

In open systems where contact is likely, wear safety goggles, chemical-resistant overalls, and chemically impervious gloves.

Where only incidental contact is likely, wear safety glasses with side shields. No other special precautions are necessary provided skin/eye contact is avoided.

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.

Odorous and toxic fumes may form from the decomposition of this product if stored at temperatures in excess of 45 deg C for extended periods of time or if heat sources in excess of 121 deg C are used.

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 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: 180 deg C COC ASTM D92

Autoignition: NA Flammable Limits: LEL: NA UEL: NA

GENERAL HAZARDS:

Low Hazard; liquids may burn upon heating to temperatures at or above the flash point.

Decomposes; flammable/toxic gases will form at elevated temperatures (thermal decomposition).

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 Alkyl mercaptans and sulfides may also be released.

8. REACTIVITY DATA

STABILITY:

This product is stable. Hazardous polymerization will not occur.

INCOMPATIBLE MATERIALS AND CONDITIONS TO AVOID:

Strong oxidizing agents

HAZARDOUS DECOMPOSITION:

Smoke, carbon monoxide, carbon dioxide, oxides of sulphur and phosphorus. Alkyl mercaptans and sulfides may also be released.

9. NOTES

All components of this product are listed on the U.S. TSCA inventory.

10. PREPARATION

Date Prepared: March 22, 2003
Prepared by: Lubricants & Specialties
IMPERIAL OIL
Products Division
111 St Clair Avenue West
Toronto, Ontario
M5W 1K3
(800) 268-3183

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 Imperial Oil customers and their employees and agents only. Any further distribution of this MSDS by Imperial Oil customers is prohibited without the written consent of Imperial Oil."

MATERIAL SAFETY DATA SHEET page 1/3

SECTION 1 — PRODUCT IDENTIFICATION AND USE

PRODUCT IDENTIFIER ♦ HYDROFLUORIC ACID SOLUTION [4%, 6%, 12%, 13%, 48% & 52%]		PRODUCT IDENTIFICATION NUMBER (PIN) UN 1790	
PRODUCT USE ♦			
MANUFACTURER'S NAME		SUPPLIER'S NAME Nymoc Limited	
STREET ADDRESS		STREET ADDRESS 24 McGee Street	
CITY	PROVINCE	CITY Toronto	PROVINCE Ontario
POSTAL CODE	EMERGENCY TELEPHONE NO.	POSTAL CODE M4M 2K9	EMERGENCY/TELEPHONE NO.

SECTION 2 — HAZARDOUS INGREDIENTS

HAZARDOUS INGREDIENTS	%	CAS NUMBER	LD ₅₀ OF INGREDIENT (SPECIFY SPECIES AND ROUTE)	LC ₅₀ OF INGREDIENT (SPECIFY SPECIES)
Hydrogen Fluoride	As listed	7664-39-3	LDLo rat intra-peritoneal 25 mg/kg	rat 1276 ppm/lhr
" "	4			
" "	6			
" "	12			
" "	13			
" "	48			
" "	52			

SECTION 3 — PHYSICAL DATA

PHYSICAL STATE Liquid	ODOUR AND APPEARANCE Water white. Odour is slightly pungent to strongly pungent.		ODOUR THRESHOLD (ppm) as HF 5ppm	
VAPOUR PRESSURE See appendix (mm Hg)	VAPOUR DENSITY See appendix (AIR=1)	EVAPORATION RATE 1	BOILING POINT (°C) See appendix	FREEZING POINT (°C) See appendix
pH N.av	SPECIFIC GRAVITY See appendix	COEFF. WATER/OIL DIST. N.ap		

SECTION 4 — FIRE AND EXPLOSION DATA

FLAMMABILITY YES <input type="checkbox"/> NO <input checked="" type="checkbox"/> IF YES, UNDER WHICH CONDITIONS?		
MEANS OF EXTINCTION Use fire extinguisher appropriate to adjacent fire - keep containers cool.		
FLASHPOINT (°C) AND METHOD N.ap	UPPER FLAMMABLE LIMIT (% BY VOLUME) N.ap	LOWER FLAMMABLE LIMIT (% BY VOLUME) N.a
HAZARDOUS COMBUSTION PRODUCTS Not combustible. Heating solutions will evolve toxic and corrosive HF fumes.		
EXPLOSION DATA ♦	SENSITIVITY TO IMPACT N.ap	SENSITIVITY TO STATIC DISCHARGE N.ap

SECTION 5 — REACTIVITY DATA

CHEMICAL STABILITY YES <input checked="" type="checkbox"/> NO <input type="checkbox"/> IF NO, UNDER WHICH CONDITIONS?	
INCOMPATIBILITY WITH OTHER SUBSTANCES YES <input checked="" type="checkbox"/> NO <input type="checkbox"/> IF SO, WHICH ONES? Silica containing materials, eg. glass and ceramics. Strong alkalis, oxidizers, salts such as cyanides, sulphides & sulphites	
REACTIVITY, AND UNDER WHAT CONDITIONS Reacts with many metals to yield flammable hydrogen gas.	
HAZARDOUS DECOMPOSITION PRODUCTS N.ap. Heating solutions will yield toxic and corrosive HF gas.	

PRODUCT
IDENTIFIER

SECTION 6 — TOXICOLOGICAL PROPERTIES

ROUTE OF ENTRY

SKIN CONTACT ☒SKIN ABSORPTION ☒EYE CONTACT ☒INHALATION ☒INGESTION ☒

EFFECTS OF ACUTE EXPOSURE TO PRODUCT Severe damage to skin and tissue. Irreversible damage to the eyes.

EFFECTS OF CHRONIC EXPOSURE TO PRODUCT Fluorosis - ie bone and joint damage.

EXPOSURE LIMITS
TLC-C [HF]
3 ppmIRRITANCY OF PRODUCT
Burn at site of contact
solutions as dilute as
2% or lower may cause
burns.SENSITIZATION TO PRODUCT
UnknownCARCINOGENICITY
UnknownTERATOGENICITY
Experimental
teratogenic effects
[Sax & Lewis]REPRODUCTIVE TOXICITY
Experimental reproduct-
ive effects
[Sax & Lewis]MUTAGENICITY
UnknownSYNERGISTIC PRODUCTS
Unknown

SECTION 7 — PREVENTIVE MEASURES

PERSONAL PROTECTIVE EQUIPMENT:

GLOVES (SPECIFY)

Neoprene type

RESPIRATOR (SPECIFY)

Where required, use
NIOSH for HF gas or mist.
Some exposures may require
SCBA.

EYE (SPECIFY)

Chemical safety
goggles-full face shield

FOOTWEAR (SPECIFY)

Neoprene where
required

CLOTHING (SPECIFY)

Acid suit, Neoprene
type, where required

OTHER (SPECIFY)

Eyewash & quick
drench shower available

ENGINEERING CONTROLS (SPECIFY, EG. VENTILATION, ENCLOSED PROCESS)

Use only in a well ventilated area such as a fume
hood.LEAK AND SPILL PROCEDURE Wear the proper personal protective equipment. Contain spill do not allow to
enter waterway or sewer. Neutralize with soda ash or limestone. Provide good ventilation.WASTE DISPOSAL Any waste material or neutralized sludge should be disposed of according to
government regulations.HANDLING PROCEDURES AND EQUIPMENT Never pipette by mouth - use bulb pipette or aspirator. Do not use
glass, ceramic or containers containing silica-use appropriate heavy walled plastic containers

STORAGE REQUIREMENTS Store in a cool well ventilated area away from direct sunlight.

SPECIAL SHIPPING INFORMATION

TDG Regulations: Class 8 [2.3]

SECTION 8 — FIRST AID MEASURES

SPECIFIC MEASURES Protect yourself (PPE). Remove victim from contaminated area and place under
deluge shower. Remove contaminated clothing while showering with copious amounts of water.
Summon assistance. If available immerse the contaminated area in 0.2% iced Hyamine solution.
If immersion is not feasible area with compresses saturated with this solution, changing
2 minutes. For eye contact irrigate thoroughly with copious amounts of water for 15 minutes.
Apply 1 or 2 drops of 0.5% Pontocaine solution and irrigate again for 15 minutes.
In all instances seek medical attention as soon as possible.

SECTION 9 — PREPARATION DATE OF MSDS

PREPARED BY (GROUP, DEPARTMENT, ETC.)

safety dept.

PHONE NUMBER

416-465-1929

DATE

MAR 22 2004

APPENDIX

% HF IN AQUEOUS SOLUTION	SPECIFIC GRAVITY [°C]	BOILING POINT [°C]	FREEZING POINT [°C]	VAPOUR PRESSURE [mmHg]
4	1.016	N.av	N.av	N.av
6	1.024	N.av	N.av	N.av
12	1.048	N.av	N.av	N.av
13	1.052	N.av	N.av	N.av
48	1.190	108.2	-37.8	18
52	1.206	103.4	-35.4	28

J-SHOP GENERAL PURPOSE ALKALINE DEGREASER

National Fire Protection Association (NFPA)	Fire Hazard	Hazardous Material Information System (HMIS)	Health	2
	Health		2	0
	Reactivity		Fire Hazard	0
Specific Hazard				
Protective Clothing	Emergency Overview		Clear Blue Liquid. See Section 9. WARNING: CAUSES EYE AND SKIN IRRITATION. HARMFUL IF SWALLOWED.	

Product Name	J-SHOP GENERAL PURPOSE ALKALINE DEGREASER		Code	5131 & 5132 & 5135 & 5136
Product Use	Industrial/Institutional: Cleaning product.		PMS#	3135154
MSDS#	115020001		Validation Date	5/15/2003
U.S. Headquarters	Canadian Headquarters	Print Date	5/15/2003	
Johnson Wax Professional 8310 16th Street Sturtevant, Wisconsin 53177-0902 Phone: (888) 352-2249 MSDS Internet Address: www.jwp.com	Johnson Wax Professional 100 Matheson Blvd. East, Suite 203 Mississauga, Ontario L4Z 2G7 Phone: (905) 755-0913 or (888) 746-5971	Supersedes	No Previous Validation	
		In Case of Emergency	(800) 851-7145	

Ingredients	CAS #	% by Weight	Exposure Limits	LC50/LD50
Sodium Metasilicate Pentahydrate	6834-92-0	1-5	Not available.	ORAL (LD50): Acute: 770 mg/kg [Rat].
Tetrasodium Salt of EDTA	64-02-8	1-5	Not available.	Not available.
Potassium Carbonate	584-08-7	1-5	Not available.	ORAL (LD50): Acute: 1870 mg/kg [Rat].
Alkylphenoxy Polyethoxyethano Water	28027-38-3 7732-18-5	1-5 60-100	Not available. Not available.	Not available. Not available.

Routes of Entry	Inhalation. Skin contact. Eye contact.
Potential Acute Health Effects	<p><i>Eyes</i> May be severely irritating to eyes.</p> <p><i>Skin</i> May be moderately irritating to skin.</p> <p><i>Inhalation</i> May be irritating to nose, throat, and respiratory tract.</p> <p><i>Ingestion</i> May be irritating to mouth, throat and stomach.</p>
Medical Conditions	Persons with pre-existing skin disorders may be more susceptible to irritating effects.
Aggravated by Overexposure:	
See Toxicological Information (section 11)	

Eye Contact	Immediately flush eyes with running water for at least 15 minutes, keeping eyelids open. Get medical attention.
Skin Contact	Flush immediately with plenty of water. If irritation persists, get medical attention.
Inhalation	If breathing is difficult: Remove to fresh air. Get medical attention.
Ingestion	Immediately drink plenty of water. Never give anything by mouth to an unconscious person. Get medical attention.

Flammability of the Product	None known.
Flash Points	Closed cup: >83.33°C (200°F).
Products of Combustion	None known.
Fire Fighting Media and Instructions	Extinguish with water spray or carbon dioxide, dry chemical powder or appropriate foam. Normal fire fighting procedure may be used.
Protective Clothing (Fire)	Put on appropriate personal protective equipment (see Section 8.).
Special Remarks on Fire and Explosion Hazards	None known.

Personal Precautions	Put on appropriate personal protective equipment (see Section 8.).
Environmental Precautions and Clean-up Methods	In the event of major spillage: Use appropriate containment to avoid environmental contamination. Sweep or scrape up material. Place in suitable clean, dry containers for disposal by approved methods. Use a water rinse for final clean-up.

Handling	Avoid contact with eyes, skin and clothing. Wash thoroughly after handling. Do not taste or swallow. FOR COMMERCIAL AND INDUSTRIAL USE ONLY.
Storage	Store in a dry, cool and well-ventilated area. Protect from freezing. KEEP OUT OF REACH OF CHILDREN.

Engineering Controls	No special ventilation requirements. General room ventilation is adequate.
Personal Protection	
<i>Eyes</i>	Safety glasses with side shields.
<i>Hands</i>	Rubber gloves. Neoprene gloves.
<i>Respiratory</i>	No special requirements under normal use conditions.
<i>Feet</i>	No special requirements under normal use conditions.
<i>Body</i>	If major exposure is possible, wear suitable protective clothing.

Physical State and Appearance	Liquid.
Odor	Odorless.
Color	Clear Blue.
pH	12.6 [Basic.]
Specific Gravity	1.06
Solubility in water	Complete.

Stability and Reactivity The product is stable.

Conditions of Instability None known.

Incompatibility with Various Substances Reactive with acids.

Hazardous Decomposition Products When exposed to fire: Produces normal products of combustion.

Hazardous Polymerization Will not occur.

Acute toxicity ORAL (LD50) Estimated to be greater than 5000 mg/kg (rat).
 INHALATION (LC50) Estimated to be greater than 78.6 mg/L (rat).

Effects of Chronic Exposure None known.

Other Toxic Effects Not available.

Not available.

Waste Information No special precautions. Dispose of according to all federal, state and local regulations.

DOT Classification
DOT Proper Shipping Name Please refer to the Bill of Lading/receiving documents for up to date shipping information.

TDG Classification
TDG Proper Shipping Name Please refer to the Bill of Lading/receiving documents for up to date shipping information.

Reporting in this section is based on ingredients disclosed in Section 2
US Regulations

This product is not subject to the reporting requirements under California's Proposition 65.

Registered Product Not applicable.
Information
Canadian Regulations
Canadian NPRI Canadian NPRI: Alkylphenoxy Polyethoxyethanol.

WHMIS Classification CLASS D-2B: Material causing other toxic effects (TOXIC).

WHMIS Icon

Registered Product Not applicable.
Information
Chemical Inventory Status All ingredients of this product are listed or are excluded from listing on the U.S. Toxic Substances Control Act (TSCA) Chemical Substance Inventory

Other Special Considerations	Not available.
Version	1.01
Notice to Reader <i>This document has been prepared using data from sources considered technically reliable. It does not constitute a warranty, express or implied, as to the accuracy of the information contained within. Actual conditions of use and handling are beyond seller's control. User is responsible to evaluate all available information when using product for any particular use and to comply with all Federal, State, Provincial and Local laws and regulations.</i>	

SECTION I-MATERIAL IDENTIFICATION AND USE

Material Name/Identifier:	Kleen-Start Starting Fluid	Stock No.	730
Manufacturer's Name:	Kleen-Flo Tumbler Industries Ltd	Street Address:	75 Advance Blvd.
City:	Brampton	Province:	Ontario
Postal Code:	L6T 4N1	Emergency Phone #:	(905) 793-4311
Chemical Name:	N/A (Mixture)	Chemical Family:	N/A (Mixture)
Chemical Formula:	N/A (Mixture)	Trade Names & Synonyms:	Kleen-Start
Material Use:	Engine Starting Fluid	Molecular Weight:	N/A (Mixture)

SECTION II-HAZARDOUS INGREDIENTS OF MATERIAL

Hazardous Ingredients	C.A.S.	Approximate % Concentration	LD50 Species & Route	LC50 Species & Route
Diethyl ether	60-29-7	40-70	N/A	N/A
Heptane	142-82-5	40-70	N/A	N/A
Carbon dioxide	124-38-9	5-10	N/A	N/A
Upper Cylinder Lubricant	64741-89-5	1-5	N/E	N/E

SECTION III-PHYSICAL DATA FOR MATERIAL

Physical State:	Liquid	Odour/Appearance:	ether-like odour/ colorless liquid
Specific Gravity:	0.713	Odour Threshold(p.p.m.):	N/A
Boiling Point:	35.5°C	Evaporation Rate:	37.5 (Butyl-acetate=1)
Freezing Point:	N/E	Solubility in Water:	6.5%
% Volatile(by volume):	100	Vapour Pressure(mm)Hg:	537
Vapour Density(Air=1):	2.55	Coefficient of Water/Oil Distribut:	N/A
pH	N/A		

SECTION IV-FIRE AND EXPLOSION HAZARD OF MATERIAL

Flammability Yes/No:	Yes, extremely	If yes under which conditions?:	Excessive heat, open flame or sparks
Auto Ignition Temperature:	N/A	Means of Extinction:	carbon dioxide, dry chemical, foam
Flashpoint and Method:	-49°C	Hazardous Combustion Products:	N/A
	Tag C.C.		
Upper Flammable limit (% by volume):	48	Lower Flammable Limit(% by volume):	1.85
Explosion Data:	Sensitivity to Mechanical Impact: N.Ap	Sensitivity to Static Discharge:	N.Ap

SECTION V-REACTIVITY DATA

Chemical Stability Yes/No:	No	If NO under which conditions?	above 35.5°C
Incompatibility to Other Substances Yes/No:	Yes	If so which ones?	Inorganic acid conc., Peroxides, Caustics
Reactivity and under what conditions?	N/A		
Hazardous Decomposition Products:	Carbon monoxide & carbon dioxides.		

N/E: not established

N.Ap.: not applicable

N/A: not available

SECTION VI-TOXICOLOGICAL PROPERTIES OF PRODUCT

Route of Entry: ALL Routes	--SKIN CONTACT --SKIN ABSORPTION --EYE CONTACT --INHALATION --INGESTION		
Effects of Acute Exposure:	May cause defatting and drying of skin. May irritate mucous membranes of respiratory tract.		
	Overexposure may cause central nervous system depression. Headche or nausea.		
Effects of Chronic Exposure:	Continuous inhalation of spray may cause death (50 ml.)		
LD 50 of Product:	N/A	LC 50 of Product:	N/A
Irritancy of Product:	Skin & Eye Irritant	Exposure Limits of Product:	N/A
Sensitization of Product:	N/A	Toxicologically Synergistic Materials:	N/A
--CARCINOGENICITY --REPRODUCTIVE EFFECTS --TERATOGENICITY --MUTAGENICITY			None Known

SECTION VII-PREVENTIVE MEASURES

Personal Protective Equipment to be used:

Gloves(specify):	Rubber	Eye(specify)	Goggles
Respiratory(specify):	NOISH organic vapor mask	Clothing:	Not required
Respiratory Protection:	If used indoors or on a continuous basis, use of cartridge type respirator is recommended		
Engineering Controls:	Local ventilation to keep exposure limit below 400 ppm (diethyl ether).		
Leak and Spill Procedure:	Absorb with paper towel which should then be taken away to a safe place for evaporation.		
Waste Disposal:	Defective cans with residual liquid should be disposed of in an approved hazardous waste site.		
	Empty cans can disposed of at local recycling depots.		
Storage Requirements:	Storage at room temperature. Do not expose under direct sunlight for prolonged period.		
Handling Procedure &	Keep away from open flame and spark. Do not store above 30°C for a long period of time.		
Equipment:	Keep away from open flame and spark.		
IATA (air transport)	Aerosol, flammable, n.o.s., (engine starting fluid), UN 1950. Class2.1		
Marine (IMDG)	Aerosol, UN1950, Class 2, Marine Pollutant (Class 2.1 red label is required)		
TDG Classification:	Consumer Commodity		
WHMIS Classification:	Consumer Commodity - exempt from WHMIS labelling requirement.		
	If required: Class A,B5,D2B		

SECTION VIII-FIRST AID MEASURES

Eye:	Flush with large amount of water for at least 15 minutes. If irritation persists, seek medical help.
Skin:	Wash with soap and water.
Inhalation:	Remove to open air. Maintain body warmth. Seek medical help.
Ingestion:	Do not induce vomiting. Seek medical help.

SECTION IX-PREPARATION DATE OF M.S.D.S.

Additional Info/Comments:		Sources Used:	Handbook of Poisoning by R. Dreisbach
Phone Number:	(905) 793-4311	Prepared By:	Quality Control Laboratory
Date:	March 3rd 2003		Kleen-Flo Tumbler Industries Limited

THIS SHEET SUPERSEDES ANY OTHER M.S.D.S. PREVIOUSLY PREPARED

N/A: not available

N/E: not established

EAST PENN manufacturing co., inc.



- Material Safety Data Sheet -

Lead Acid Battery Wet, Filled with Acid

Manufacturer's Name:

East Penn Manufacturing Co., Inc.

Deka Road, Lyon Station, PA 19536

Telephone Number for Information: (610) 682-6361

Emergency Telephone Number: CHEMTREC: 1-800-424-9300,
In Washington D.C. or outside continental U.S., call 1-202-483-7616

Date: March 15, 2002

Trade Name: Electric Storage battery, SLI or Industrial battery

Classification: Battery wet, filled with acid, electric storage
UN2794

Hazardous Components Specific Chemical Identity (Common Name (s))	OSHA PEL	ACGIH TLV	Range Percent By Weight	Average
Lead, CAS #7439921	0.05 mg/m ³	0.05 mg/m ³	43-70	65
Sulfuric Acid, CAS #7664939	1.00 mg/m ³	1.00 mg/m ³	20-44	25
Antimony, CAS #7440360	0.50 mg/m ³	0.50 mg/m ³	0-4	<1
Arsenic, CAS #7440382	0.01 mg/m ³	0.01 mg/m ³	<01	-
Polypropylene, CAS #9003070	-	-	5-10	8
Calcium, CAS #7440702	1.0 mg/m ³	1.0 mg/m ³	<1	<1

Electrolyte (Sulfuric Acid):

Appearance and Odor: Clear, Odorless, Colorless

Boiling Point: approximately 235° F

Evaporation Rate (Butyl Acetate=1): less than 1.0

Melting Point: N/A

Solubility in Water: Completely

Specific Gravity (H₂O=1): 1.220 - 1.325

Vapor Density (AIR=1): N/A

Vapor Pressure (mm Hg): 13

Flash Point (Method Used): Non-Flammable

Extinguishing Media: Class ABC extinguisher, CO₂

Special Fire Fighting Procedures: Cool exterior of battery if exposed to fire to prevent rupture. The acid mist and vapors in a fire situation are corrosive. Wear special respiratory protection (SCBA) and clothing.

Unusual Fire and Explosion Hazards: *Hydrogen gas, which may explode if ignited, is produced by this battery, especially when charging. Use adequate ventilation; avoid open flames, sparks, or other sources of ignition.

Flammable Limits: *Hydrogen Gas

LEL: 4%

UEL 74%

Stability: Stable

Condition to Avoid: Prolonged overcharging, sources of ignition

Incompatibility (Materials to Avoid): Sulfuric Acid: Contact with combustibles and organic materials may cause fire and explosion. Also reacts violently with strong reducing agents, metals, strong oxidizers and water. Contact with metals may produce toxic sulfur dioxide fumes and may release flammable hydrogen gas.Hazardous Decomposition of By-Products: Sulfuric Acid: Excessive overcharging or fire may create Sulfur trioxide, carbon monoxide, sulfuric acid mist, sulfur dioxide, and hydrogen.

Lead Compounds: Contact with strong acid or base or presence of nascent hydrogen may generate highly toxic arsine gas.

Route(s) of Entry: Not Applicable under normal use. (Inhalation, skin contact, and ingestion)

Health Hazards (Acute and Chronic): Do not open battery, avoid contact with internal components. Internal components are Oxide lead and electrolyte. Short term exposure: Sulfuric acid may cause irritation of eyes, nose, and throat. Prolonged contact may cause severe burns. Long term exposure: Repeated contact causes irritation and skin burns. Repeated exposure to mist may cause erosion of teeth, chronic eye irritation and/or chronic inflammation of the nose, throat, and bronchial tubes.

TARGET ORGAN: (Electrolyte) respiratory system, eyes, skin, and teeth

Carcinogenicity:

Sulfuric Acid: The International Agency for Research on Cancer (IARC) has classified "strong inorganic acid mist containing sulfuric acid" as a Category 1 carcinogen, a substance that is carcinogenic to humans. This classification does not apply to liquid forms of sulfuric acid contained within a battery. Inorganic acid mist (sulfuric acid mist) is not generated under normal use of this product. Misuse of the product such as overcharging, may result in the generation of sulfuric acid mist.

Lead Compounds: Lead is listed as a 2B carcinogen, likely in animals at extreme doses. Proof of carcinogenicity in humans is lacking at present.

Arsenic: Listed by National Toxicology Program (NTP), IARC, OSHA and NIOSH as a carcinogen only after prolonged exposure at high levels.

Signs and Symptoms of Exposure: Acid contact may cause irritation of eyes, nose and throat. Breathing of mist may produce respiratory difficulty. Contact with eyes and skin causes irritation and skin burns. Sulfuric acid is a CORROSIVE chemical.

Medical Conditions Generally Aggravated by Exposure: Sulfuric Acid Mist exposure may aggravate medical conditions such as, pulmonary edema, bronchitis, emphysema, dental erosion, and tracheobronchitis. Pregnant women and children must be protected from lead exposure.

Emergency and First Aid Procedures: (Sulfuric Acid)

- 1) Flush contacted area with large amounts of water for at least 15 minutes. Remove contaminated clothing and obtain medical attention if necessary. Eye wash and/or emergency shower should be readily available.
- 2) If swallowed, give large volumes of water. **DO NOT** induce vomiting, obtain medical treatment.

Steps to be Taken in Case Material is Released or Spilled: *SULFURIC ACID:* Dilute spill cautiously with five to six volumes of water and gradually neutralize with sodium bicarbonate, soda ash or lime. When exposure level is not known, wear NIOSH approved positive pressure self-contained breathing apparatus. Reference North American Emergency Response Guidebook, #154.

Waste Disposal Method: Lead-acid batteries are completely recyclable. For information on returning batteries to East Penn for recycling, contact your East Penn Representative. Dispose of any collected material in accordance with local, state or applicable federal regulations.

Precautions to be Taken in Handling and Storing: Store away from reactive material as defined in Section V, Reactivity Data. Place cardboard between layers of stacked batteries to avoid damage and short circuit. Do not allow metallic materials to simultaneously contact both terminals.

Other Precautions: Sodium bicarbonate, soda ash, sand, or lime should be kept in same general area for emergency use. Keep away from sources of ignition during charging see Section IV on generation of hydrogen gas. If battery case is broken, avoid direct contact with internal components.

Respiratory Protection (Specific Type): Respirator required when PEL is exceeded or employee witnesses respiratory irritation. (see Section VI, Health Hazard Data).

Ventilation: Must be provided when charging in an enclosed area. (29CFR1910.178(g) and .305(j)(7))

Mechanical (general): Acceptable at 1 to 4 air exchanges/hour or to maintain air concentrations below the PEL.

Local Exhaust: Preferred

Other: Local building/fire codes may require explosion proof fans and equipment

Protective Gloves: Acid resistant

Eye Protection: Preferred, safety glasses, goggles, face shield

Other Protective Clothing or Equipment: Acid resistant aprons, boots, and protective clothing

Work Hygienic Practices: Good Personal hygiene and work practices are mandatory.

<u>NEPA Hazard Rating</u>	<u>Sulfuric Acid</u>	<u>Lead</u>
Health(Blue)	3	3
Flammability (Red)	0	0
Reactivity (Yellow)	2	0

Note: Sulfuric acid is water-reactive if concentrated.

U.S. DOT: Battery Wet, Filled with Acid

Hazard Class/Division	8
ID Number	UN2794
Packing Group	III
Label Requirement	Corrosive

RCRA: Spent lead-acid batteries are not regulated as hazardous waste when recycled. Spilled sulfuric acid is a characteristic hazardous waste, EPA hazardous waste number D002 (corrosivity).

CERCLA (Superfund) and EPCRA (Emergency Planning and Community Right to Know ACT)

- a) Reportable Quantity (RQ) for spilled 100% sulfuric acid is 1000 lbs.
- b) Sulfuric acid is a listed "Extremely Hazardous Substance" under EPCRA with a Threshold Planning Quantity (TPQ) of 1000 lbs.
- c) EPCRA Section 312 Tier II reporting required for batteries if sulfuric acid is present in quantities of 500 lbs or more and/or lead is present in quantities of 10,000 lbs or more.

California Prop 65: This product contains chemicals known to the State of California to cause cancer, birth defects and other reproductive harm.

For additional information concerning East Penn Manufacturing Co., Inc. products or questions concerning the content of this MSDS please contact your East Penn representative.

This information is accurate to the best of East Penn Mfg. Co.'s knowledge or obtained from sources believed by East Penn to be accurate. Before using any product, read all warnings and directions on the label.



MATERIAL SAFETY DATA SHEET

Date Prepared: November 06, 2002
Supersedes: November 01, 2002
MSDS Number: 08529

1. PRODUCT INFORMATION

Product Identifier: LIGHT DISTILLATE

ESSO STOVE OIL (DYED OR CLEAR)
DIESEL ARCTIC (DYED OR CLEAR)
ESSO DIESEL DEW (DYED OR CLEAR)
ESSO DIESEL ARCTIC (DYED OR CLEAR)
ESSO STOVE QUALITY COMMERCIAL FUEL
ESSO STOVE QUALITY FURNACE FUEL
ESSO STOVE QUALITY HEATING OIL (DYED OR CLEAR)
STOVE QUALITY FURNACE FUEL
DIESEL 60 (DYED OR CLEAR)
DIESEL DEW (DYED OR CLEAR)
ESSO DIESEL 60 (DYED OR CLEAR)
ESSO DIESEL LIGHT (DYED OR CLEAR)
STOVE OIL (DYED OR CLEAR)
STOVE QUALITY HEATING OIL (DYED OR CLEAR)
ESSO DIESEL FUEL OIL 50 (DYED OR CLEAR)
DIESEL LOW SULFUR LIGHT (DYED OR CLEAR)
LIGHT DISTILLATE (LOW SULFUR)
STOVE QUALITY COMMERCIAL FUEL
DIESEL FUEL OIL 50 (DYED OR CLEAR)
DIESEL LIGHT (DYED OR CLEAR)
DIESEL LOW SULFUR LIGHT DYED EP
FURNACE LIGHT (DYED OR CLEAR)
MC SOLVENT
DIESEL LOW SULPHUR LIGHT RAIL
FURNACE LOW SULPHUR
FURNACE LOW SULPHUR DYED
FURNACE LOW SULPHUR LIGHT
FURNACE LOW SULPHUR LIGHT DYED

Application and Use:
Multi-purpose fuel

Product Description:

A complex mixture of aliphatic, olefinic, naphthenic and aromatic hydrocarbons, and additives.

REGULATORY CLASSIFICATION**WHMIS:**

Class B, Division 3: Combustible Liquids.

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.

TDG INFORMATION (RAIL/ROAD):

Shipping Name: FUEL OIL

Class: 3

Packing Group: III

PIN Number: UN1202

Marine Pollutant:N

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) 968-4441

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 #
Kerosene, straight run	0-100 V/V	8008-20-6 LD50:>5g/kg,oral,rat
Light Atmospheric Gas Oil	0-100 V/V	64741-44-2
Light Hydrocracked Distillate	0-100 V/V	64741-77-1

3. TYPICAL PHYSICAL & CHEMICAL PROPERTIES

Physical State: Liquid

Specific gravity: not available

Viscosity: 1.70 cSt at 40 deg C

Vapour Density: not available

Boiling Point: 180 to 320 deg C

Evaporation rate: <1 (1= n-butylacetate)
Solubility in water: negligible
Freezing/Pour Point: -39 deg C ASTM D97
Odour Threshold: not available
Vapour Pressure: <1 kPa at 38 deg C
Density: 0.85 g/cc at 15 deg C
Appearance/odour: White or pale yellow liquid, petroleum odour

4. 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:

Low toxicity.
Irritating.

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:

Lifetime skin painting tests indicate that materials of similar composition have produced 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 > 2000 mg/kg (Rabbit)
Inhalation : LC50 > 2500 mg/m3 (Rat)

OCCUPATIONAL EXPOSURE LIMIT:

ACGIH recommends:

ACGIH recommends a TWA of 100 mg/m3 total hydrocarbon for diesel fuel

Local regulated limits may vary.

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 attention.

6. 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 safety goggles, chemical-resistant overalls, and chemically impervious gloves.

Where only incidental contact is likely, wear safety goggles, long sleeves, and chemical-resistant gloves.

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: