.)	CAS #
Complex mixture of petroleum hydrocarbons* (C9 - C18).	>99.9	68334-30-5
ALLOWABLE LIMITS (8 h) 5 mg/m3 (oil mist)**		
Anti-static additive, cetane improver, pour point depressant.	<0.1	N/A
ALLOWABLE LIMITS (8 h) N/A		

* Aromatic content is 38% maximum (benzene nil)
** Petro-Canada recommendation.

SECTION IV PHYSICAL DATA

Density (@ 15 deg C):	0.78-0.90 kg/L
Vapour Pressure (@ 25 deg C):	1 kPa (approx.)
Vapour Density (@ 20 deg C):	4.5 (approx.)
Solubility in Water:	Insoluble
Viscosity (Kinematic): (@ 40 deg C)	1.2-4.1 cSt
Pour Point:	-50 to -6 deg C (-58 to 20 deg F)
Boiling Point/Range (@ 1 atm):	145-371 deg C (approx.)
Percent Volatile (@ 20 deg C):	U
Evaporation Rate:	N/A
Appearance & Odour:	Clear to yellow, bright oily liquid with hydrocarbon odour.**

** May be dyed purple or red for taxation purposes.

SECTION V FIRE & EXPLOSION DATA

Flash Point (method used = COC):	40 deg C (minimum)
Flammable limits in air (% by volume):	Lower 0.7% Upper 6.0%
Auto-Ignition Temperature:	>225 deg C
Fire and Explosion Hazards: MODERATE FIRE HAZARD	Treat as combustible liquid. Do not cut, drill or weld empty containers.
Extinguishing Media:	Dry chemical or carbon dioxide for small fires. Water spray or foam for large fires.
Fire Fighting Procedures:	Use full protective equipment and self-contained breathing apparatus. Cover with extinguishing agent. Use water spray to cool fire-exposed containers and as a protective screen. Do not point solid water stream directly into burning product to avoid spreading fire.

SECTION VI HEALTH HAZARD INFORMATION

Toxicity Data

* Estimated acute LD50 = 7650 mg/kg (rat, oral): practically non-toxic.
Rabbit primary dermal irritation index (Draize) = 6.8: extremely irritating. Rabbit eye irritation index (Draize) = 0: non-irritating.

Effects of Overexposure

Inhalation:	Inhalation of vapours or mist will cause headaches, nausea, dizziness, and intoxication; severe central nervous system depressant.
Skin and Eyes:	Irritation, defatting and drying of skin. Prolonged exposure to skin may cause chapping, cracking or possibly dermatitis. Eye contact may cause irritation, but not permanent damage.
Ingestion:	Ingestion is unlikely.

Based on API Study #79-6 on diesel fuel where LD50=9.0 mL/k (rat, oral).

Emergency and First Aid Procedures Information

Skin:	Remove contaminated clothing - launder before reuse. Soap and water wash. Discard saturated leather articles.
Eyes:	Copious warm water flush - 15 minutes. Physician assessment mandatory.
Inhalation:	Evacuate to fresh air. Apply Cardio Pulmonary Resuscitation if required. Administer oxygen if available. If resuscitation is required, physician assessment is mandatory.
Ingestion:	DO NOT INDUCE VOMITING. If vomiting - take care to prevent aspiration. Give 250 mL. (1/2 pint) of milk to drink. Mandatory physician assessment.
Notes to Physician:	Gastric lavage should only be done after endotracheal intubation in view of the risk of aspiration which can cause serious chemical pneumonitis for which antibiotic

and orticosteroid therapy may , indicated.

SECTION VII REACTIVITY DATA

Stability:	Stable under normal storage and use.
Conditions to avoid:	Excessive heat, sources of ignition, formation of oil mist.
Materials to avoid:	Strong oxidizing agents (strong acids, peroxides, chlorine, etc).
Hazardous Decomposition products:	COx, SOx, smoke on combustion.
Can hazardous polymerization occur?:	No.

SECTION VIII SPILL OR LEAK PROCEDURES

Steps to be taken if material is released or spilled:	Avoid contact. Use full protective equipment and breathing apparatus if required. ELIMINATE IGNITION SOURCES. Contain spill. Absorb with inert absorbent such as dry clay, sand or diatomaceous earth, commercial sorbents, or recover using electrically grounded explosion-proof pumps. Place absorbent in closed metal containers. DO NOT FLUSH TO SEWER.
Waste Disposal Method:	Dispose in approved, SECURE contaminated waste landfill site or licensed waste reclaimer facility. Check with applicable jurisdictions for specific disposal requirements.

SECTION IX SPECIAL PROTECTION INFORMATION

Ventilation:	General ventilation. Use explosion-proof mechanical ventilation suitable for group D atmospheres.
Respiratory Protection:	Up to 5 mg/m3 (oil mist), none required. From 5 to 50 mg/m3, use an approved organic vapour respirator suitable for oil mist in areas with sufficient oxygen. Above 50 mg/m3, use full-face air-supplied or self-contained breathing apparatus.
Protective Gloves:	For direct contact with hydrocarbons of more than 2 hours, VITON or NITRILE recommended. Otherwise, PVC gloves may be worn.
Eye Protection:	Chemical goggles if splashing likely.
Other Protective Clothing:	Wear long sleeved clothing to minimize skin contact.

SECTION X SPECIAL PRECAUTIONS

Store in cool, well-ventilated area. Electrically ground/bond during pumping or transfer to avoid static accumulation. AVOID SKIN CONTACT AND INHALATION. Practice good personal hygiene. DO NOT SIPHON BY MOUTH OR USE AS A CLEANING SOLVENT. Launder work clothes frequently. Petro-Canada recommends an

allowable exposure of 5 .g/m3 (oil mist) when handl. .g DIESEL FUELS.

SECTION XI REFERENCES

ACGIH, Threshold Limit Values and Biological Exposure Indices for 1991.
CONCAWE, First Aid Measures, Medical Toxicology Data and Professional Advice to Clinicians on Petroleum Products, February 1983.
API, Petroleum Process Stream Terms Included in the Chemical Substances Inventory Under the Toxic Substances Control Act (TSCA), 1983.
Environment Canada Manual for Spills of Hazardous Materials, March, 1984.
Party's Industrial Hygiene and Toxicology, 3rd Edition, Vol. 2B, 1981.
NIOSH, The Industrial Environment - Its Evaluation and Control, 1973.
API, Acute Toxicity Tests on Diesel Fuel, API # 79-6, 1980.
API, The Toxicology of Petroleum Hydrocarbons, May, 1982.

Prepared by Environment, Safety and Hygiene
Cette fiche est aussi disponible en francais.

NR-Not Regulated N/A-Not Applicable U-Unknown
W104E(9204)

ISN: 421419

M S D S

Canadian Centre for Occupational Health and Safety

Issue : 97-1 (February, 1997)

*** IDENTIFICATION ***

MSDS RECORD NUMBER : 1307882
PRODUCT NAME(S) : REGULAR UNLEADED GASOLINE MMT-FREE
PRODUCT IDENTIFICATION : SHELL CANADA CODE 211-003
DATE OF MSDS : 1994-11-15

*** MANUFACTURER INFORMATION ***

MANUFACTURER : SHELL CANADA LIMITED
ADDRESS : Post Office Box 100 Station M
Calgary Alberta
Canada T2P 2H5
Telephone: 403-691-3111
EMERGENCY TELEPHONE NO. : 403-691-2220 (BUSINESS HOURS)
800-661-7378 (AT ALL OTHER TIMES)
613-996-6666 (CANUTEC, 24 HOUR)

*** MATERIAL SAFETY DATA ***

MATERIAL SAFETY DATA SHEET

MSDS NUMBER: 211-003

SECTION 1 PRODUCT IDENTIFICATION

TRADE NAME: REGULAR UNLEADED GASOLINE MMT-FREE
MANUFACTURER/SUPPLIER'S NAME: SHELL CANADA LIMITED
ADDRESS: P.O. Box 100, Station M
Calgary, Alberta
Canada
T2P 2H5 PHONE: 403-691-3111

SHELL EMERGENCY TELEPHONE NUMBER CANUTEC
BUSINESS HOURS : (403) 691-2220 24 HOUR EMERGENCY TELEPHONE
AT ALL OTHER TIMES : 1-800-661-7378 (613) 996-6666

CHEMICAL SYNONYMS
Automotive Fuel
Petrol
PRODUCT USE
Fuel
WHMIS CLASS AND DESCRIPTION
Class B2 Flammable Liquid
Class D2A Other Toxic Effects - Carcinogen
CANADIAN TDG DESCRIPTION (ROAD & RAIL)
SHIPPING NAME: GASOLINE
CLASS DESCRIPTION: PACKING GROUP:
Class 3 Flammable Liquid II
UN NUMBER: 1203

SECTION 2 INGREDIENTS & TOXICOLOGICAL PROPERTIES

LEGEND: CBI - CONFIDENTIAL BUSINESS INFORMATION
2A - PRODUCT & CONTROLLED INGREDIENTS
PRODUCT: REGULAR UNLEADED GASOLINE MMT-FREE 100% VOL
CAS# : 8006-61-9 WHMIS CONTROLLED: YES
Rat Oral LD50 18800.0 mg/kg
Rabbit Dermal LD50 > 8000.0 mg/kg
BENZENE 1.0 - 5.0 % VO
CAS# : 71-43-2 WHMIS CONTROLLED: YES
Rat Oral LD50 > 5600.0 mg/kg
Inhal. LC50 13700.0 ppm 4.00 hrs

2B - TOXICOLOGICAL INFORMATION
RATIONALE FOR WHMIS TOXICITY CLASSIFICATION
Exposure may occur via inhalation, ingestion, skin absorption and skin or eye contact.
According to the International Agency for Research on Cancer (IARC) this product is considered to be possibly carcinogenic to humans.
This product contains benzene. Repeated exposure to benzene concentrations greater than the recommended TLV/TWA may reduce the cellular components of peripheral blood and bone marrow. Epidemiological studies indicate that long term inhalation of benzene vapour can cause leukaemia in man. Benzene has also produced chromosomal aberrations in peripheral blood lymphocytes.
Based on testing with similar materials, this product is not expected to be a primary skin irritant after exposure of short duration, would not be a skin sensitizer and would not be irritating to the eye.
Data is insufficient to further classify according to WHMIS criteria. See supplemental health information.
SUPPLEMENTAL HEALTH INFORMATION
Prolonged and repeated contact with skin can cause defatting and drying of the skin resulting in skin irritation and dermatitis. Vapours are moderately irritating to the eyes and respiratory passages. Prolonged exposure to high vapour concentration can cause headache, dizziness, nausea, and central nervous system depression. Prolonged immersion in liquid may lead to chemical burns. The liquid when accidently aspirated into the lungs can cause a severe inflammation of the lung.

SECTION 3 EMERGENCY AND FIRST AID PROCEDURES

EYES
Flush eyes with water for at least 15 minutes while holding eyelids open. If irritation occurs and persists, obtain medical attention.
INHALATION
Remove victim from further exposure and restore breathing, if required. Obtain medical attention.
INGESTION
DO NOT INDUCE VOMITING] OBTAIN MEDICAL ATTENTION IMMEDIATELY. Guard against aspiration into lungs by having the individual turn on to their left side. If vomiting occurs spontaneously keep head below hips to prevent aspiration of liquid into the lungs.
SKIN
Start rinsing and remove contaminated clothing while rinsing. Wash contaminated skin with mild soap and water. If irritation occurs and persists, obtain medical attention.
NOTES TO PHYSICIAN
The main hazard following accidental ingestion is aspiration of the liquid into the lungs producing chemical pneumonitis. If more than 2.0 mL/kg has been ingested, vomiting should be induced with supervision. If symptoms such as

loss of gag reflex, con lsions or unconsciousnes occur before vomiting, gastric lavage with a curfed endotracheal tube should be considered.

SECTION 4 EMPLOYEE PROTECTION

THE FOLLOWING INFORMATION, WHILE APPROPRIATE FOR THIS PRODUCT, IS GENERAL IN NATURE. THE SELECTION OF PERSONAL PROTECTIVE EQUIPMENT WILL VARY DEPENDING ON THE CONDITIONS OF USE.

OCCUPATIONAL EXPOSURE LIMITS - VALID 1995/1996

Gasoline: 300 ppm, 890 mg/m3 (TLV/TWA) ACGIH
500 ppm,1480 mg/m3 (TLV/STEL) ACGIH

EYES AND FACE

Chemical safety goggles and/or full face shield to protect eyes and face, if product is handled such that it could be splashed into eyes. Provide an eyewash station in the area.

SKIN (HANDS, ARMS AND BODY)

Impervious gloves should be worn at all times when handling this product. PVC or nitrile rubber gloves recommended. In confined spaces or where the risk of skin exposure is much higher, impervious clothing should be worn. Safety showers should be available for emergency use.

RESPIRATORY

If exposure exceeds occupational exposure limits, wear a NIOSH- approved respirator. Use a chemical cartridge respirator (half mask or full-facepiece) with organic vapour cartridge. For high concentration use an atmosphere-supplied, positive pressure demand self-contained or airline breathing apparatus.

MECHANICAL VENTILATION

Use explosion-proof ventilation as required to control vapour concentrations. Concentrations in air should be maintained below lower explosive limit at all times or below the recommended threshold limit value if unprotected personnel are involved.

For personnel entry into confined spaces (i.e. bulk storage tanks) a proper confined space entry procedure must be followed including ventilation and testing of tank atmosphere.

Make up air should always be supplied to balance air exhausted (either generally or locally).

SECTION 5 PREVENTATIVE MEASURES

STORAGE AND HANDLING

Extremely flammable. Store in a cool, dry, well ventilated area, away from heat and ignition sources. Protect against physical damage to containers. Fixed equipment as well as transfer containers and equipment should be grounded to prevent accumulation of static charge. Avoid all direct contact with this material. Avoid prolonged or repeated inhalation of vapours. Vapours may accumulate and travel to distant ignition sources and flashback. Do not cut, drill, grind, weld or perform similar operations on or near containers. Do not use as a cleaning solvent. Never siphon by mouth. Empty containers are hazardous, may contain flammable/explosive dusts, residues or vapours. Launder contaminated clothing prior to reuse. Wash with soap and water prior to

eating, drinking, smoking or using toilet facilities.

SPILL AND LEAK HANDLING PROCEDURES

Issue warning "Flammable". Eliminate all ignition sources. Isolate hazard area and restrict access. Handling equipment must be grounded. Try to work upwind

of spill. Avoid direct contact with material. Wear appropriate breathing apparatus (if applicable) and protective clothing. Stop leak only if safe to do so. Dike and contain land spills; contain water spills by booming. Use water fog to knock down vapours; contain runoff. Absorb residue or small spills with absorbent material and remove to non-leaking containers for disposal. Recommended materials: Clay or Sand Flush area with water to remove trace residue. Dispose of recovered material as noted below.

WASTE DISPOSAL METHODS

Waste management priorities(depending on volumes and concentration of waste) are: 1. recycle(reprocess), 2. energy recovery(cement kilns, thermal power generation), 3. incineration, 4. disposal at a licenced waste disposal facility. Do not attempt to combust waste on-site. Incinerate at a licenced waste disposal site with approval of environmental authority.

SECTION 6 PHYSICAL AND CHEMICAL PROPERTIES

PHYSICAL STATE

Liquid

ODOUR AND APPEARANCE

Typical Gasoline Odour Clear

AVERAGE ODOUR THRESHOLD	:	> 0.25 ppm
BOILING POINT (DEG C)	:	35 - 220
FREEZING POINT (DEG C)	:	NOT AVAILABLE
DENSITY (KG/M3 @ DEG C)	:	750.00 - 850.00 @ 15
VAPOUR DENSITY (AIR=1)	:	3.5
VAPOUR PRESSURE (MMHG @ DEG C)	:	NOT AVAILABLE
SPECIFIC GRAVITY (H2O=1)	:	NOT AVAILABLE
PH LEVEL	:	NOT AVAILABLE
VISCOSITY (CST @ DEG C)	:	< 1.00 @ 38
EVAPORATION RATE (NBUAC=1)	:	NOT AVAILABLE
PARTITION COEFFICIENT (KOW)	:	2.00
WATER SOLUBILITY	:	Insoluble
OTHER SOLVENT	:	Hydrocarbon Solvents
MOLECULAR WEIGHT (G	:	NOT AVAILABLE
FORMULA		MIXTURE OF C4-C11 HYDROCARBONS

SECTION 7 REACTIVITY, FIRE AND EXPLOSION HAZARD

7A - FIRE AND EXPLOSION HAZARD

FLASH POINT (DEG C) AND METHOD:

-30 Tag Closed Cup

FLAMMABLE LIMITS / % VOLUME IN AIR

LFL: 1.4 UFL: 7.6

AUTOIGNITION TEMP. (DEG C):

280

EXTINGUISHING MEDIA

Dry Chemical

Carbon Dioxide

Foam

Water Fog

SPECIAL FIRE-FIGHTING PROCEDURES

Extremely flammable. Do not enter confined fire space without adequate protective clothing and an approved positive pressure self-contained breathing apparatus. Do not use water except as a fog. Product will float and can be reignited on surface of water. Containers exposed to intense heat from fires should be cooled with water to prevent vapour pressure buildup which could

result in container rupture. Container areas exposed to direct flame contact should be cooled with large quantities of water as needed to prevent weakening of container structure.

7R - REACTIVITY DATA

HAZARDOUS COMBUSTION / DECOMPOSITION PRODUCTS

Vapour forms a flammable/explosive mixture with air between upper and lower flammable limits. Vapours may travel along ground and flashback along vapour trail may occur.

Nitrogen oxides, carbon monoxide, carbon dioxide and unidentified organic compounds may be formed during combustion.

INCOMPATIBILITY

Strong oxidizing agents.

CONDITIONS OF REACTIVITY/INSTABILITY

Avoid excessive heat, open flames and all ignition sources.

STABLE :	YES	SENSITIVITY TO MECHANICAL IMPACT :	NO
HAZARDOUS POLYMERIZATION:	NO	SENSITIVITY TO STATIC DISCHARGE :	YES

SECTION 8 ENVIRONMENTAL DATA

REGULATIONS AND STANDARDS

No Canadian federal standards. This product, or all components, are listed on the Domestic Substances List, as required under the Canadian Environmental Protection Act.

ENVIRONMENTAL EFFECTS AND HAZARDS

Do not allow product or runoff from fire control to enter storm or sanitary sewers, lakes, rivers, streams, or public waterways. Block off drains and ditches. Provincial regulations require and federal regulations may require that environmental and/or other agencies be notified of a spill incident. Spill area must be cleaned and restored to original condition or to the satisfaction of authorities. May be harmful to aquatic life. Fish Toxicity: 5 to 40 ppm ! 96 hr TLm ! Rainbow Trout ! Freshwater

BIODEGRADABILITY

Not readily biodegradable. Potential for bioaccumulation. Rapid volatilization.

SECTION 9 LABEL INFORMATION

PTI TRADE NAME: REGULAR UNLEADED GASOLINE MMT-FREE

WHMIS DESCRIPTION

Class B2 Flammable Liquid

Class D2A Other Toxic Effects - Carcinogen

HAZARD STATEMENTS

Flammable Liquid. May cause cancer.

SAFE HANDLING

Eliminate all ignition sources. Wear suitable gloves and eye protection. Bond and ground transfer containers and equipment to avoid static accumulation. Avoid prolonged exposure to vapours. Empty containers are hazardous, may contain flammable / explosive dusts, liquid residue or vapours. Keep away from sparks and open flames.

FIRST AID

Wash contaminated skin with soap and water. Flush eyes with water. If overcome by vapours remove to fresh air. Do not induce vomiting. Obtain medical attention.

SECTION 10 PREPARATION AND SUPPLEMENTAL INFORMATION

10A - PREPARATION INFORMATION

PREPARED BY: TOXICOLOGY AND MATERIAL SAFETY SECTION OF SHELL CANADA LIMITED

MSDS EFFECTIVE DATE: 1994/11/15 SUPERCEDES MSDS DATED: 1994/10/06

10B - SUPPLEMENTAL INFORMATION

REVISIONS

- The status of Shell products with respect to the Domestic Substances List will be provided in Section 8, as the information becomes available.

REF.011994111599

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*                        M S D S                       *
*                                                      *
*  Canadian Centre for Occupational Health and Safety  *
* * * * * * * * * * * * * Issue : 97-1 (February, 1997) *
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*** IDENTIFICATION ***

MSDS RECORD NUMBER	:	485141
PRODUCT NAME(S)	:	HYDROCHLORIC ACID 8%
PRODUCT IDENTIFICATION	:	Code.: R-105 MS/NB11/H-C 8%
DATE OF MSDS		1990-04-24

*** MANUFACTURER INFORMATION ***

MANUFACTURER	MAGNUS CHEMICALS LIMITED
ADDRESS	190 Industrial Boulevard Boucherville Quebec Canada J4B 2X3 Fax: 514-655-5428 (8:30 to 16:30)
EMERGENCY TELEPHONE NO.	514-655-1344 613-996-6666 (CANUTEC)

***

MESSAGE FROM MAGNUS CHEMICALS LIMITED: The opinions expressed herein are those of qualified experts within MAGNUS CHEMICALS LIMITED. We believe that the information contained herein is current as of the date of this Material Safety Data Sheet. Since the use of this information and of these opinions and the conditions of use of the product are not within the control of MAGNU CHEMICALS LIMITED, it is the user's obligation to determine the conditions o safe use of the product.

*** MATERIAL SAFETY DATA ***

MATERIAL SAFETY DATA SHEET

Product: HYDROCHLORIC ACID 8%

1- PRODUCT INFORMATION:

Product Manufacturer:	MAGNUS CHEMICALS LIMITED
Product Identifier:	HYDROCHLORIC ACID 8%
Product Use:	Reagent used in the molybdenum determination (low concentrations).

2- HAZARDOUS INGREDIENTS:

MATERIAL or COMPOUND:	C.A.S. No.:	PERCENT: W/W
Hydrochloric acid	7647-01-0	5-10

THRESHOLD LIMIT VALUE (TLV)
PPM: 5

mg/m3: 7
LD 50 Oral rabbit
900 mg/kg

NAP: Not Applicable, NAV: Not Available

3- PHYSICAL DATA:

Physical State:	Liquid.
Appearance and Odor:	Clear colorless liquid, light odor.
Odour Threshold:	Not available.
Specific Gravity:	1.00
Vapor Pressure:	Not available.
Vapor Density:	Not available.
Evaporation Rate:	Not available.
Boiling Point:	~ 100 deg C
Freezing Point:	~ 0 deg C
pH:	< 1 (as is)
Coefficient of Water/Oil Distribution:	Not available.
Percent Volatile:	> 90%
Solubility in Water:	100%

4- FIRE AND EXPLOSION HAZARD DATA

Conditions of Flammability:	None known.
Extinguishing Media:	Not applicable.
Flash Point and Method:	Not applicable.
Flammable Limits - UEL:	Not applicable.
Flammable Limits - LEL:	Not applicable.
Auto-Ignition Temperature:	Not applicable.
Hazardous Combustion Product:	Oxide of carbon.
Sensitivity to Mechanical Impact/Static Discharge:	Not applicable.
Unusual Fire and Explosion Hazards:	None known.

5- REACTIVITY DATA

Stability, If Not, Under Which Condition:	Yes.
Incompatibility - Materials to Avoid:	Alkali.
Hazardous Polymerization:	No.
Corrosion:	Not available.
Hazardous Decomposition Products:	Not available.

6- PREVENTIVE MEASURES

Environmental Data:	Not available.
Handling:	Avoid skin and eye contact. Handle and open container with care.
Personal Protective Equipment:	
Eye Protection:	Safety glasses.
Hand Protection:	Rubber, gauntlet type.
Respiratory Protective Equipment	Not normally necessary.
Other Protective Equipment:	Not normally necessary.
Recommended Disposal:	Disposal should be in accordance with applicable regulations.
Spill Response:	Wash the area with water.
Storage Requirements:	Do not store near or with incompatible materials.
Ventilation Requirements:	Mechanical (general).

7- TOXICOLOGICAL PROPERTIES

ROUTE OF ENTRY: Skin contact. Eye contact.

7.1 - EFFECTS OF ACUTE EXPOSURE:

Eye Contact: Irritation. Burns.
Skin Contact: Irritation. Dermatitis.
Inhalation: Possibility of an irritation.
Ingestion: Gastric discomfort.

7.2 - EFFECTS OF CHRONIC EXPOSURE:

Carcinogenicity: Not applicable.
Reproductive Toxicity: Not applicable.
Teratogenicity: Not applicable.
Mutagenicity: Not applicable.
Synergistic Product: Not available.
Sensitization: Not available.

8- SUGGESTED FIRST AID

Eye Contact: Rinse with plenty of water during at least 15 minutes.
Skin Contact: Wash with plenty of water.
Inhalation: Remove victim to fresh air.
If Swallowed: Do not induce vomiting. Drink plenty of water.
Other First Aid: Contact a physician.

9- ADDITIONAL INFORMATION

TDG Classification: Not regulated.
WHMIS Classification: D2B

10- PREPARATION INFORMATION

Preparation: MAGNUS Industrial Hygiene Department
TEL: (514) 655-1344
FAX: (514) 655-5428
Code.: R-105
Date of Preparation: 24-Apr-90

* *
MSDS
Canadian Centre for Occupational Health and Safety
Issue : 97-1 (February, 1997)

*** IDENTIFICATION ***

MSDS RECORD NUMBER : 1314587
PRODUCT NAME(S) : TURBINE FUEL AVIATION, WIDE CUT TYPE
ESSO JET B
ESSO TURBO FUEL B
JET B
TURBO FUEL B
TURBO FUEL B F40
TURBO FUEL B JP4
PRODUCT IDENTIFICATION : MSDS Number : 000110
DATE OF MSDS : 1995-05-18

*** MANUFACTURER INFORMATION ***

MANUFACTURER : Imperial Oil (Products Division)
ADDRESS : 111 St Clair Avenue West
Toronto Ontario
Canada M5W 1K3
Telephone: 416-968-4111

*** SUPPLIER/DISTRIBUTOR INFORMATION ***

SUPPLIER/DISTRIBUTOR : Imperial Oil (Products Division)
ADDRESS : 111 St Clair Avenue West
Toronto Ontario
Canada M5W 1K3
Telephone: 416-968-4111

*** MATERIAL SAFETY DATA ***

Date Prepared: May 18, 1995
Supersedes: April 13, 1994
MSDS Number : 000110

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1. PRODUCT INFORMATION

Product Identifier: TURBINE FUEL AVIATION, WIDE CUT TYPE
ESSO JET B
ESSO TURBO FUEL B
JET B
TURBO FUEL B
TURBO FUEL B F40
TURBO FUEL B JP4

Application and Use:
Naphtha-kerosene blended aviation fuel for turbine-powered aircraft

Product Description:

A mixture of aliphatic and aromatic hydrocarbons and additives.

REGULATORY CLASSIFICATION

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

CEPA: CANADIAN ENVIRONMENTAL PROTECTION ACT
All components of this product are either on the Domestic Substances List (DSL) or are exempt.

TRANSPORTATION OF DANGEROUS GOODS INFORMATION

Shipping Name: Fuel, Aviation, Turbine Engine
Class: Flammable Liquid 3.1 Packing Group: II
PIN Number: UN1863 Guide Number: 120

Please be aware that other regulations may apply.

TELEPHONE NUMBERS

Emergency 24 hr. (519) 339-2145
Technical Info. (800) 268-3183

MANUFACTURER/SUPPLIER:

IMPERIAL OIL
Products Division
111 St Clair Avenue West
Toronto, Ontario
M5W 1K3
(416) 968-4111

. . REGULATED COMPONENTS

The following components are defined in accordance with sub-paragraph 13(a)(i) to (iv) or paragraph 14(a) of the Hazardous Products Act:

NAME	%	CAS #	
Kerosene, straight run	40-70 V/V	8008-20-6	LD50:>5g/kg,oral,rat
Naphtha, full range	30-60 V/V	64741-42-0	
Ethylene Glycol Monomethyl Ether	0-0.15 V/V	109-86-4	LD50:2.4g/kg,orl,rat LD50:0.8g/kg,orl,rab
Diethylene Glycol Monomethyl Ether	0-0.15 V/V	111-77-3	LD50:9.2g/kg,orl,rat LD50:0.6g/kg,skn.rbt

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3. TYPICAL PHYSICAL & CHEMICAL PROPERTIES

Physical State:	Liquid
Specific gravity:	not available
Viscosity:	0.60 cSt at 40 deg C
Vapour Density:	4
Boiling Point:	40 to 243 deg C
Evaporation rate:	<1 (1= n-butylacetate)
Solubility in water:	negligible
Freezing/Pour Point:	-53 deg C less than
Odour Threshold:	not available
Vapour Pressure:	21 kPa at 38 deg C
Density:	0.78 g/cc at 15 deg C
Appearance/odour:	White or pale yellow liquid, petroleum odour

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HEALTH HAZARD INFORMATION

NATURE OF HAZARD

INHALATION:

Negligible hazard at normal temperatures (up to 38 deg C).
High vapour concentrations are irritating to the eyes, nose, throat and lungs; may cause headaches and dizziness; may be anesthetic and may cause other central nervous system effects.
Avoid breathing vapours or mists.

EYE CONTACT:

Slightly irritating, but will not injure eye tissue.

SKIN CONTACT:

Irritating.
Frequent or prolonged contact may irritate the skin and cause a skin rash (dermatitis).
Low toxicity.

INGESTION:

Low toxicity.
Small amounts of this liquid drawn into the lungs from swallowing or vomiting may cause severe health effects (e.g. bronchopneumonia or pulmonary edema).

CHRONIC:

May contain ethylene glycol monomethyl ether (EGME). Prolonged and/or repeated exposure through inhalation or extensive skin contact with EGME may result in toxic effects on the blood, the blood producing system, the kidneys, the male reproductive system and the embryo/fetus.
Contains benzene. Human health studies (epidemiology) indicate that prolonged and/or repeated overexposures to benzene may cause damage to the blood producing system and serious blood disorders, including leukemia.
Animal tests suggest that prolonged and/or repeated overexposures to benzene may damage the embryo/fetus. The relationship of these animal

studies to humans has not been fully established.
Contains n-hexane. Prolonged and/or repeated exposures may cause damage to the peripheral nervous system (e.g. fingers, feet, arms etc.). Contains diethylene glycol monomethyl ether (DIEGME). Prolonged and repeated exposure through inhalation or extensive skin contact with DIEGME may result in toxic effects on the kidneys, the reproductive system and/or the embryo/fetus.

ACUTE TOXICITY DATA:

Based on animal testing data from similar materials and products, the acute toxicity of this product is expected to be:

Oral	:	LD50 > 5000 mg/kg (Rat)
Dermal	:	LD50 > 2000 mg/kg (Rabbit)
Inhalation	:	LC50 > 2500 mg/m3 (Rat)

OCCUPATIONAL EXPOSURE LIMIT:

Manufacturer recommends:
100 ppm based on composition.
For Benzene (skin) 1) 5 ppm TWA for 8 hrs/day 2) 3 ppm TWA for 12 hrs/day 3) 250 ppm minutes for 5 to 30 minutes.

ACGIH recommends:
For n-Hexane, 50 ppm (180 mg/m3).
For Benzene, the ACGIH recommends a TLV of 10 ppm (30 mg/m3), and describes it as a substance of suspect carcinogenic potential in man.
For 2-Methoxyethanol, (skin) 5 ppm (16 mg/m3).

Local regulated limits may vary.

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5. FIRST AID MEASURES

INHALATION:

In emergency situations use proper respiratory protection to immediately remove the affected victim from exposure. Administer artificial respiration if breathing has stopped. Keep at rest. Call for prompt medical attention.

EYE CONTACT:

Flush eyes with large amounts of water until irritation subsides. If irritation persists, get medical attention.

SKIN CONTACT:

Immediately flush with large amounts of water. Use soap if available. Remove contaminated clothing, including shoes, after flushing has begun. If irritation persists, seek medical attention.

INGESTION:

DO NOT induce vomiting since it is important that no amount of the material should enter the lungs (aspiration). Keep at rest. Get

prompt medical attent on.

. PREVENTIVE AND CORRECTIVE MEASURES

PERSONAL PROTECTION:

The selection of personal protective equipment varies, depending upon conditions of use.
Where prolonged and/or repeated skin and eye contact is likely to occur, wear safety glasses with side shields, long sleeves, and chemical resistant gloves.
Where skin and eye contact is unlikely, but may occur as a result of short and/or periodic exposures, wear long sleeves and safety glasses with side shields.
Where concentrations in air may exceed the occupational exposure limits given in Section 4 and where engineering, work practices or other means of exposure reduction are not adequate, approved respirators may be necessary to prevent overexposure by inhalation.

ENGINEERING CONTROLS:

The use of local exhaust ventilation is recommended to control emissions near the source. Laboratory samples should be handled in a fumehood. Provide mechanical ventilation of confined spaces.
Use explosion-proof ventilation equipment.

HANDLING, STORAGE AND SHIPPING:

Keep containers closed. Handle and open containers with care.
Store in a cool, well ventilated place away from incompatible materials.
In keeping with good personal hygiene practices, wash hands thoroughly after handling the material.
Store and load at normal (up to 38 deg C) temperature and at atmospheric pressure.
Material will accumulate static charges which may cause a spark. Static charge build-up could become an ignition source. Use proper relaxation and grounding procedures.
Empty containers may contain product residue. Do not pressurize cut, heat, or weld empty containers. Do not reuse empty containers without commercial cleaning or reconditioning.

LAND SPILL:

Eliminate source of ignition. Keep public away. Prevent additional discharge of material, if possible to do so without hazard.
Vapours or dust may be harmful or fatal. Warn occupants of downwind areas.
Prevent spills from entering sewers, watercourses or low areas. Contain spilled liquid with sand or earth. Do not use combustible materials such as sawdust.
Recover by pumping (use an explosion proof motor or hand pump), or by using a suitable absorbent.
Consult an expert on disposal of recovered material. Ensure disposal in compliance with government requirements and ensure conformity to local disposal regulations. Notify the appropriate authorities immediately.

Take all additional action necessary to prevent and remedy the adverse effects of the spi .

WATER SPILL:

Eliminate all sources of ignition. Vapours or dust may be harmful or fatal. Warn occupants and shipping in downwind areas.
Consult an expert on disposal of recovered material. Ensure disposal in compliance with government requirements and ensure conformity to local disposal regulations. Notify the appropriate authorities immediately.
Take all additional action necessary to prevent and remedy the adverse effects of the spill.

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7. FIRE AND EXPLOSION HAZARD

Flashpoint and method: -18 deg C COC D92

Autoignition: NA Flammable Limits: LEL: 0.6% UEL: 8.0%

GENERAL HAZARDS:

Extremely flammable; material will readily ignite at normal temperatures.
Flammable Liquid; may release vapours that form flammable mixtures at or above the flash point.
Toxic gases will form upon combustion.
Static Discharge; material may accumulate static charges which may cause a fire.

FIRE FIGHTING:

Use water spray to cool fire exposed surfaces and to protect personnel.
Shut off fuel to fire if possible to do so without hazard. If a leak or spill has not ignited use water spray to disperse the vapours.
Either allow fire to burn out under controlled conditions or extinguish with foam or dry chemical. Try to cover liquid spills with foam.
Respiratory and eye protection required for fire fighting personnel.
Avoid spraying water directly into storage containers due to danger of boilover.
A self-contained breathing apparatus (SCBA) should be used for all indoor fires and any significant outdoor fires. For small outdoor fires, which may easily be extinguished with a portable fire extinguisher, use of an SCBA may not be required.

HAZARDOUS COMBUSTION PRODUCTS:

Smoke, carbon monoxide, carbon dioxide

REACTIVITY DATA

STABILITY:

This product is stable. Hazardous polymerization will not occur.

INCOMPATIBLE MATERIALS AND CONDITIONS TO AVOID:

Strong oxidizing agents

HAZARDOUS DECOMPOSITION:

none

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9. NOTES

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10. PREPARATION

Date Prepared: May 18, 1995
Prepared by: LUBRICANTS AND SPECIALTIES
IMPERIAL OIL
Products Division
111 St Clair Avenue West
Toronto, Ontario
M5W 1K3
(800) 268-3183

M S D S

Canadian Centre for Occupational Health and Safety
Issue : 97-1 (February, 1997)

*** IDENTIFICATION ***

MSDS RECORD NUMBER	969222
PRODUCT NAME(S)	MOTOR OILS (ALL GRADES), HYDRAULIC OILS, GEAR OILS, TRANSMISSION FLUIDS
PRODUCT IDENTIFICATION	DATA SHEET NO: 0170829-007
DATE OF MSDS	1992-12-09

*** MANUFACTURER INFORMATION ***

MANUFACTURER	VALVOLINE, INC
ADDRESS	Post Office Box 14000 Lexington Kentucky U.S.A. 40512 Telephone: 606-357-7000
EMERGENCY TELEPHONE NO.	606-324-1133 (24-HOUR, LOCATED AT ASHLAND, KENTUCKY

*** MATERIAL SAFETY DATA ***

MOTOR OILS (ALL GRADES), HYDRAULIC OILS, GEAR OILS,
TRANSMISSION FLUIDS

THIS MSDS COMPLIES WITH 29 CFR 1910.1200 (THE HAZARD COMMUNICATION STANDARD) IN ADDITION TO WHMIS

PRODUCT NAME: MOTOR OILS, HYDRAULIC OILS, GEAR OILS, TRANSMISSION FLUIDS

DATA SHEET NO: 0170829-007
PREPARED: 12/09/92
SUPERSEDES: 01/01/90

SECTION I - PRODUCT IDENTIFICATION

GENERAL OR GENERIC ID: PETROLEUM BASED-LUBRICATING OIL
DOT HAZARD CLASSIFICATION: NOT APPLICABLE
NOT CONTROLLED PRODUCTS UNDER WHMIS

SECTION II - COMPONENTS

IF PRESENT, IARC, NTP AND OSHA CARCINOGENS AND CHEMICALS SUBJECT TO THE REPORTING REQUIREMENTS OF SARA TITLE III SECTION 313 ARE IDENTIFIED IN THIS SECTION.

SEE DEFINITION PAGE FOR CLARIFICATION

INGREDIENT	% (BY WT)	NOTE
NO REGULATED COMPONENTS		

SECTION III - PHYSICAL DATA

PROPERTY	REFINEMENT	MEASUREMENT
BOILING POINT	FOR COMPONENT	> 425.00 DEG F (218.33 DEG C) @ 760.00 MMHG
VAPOR PRESSURE	NOT APPLICABLE	
SPECIFIC VAPOR DENSITY		HEAVIER THAN AIR
SPECIFIC GRAVITY		<1 @ 60.00 DEG F (15.55 DEG C)
PERCENT VOLATILES	NOT APPLICABLE	
EVAPORATION RATE		SLOWER THAN ETHER
APPEARANCE		NOT SPECIFIED
STATE		LIQUID
FORM		HOMOG SOLN
COEFFICIENT OF WATER/OIL DISTRIBUTION		UNKNOWN
ODOUR/ODOUR THRESHOLD		PETROLEUM ODOUR/UNKNOWN

SECTION IV - FIRE AND EXPLOSION INFORMATION

FLASH POINT > 400.0 DEG F
(204.4 DEG C)

EXPLOSIVE LIMIT UNAVAILABLE

AUTOIGNITION TEMPERATURE UNKNOWN

EXTINGUISHING MEDIA: REGULAR FOAM OR CARBON DIOXIDE OR DRY CHEMICAL

HAZARDOUS DECOMPOSITION PRODUCTS: MAY FORM TOXIC MATERIALS:, CARBON DIOXIDE AND CARBON MONOXIDE, VARIOUS HYDROCARBONS, ETC.

FIREFIGHTING PROCEDURES: WEAR SELF-CONTAINED BREATHING APPARATUS WITH A FULL FACEPIECE OPERATED IN THE POSITIVE PRESSURE DEMAND MODE WHEN FIGHTING FIRES.
WATER OR FOAM MAY CAUSE FROTHING WHICH CAN BE VIOLENT AND POSSIBLY ENDANGER THE LIFE OF THE FIREFIGHTER, ESPECIALLY IF SPRAYED INTO CONTAINERS OF HOT, BURNING LIQUID.

SPECIAL FIRE & EXPLOSION HAZARDS: NEVER USE WELDING OR CUTTING TORCH ON OR NEAR DRUM (EVEN EMPTY) BECAUSE PRODUCT (EVEN JUST RESIDUE) CAN IGNITE EXPLOSIVELY.

PA CODES: HEALTH- 1 FLAMMABILITY- 1 REACTIVITY- 0

SECTION V - HEALTH HAZARD DATA

PERMISSIBLE EXPOSURE LIMIT: NOT ESTABLISHED FOR PRODUCT. SEE SECTION II.

EFFECTS OF ACUTE OVEREXPOSURE: FOR COMPONENT

TOXICOLOGICAL TESTING INDICATES THAT SIMILAR PRODUCTS ARE NOT HAZARDOUS AS DEFINED BY OSHA (29 CFR 1910.1200).
LD50 FOR PRODUCT >5G/KG (ORAL-RAT)

FIRST AID:

IF ON SKIN: THOROUGHLY WASH EXPOSED AREA WITH SOAP AND WATER. REMOVE CONTAMINATED CLOTHING. LAUNDER CONTAMINATED CLOTHING BEFORE RE-USE.
IF IN EYES: FLUSH WITH LARGE AMOUNTS OF WATER, LIFTING UPPER AND LOWER LIDS OCCASIONALLY, GET MEDICAL ATTENTION.
IF SWALLOWED: DO NOT INDUCE VOMITING, KEEP PERSON WARM AND QUIET, AND GET MEDICAL ATTENTION.
IF BREATHED: IF AFFECTED, REMOVE INDIVIDUAL TO FRESH AIR. IF BREATHING IS DIFFICULT, ADMINISTER OXYGEN. IF BREATHING HAS STOPPED GIVE ARTIFICIAL RESPIRATION. KEEP PERSON WARM, QUIET AND GET MEDICAL ATTENTION.

SECTION VI - REACTIVITY DATA

HAZARDOUS POLYMERIZATION: CANNOT OCCUR
STABILITY: STABLE
INCOMPATIBILITY: AVOID CONTACT WITH:, STRONG OXIDIZING AGENTS.

SECTION VII - SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED:

SMALL SPILL: ABSORB LIQUID ON PAPER, VERMICULITE, FLOOR ABSORBENT, OR OTHER ABSORBENT MATERIAL AND TRANSFER TO HOOD.
LARGE SPILL: PREVENT RUN-OFF TO SEWERS, STREAMS OR OTHER BODIES OF WATER. IF RUN-OFF OCCURS, NOTIFY PROPER AUTHORITIES AS REQUIRED, THAT A SPILL HAS OCCURRED.

PERSONS NOT WEARING PROTECTIVE EQUIPMENT SHOULD BE EXCLUDED FROM AREA OF SPILL UNTIL CLEAN-UP HAS BEEN COMPLETED. STOP SPILL AT SOURCE, DIKE AREA OF SPILL TO PREVENT SPREADING, PUMP LIQUID TO SALVAGE TANK. REMAINING LIQUID MAY BE TAKEN UP ON SAND, CLAY, EARTH, FLOOR ABSORBENT, OR OTHER ABSORBENT MATERIAL AND SHOVELED INTO CONTAINERS.

WASTE DISPOSAL METHOD:

SMALL SPILL: ALLOW VOLATILE PORTION TO EVAPORATE IN HOOD. ALLOW SUFFICIENT TIME FOR VAPORS TO COMPLETELY CLEAR HOOD DUCT WORK. DISPOSE OF REMAINING MATERIAL IN ACCORDANCE WITH APPLICABLE REGULATIONS.
LARGE SPILL: DESTROY BY LIQUID INCINERATION.
CONTAMINATED ABSORBENT MAY BE DEPOSITED IN A LANDFILL IN ACCORDANCE WITH LOCAL, PROVINCIAL AND FEDERAL REGULATIONS.

SECTION VIII - PROTECTIVE EQUIPMENT TO BE USED

RESPIRATORY PROTECTION: NOT REQUIRED UNDER NORMAL CONDITIONS OF USE.
VENTILATION: NOT REQUIRED UNDER NORMAL CONDITIONS OF USE.
PROTECTIVE GLOVES: NOT NORMALLY REQUIRED.
EYE PROTECTION: NOT REQUIRED UNDER NORMAL CONDITIONS OF USE.
OTHER PROTECTIVE EQUIPMENT: NORMAL WORK CLOTHING COVERING ARMS AND LEGS.

SECTION - SPECIAL PRECAUTIONS OR OTHER COMMENTS

CONTAINERS OF THIS MATERIAL MAY BE HAZARDOUS WHEN EMPTIED. SINCE EMPTIED CONTAINERS RETAIN PRODUCT RESIDUES (VAPOR, LIQUID, AND/OR SOLID), ALL HAZARD PRECAUTIONS GIVEN IN THIS DATASHEET MUST BE OBSERVED.

THE INFORMATION ACCUMULATED HEREIN IS BELIEVED TO BE ACCURATE BUT IS NOT WARRANTED TO BE WHETHER ORIGINATING WITH THE COMPANY OR NOT. RECIPIENTS ARE ADVISED TO CONFIRM IN ADVANCE OF NEED THAT THE INFORMATION IS CURRENT, APPLICABLE, AND SUITABLE TO THEIR CIRCUMSTANCES.

MATERIAL SAFETY DATA SHEET

Date Prepared: October 23, 1991
Supersedes: July 22, 1991
MSDS Number: 223620

Cette fiche signalétique est aussi disponible en français

1. PRODUCT INFORMATION

Product Identifier: ESSOLUBE XD-3 EXTRA 20W-20

Application and Use:
Premium quality universal engine oil for use in severe service, heavy duty, diesel and gasoline engines

Product Description:

A lubricating oil consisting of a mixture of saturated and unsaturated hydrocarbons derived from paraffinic distillate, and additives.

REGULATORY CLASSIFICATION

WHMIS:

NOT A CONTROLLED PRODUCT

TRANSPORTATION OF DANGEROUS GOODS INFORMATION

Shipping Name: Petroleum Lubricating Oil
Class: Not applicable Packing Group:Not applicable
PIN Number: Not applicable Guide Number: 129

Please be aware that other regulations may apply.

TELEPHONE NUMBERS

Emergency 24 hr. (519) 339-2145
Technical Info. (416) 968-5114

MANUFACTURER/SUPPLIER:

Esso Petroleum Canada
55 St Clair Avenue West
Toronto, Ontario
M5W 2J8
(416) 968-4111

2. REGULATED COMPONENTS

The following components are defined in accordance with sub-paragraph 13(a)(i) to (iv) or paragraph 14(a) of the Hazardous Products Act:

NAME	CAS #

No regulated components

3. TYPICAL PHYSICAL & CHEMICAL PROPERTIES

Physical State: Liquid
Specific gravity: not available
Viscosity: 8.40 cSt at 100 deg C
Vapour Density: not available
Boiling Point: 310 to 600 deg C
Evaporation rate: < 1 1 = n-butylacetate
Solubility in water: negligible
Freezing/Pour Point: -27 deg C POUR
Odour Threshold: not available
Vapour Pressure: < 1 kPa at 38 deg C
Density: 0.89 g/cc at 15 deg C
Appearance/odour: Amber liquid, petroleum odour

4. HEALTH HAZARD INFORMATION

NATURE OF HAZARD

INHALATION:

Negligible hazard at normal temperatures (up to 38 deg C).
Elevated temperatures or mechanical action may form vapours, mists or fumes which may be irritating to the eyes, nose, throat and lungs.
Avoid breathing vapours or mists.

EYE CONTACT:

Slightly irritating, but will not injure eye tissue.

SKIN CONTACT:

ow toxicity.
requent or prolonged contact may irritate the skin

INGESTION:

Low toxicity.

CHRONIC:

Prolonged and/or repeated contact with used gasoline engine oil has caused skin cancer in experimental animals. The relationship of these results to humans has not been fully established.

ACUTE TOXICITY DATA:

Based on animal testing data from similar materials and products, the acute toxicity of this product is expected to be:
Oral : LD50 > 5000 mg/kg (Rat)
Dermal : LD50 > 3160 mg/kg (Rabbit)
Inhalation : LC50 > 5000 mg/m3 (Rat)

OCCUPATIONAL EXPOSURE LIMIT:

ACGIH recommends:
For oil mists, 5 mg/m3.

Local regulated limits may vary.

5. FIRST AID MEASURES

INHALATION:

Vapour pressure of this material is low and as such inhalation under normal conditions is usually not a problem. If overexposed to oil mist, remove from further exposure. Administer artificial respiration if breathing has stopped. Keep at rest. Call for prompt medical attention.

EYE CONTACT:

Flush eyes with large amounts of water until irritation subsides. If irritation persists, get medical attention.

SKIN CONTACT:

Flush with large amounts of water. Use soap if available.
Remove severely contaminated clothing (including shoes) and launder before reuse.
If irritation persists, seek medical attention.

INGESTION:

If swallowed, DO NOT induce vomiting. Keep at rest. Get prompt medical attention.

6. PREVENTIVE AND CORRECTIVE MEASURES

PERSONAL PROTECTION:

The selection of personal protective equipment varies, depending upon conditions of use.
Where prolonged and/or repeated skin and eye contact is likely to occur, wear safety glasses with side shields, long sleeves, and chemical resistant gloves.
Where eye contact is unlikely, but may occur as a result of short and/or periodic exposures, wear safety glasses with side shields.
Where concentrations in air may exceed the occupational exposure limits given in Section 4 and where engineering, work practices or other means of exposure reduction are not adequate, approved respirators may be necessary to prevent overexposure by inhalation.

ENGINEERING CONTROLS:

The use of local exhaust ventilation is recommended to control emissions near the source. Laboratory samples should be handled in a fumehood. Provide mechanical ventilation of confined spaces.

HANDLING, STORAGE AND SHIPPING:

Keep containers closed. Handle and open containers with care.
Store in a cool, well ventilated place away from incompatible materials.
Do not handle or store near an open flame, sources of heat, or sources of ignition.
Empty containers may contain product residue. Do not pressurize cut, heat, or weld empty containers. Do not reuse empty containers without commercial cleaning or reconditioning.

LAND SPILL:

Eliminate source of ignition. Keep public away. Prevent additional discharge of material, if possible to do so without hazard.
Prevent spills from entering sewers, watercourses or low areas. Contain spilled liquid with sand or earth.
Recover by pumping or by using a suitable absorbant.
Consult an expert on disposal of recovered material. Ensure disposal in

Please turn over

compliance with government requirements and ensure conformity to local disposal regulations. Notify the appropriate authorities immediately. Take all additional action necessary to prevent and remedy the adverse effects of the spill.

WATER SPILL:

Remove from surface by skimming or with suitable absorbents. If allowed by local authorities and environmental agencies, sinking and/or suitable dispersants may be used in unconfined waters.
Consult an expert on disposal of recovered material. Ensure disposal in compliance with government requirements and ensure conformity to local disposal regulations. Notify the appropriate authorities immediately. Take all additional action necessary to prevent and remedy the adverse effects of the spill.

7. FIRE AND EXPLOSION HAZARD

Flashpoint and method: 215 deg C CO D92

Autoignition: 330 deg C Flammable Limits: LEL: NA UEL: NA

GENERAL HAZARDS:

Low Hazard; liquids may burn upon heating to temperatures at or above the flash point.
Toxic gases will form upon combustion.

FIRE FIGHTING:

Use water spray to cool fire exposed surfaces and to protect personnel. Shut off fuel to fire.

Use foam, dry chemical or water spray to extinguish fire.
Respiratory and eye protection required for fire fighting personnel.
Avoid spraying water directly into storage containers due to danger of boilover.
A self-contained breathing apparatus (SCBA) should be used for all indoor fires and any significant outdoor fires. For small outdoor fires, which may easily be extinguished with a portable fire extinguisher, use of an SCBA may not be required.

HAZARDOUS COMBUSTION PRODUCTS:

Smoke, carbon monoxide, carbon dioxide and traces of oxides of sulphur

8. REACTIVITY DATA

STABILITY:

This product is stable. Hazardous polymerization will not occur.

INCOMPATIBLE MATERIALS AND CONDITIONS TO AVOID:

Strong oxidizing agents

HAZARDOUS DECOMPOSITION:

none

9. NOTES

NA = not available

10. PREPARATION

Date Prepared : July 22, 1991
Prepared by: LUBRICANTS AND SPECIALTIES
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CAUTION

CAUTION: " The information contained herein relates only to this product or material and may not be valid when used in combination with any other product or material or in any process. If the product is not to be used for a purpose or under conditions which are normal or reasonably foreseeable, this information cannot be relied upon as complete or applicable. For greater certainty, uses other than those described in Section 1 must be reviewed with the supplier. The information contained herein is based on the information available at the indicated date of preparation. This MSDS is for the use of Esso Petroleum Canada customers and their employees and agents only. Any further distribution of this MSDS by Esso Petroleum Canada customers is prohibited without the written consent of Esso Petroleum Canada."

The Preparation and Use of "Zinc Zap" and "Lead Zap".

The following formula and procedure was developed as a spot test for the detection of zinc and for a lesser extent of lead, bismuth and iron.

The solution is applied directly on the surface of the rock specimen and if the mentioned elements are present in an oxide form, a stain of a characteristic colour will appear. These colours are: red for zinc, yellow for lead and bismuth and blue for iron.

If the metals sought are in a sulphide form, the stain will not appear. When sulphides are suspected, we suggest a preliminary treatment. Moisten the test surface with 1:3 HCl (25% v/v) and let if dry. Now apply the test solution. In the presence of relatively large amounts of iron, the blue stain produced by it may mask the red or the yellow zinc and lead stains.

"Zinc Zap" is a two-solution formula. Solution "A" slowly decomposes when exposed to light, keep it in a dark, or aluminum foil covered bottle. For use, the two solutions should be mixed in a proportion of one to one. The mixed solution is photo sensitive and rapidly deteriorates. Mix them just before use.

As an alternative, the solution "A" and "B" may be mixed directly on the test surface. Disperse them from dropper bottles on the test specimen, first the solution "B", then an equal number of drops of the solution "A".

Solutions:

Solution "A":

Dissolve 30 gms of Potassium Ferricyanide ($K_3\{Fe(CN)_6\}$) in 250 mls of demineralized water. Dilute to 1000 mls with water. Keep in a dark, or foil covered polyethylene bottle.

Solution "B":

Dissolve 30 gms of Oxalic Acid in 500 mls of water. Add 5 gms (5.4 mls) of Diethylaniline (sp. gr. 0.94) and mix. While stirring, add 40 mls of 1:3 HCl (25% v/v). Dilute to 1000 mls with demineralized water. Keep in a polyethylene bottle.

/....

- OXALI ACID
- POTASSIUM FERRICYANIDE
- DIETHYL AMINE
- HCL

Charles R. Foden

HAZARDOUS MATERIALS

EMERGENCY ACTION DATA

LEWIS PUBLISHERS
Boca Raton Ann Arbor London

CHEMICAL: OXALIC ACID RQ: TLV: 1mg/m3 DOT: CAS#: 144-62-7

SYNONYMS: ETHANEDIOIC ACID, DICARBOXYLIC ACID, ETHANE-DI-ACID, OXALIC ACID DIHYDRATE

INCOMPATIBILITY: VIOLENT REACTIONS WITH: SODIUM CHLORITE, SODIUM CHLORATE, FURFURYL ALCOHOL, STRONG OXIDIZERS, SILVER

IGNI TEMP: NA FP: NOT FLAM. LEL: NA UEL: NA VP: NA VD: 4.3 SG: 1.90 @ 15C PS: SOLID APPEAR: WHITE

HAZARD RATINGS: H. F. R. 2 HAZARD CLASS:

NEUTRALIZING AGENTS: USE SLAKED LIME OR SODA ASH

FIRE FIGHTING:

DRY CHEMICAL, FOAM, CARBON DIOXIDE, WATER

PROTECTIVE CLOTHING, RUBBER GLOVES, BREATHING APPARATUS

WARNING: 1) STRUCTURAL PROTECTIVE CLOTHING IS PERMEABLE, REMAIN CLEAR OF SMOKE, WATER FALL OUT AND WATER RUN OFF.
2) GENERATES A POISON GAS.
3) CONTACT WITH STRONG OXIDIZERS MAY CAUSE FIRES AND EXPLOSIONS.
4) CONTACT WITH SILVER MAY FORM EXPLOSIVE SILVER OXALATE SALTS.
5) FORMIC ACID AND CARBON MONOXIDE FUMES AND VAPORS MAY BE RELEASED IN A FIRE.

EVACUATION DISTANCE: EVACUATE NON ESSENTIAL PERSONNEL 1500 FEET FROM THE FIRE AREA. DOWN WIND MUST BE CONSIDERED.

SPILL/NO FIRE RESCUE: SEALED CHEMICAL SUIT SELF CONTAINED (POLYCARBONATE, BUTYL RUBBER, VITON, PVC, CHLORINATED POLYETHYLENE)

SPILL CONTROL AND CONTAINMENT:

LIQUID: AFTER NEUTRALIZATION, COVER SPILL AREA WITH ABSORBENT. SWEEP UP AND PLACE IN A DISPOSAL CONTAINER.

SOLID: AVOID CREATING A DUST, SWEEP OR VACUUM UP MATERIAL AND PLACE IN A DISPOSAL CONTAINER.

HEALTH HAZARD INFORMATION

Oxalic acid is a corrosive soluble solid. As dust or as a solution, can cause severe burns of the eyes, skin or mucous membrane tissue. Ingestion of 5 grams has caused death with symptoms of nausea, shock, collapse, and convulsions coming on rapidly. Repeated or prolonged skin exposure can cause dermatitis and slow-healing ulcers.

Liquid or solid irritant: severe skin irritant. Causes second and third degree burns on short contact and is very injurious to the eyes.

A physician should be contacted if anyone develops any signs or symptoms and suspects that they are caused by exposure to oxalic acid.

Get medical attention for all exposures and any serious overexposures; treatment is symptomatic.

FIRST AID

Eye Exposure

If oxalic acid gets into the eyes, flush thoroughly with water for at least fifteen minutes while holding open the eye lids. Get medical attention. Contact lens should not be worn when working with chemicals.

Skin Exposure

If oxalic acid gets on the skin, flush thoroughly with water. If chemicals gets under the clothing, remove clothing and flush the contaminated skin with water for at least fifteen minutes. Get medical attention.

Breathing

If oxalic acid has been inhaled, have victim gargle or rinse mouth repeatedly with cold water. If breathing becomes labored give oxygen. If breathing has stopped give artificial respiration. Keep victim warm and at rest. Get medical attention.

Swallowing

If oxalic acid has been ingested, dilute by having victim drink large amounts of water. Give milk or milk of magnesia as an emollient. DO NOT induce vomiting. Keep victim warm and at rest. Get medical attention.

CHEMICAL: POTASSIUM CYANIDE RQ: TLV: 5 mg/m3 DOT: 1680 CAS#: 151-50-8

SYNONYMS: CYANIDE

INCOMPATIBILITY: CHLORATES, NITRITES, NITROGEN TRICHLORIDE, SODIUM CHLORATE

IGNI TEMP: NA FP: NOT FLAM LEL: NA UEL: NA VP: NA VD: 2.2 SG: 1.52 @ 16C PS: SOLID APPEAR: WHITE

HAZARD RATINGS: H. F. R. 3 HAZARD CLASS:

NEUTRALIZING AGENTS:

FIRE FIGHTING:

DRY CHEMICAL, FOAM, CARBON DIOXIDE, WATER: PROTECTIVE CLOTHING, RUBBER GLOVES, BREATHING APPARATUS

WARNING: 1] STRUCTURAL PROTECTIVE CLOTHING IS PERMEABLE, REMAIN CLEAR OF SMOKE, WATER FALL OUT AND WATER RUN OFF.
2] CLASS "B" POISONOUS LIQUID OR SOLID.
3] REACTIVE WITH WATER RELEASING SOME HYDROGEN CYANIDE GAS. 4] ONLY HAZARDOUS IN A CONFINED SPACE.
5] IF WATER IS ACIDIC TOXIC AMOUNTS OF GAS WILL BE FORMED AT ONCE.
6] CONTACT WITH EVEN WEAK ACID CAUSES FORMATION OF HYDROGEN CYANIDE GAS.
7] MOVE CONTAINERS FROM THE FIRE AREA IF WITHOUT RISK. COOL EXPOSED CONTAINERS.
8] DIKE AREA FOR CONTROL AND CONTAINMENT TO PREVENT ENTRY INTO SEWERS, DRAINS AND WATERWAYS.

EVACUATION DISTANCE: EVACUATE NON ESSENTIAL PERSONNEL 1500 FEET FROM THE FIRE AREA. DOWN WIND MUST BE CONSIDERED.

SPILL/NO FIRE RESCUE: SEALED CHEMICAL SUIT SELF CONTAINED (POLYCARBONATE, BUTYL RUBBER, VITON, PVC, CHLORINATED POLYETHYLENE, NITRILE, NEOPRENE)

SPILL CONTROL AND CONTAINMENT:

LIQUID. COVER SPILL AREA WITH ABSORBENT. SWEEP UP AND PLACE IN A DISPOSAL CONTAINER.
SOLID: AVOID CREATING A DUST. SWEEP OR VACUUM UP MATERIAL AND PLACE IN A DISPOSAL CONTAINER.

HEALTH HAZARD INFORMATION

Potassium cyanide is a poisonous liquid or solid Class "B". Is a rapidly, fatal poison when taken into the digestive system. Dust may cause toxic symptoms when inhaled, prolonged contact with the skin may cause irritation and possible poisoning if the skin is broken. Strong solutions are corrosive to the skin and may cause deep ulcers that heal slowly. Vapor is nonvolatile, but moisture in the air can liberate some lethal hydrogen cyanide gas. Moist solid can cause caustic-type irritation of the skin and formation of ulcers.

A physician should be contacted if anyone develops any signs or symptoms and suspects that they are caused by exposure to potassium cyanide.

FIRST AID

Eye Exposure

If potassium cyanide gets into the eyes, flush with water for at least fifteen minutes while holding open the eye lids. Get medical attention. Contact lens should not be worn when working with chemicals.

Skin Exposure

If potassium cyanide gets on the skin remove clothing and flush contaminated area with water. Get medical attention.

Breathing

If potassium cyanide has been inhaled move victim to fresh air. If breathing becomes labored give oxygen. If breathing has stopped give artificial respiration. Keep victim warm and at rest. Get medical attention.

Swallowing

If potassium cyanide has been ingested, keep victim warm and at rest. If victim is conscious give victim warm salt water to drink, (1 tablespoon of salt to a cup of water) repeat until vomit fluid is clear; then give orally 1 pint of 1% solution of sodium thiosulfate, to be repeated in 15 minutes. If victim is not breathing give artificial respiration until breathing starts. If victim is unconscious but breathing, give oxygen from an inhalator if the victim does not respond to treatment. In all cases, break an amyl nitrite pearl in a cloth and hold lightly under victim's nose for 15 seconds repeating 5 times at about 15 second intervals; if necessary, repeat procedure every 3 minutes with fresh pearls until 3 or 4 have been used. Amyl Nitrite pearls must not be over 2 years old. Avoid breathing vapor while administering it to the victim.

CHEMICAL: N,N-DIETHYLANILINE RQ: TLV: 5 ppm (skin) DOT: 1993 CAS: 91-66-7

SYNONYM: DEA/ N-PHENYL DIETHYLAMINE/ BENZENEAMINE, N,N-DIETHYL.

INCOMPATIBILITY: STRONG OXIDIZING AGENTS/ STRONG ACIDS

IGNI TEMP: 630F FP: 185F LEL: 1.6 UEL: 9.5 VP: 0.2 mmHg @ 77F VD: 5.2 SG: 0.94 @ 68F PS: OILY LIQUID
APPEAR: CLEAR TO YELLOW ODOR: AROMATIC AMINE

HAZARD RATINGS: H: F: R: 3 2 0 HAZARD CLASS:

NEUTRALIZING AGENTS:

FIRE FIGHTING:
HIGH EXPANSION FOAM; LOW EXPANSION FOAM; DRY CHEMICAL; CARBON DIOXIDE; WATER
PROTECTIVE CLOTHING, RUBBER GLOVES AND BREATHING APPARATUS
WARNING: 1] STRUCTURAL PROTECTIVE CLOTHING IS PERMEABLE, REMAIN CLEAR OF SMOKE, WATER FALL OUT AND WATER RUN OFF.
2] THERMAL DECOMPOSITION YIELDS HAZARDOUS NITROGEN OXIDE GASES.
3] IF SMOKE AND GASES CAN NOT BE AVOIDED WEAR CHEMICAL PROOF SEALED SUIT, BOOTS, GLOVES AND BREATHING APPARATUS.
4] LIQUID AND VAPORS CAN PENETRATE THE SKIN AND MUCOUS MEMBRANE TISSUE.
5] MOVE CONTAINERS FROM FIRE AREA IF WITHOUT RISK, COOL EXPOSED CONTAINERS.
6] DIKE AREA FOR CONTROL AND CONTAINMENT TO PREVENT ENTRY INTO SEWERS, DRAIN, AND WATER WAYS.
EVACUATION DISTANCE: EVACUATE NON ESSENTIAL PERSONNEL 2500 FT FROM THE DANGER AREA. DOWN WIND MUST BE CONSIDERED
SPILL/ NO FIRE/ RESCUE: WEAR BUTYL RUBBER SEALED SUIT, BOOTS, GLOVES AND BREATHING APPARATUS.

SPILL CONTROL AND CONTAINMENT:
COVER SPILL AREA WITH NON COMBUSTIBLE ABSORBENT OR ENCAPSULATING MATERIAL. SWEEP OR VACUUM UP AND PLACE IN A DISPOSAL CONTAINER. SCRUB SPILL AREA WITH STRONG DETERGENT AND WATER. COVER LIQUID WITH ABSORBENT OR ENCAPSULATING MATERIAL. VACUUM OR SWEEP UP MATERIAL AND PLACE IN A DISPOSAL CONTAINER.

HEALTH HAZARD INFORMATION:
Inhalation can cause cyanosis (bluish discoloration), weakness, shortness of breath. Skin permeation can occur in amounts capable of effects of systemic toxicity.
A physician should be contacted if any one develops any signs or symptoms and suspects that they are caused by exposure to this product.

FIRST AID:
Eye Exposure
If this material gets into the eyes, flush with water for at least fifteen minutes while holding open the upper and lower eye lids. Contact lens should not be worn when working with this product, Get medical attention.

Skin Exposure
If this material gets onto the clothing, remove contaminated clothing under flowing water and flush exposed skin for at least fifteen minutes. Keep victim warm and at rest, Get medical attention.

Breathing
If this material has been inhaled, move the victim to fresh air. If breathing becomes labored give oxygen. If breathing stops give artificial respiration. Keep victim warm and at rest, Get medical attention.

Swallowing
If this material has been ingested, if the victim is conscious immediately give 2-3 glasses of water to drink. Have the victim touch the back of the throat with a finger to induce vomiting. Keep victim warm and at rest, Get medical attention.

CHEMICAL: HYDROCHLORIC ACID SOLUTION RQ: TLV: 5 ppm DOT: 1789 CAS#: 7647-01-0

SYNONYMS: CHLOROHYDRIC ACID, MURIATIC ACID, HYDROGEN CHLORIDE

INCOMPATIBILITY: CALCIUM, LITHIUM, STRONG ACIDS, STRONG OXIDIZERS, PEROXIDES, AMINES. CORRODES MOST METALS EMITTING FLAMMABLE HYDROGEN GAS. VIOLENT REACTION WITH: ACETIC ANHYDRIDE, 2-AMINO ETHANOL, AMMONIUM HYDROXIDE, CALCIUM PHOSPHIDE, CHLOROSULFONIC ACID, ETHYLENE DIAMINE, ETHYLENE IMINE, OLEUM, PERCHLORIC ACID, B-PROPIOLACTONE, PROPYLENE OXIDE, SILVER CHLORATE plus CARBON TETRACHLORIDE, SODIUM HYDROXIDE, SULFURIC ACID, VINYL ACETATE, CALCIUM CARBIDE, SODIUM

IGNI TEMP: NA FP: NOT-FLAM LEL: NA UEL: NA VP: 4.0 @ 17.8C VD: 1.3 SG: 1.19 @ 20C PS: LIQUID APPEAR: CLEAR TO LIGHT YELLOW

HAZARD RATINGS: H. F. R 3 0 0 HAZARD CLASS:

NAS RATINGS:

FIRE	HEALTH	WATER POLLUTION	REACTIVITY
FIRE: 0	VAPOR IRRITANT: 3	HUMAN TOXICITY: 2	OTHER CHEMICALS: 3
	POISONS: 2	AQUATIC TOXICITY: 2	WATER: 0
			SELF-REACTION: 0

NEUTRALIZING AGENTS: FLUSH WITH WATER, APPLY POWDERED CRUSHED LIMESTONE, AGRICULTURAL LIME (SLAKED LIME), SODA ASH, LIME, SODIUM BICARBONATE

FIRE FIGHTING:

DRY CHEMICAL, ALCOHOL FOAM, CARBON DIOXIDE, WATER,
PROTECTIVE CLOTHING, RUBBER GLOVES, BREATHING APPARATUS
WARNING: 1] STRUCTURAL PROTECTIVE CLOTHING IS PERMEABLE, REMAIN CLEAR OF SMOKE, WATER FALL OUT AND WATER RUN OFF.
2] FUMING LIQUID.
3] RAPIDLY ABSORBS MOISTURE REACTS WITH WATER OR STEAM PRODUCING TOXIC AND CORROSIVE FUMES.
4] PRESSURIZED CONTAINERS MAY EXPLODE RELEASING TOXIC AND IRRITATING VAPORS.
5] WILL ATTACK MOST METALS, SOME PLASTICS, RUBBER AND COATINGS. 6] CORROSIVE MATERIAL. 7] ACIDIC.
6] MOVE CONTAINERS FROM FIRE AREA IF WITHOUT RISK. COOL EXPOSED CONTAINERS.
7] DIKE AREA FOR CONTROL AND CONTAINMENT TO PREVENT ENTRY INTO SEWERS, DRAINS AND WATERWAYS.
SPILL/NO FIRE RESCUE: SEALED CHEMICAL SUIT SELF CONTAINED (POLYCARBONATE, BUTYL RUBBER, VITON, PVC, CHLORINATED POLYETHYLENE)
SPILL 800 SQUARE FEET OR LESS; EVACUATION DISTANCE CROSS WIND 1 MILE WIDE DOWN WIND 1.5 MILES.

SPILL CONTROL AND CONTAINMENT:
AFTER NEUTRALIZATION, COVER SPILL AREA WITH ABSORBENT. SWEEP UP AND PLACE IN A DISPOSAL CONTAINER.

HEALTH HAZARD INFORMATION

Hydrochloric acid solution is a corrosive. Inhalation of fumes results in coughing and choking sensation. Vapors is moderately irritating such that personnel will not usually tolerate moderate or high concentrations. Liquid is a fairly severe skin irritant; may cause pain and second degree burns after a few minutes contact.
A physician should be contacted if anyone develops any signs or symptoms and suspects that they are caused by exposure to hydrochloric acid solution.

FIRST AID

Eye Exposure

If hydrochloric acid solution gets into the eyes, flush with water for at least fifteen minutes while holding open the eye lids. Get immediate medical attention. Contact lens should not be worn when working with chemicals.

Skin Exposure

If hydrochloric acid solution gets on the skin, immediately flush while removing contaminated clothing under a shower; using soap and water wash contaminated area for at least fifteen minutes. Get immediate medical attention.

Breathing

If hydrochloric acid solution fumes or vapors have been inhaled, move victim to fresh air. If breathing becomes labored give oxygen. If breathing has stopped give artificial respiration. Keep victim warm and at rest. Get immediate medical attention.

Swallowing

If hydrochloric acid solution has been ingested, and victim is conscious give victim large amounts of milk or water to drink. Do not induce vomiting. Keep victim warm and at rest. Get immediate medical attention.