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HYDRAULIC OIL

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SECTION 13 DISPOSAL CONSIDERATIONS

Dispose in accordance with all applicable regulations.

SECTION 14 TRANSPORT INFORMATION

U.S. DEPARTMENT OF TRANSPORTATION: Not regulated.

CANADIAN TRANSPORTATION OF DANGEROUS GOODS: Not regulated.

LAND TRANSPORT ADR/RID: Not regulated.

AIR TRANSPORT IATA/ICAO: Not regulated.

MARITIME TRANSPORT IMDG: Not regulated.

SECTION 15 REGULATORY INFORMATION

CERCLA SECTIONS 102a/103 HAZARDOUS SUBSTANCES (40 CFR Part 302.4): This product is not reportable under 40 CFR Part 302.4.

SARA TITLE III SECTION 302 EXTREMELY HAZARDOUS SUBSTANCES (40 CFR Part 355): This product is not regulated under Section 302 of SARA and 40 CFR Part 355.

SARA TITLE III SECTION 311/312 HAZARDOUS CATEGORIZATION (40 CFR Part 370):

ACUTE: N

CHRONIC: N

FIRE: N

REACTIVE: N

SUDDEN RELEASE: N

SARA TITLE III SECTION 313 (40 CFR Part 372): This product is not regulated under Section 313 of SARA and 40 CFR Part 372.

STATE REGULATIONS:

California Proposition 65: N

TSCA INVENTORY STATUS: Listed on inventory.

OSHA HAZARD COMMUNICATION STANDARD: Contains a component listed by ACGIH.
Contains a component listed by OSHA.

EC INVENTORY (EINECS/ELINCS): Not determined.

JAPAN INVENTORY (MITI): Not determined.

AUSTRALIA INVENTORY (AICS): Not determined.

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HYDRAULIC OIL

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KOREA INVENTORY (ECL): Not determined.

CANADA INVENTORY (DSL): Not determined.

PHILIPPINE INVENTORY (PICCS): Not determined.

CHINA INVENTORY (IECS): Not determined.

SECTION 16 OTHER INFORMATION

Prepared by: Product Stewardship and Toxicology

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This Material Safety Data Sheet conforms to the requirements of ANSI Z400.1. NOTICE: The information presented herein is based on data considered to be accurate as of the date of preparation of this Material Safety Data Sheet. However, no warranty or representation, express or implied, is made as to the accuracy or completeness of the foregoing data and safety information, nor is any authorization given or implied to practice any patented invention without a license. In addition, no responsibility can be assumed by vendor for any damage or injury resulting from abnormal use, from any failure to adhere to recommended practices, or from any hazards inherent in the nature of the product.

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JET B FUEL

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* M S D S *

* Canadian Centre for Occupational Health and Safety *

* * * * * Issue : 2001-1 (February, 2001) *

*** IDENTIFICATION ***

MSDS RECORD NUMBER : 2483109

PRODUCT NAME(S) : TURBINE FUEL AVIATION, WIDE CUT TYPE

ESSO TURBO FUEL B

ESSO JET B

JET B

TURBO FUEL B

TURBO FUEL B F40

TURBO FUEL B JP4

ESSO TURBO FUEL B <FSII>

JET B <FSII>

AVIATION TURBINE FUEL <JP4>

CAN/CGSB-3.22 GRADE F40

ESSO JET B <FSII>

PRODUCT IDENTIFICATION : MSDS Number: 08524

DATE OF MSDS : 2000-06-15

CURRENCY NOTE : This MSDS was provided to CCOHS in electronic form on 2000-12-14

*** 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: June 15, 2000

Supersedes: April 21, 1999

MSDS Number: 08524

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JET B FUEL

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1. PRODUCT INFORMATION

Product Identifier: TURBINE FUEL AVIATION, WIDE CUT TYPE
ESSO TURBO FUEL B
ESSO JET B
JET B
TURBO FUEL B
TURBO FUEL B F40
TURBO FUEL B JP4
ESSO TURBO FUEL B <FSII>
JET B <FSII>
AVIATION TURBINE FUEL <JP4>
CAN/CGSB-3.22 GRADE F40
ESSO JET B <FSII>

Application and Use: Aviation turbine fuel

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.

TDG INFORMATION (RAIL/ROAD):

Shipping Name: FUEL, AVIATION, TURBINE ENGINES
Class: 3
Packing Group: II
PIN Number: UN1863

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

JET B FUEL

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	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 LD50:6.6g/kg, skn. rbt

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 270 deg C
Evaporation rate: <1 (1= n-butylacetate)
Solubility in water: negligible
Freezing/Pour Point: -58 deg C ASTM D 2386
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

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.

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JET B FUEL

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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 ppm TWA for 8 hour workday.

ACGIH recommends:

For n-Hexane (skin), 50 ppm (176 mg/m3).

For Benzene, ACGIH recommends a TWA of 0.5 ppm (1.6 mg/m3), (skin), and categorizes it as a confirmed human carcinogen.

For 2-Methoxyethanol, (skin) 5 ppm (16 mg/m3).

Local regulated limits may vary.

JET B FUEL

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. 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.

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JET B FUEL

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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 spill.

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.

7. FIRE AND EXPLOSION HAZARD

Flashpoint and method: -18 deg C COC ASTM 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.

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

Toxic gases will form upon combustion.

Static Discharge; material may accumulate static charges which may cause a fire.

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JET B FUEL

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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 and traces of oxides of sulphur. In addition, small amounts of nitrogen oxides will be formed.

8. REACTIVITY DATA

STABILITY:

This product is stable. Hazardous polymerization will not occur.

INCOMPATIBLE MATERIALS AND CONDITIONS TO AVOID:

Strong oxidizing agents. Use product with caution around heat, sparks, pilot lights, static electricity and open flames.

HAZARDOUS DECOMPOSITION:

See: Hazardous Combustion Products

9. NOTES

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

Boiling point change.

REVISION SUMMARY:

Since 21 April 1999, this MSDS has been revised in Section(s):
2, 3

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JET B FUEL

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10. PREPARATION

Date Prepared: June 15, 2000
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."

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LATEX PAINTS - ALL

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* M S D S *

* Canadian Centre for Occupational Health and Safety *

* * * * * Issue : 2001-1 (February, 2001) *

*** IDENTIFICATION ***

MSDS RECORD NUMBER : 1641578

PRODUCT NAME(S) : LATEX PAINTS - ALL

Water based paint

PRODUCT IDENTIFICATION : #12

PRODUCT CODES C100, C105, C150, D5000,

D5050, D5090, D5100, D5150, D5300, D5400,

D6050

DATE OF MSDS : 1998-02-02

*** MANUFACTURER INFORMATION ***

MANUFACTURER : Para Inc

ADDRESS : 11 Kenview Boulevard

Brampton Ontario

Canada L6T 5G5

Telephone: 905-792-0940 (Information)

EMERGENCY TELEPHONE NO. : 905-792-0940

613-996-6666 (CANUTEC, after hours, in

case of emergency only)

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SECTION I - PRODUCT AND PREPARATION INFORMATION

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TRADE NAME : LATEX PAINTS - ALL

PREPARATION DATE.. Feb. 2, 1998 PREPARED BY...Don Warren

SUPERCEDES.. March 27, 1996 REASON...Additional product codes

PRODUCT CODES.. C100, C105, C150, D5000, D5050, D5090, D5100,

D5150, D5300, D5400, D6050

(Note: Where applicable, the above product codes also represent

tint base codes for each.)

CHEMICAL NAME.. Water based paint HMIS RATING: Health...1

CHEMICAL FAMILY.. Mixture Flammability...0

FORMULA.. Not applicable Reactivity...0

PRODUCT USE.. Decorative and/or protective coatings for various

substrates.

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LATEX PAINTS - ALL

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SECTION II - HAZARDOUS INGREDIENTS

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CHEMICAL IDENTITY/CAS NUMBER % (WT) LC50 (ppm) LD50 (mg/kg)

No hazardous ingredients

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SECTION III - PHYSICAL DATA

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PHYSICAL STATE (room temperature).. liquid

ODOUR AND APPEARANCE.. opaque liquid, mild odour

BOILING POINT - (centigrade).. > 100'C

FREEZING POINT - (centigrade).. < 0'C

PERCENT VOLATILE BY VOLUME.. 60 - 75%

SPECIFIC GRAVITY.. 1.0 - 1.6

EVAPORATION RATE (n-butyl acetate = 1).. 0.36

VAPOUR PRESSURE.. 2.3 KPa

VAPOUR DENSITY (air = 1).. n/a

pH.. 8-9

COEFFICIENT OF OIL/WATER DISTRIB'N.. n/a

SOLUBILITY IN WATER.. partially

COATINGS VOC (less water).. 25 - 236 gm/L

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SECTION IV - FIRE OR EXPLOSION HAZARDS

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CONDITIONS OF FLAMMABILITY.. Wet paint is non-flammable, but dried film may burn if exposed to flame, but will not support combustion.

EXTINGUISHING MEDIA.. n/a

HAZARDOUS COMBUSTION PRODUCTS.. Carbon monoxide, carbon dioxide, smoke.

SPECIAL FIRE FIGHTING PROCEDURES.. n/a

FLASH POINT (method).. n/a

UPPER FLAMMABILITY LIMITS(UEL).. n/a

LOWER FLAMMABILITY LIMITS(LEL).. n/a

AUTO-IGNITION TEMPERATURE.. n/a

SENSITIVITY TO MECHANICAL IMPACT.. none

SENSITIVITY TO STATIC DISCHARGE.. n/a

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SECTION V - REACTIVITY DATA

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STABILITY.. Stable

CONDITIONS TO AVOID.. Very high temperatures

INCOMPATIBLE SUBSTANCES.. Strong oxidizing agents

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LATEX PAINTS - ALL

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HAZARDOUS DECOMPOSITION PRODUCTS.. Not applicable
HAZARDOUS POLYMERIZATION.. Will not occur

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SECTION VI - TOXICOLOGICAL PROPERTIES

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SKIN CONTACT.. none
SKIN ABSORPTION.. none
EYE CONTACT.. Irritating but will not injure eye tissue.
INHALATION.. none
INGESTION.. May cause nausea, vomiting.

EFFECTS OF ACUTE EXPOSURE.. none
EFFECTS OF CHRONIC EXPOSURE.. none

EXPOSURE LIMITS: CHEMICAL COMPONENT OSHA/PEL ACGIH/TLV
 No hazardous ingredients

IRRITANCY.. May cause eye irritation.
SENSITIZATION.. none
CARCINOGENICITY.. none REPRODUCTIVE TOXICITY...none
TERATOGENICITY.. none MUTAGENICITY...none
TOXICOLOGICALLY SYNERGISTIC PRODUCTS.. none known

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SECTION VII - PREVENTIVE MEASURES

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HAND PROTECTION.. Not normally required.
EYE PROTECTION.. Safety glasses or goggles.
RESPIRATORY PROTECTION.. Combined dust and organic vapour
canister when spraying or using in a poorly ventilated area.
BODY PROTECTION.. No special clothing required.
FOOT PROTECTION.. Safety shoes if handling pails.
VENTILATION CONTROLS.. Good local ventilation, exhaust fans
and/or open windows.
STEPS TO BE TAKEN IN CASE OF A LEAK OR SPILL.. Scoop up and
return to original container, soak up residue with absorbent.
Prevent from entering storm or sanitary sewers.
WASTE DISPOSAL METHOD.. Approved waste disposal firm.
PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE.. Keep from
freezing.
SPECIAL SHIPPING REQUIREMENTS.. Keep from freezing.

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SECTION VIII - FIRST AID MEASURES

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SKIN CONTACT.. Wash with water.
EYE CONTACT.. Rinse with clean water for 15 minutes. Get medical
attention if irritation persists.
INHALATION.. Remove to fresh air.
INGESTION.. Consult a physician.

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LATEX PAINTS - ALL

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SECTION IX - REGULATORY INFORMATION

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WHMIS CLASSIFICATION.. Not a controlled product

TDG CLASSIFICATION.. N/R

TDG SHIPPING NAME.. N/R

UN NUMBER.. N/R

TSCA (U.S.A.).. All ingredients on TSCA inventory

CEPA (CANADA).. All ingredients on DSL (Domestic Substances List)

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DISCLAIMER: All information, recommendations and suggestions appearing herein concerning these products are based upon tests and data believed to be reliable. Therefore it is the user's responsibility to determine the safety and suitability for his or her own use of these products. Since the actual use or misuse is beyond our control, no guarantee, expressed or implied, is made by Para Inc. as to the effects of such use, nor does Para Inc. assume any liability arising out of the use or misuse by others of this product.

.. []; Class: [] Div.: []; Class: [] Div.: [].

TRANSPORTATION :

	UN/NA	CLASS	P.G.	SHIPPING NAME
	-----	-----	----	-----
TDG :	2211	9.1	III	Polymeric beads, expandable
IATA:	2211	9	III	Polymeric beads, expandable
IMDG:	2211	9	III	Polymeric beads, expandable

SPECIAL PROVISIONS :

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PREPARED / REVISED BY: BASF CANADA INC. (416) 675-3611

DATE : 1999/01/28

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LEAD ACID BATTERIES

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* M S D S *

* Canadian Centre for Occupational Health and Safety *

* * * * * Issue : 2001-1 (February, 2001) *

*** IDENTIFICATION ***

MSDS RECORD NUMBER : 624438

PRODUCT NAME(S) : Lead Acid type battery

PRODUCT IDENTIFICATION : T-MS-105

DATE OF MSDS : 1993-02-08

*** MANUFACTURER INFORMATION ***

MANUFACTURER : GNB Batteries (Canada) Inc

ADDRESS : 275 Lewis Street

Fort Erie Ontario

Canada L2A 5N6

Telephone: 905-871-5600

Fax: 905-871-6310

*** MATERIAL SAFETY DATA ***

T-MS-105 - EFFECTIVE February 8, 1993

REPLACING: March 15, 1992

TECHNICAL BULLETIN: Material Safety

Data Sheet

SUBJECT TO CHANGE WITHOUT NOTICE

1. GENERAL INFORMATION

- a) Product Name: Lead acid type battery
- b) Product Type: (I) Wet Cells (Stationary, Motive Power and Railroad type batteries)
- (II) Sealed modules
- c) Application DC Power Source (Rechargeable)

2. BASIC COMPONENTS*

- a) Lead alloy: Major component - Lead
- Minor components -
- Antimony or calcium and traces of arsenic (for wet cells)
- Calcium, antimony and cadmium (for sealed modules)
- b) Lead dioxide (active material)
- c) Copper, stainless steel, brass etc. (used as hardware and other external components)
- d) Sulfuric Acid (battery electrolyte)
- e) Plastic materials like styrene-acrylonitrile copolymer, polypropylene or polycarbonate (battery container); synthetic rubber separators, glass mats, rubber washers etc. are also used.

LEAD ACID BATTERIES

* percentage of these components vary with the type of product.

3. PHYSICAL AND TOXICOLOGICAL DATA

- a) Lead: Toxic, TLV 0.1 mg/M3, S.G. 11.34, m.p. 327 deg C.
- b) Antimony: Toxic, TLV 0.5 mg/M3, S.G. 6.68, m.p. 630 deg C
- c) Calcium: Nontoxic, m.p. 842 deg C, S.G. 1.54.
- d) Cadmium: Toxic, TLV 0.2 mg/M3, S.G. 8.64, m.p. 321 deg C.
Note: Physical and toxicological properties of a) to d) above vary with alloy composition.
- e) Sulfuric acid: Corrosive, TLV 1.0 mg/M3, reacts with alkaline materials like caustic soda or soda ash; soluble in water. Battery electrolyte is 29-42 percent solution water, S.G. 1.215 - 1.300
- f) Plastic Container Materials: Plastic materials used for battery containers are nontoxic solids. They are attacked by organic solvents and may be flammable if exposed to excessive heat or open flames.

(TLV = Threshold Limiting Value)

(SG = Specific Gravity)

(m.p. = melting point)

4. BY-PRODUCTS

Hydrogen and Oxygen Gasses These gases generated at the end of charge of the battery could form explosive mixtures with air if proper ventilation is not provided. Explosive range for hydrogen in air is 4.1-74.2%.

5. PRECAUTIONS

- a) Cells should not be exposed to excessive heat, open flames or freezing conditions. ABSOLYTE (R) type sealed modules however can withstand freezing conditions.
- b) Cell jars are likely to be damaged on contact with organic solvents or detergents. Do not use such materials for the purpose of cleaning the cells.
- c) Use protective gloves, acid resistant clothes and boots as well as safety glasses while working in the battery room.
- d) Acid spills should be carefully neutralized by soda ash or baking soda. Neutralizing chemicals should not be allowed to enter the cells as they chemically react with the electrolyte.

6. HEALTH HAZARDS

- a) Inhalation of sulfuric acid vapour can cause respiratory irritation. Use of mask and proper ventilation minimizes the possibility of inhalation of acid fumes. Do not operate the battery in closed space and in case of inhalation of acid fumes, remove the person to fresh air.
- b) Splashing of electrolyte into the eyes or skin could cause irritation and severe burns. Affected area should be washed thoroughly with cold water.

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LEAD ACID BATTERIES

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Medical attention required in cases of eye exposure or severe skin exposure.
c) Lead, arsenic, antimony and cadmium also have toxic effects, but, emission of these materials from batteries is minimal.

7. FIRE AND EXPLOSION DATA

- a) Plastic containers are flammable if exposed to extreme heat or open flame. Use carbon dioxide or dry chemicals only as fire extinguishers.
- b) Gases generated at the end of charge could form explosive mixtures with air. Sources of sparks, flames etc. should be avoided. Smoking is not permitted in the battery room.

8. DISPOSAL AT END OF USE

Contact GNB at Fort Erie or the nearest sales office for procedure to be followed for the disposal of used batteries in accordance with Government regulations.

9. GENERAL REMARKS

Lead acid batteries as such pose no hazards to either health or the environment. All toxic and corrosive components are contained within the cell jars and their emission is minimal. With proper maintenance and use, the battery will function as a DC power source for many years.

NOTE

DUE TO THE NEW MANUFACTURING TECHNOLOGY, GNB'S SEALED ABSOLYTE (R) MODULES REQUIRE CONSIDERABLE SMALLER QUANTITIES OF ELECTROLYTE. AS A CONSEQUENCE, POSSIBILITY OF SPILLAGE OR HYDROGEN EVOLUTION IS VERY MUCH REDUCED. THEY CAN BE STACKED IN ANY POSITION AND ARE ALSO AVAILABLE IN FLAME RESISTANT CONTAINERS. ALL OTHER PRECAUTIONS RECOMMENDED FOR WET CELLS ARE APPLICABLE TO SEALED ABSOLYTE (R) MODULES AS WELL.

LEAD CONCENTRATE

teckcominco

MATERIAL SAFETY DATA SHEET

SECTION 1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

Product Identity: Polaris Lead Concentrate

Manufacturer:

Cominco Mining Partnership
Polaris Operations
Polaris, NU
X0A 0Y0

Emergency Telephone: (250) 364-4214

Supplier:

Teck Cominco Metals Ltd.
1500 - 120 Adelaide Street, W.
Toronto, Ontario
M5H 1T1

MSDS Preparer:

Teck Cominco Metals Ltd.
600 - 200 Burrard Street
Vancouver, British Columbia
V6C 3L7

Date of MSDS Preparation: July 23, 1997

Product Use: Lead concentrate is used in the production of lead metal and lead alloys.

SPECIAL NOTES:

Caution: The toxicological properties of this material have not been fully investigated. The information contained in this MSDS is based on information in the technical and scientific literature about the material's constituent compounds. Use appropriate procedures to prevent direct contact with the skin or eyes and to prevent ingestion or inhalation.

SECTION 2. COMPOSITION/INFORMATION ON INGREDIENTS

Hazardous Ingredient	Approximate Percent by Weight	C.A.S. Number	Exposure Limits*		LD ₅₀ /LC ₅₀ Species and Route
Lead Sulfide	86 to 92	1314-87-0	OSHA PEL ACGIH TLV NIOSH REL	.05 mg/m ³ .05 mg/m ³ <0.1 mg/m ³	Guinea Pig-oral LDLo 10 gm/kg
Zinc Sulfide	1 to 3	1314-98-3	OSHA PEL** ACGIH TLV** NIOSH REL**	None established None established None established	Human-inh TCLo 124 mg/m ³ /50M Rat-oral LD ₅₀ >2 gm/kg Rat-inh LC ₅₀ >5040 mg/m ³ /4H Rat-skin LD ₅₀ >2gm/kg
Iron Sulfide	2 to 4	7439-89-6	OSHA PEL*** ACGIH TLV*** NIOSH REL***	None established None established None established	No data

NOTE: TLVs for individual states may differ from OSHA TLVs. Check with local authorities for the applicable state TLVs.

*OSHA - Occupational Safety and Health Administration; ACGIH - American Conference of Governmental Industrial Hygienists; NIOSH - National Institute for Occupational Safety and Health.

**The OSHA PEL for zinc oxide dust is 15 mg/m³ total and 5 mg/m³ respirable. The ACGIH TLV for zinc oxide dust is 10 mg/m³ and the NIOSH REL for zinc oxide dust is 5 mg/m³ with a STEL of 15 mg/m³.

***The OSHA PEL for iron oxide fume is 10 mg/m³. The ACGIH TLV and the NIOSH REL for iron oxide dust and fume is 5 mg/m³.

European Economic Community (EEC) Classification: Lead: Lead compounds are classified as Category 1 and Category 3 reproductive toxins and as harmful.

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LEAD CONCENTRATE

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EEC R Phrase(s): Lead Compounds: R61 - may cause harm to unborn child; R62 - possible risk of impaired fertility; R20/22 - harmful by inhalation and if swallowed; R33 - danger of cumulative effects.

Trade Names and Synonyms: Lead Concentrate

SECTION 3. HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW

Appearance: Dark grey talc-like substance. Caution! The toxicological properties of this substance have not been fully investigated. Overexposure may cause eye, skin, digestive tract, and respiratory tract irritation. Many lead compounds can produce toxic effects in blood forming organs, kidneys and the central nervous system. May cause adverse reproductive or fetal effects. Lead compounds may cause cancer based on studies on laboratory animals. Use appropriate procedures to prevent direct contact with the skin or eyes and to prevent ingestion or inhalation.

EYE:

Eye contact may cause eye irritation.

SKIN:

Skin contact may cause skin irritation.

INHALATION:

Dust is irritating to the nose, throat, and respiratory tract. May cause effects similar to those described for ingestion. The toxicological properties of this substance have not been fully investigated.

INGESTION:

Causes gastrointestinal irritation with nausea, vomiting and diarrhea. Many lead compounds can produce toxic effects in blood forming organs, kidneys and the central nervous system. The toxicological properties of this substance have not been fully investigated.

SIGNS AND SYMPTOM OF EXPOSURE:

Lead is a cumulative poison. When significant continuous or periodic exposure occurs, increasing amounts build up in the body and eventually symptoms and disability may occur. Some signs and symptoms of exposure to lead compounds include gastrointestinal discomfort, a blue-black line on the gums, neuromuscular dysfunction including muscle weakness and paralysis, and mental changes.

CHRONIC EFFECTS:

Many lead compounds can produce toxic effects in blood forming organs, kidneys and the central nervous system. May cause adverse reproductive or fetal effects. Lead compounds may cause cancer based on studies with laboratory animals. The toxicological properties of this substance have not been fully investigated.

REPRODUCTIVE HAZARDS:

Overexposure to lead compounds may cause adverse reproductive effects. Unborn and nursing children can be exposed to lead through their mother. This may cause premature births, smaller babies, and decreased mental ability in the infant.

CARCINOGENICITY INFORMATION:

Lead compounds may cause cancer based on studies with laboratory animals.

TARGET ORGAN:

Target Organs for lead compounds include: The central and peripheral nervous systems, blood-forming organs, kidneys, and the male reproductive system.

SECTION 4. FIRST AID MEASURES

EYE CONTACT FIRST AID:

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LEAD CONCENTRATE

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Immediately flush eyes with plenty of water for at least 15 minutes occasionally lifting the upper and lower eyelids. Get medical attention if irritation develops or persists.

SKIN CONTACT FIRST AID:

Flush skin with plenty of soap and water for at least 15 minutes. Remove contaminated clothing - wash before reuse. Get medical aid if irritation develops or persists.

INHALATION FIRST AID:

If exposed to excessive levels of dusts or fumes, remove from exposure to fresh air immediately. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention if cough or other symptoms develop.

INGESTION FIRST AID:

If victim is conscious and alert, give 2 - 4 cupfuls of water. Never give anything by mouth to an unconscious person. Get medical aid immediately.

NOTES TO PHYSICIAN:

Treat symptomatically and supportively. Chelators of choice for lead poisoning are BAL, calcium-disodium EDTA and penicillamine.

SECTION 5. FIRE FIGHTING MEASURES

FLAMMABLE PROPERTIES

TCC Flash Point: None

Autoignition Temperature: N/A

FLAMMABLE LIMITS IN AIR

LEL: N/A

UEL: N/A

EXTINGUISHING MEDIA:

In case of fire, use water spray, dry chemical, carbon dioxide, or alcohol-resistant foam.

FIRE AND EXPLOSION HAZARDS:

During a fire, irritating and highly toxic gases may be generated by thermal decomposition or combustion.

FIRE FIGHTING INSTRUCTIONS:

As in any fire, wear self-contained breathing apparatus pressure-demand MSHA/NIOSH (approved or equivalent) and full protective gear. Avoid breathing smoke, fumes, and decomposition products.

COMBUSTION PRODUCTS:

Excess heat will generate sulfur oxide, zinc oxide, and lead oxide fumes. Contact with acids will generate flammable and toxic hydrogen sulfide gas.

SECTION 6. ACCIDENTAL RELEASE MEASURES

SAFEGUARDS (PERSONNEL):

Use proper personal protective equipment as specified in Section 8.