

Appendix C

Spill Response Supplies

C.1 TYPICAL SPILL RESPONSE KITS AT BAFFINLAND'S MARY RIVER PROJECT

Kit #1 twelve (12) kits
Kit #2 eight (8) kits
Kit #3 eight (8) kits
Kit #4 thirty-six (36) kits
Kit #5 sixteen (16) kits

Kit No./Details	Contents	Quantity
1 20 GALLON LAB PACK Absorbs up to 18 Gallons Lab Pack Container	Sorbent Pads (19" x 17" x 3/8") Sorbent Socks (3" x 4ft) Sorbent Pillows Nitrile Gloves (pair) Disposal Bag Epoxy Putty	20 5 4 2 3 1
2 PORTABLE RESPONSE KIT Absorbs up to 65 Gallons Durable Yellow Rollout Container 2 convenient sizes - 64 Gallon 96 Gallon	Sorbent Pads (19" x 17" x 3/8") Sorbent Socks (3" x 4ft) Xsorb (6 quart) Hand broom/dust pan Nitrile Gloves (pair) Disposal Bag Disposable Coveralls Drain Cover Splash resistant goggles	150 6 1 1 2 4 2 2 2
3 SPILL CHEST Absorbs up to 170 Gallons Heavy duty plastic Yellow Container Can be moved with a forklift	Sorbent Pads (19" x 17" x 3/8") Sorbent Socks (3" x 4ft) Sorbent Booms (5" x 10ft) Sorbent Pillows (15" x 9ft) Sorbent Roll (38" x 144ft) Nitrile Gloves (pair) Disposal Bag Epoxy Putty Barricade Tape (roll)	100 8 4 16 1 2 4 1 1

<p style="text-align: center;">4</p> <p style="text-align: center;">HEAVY DUTY DRUM KIT</p> <p>Absorbs up to 75 Gallons Heavy duty plastic Yellow Container Drum sizes include 65 & 94 US gallons or an economy 45 gallon steel drum</p>	<p>Sorbent Pads (19" x 17" x 3/8") Sorbent Booms (5" x 10ft) Xsorb (6 quart) Nitrile Gloves (pair) Disposal Bag Disposable Coveralls Drain Cover Splash resistant goggles</p>	<p>100 4 1 2 4 2 1 2</p>
<p style="text-align: center;">5</p> <p style="text-align: center;">EXTRA LARGE DRUM KIT</p> <p>Absorbs up to 120 Gallons Heavy duty plastic Yellow Container</p>	<p>Sorbent Pads (19" x 17" x 3/8") Sorbent Socks (4ft) Sorbent Socks (8ft) Sorbent Pillows (large) Sorbent Pillows (small) Plug Putty Drain Cover Disposal Bag (roll) Disposable Coveralls Barrier Tape (roll) Granular Absorbent (12.5kg)</p>	<p>300 8 8 12 8 2 7 1 2 1 1</p>


ADDITIONAL SPILL RESPONSE EQUIPMENT TO BE STORED IN 2 SEA-CAN CONTAINERS AT MILNE INLET FOR BAFFINLAND'S MARY RIVER PROJECT:

Description of additional equipment
<p>Oil containment boom, anchors and towing bridles (300 m) Multisorb granular absorbent (500 bags) Custom pump skid for emergency fuel transfers from one tank to another 2" x 25' transfer hose for emergency transfer pump (8 sections) 18" x 18" x 6" Arctic min berm for under fittings (12 units) 36" x 36" x 6" Arctic min berm for under fittings (12 units) Insta berm 10' x 10' x 15" Arctic (2 units) Oil sheets for replenishing spill kits (300 bags) Oil Skimmer Marine Near Shore Work Boat Spill response Hazardous Materials Trailer complete with spill equipment storage, pump and storage tank</p>

Appendix D:

Standard Forms for Emergency Response

D.1 Standard Nunavut Spill Report Form

  		NT-NU SPILL REPORT <small>OIL, GASOLINE, CHEMICALS AND OTHER HAZARDOUS MATERIALS</small>		<small>NT-NU 24-HOUR SPILL REPORT LINE TEL: (867) 920-8133 FAX: (867) 875-8024 EMAIL: cs@gn.gov.nt.ca </small>	
A	REPORT DATE: MONTH - DAY - YEAR	REPORT TIME	<input type="checkbox"/> ORIGINAL SPILL REPORT OR <input type="checkbox"/> UPDATE # _____ TO THE ORIGINAL SPILL REPORT	REPORT NUMBER _____	
	B OCCURRENCE DATE: MONTH - DAY - YEAR	C OCCURRENCE TIME			
C	LAND USE PERMIT NUMBER (IF APPLICABLE)		WATER LICENSE NUMBER (IF APPLICABLE)		
D	GEOGRAPHIC PLACE NAME OR DISTANCE AND DIRECTION FROM NAMED LOCATION		REGION: <input type="checkbox"/> NWT <input type="checkbox"/> NUNAVUT <input type="checkbox"/> ADJACENT JURISDICTION OR OCEAN		
E	LATITUDE DEGREES: _____ MINUTES: _____ SECONDS: _____		LONGITUDE DEGREES: _____ MINUTES: _____ SECONDS: _____		
F	RESPONSIBLE ENTITY OR VESSEL NAME		RESPONSIBLE ENTITY ADDRESS OR OFFICE LOCATION		
G	ANY CONTRACTOR INVOLVED		CONTRACTOR ADDRESS OR OFFICE LOCATION		
H	PRODUCT SPILLED		QUANTITY IN LITRES, KILOGRAMS OR CUBIC METRES	UN. NUMBER	
	SECOND PRODUCT SPILLED (IF APPLICABLE)		QUANTITY IN LITRES, KILOGRAMS OR CUBIC METRES	UN. NUMBER	
I	SPILL SOURCE		SPILL CAUSE	AREA OF CONTAMINATION IN SQUARE METRES	
J	FACTORS AFFECTING SPILL OR RECOVERY		DESCRIBE ANY ASSISTANCE REQUIRED	HAZARDS TO PERSONS, PROPERTY OR ENVIRONMENT	
K	ADDITIONAL INFORMATION, COMMENTS, ACTIONS PROPOSED OR TAKEN TO CONTAIN, RECOVER OR DISPOSE OF SPILLED PRODUCT AND CONTAMINATED MATERIALS				
L	REPORTED TO SPILL LINE BY	POSITION	EMPLOYER	LOCATION CALLING FROM	TELEPHONE
M	ANY ALTERNATE CONTACT	POSITION	EMPLOYER	ALTERNATE CONTACT LOCATION	ALTERNATE TELEPHONE
REPORT LINE USE ONLY					
N	RECEIVED AT SPILL LINE BY	POSITION STATION OPERATOR	EMPLOYER	LOCATION CALLED YELLOWKNIFE, NT	REPORT LINE NUMBER (867) 800-8133
LEAD AGENCY <input type="checkbox"/> EC <input type="checkbox"/> COG <input type="checkbox"/> GNWT <input type="checkbox"/> GN <input type="checkbox"/> I.A. <input type="checkbox"/> INAC <input type="checkbox"/> NIS <input type="checkbox"/> TC			SIGNIFICANCE <input type="checkbox"/> MINOR <input type="checkbox"/> MAJOR <input type="checkbox"/> UNKNOWN		FILE STATUS <input type="checkbox"/> OPEN <input type="checkbox"/> CLOSED
AGENCY		CONTACT NAME	CONTACT TIME	REMARKS	
LEAD AGENCY					
FIRST SUPPORT AGENCY					
SECOND SUPPORT AGENCY					
THIRD SUPPORT AGENCY					

D.2 Muster Station Attendance Register

Date	
Muster Location:	
Muster Captain (printed):	
Muster Captain Signature:	

First Name	Last Name	Company	Employee No.	Time	Date	Signature

Date: _____

Name of Emergency Response Coordinator: _____ Name of Communication Logger: _____

H349000-1000-07-126-0014, Rev. 0

D.4 EMERGENCY CALL-IN REPORT for ER DISPATCHER

NAME AND CONTACT NUMBER:	COMPANY:
TYPE OF EMERGENCY: LEVEL: 1 2 3 TIME: _____ CHANGE IN LEVEL: 1 2 3 TIME: _____	MAN DOWN #OF CASUALTIES: _____ ENVIRONMENTAL SPILL FIRE OTHER
EXACT LOCATION OF EMERGENCY:	
ASSISTANCE REQUIRED:	
ADDITIONAL HAZARDS ERT NEED TO BE AWARE OF:	
LOCATION OF MEETING POINT WITH EMERGENCY TEAM FOR GUIDANCE TO EMERGENCY:	
Name of Emergency Response Dispatcher:	
Date:	
Time:	

Appendix E

Hazardous Materials List

E.1 List of MSDS of Hazardous Materials Used on site

- Agricultural Lime (4p.)
- Aluminum Sulphate (1p.)
- APS 703d#3 Flocc Log (2p.)
- APS 705 Silt Stop (2p.)
- APS 706b Flocc Log (2p.)
- Aviation Fuel (7p.)
- Calcium Chloride Flake (4p.)
- Cast Booster (3p.)
- CP-43 Diesel (6p.)
- Detonating Cord (3p.)
- DR-133 POLYMER (4p.)
- Electric Detonators (4p.)
- Emulsion Explosives – Dyno AP (3p.)
- EZ-MUD (6p.)
- Gasoline (6p.)
- Jet A (7p.)
- Lubtrac Rod Grease (4p.)
- Non-Electric Detonators (5p.)
- Packaged Dynamites and Explosive Gelatins (3p.)
- Packaged Emulsion Explosives (3p.)
- Potassium Chloride (Potash) (4p.)
- Shock Tube (3p.)
- Tellus T32 (4p.)
- W-OB POLYMER (4p.)

Environment Laboratory

- AmVer™ High Range Ammonia Test 'N Tube™ Reagent
- Ammonia Cyanurate Reagent
- Ammonia Salicylate Reagent
- COD TNTPlus™, LR (3-150 mg/L)
- Phosphate Acid Reagent Vials
- PhosVer® 3 Phosphate Reagent
- Potassium Persulfate
- Sodium Hydroxide Solution, 1.54 N

Appendix F

Material Safety Data Sheets



Material Safety Data Sheet

1. Identification of the Product and the Company

Product Name: APS 703d#3 Floc Log

Manufacturer: Applied Polymer Systems, Inc.
519 Industrial Drive
Woodstock, GA 30189
Tel. 678-494-5998
Fax. 678-494-5298
www.siltstop.com

Distributed by: Clear Flow Consulting, Inc.
#125, 65 Chippewa Road
Sherwood Park, AB T8A 6J7
Tel. 780-410-1403
Fax. 780-410-1406
www.clearflowconsulting.com

2. Composition / Information on Ingredients

Identification of the preparation: Anionic water-soluble co-polymer gel

3. Hazard Identification

Placement of these materials on wet walking surface will create extreme slipping hazard.

4. First Aid Measures

Inhalation: None.

Skin contact: Contact with wet skin could cause dryness and chapping, wash with water and soap. Use of gloves recommended.

Eye Contact: Rinse thoroughly with plenty of water, also under the eyelids, seek medical attention in case of persistent irritation.

Ingestion: Consult a physician

5. Fire-Fighting Measures

Suitable extinguishing media: Water, water spray, foam, carbon dioxide, dry powder.

Special fire fighting precautions: Floc Logs that become wet render surfaces extremely slippery.

Protective equipment for firefighters: No special equipment required.

6. Accidental Release Measures

Personal precautions: No special precautions required.

Methods for cleaning up: Dry wipe as well as possible. Keep in suitable and closed containers for disposal. After cleaning, flush away traces with water.

7. Handling and Storage

Handling: Avoid contact with skin and eyes. Wash hands after handling.

Storage: Keep in a cool, dry place.

8. Exposure Controls / Personal Protection

Engineering Controls: Use dry handling areas only.

Personal Protection Equipment**Respiratory Protection:** none.**Hand Protection:** Dry Cloth, Leather, or Rubber Gloves.**Eye Protection:** Safety glasses with side shields. Do not wear contact lenses.**Skin Protection:** No special protective clothing required.**Hygiene Measures:** Wash hands before breaks and at end of workday.

9. Physical and Chemical Properties

Form: Granular semi-solid gel**Color:** White to Brown**Odor:** None**pH:** 3-10**Melting Point:** N/A**Flash Point:** N/A**Autoignition:** N/A

10. Stability and Reactivity

Stability: Product is stable, no hazardous polymerization will occur.**Materials to Avoid:** Oxidizing agents may cause exothermic reactions.**Hazardous Decomposition Products:** Thermal Decomposition may produce nitrogen oxides (NO_x), carbon oxides.

11. Toxicological / Ecological Information

Acute Toxicity (EPA-821-R-02-012)LC 50 (Survival) / *Ceriodaphnia dubia* / 48h / 673 ppmNOAEC (Survival) / *Ceriodaphnia dubia* / 48h / 420 ppmLC 50 / *Onchorhynchus mykiss* / 96h / 2928 ppm**Chronic Toxicity (EPA-821-R-02-013)**IC 25 (Survival) / *P. promelas* / 7 day / 77.8 ppm IC 25 (Survival) / *C. dubia* / 7 day / 78.7 ppmNOEC (Survival) / *P. promelas* / 7 day / 52.5 ppm NOEC (Survival) / *C. dubia* / 7 day / 52.7 ppmIC 25 (Growth) / *P. promelas* / 7 day / 50.1 ppm IC 25 (Reproduction) / *C. dubia* / 7 day / 66.8 ppmNOEC (Growth) / *P. promelas* / 7 day / 52.5 ppm NOEC (Reproduction) / *C. dubia* / 7 day / 52.5 ppm**Bioaccumulation:** The product is not expected to bioaccumulate.**Persistence / Degradability:** Not readily biodegradable: (~85% after 180 days)

12. Transport and Regulatory Information

Not regulated by DOT, RCRA status-Not a hazardous waste

NFPA and HMIS ratings:**NFPA:** Health: 3 Flammability: 0 Reactivity: 1**HMIS:** Health: 2 Flammability: 0 Reactivity: 1



Material Safety Data Sheet

1. Identification of the Product and the Company

Product Name: APS 705 Silt Stop

Manufacturer: Applied Polymer Systems, Inc.
519 Industrial Drive
Woodstock, GA 30189
Tel. 678-494-5998
Fax. 678-494-5298
www.siltstop.com

Distributed by: Clear Flow Consulting, Inc.
#125, 65 Chippewa Road
Sherwood Park, AB T8A 6J7
Tel. 780-410-1403
Fax. 780-410-1406
www.clearflowconsulting.com

2. Composition / Information on Ingredients

Identification of the preparation: Anionic water-soluble co-polymer.

3. Hazard Identification

Aqueous solutions or powders that become wet render surfaces extremely slippery.

4. First Aid Measures

Inhalation: Move to fresh air. Use dust mask when handling.

Skin contact: Contact with wet skin could cause dryness and chapping, wash with water and soap. In case of persistent skin irritation, consult a physician.

Eye Contact: Rinse thoroughly with plenty of water, also under the eyelids, seek medical attention in case of persistent irritation.

Ingestion: Consult a physician

5. Fire-Fighting Measures

Suitable extinguishing media: Water, water spray, foam, carbon dioxide, dry powder.

Special fire fighting precautions: Aqueous solutions or powders that become wet render surfaces extremely slippery.

Protective equipment for firefighters: No special equipment required.

6. Accidental Release Measures

Personal precautions: No special precautions required.

Methods for cleaning up: Do Not flush with water. Clean up promptly by sweeping or vacuum. Keep in suitable and closed containers for disposal. After cleaning, flush away traces with water.

7. Handling and Storage

Handling: Avoid contact with skin and eyes. Avoid dust formation. Do not breathe dust. Use dust mask during handling. Wash hands after handling.

Storage: Keep in a cool, dry place. (0-30° C).

8. Exposure Controls / Personal Protection

Engineering Controls: Use local exhaust if dusting occurs. Natural ventilation is adequate in absence of dust.

Personal Protection Equipment

Respiratory Protection:	Dust safety masks are recommended where dusting may occur.
Hand Protection:	Dry cloth, leather or rubber Gloves.
Eye Protection:	Safety glasses with side shields or face masks. Do not wear contact lenses.
Skin Protection:	No special protective clothing required.
Hygiene Measures:	Wash hands before breaks and at end of workday.

9. Physical and Chemical Properties

Form:	Granular solid
Color:	White
Odor:	None
pH:	5-6
Melting Point:	N/A
Flash Point:	N/A
Autoignition:	N/A

10. Stability and Reactivity

Stability:	Product is stable, no hazardous polymerization will occur.
Materials to Avoid:	Oxidizing agents may cause exothermic reactions.
Hazardous Decomposition Products:	Thermal Decomposition may produce nitrogen oxides (NO _x), carbon oxides.

11. Toxicological / Ecological Information**Acute Toxicity:** (EPA/600/4-90/027F)

LD 50 / *Rattus norvegicus* / oral / >5000 mg/kg
 LC 50 / *Oncorhynchus mykiss* / 96h / 530 mg/L
 LC 50 / *Daphnia magna* / 48h / >420 mg/L
 EC 50 / *Selenastrum capricornutum* / 96h / >500 mg/L

Chronic Toxicity: (EPA/600/R-98/182)

IC 25 (Survival) / <i>P. promelas</i> / 7 day / 358 ppm	IC 25 (Survival) / <i>C. dubia</i> / 7 day / 157.5 ppm
NOEC (Survival) / <i>P. promelas</i> / 7 day / 840 ppm	NOEC (Survival) / <i>C. dubia</i> / 7 day / 105 ppm
IC 25 (Growth) / <i>P. promelas</i> / 7 day / 94 ppm	IC 25 (Reproduction) / <i>C. dubia</i> / 7 day / 27.7 ppm
NOEC (Growth) / <i>P. promelas</i> / 7 day / 105 ppm	NOEC (Reproduction) / <i>C. dubia</i> / 7 day / 26.25 ppm

Inhalation:	The product is not expected to be toxic by inhalation.
Dermal:	The result of testing on rabbits showed no toxicity even at high dose levels.
Bioaccumulation:	The product is not expected to bioaccumulate.
Persistence / Degradability:	Not readily biodegradable: (~40% after 28 days).
Chronic toxicity:	A 2 yr feeding study on rats did not reveal adverse health effects. A 1 yr feeding study on dogs did not reveal adverse health effects.

12. Transport and Regulatory Information

Not regulated by DOT, RCRA status-Not a hazardous waste

NFPA and HMIS ratings:

NFPA:	Health: 3	Flammability: 0	Reactivity: 1
HMIS:	Health: 2	Flammability: 0	Reactivity: 1



Material Safety Data Sheet

1. Identification of the Product and the Company

Product Name: APS 706b Flocc Log

Manufacturer: Applied Polymer Systems, Inc.
519 Industrial Drive
Woodstock, GA 30189
Tel. 678-494-5998
Fax. 678-494-5298
www.siltstop.com

Distributed by: Clear Flow Consulting, Inc.
#125, 65 Chippewa Road
Sherwood Park, AB T8A 6J7
Tel. 780-410-1403
Fax. 780-410-1406
www.clearflowconsulting.com

2. Composition / Information on Ingredients

Identification of the preparation: Anionic water-soluble co-polymer gel mix.

3. Hazard Identification

Placement of these materials on wet walking surface will create extreme slipping hazard.

4. First Aid Measures

Inhalation: None.

Skin contact: Contact with wet skin causes dryness and chapping, wash with water and soap.

Eye Contact: Rinse thoroughly with plenty of water, also under the eyelids, seek medical attention in case of persistent irritation.

Ingestion: Consult a physician

5. Fire-Fighting Measures

Suitable extinguishing media: Water, water spray, foam, carbon dioxide, dry powder.

Special fire fighting precautions: Flocc Logs that become wet render surfaces extremely slippery.

Protective equipment for firefighters: No special equipment required.

6. Accidental Release Measures

Personal precautions: No special precautions required.

Methods for cleaning up: Dry wipe as well as possible. Keep in suitable and closed containers for disposal. After cleaning, flush away traces with water.

7. Handling and Storage

Handling: Avoid contact with skin and eyes. Wash hands after handling.

Storage: Keep in a cool, dry place.

8. Exposure Controls / Personal Protection

Engineering Controls: Use dry handling areas only.

Personal Protection Equipment

Respiratory Protection: none.

Hand Protection:	Dry Cloth, Leather, or Rubber Gloves.
Eye Protection:	Safety glasses with side shields. Do not wear contact lenses.
Skin Protection:	No special protective clothing required.
Hygiene Measures:	Wash hands before breaks and at end of workday.

9. Physical and Chemical Properties

Form:	Granular semi-solid gel
Color:	White to Brown
Odor:	None
pH:	3-10
Melting Point:	N/A
Flash Point:	N/A
Autoignition:	N/A

10. Stability and Reactivity

Stability:	Product is stable, no hazardous polymerization will occur.
Materials to Avoid:	Oxidizing agents may cause exothermic reactions.
Hazardous Decomposition Products:	Thermal Decomposition may produce nitrogen oxides (NO _x), carbon oxides.

11. Toxicological / Ecological Information

Acute Toxicity

LC 50 / *Daphnia magna* / 48h / >420 mg/L

LC 50 / *Oncorhynchus mykiss* / 96h / 637 mg/L

Chronic Toxicity

IC 25 (Survival) / *P. promelas* / 7 day / >1680 ppm

NOEC (Survival) / *P. promelas* / 7 day / 1680 ppm

IC 25 (Growth) / *P. promelas* / 7 day / >1680 ppm

NOEC (Growth) / *P. promelas* / 7 day / 1680 ppm

IC 25 (Survival) / *C. dubia* / 7 day / 257.3 ppm

NOEC (Survival) / *C. dubia* / 7 day / 210 ppm

IC 25 (Reproduction) / *C. dubia* / 7 day / 91.6 ppm

NOEC (Reproduction) / *C. dubia* / 7 day / 105 ppm

Bioaccumulation:	The product is not expected to bioaccumulate.
Persistence / Degradability:	Not readily biodegradable (~85% after 180 days)

12. Transport and Regulatory Information

Not regulated by DOT, RCRA status-Not a hazardous waste

NFPA and HMIS ratings:

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



Material Safety Data Sheet for Agricultural Lime

Section I - Identity

Manufacturer's name and address: Ash Grove Cement Company
P. O. Box 25900
Overland Park, KS 66225

Emergency Telephone Number: (913) 451-8900

Information Telephone Number: (913) 451-8900

Chemical Name and Synonyms: Agricultural Lime

Chemical Family: Primarily a mixture of calcium carbonate and calcium hydroxide and may contain a minor amount of calcium oxide.

Revision Date: January 2005

Section II - Hazardous Ingredients

	CAS Number	OSHA PEL	1994-1995 ACGIH TLV	MSHA Limit from 1973 TLV
Calcium carbonate, CaCO_3	1317-65-3	Total dust, 15 mg/m^3 Respirable fraction, 5 mg/m^3 **	10 mg/m^3 *	10 mg/m^3
Calcium hydroxide, $\text{Ca}(\text{OH})_2$	1305-62-0	5 mg/m^3	5 mg/m^3	N/A
Calcium oxide, CaO	1305-78-8	5 mg/m^3	2 mg/m^3	5 mg/m^3
*Particulate not otherwise classified containing no asbestos and less than 1% crystalline silica **Unless contains >1% crystalline silica (quartz)				

N/A = Not Applicable

Agricultural Lime can contain quartz >0.1%. The MSHA 1973 TLV/OSHA PEL for quartz is respirable dust only.

$\frac{10\text{mg}/\text{m}^3}{\% \text{SiO}_2+2}$

The 2000 ACGIH TLV for respirable quartz is 0.05 mg/m^3 .

ACGIH American Conference of Governmental Industrial Hygienists
OSHA Occupational Safety and Health Administration
PEL Permissible Exposure Limit
TLV Threshold Limit Value

Section III - Physical/Chemical Characteristics

Chemical Family:	Inorganic Base
Specific Gravity:	Approximate range 2.3 to 2.60
Vapor Pressure(mm Hg):	0
Vapor Density:	(Air=1) NA
Evaporation Rate:	NA
Solubility in Water:	0.0014% (25°C)
Appearance and Odor:	Soft white powder or granules; faint odor
Melting Point:	Calcium hydroxide-decomposes above 600°C Calcium carbonate-decomposes above 900°C

Section IV - Fire and Explosion Hazard Data

Flash Point (method used): NA; Agricultural Lime is non-combustible and not explosive.

Flammable or Explosive Limits: LEL: NA **UEL:** NA

Extinguishing Media: NA

Special Fire Fighting Procedures: Agricultural Lime is incombustible

Firefighting Media: Dry chemical, carbon dioxide, water spray or foam. For larger fires use water spray or fog.

CAUTION: Saturated water solutions of calcium hydroxide or calcium oxide can have pH of 12-12.49. See Section VI for appropriate precautions.

Unusual Fire and Explosion Hazards: None

Section V - Health Hazard Data

Agricultural Lime can contain quartz greater than 0.1%. Chronic long term exposure to respirable crystalline silica without the use of a proper respirator can cause silicosis. Silicosis may aggravate other chronic pulmonary conditions and may increase the risk of pulmonary tuberculosis infection.. Smoking aggravates the effects of silica exposure. NTP and IARC list respirable quartz crystalline silica as a carcinogen; OSHA does not.

Route(s) of Entry of calcium hydroxide, calcium oxide, and calcium carbonate: Inhalation; skin; eyes; ingestion

1. Inhalation: corrosive

- a. **Acute exposure:** Inhalation of low concentrations may cause sore throat, coughing, choking, dyspnea, and variable symptoms of headache, dizziness, and weakness. Intense exposures may result in tightness in the chest and delayed pulmonary edema. The solubility of the substance allows further penetration that may continue for several days.
- b. **Chronic exposure:** Bronchial irritation with chronic cough are common.

Section V - Health Hazard Data - (Continued)

- c. **First aid:** Remove from exposure; move to fresh air immediately. If breathing has stopped, give artificial respiration. Keep affected person warm and at rest. Get medical attention.
- 2. **Skin contact:** corrosive
 - a. **Acute exposure:** The substance can penetrate the skin slowly, producing soft, necrotic, deeply penetrating areas on contact. The solubility may allow further penetration that may continue for several days. The extent of damage depends on duration of contact.
 - b. **Chronic exposure:** A chronic dermatitis may follow repeated contact.
 - c. **First aid:** Remove contaminated clothing and shoes immediately. Wash affected area with soap or mild detergent and large amounts of water until no evidence of chemical remains (approximately 15-20 minutes). In the case of chemical burns, cover the affected areas with sterile, dry dressing. Bandage securely, but not too tightly. Get medical attention.
- 3. **Eye contact:** corrosive
 - a. **Acute exposure:** Direct contact with the solid or aqueous solutions may cause conjunctival edema and corneal destruction; can lead to and may cause blindness.
 - b. **Chronic exposure:** Prolonged contact may cause conjunctivitis.
 - c. **First aid:** Wash eyes immediately with large amounts of water, occasionally lifting the upper and lower lids, until no evidence of chemical remains (approximately 15-20 minutes). Get medical attention immediately. Qualified medical personnel should perform administration of drugs to the eyes.
- 4. **Ingestion:** corrosive. If ingested, consult a physician immediately.

Quartz listed as an OSHA carcinogen: NO **By NTP:** YES **By IARC:** YES

Calcium carbonate, calcium oxide, calcium hydroxide listed as an OSHA carcinogen: NO **By NTP** NO **By IARC:** NO

Medical conditions generally aggravated by exposure: Respiratory disorders or diseases, dermatitis or other skin disorders may be aggravated by exposure.

Section VI - Reactivity Data

Stability: Stable under normal temperatures and pressures. Calcium hydroxide and calcium oxide will gradually absorb carbon dioxide when exposed to air, forming calcium carbonate.

Incompatibility (Materials to avoid): maleic anhydride, nitroparaffins, nitromethane, nitroethane, and nitropropane; all can form explosive salts with calcium hydroxide.

Phosphorous, when boiled with alkaline hydroxides, yields mixed phosphines that may ignite spontaneously in air.

Hazardous Polymerization: Will not occur.

Water: Calcium hydroxide and calcium oxide form corrosive solutions with water; pH: 12-12.49.

Hazardous Decomposition or By-Products: When heated above 580°C, calcium hydroxide loses water to form calcium oxide, quicklime.

Conditions to Avoid: NA

Section VII - Precautions for Safe Handling and Use

Steps to be Taken in Case Material is Released or Spilled:

Pick up spilled powder; avoiding dusting conditions. Spills should not be flushed to surface waters or sewers. Dispose of in accordance with all applicable local, state and federal requirements.

Handling: Avoid generation of excessive dust.

Storing: Protect against physical damage and store in dry place away from water or moisture.

Section VIII - Control Measures

Respiratory Protection: Use NIOSH/MSHA-approved (under 30 CFR 11) or NIOSH-approved (under 42 CFR 84) respirators in poorly ventilated areas, if an applicable exposure limit is exceeded, or when dust causes discomfort or irritation. (Advisory: Respirators and filters purchased after July 10, 1998 must be certified under 42 CFR 84.)

Firefighting: Self-contained breathing apparatus with a full facepiece operated in pressure-demand or positive-pressure mode.

Ventilation: Enclose all dusty processes; use local exhaust ventilation. Use mechanical ventilation to vent dust to collector.

Protective Gloves: Gauntlet type work gloves.

Eye Protection: Tight fitting goggles.

Other Protective Equipment: To avoid contact with skin, use long sleeve shirt and long pants; can use protective cream on exposed skin areas.

Work/Hygienic Practices: Avoid skin contact with product. If skin contact has occurred promptly remove from skin with soap and water. Follow listed precautions as appropriate during the repair and/or maintenance of contaminated equipment.

This product neither contains nor is directly manufactured with any controlled ozone depleting substances, Class I and II.

MATERIAL SAFETY DATA SHEET

Revision #: 02

Section 1 - Product Identification & Use

Product Name: Aluminum Sulphate
WHMIS Classification: Class D2B, Toxic Materials
TDG Classification: Only regulated for TDG under class 9 if intended for disposal.
Supplier: Advance Chemicals Ltd.
 2023 Kingsway Avenue
 Port Coquitlam, BC V3C 1S9
 Phone: (604) 945-9666
 Fax: (604)945-9617
Emergency phone: CANUTEC 24 hrs. (613) 996-6666

Section 2 - Hazardous Ingredients

Hazardous Components	%(w/w)	C.A.S. No.	LD ₅₀ & LC ₅₀
Sulphuric acid, aluminum salt	60-100	10043-01-3	6207mg/kg, Oral(Mouse)

Section 3 - Physical Data

Physical state: Solid. Granules, or powder. **Boiling point:** 290°C
Liquid density: 1.61 g/mL **Freezing point:** 86°C
pH: >2.9 @ 5% **Solubility in water:** Yes
Vapour pressure: N/A **Evaporation rate:** N/A
Odour & Appearance: White to creamy white odourless solid.

Section 4 - Fire or Explosion Hazard

Flammability: The product is not considered to be flammable.
Extinguishing media: Use an extinguishing media for surrounding the fire, or all purpose foam by manufacturer's recommended techniques for large fires. Use water to cool fire exposed containers to prevent vapour build-up and rupture.
Hazardous Combustion Products: Wear self contained breathing apparatus. Product reacts with most metals to produce hydrogen gas, which may accumulate to produce explosive and/or flammable mixtures with air. Reacts violently with water with the evolution of heat.

Section 5 - Reactivity Data

Stability: Stable.
Incompatible substances: Strong bases. Strong oxidizing agents. Alkalis. Water-reactive materials such as oleum cause exothermic reactions.
Polymerization: Will not occur.
Conditions to Avoid: Temperatures over 760°C. Contact with water forms sulphuric acid. May corrode ferrous metals and mild steel in presence of moisture.
Hazardous Combustion Products: At temperatures above 760°C, sulfur oxide gases are released which are toxic, corrosive and are oxidizers. The remaining residue is caustic. The trioxide is also a fire hazard. Oxides of aluminum.

Section 6 - Toxicological Properties

Acute Toxicity: Aluminum Sulphate has been shown to cause liver, kidney and nervous system toxicity when tested on animals. Repeated ingestion may cause phosphate deficiency, which can weaken bones.
Skin contact: Burning, inflammation, blisters.
Eye contact: May irritate or burn eyes.
Inhalation: Dust or mist inhalation may irritate nose, throat and lungs.
Ingestion: May irritate the gastrointestinal tract and cause nausea, vomiting and purging. Acute exposure can cause incoordination, muscle spasms and kidney effects.

Section 7 - Preventative Measures

Personal Protective Equipment: Avoid contact with skin and eyes. Wear chemical protective gloves, goggles and face shield, rubber apron and boots. Eye wash fountains and safety shower facilities should be provided nearby for emergency use.
Respiratory protection: Use a NIOSH approved dust mask, for concentrations of up to 10 mg/m³. A NIOSH approved air-purifying respirator equipped with acid gas/fume, mist cartridges for concentrations up to 20 mg/m³. An air supplied respirator if concentrations are unknown.
Ventilation Requirements: This product should be used in a well ventilated area at all times.
Action to take for spills & leaks: Wear chemical protective clothing, rubber gloves and suitable respiratory protection. Small spills should be wiped up with absorbent material and disposed of in government approved waste containers. The spilled product can be neutralized with a soda ash or baking soda and wet down with a little water to form a slurry. The spill area may then be flushed with large quantities of water. Larger spills should be contained by diking with sand, soil or other absorbent, non-combustible material, then transferred into approved waste containers for proper disposal. Keep product out of sewers, storm drains, surface

run-off water and soil. Restrict access to non-protected personnel. Comply with all government regulations on spill reporting, handling and disposal of waste.

Disposal methods: Dispose of contaminated product and materials used in cleaning up spills or leaks in a manner approved for this material. Consult appropriate federal, provincial and local regulatory agencies to ascertain proper disposal procedures.

Note: Empty containers can have residues, gasses and mists, and are subject to proper waste disposal as mentioned above.

Storage & Handling Precautions: Warning, harmful or fatal if swallowed. Causes eye, skin and respiratory irritation. Avoid contact with eyes and repeated contact with skin and clothing. Do not ingest. Keep away from sources of heat and open flame. Keep container tightly closed when not in use. Store upright in a cool, dry, well ventilated place away from incompatible materials. Do not use pressure to empty container. Wash thoroughly after handling. Use with adequate ventilation. Tanks must be grounded and ventilated. Ensure proper electrical grounding procedures are in place during product transfer.

Repair and Maintenance Precautions: Do not cut, grind, weld or drill in, on or near this container.

Section 8 - First Aid Measures

If inhaled: Remove victim to fresh air. Give artificial respiration if not breathing. Get immediate emergency medical attention.

In case of eye contact: Immediately flush eyes with clean water for at least twenty (20) minutes, lifting the upper and lower eye lids occasionally. Get immediate emergency medical attention. Do not transport victim until the recommended flushing period has been completed, unless eye flushing can be continued during transport to the nearest emergency medical treatment facility.

In case of skin contact: Immediately flush skin with plenty of clean running water for at least fifteen (15) minutes. Remove contaminated clothing and shoes. If irritation persists after washing, get immediate medical attention. Wash and launder clothes before re-use.

In case of ingestion or swallowing: If victim is conscious and not convulsing, give one or two glasses of water to dilute material. Immediately contact the local poison control centre. Vomiting should only be induced under the direction of a physician or poison control centre. If spontaneous vomiting occurs, have victim lean forward with head down to avoid breathing in the vomitus. Rinse mouth and administer more water. NEVER GIVE ANYTHING BY MOUTH TO AN UNCONSCIOUS VICTIM. GET IMMEDIATE EMERGENCY MEDICAL ATTENTION.

Section 9 - Preparation Information

Advance Chemicals Limited expressly disclaims all expressed or implied warranties of merchantability and fitness for a particular purpose with respect to the product provided. The information contained herein is offered only as a guide to the handling of this specific product, and has been prepared in good faith by technically knowledgeable personnel. This M.S.D.S. is not intended to be all inclusive, and the manner and conditions of use may involve other and additional considerations.

Revised: 19 October 2006; 15 December 2006



Shell Canada Limited Material Safety Data Sheet

Effective Date: 2008-08-01

Supersedes: 2008-08-01



Class B2 Flammable Liquid



Class D2A Embryo/Fetotoxicity
Class D2B Skin Irritation

1. PRODUCT AND COMPANY IDENTIFICATION

PRODUCT: **SHELL AVGAS 100 LL**
SYNONYMS: AVIATION GASOLINE
May contain anti-icing additive (Diethylene Glycol Monomethyl Ether)
PRODUCT USE: Fuel
PRODUCT CODE: 101-200

SUPPLIER

Shell Canada Limited (SCL)
P.O. Box 100, Station M
400-4th Ave. S.W.
Calgary, AB Canada
T2P 2H5

TELEPHONE NUMBERS

Shell Emergency Number
CANUTEC 24 HOUR EMERGENCY NUMBER
For general information:

1-800-661-7378
1-613-996-6666
1-800-661-1600
www.shell.ca

This MSDS was prepared by the Toxicology and Product Stewardship Section of Shell Canada Limited.

*An asterisk in the product name designates a trade-mark(s) of Shell Canada Limited, used under license by Shell Canada Products.

2. COMPOSITION/INFORMATION ON INGREDIENTS

Component Name	CAS Number	% Range	WHMIS Controlled
Naphtha (Petroleum), Light Alkylate	64741-66-8	80 - 90	Yes
Toluene	108-88-3	8 - 10	Yes
i-Pentane	78-78-4	5 - 10	Yes
Ethanol, 2-(2-methoxyethoxy)-	111-77-3	0 - 0.15	Yes

See Section 8 for Occupational Exposure Guidelines.

3. HAZARDS IDENTIFICATION

Physical Description: Volatile Liquid Blue Colour Clear Typical Gasoline Odour
Routes of Exposure: Exposure will most likely occur through skin contact or inhalation.
Hazards:

Vapour concentrations above the recommended exposure level are irritating to the eyes and respiratory tract, may cause headaches and dizziness, are anesthetic and may have other central nervous system effects.

Flammable Liquid.
Irritating to skin.
May be absorbed by skin contact.
Ingestion may result in vomiting. Avoid aspiration of vomitus into lungs as small quantities may result in aspiration pneumonitis.
At very high concentrations this product can have an anesthetic (drowsiness, weakness) and asphyxiant effect. In rare cases may sensitize heart muscle causing heart arrhythmia.

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

For further information on health effects, see Section 11.

4. FIRST AID MEASURES

Eyes: Flush eyes with water for at least 15 minutes while holding eyelids open. If irritation occurs and persists, obtain medical attention.

Skin: Wash contaminated skin with mild soap and water for at least 15 minutes. If irritation occurs and persists, 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. Do not give anything by mouth to an unconscious person.

Inhalation: Remove victim from further exposure and restore breathing, if required. Obtain medical attention.

Notes to Physician: The main hazard following accidental ingestion is aspiration of the liquid into the lungs producing chemical pneumonitis. If symptoms such as loss of gag reflex, convulsions or unconsciousness occur before vomiting, gastric lavage with a cuffed endotracheal tube should be considered. If more than 2.0 mL/kg has been ingested, vomiting should be induced with supervision.

5. FIRE FIGHTING MEASURES

Extinguishing Media: Dry Chemical
Carbon Dioxide
Foam
Water Fog

Firefighting Instructions: Flammable. Clear area of unprotected personnel. Do not use water except as a spray. Do not enter confined fire space without adequate protective clothing and an approved positive pressure self-contained breathing apparatus. Avoid breathing vapours. 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. Product will float and can be reignited on surface of water. Delayed lung damage can be experienced after exposure to combustion products, sometimes hours after the exposure.

Hazardous Combustion Products:

Carbon dioxide, carbon monoxide and unidentified organic compounds may be formed upon combustion.

6. ACCIDENTAL RELEASE MEASURES

Issue warning "Flammable". Eliminate all ignition sources. Isolate hazard area and restrict access. Wear appropriate breathing apparatus (if applicable) and protective clothing. Handling equipment must be grounded. Work upwind of spill if it is safe to do so. Avoid direct contact with material. Stop leak only if safe to do so. Dike and contain land spills; contain spills to water by booming. Use water fog to knock down vapours; contain runoff. Adsorb residue or small spills with adsorbent material and remove to non-leaking containers for disposal. Notify appropriate environmental agency(ies). After area has been cleaned up to the satisfaction of regulatory authorities, flush area with water to remove trace residue. Dispose of recovered material as noted under Disposal Considerations.

7. HANDLING AND STORAGE

- Handling:** Flammable. Fixed equipment as well as transfer containers and equipment should be grounded to prevent accumulation of static charge. Avoid breathing vapours and prolonged or repeated contact with skin. Vapours may accumulate and travel to distant ignition sources and flashback. Empty containers are hazardous, may contain flammable/explosive dusts, residues or vapours. Do not cut, drill, grind, weld or perform similar operations on or near containers. Provide adequate ventilation. Wash with soap and water prior to eating, drinking, smoking, applying cosmetics or using toilet facilities. Launder contaminated clothing prior to reuse.
- Storage:** Store in a cool, dry, well ventilated area, away from heat and ignition sources. Use explosion-proof ventilation to prevent vapour accumulation.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

The following information, while appropriate for this product, are general in nature. The selection of personal protective equipment will vary depending on the conditions of use.

OCCUPATIONAL EXPOSURE LIMITS (Current ACGIH TLV/TWA unless otherwise noted):

North American exposure limits have not been established for the product. Consult local and provincial authorities for acceptable values.

Gasoline: 300 ppm (STEL: 500 ppm)

Pentane: 600 ppm

Toluene: 20 ppm

Skin Notation: Absorption through skin, eyes and mucous membranes may contribute significantly to the total exposure.

Mechanical Ventilation:

Concentrations in air should be maintained below the occupational exposure limit if unprotected personnel are involved. Use explosion-proof ventilation as required to control vapour concentrations. Local ventilation recommended where mechanical ventilation is ineffective in controlling airborne concentrations below the recommended occupational exposure limit. Make up air should always be supplied to balance air exhausted (either generally or locally). 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.

PERSONAL PROTECTIVE EQUIPMENT:

- Eye Protection:** 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 Protection:** Avoid contact with skin. Use protective clothing and gloves manufactured from nitrile. Impervious gloves (viton, nitrile) should be worn at all times when handling this material. Safety showers should be available for emergency use.
- Respiratory Protection:** Avoid breathing vapour or mists. If exposure has the potential to exceed occupational exposure limits, use an appropriate NIOSH-approved respirator. For high airborne concentrations, use a NIOSH-approved supplied-air respirator, either self-contained or airline breathing apparatus, operated in positive pressure mode.

9. PHYSICAL AND CHEMICAL PROPERTIES

Physical State:	Volatile Liquid
Appearance:	Blue Colour Clear
Odour:	Typical Gasoline Odour
Odour Threshold:	Not available
Freezing/Pour Point:	Freeze Point < -58 °C
Boiling Point:	70 - 170 °C
Density:	Not available
Vapour Density (Air = 1):	Not available
Vapour Pressure (absolute):	38 - 49 kPa @ 38 °C
pH:	Not applicable
Flash Point:	TCC < 1 °C
Lower Flammable Limit:	1.4 % (vol.)
Upper Flammable Limit:	7.6 % (vol.)
Autoignition Temperature:	Not available
Viscosity:	Not available
Evaporation Rate (n-BuAc = 1):	Not available
Partition Coefficient (log K_{OW}):	Not available
Water Solubility:	Insoluble
Other Solvents:	Hydrocarbon Solvents

10. STABILITY AND REACTIVITY

Chemically Stable:	Yes
Hazardous Polymerization:	No
Sensitive to Mechanical Impact:	No
Sensitive to Static Discharge:	Yes
Incompatible Materials:	Avoid contact with strong oxidizing agents and acids.
Conditions of Reactivity:	Avoid excessive heat, open flames and all ignition sources.

11. TOXICOLOGICAL INFORMATION

Ingredient (or Product if not specified)	Toxicological Data
Naphtha (Petroleum), Light Alkylate	LC50 Inhalation Rat > 11000 mg/m ³ for 4hours LD50 Dermal Rat > 4000 mg/kg LD50 Oral Rat > 8000 mg/kg

Toluene	LD50 Oral Rat = 5000 mg/kg LC50 Inhalation Rat = 8000 ppm for 4 hours LD50 Dermal Rabbit = 14000 mg/kg
i-Pentane	
Ethanol, 2-(2-methoxyethoxy)-	LD50 Oral Rat 4140 - 5180 mg/kg LD50 Dermal Rabbit > 2000 mg/kg

Routes of Exposure:	Exposure will most likely occur through skin contact or inhalation.
Formulation:	No data is specifically available for this product and therefore this toxicological information is based on testing completed with the ingredients.
Irritancy:	Based on the ingredients, this product is expected to be irritating to skin.
Acute Toxicity:	Vapour concentrations above the recommended exposure level are irritating to the eyes and respiratory tract, may cause headaches and dizziness, are anesthetic and may have other central nervous system effects.
Chronic Effects:	Prolonged and repeated contact with skin can cause defatting and drying of the skin resulting in skin irritation and dermatitis. Prolonged exposure to high vapour concentration can cause headache, dizziness, nausea, blurred vision and central nervous system depression. This product contains low levels of lead. Chronic, low grade exposure to lead compounds could lead to insomnia, anorexia, nausea and vomiting, diarrhea, anemia, sensory loss and muscular weakness.
Feto/Teratogenicity:	A component of this product has shown adverse effects on the growth and development of the fetus in some animal studies.
Pre-existing Conditions:	Pre-existing eye, skin and respiratory disorders may be aggravated by exposure to this product.

12. ECOLOGICAL INFORMATION

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.

Biodegradability:	Readily biodegradable. Rapid volatilization.
Bioaccumulation:	Not likely to bioaccumulate.
Partition Coefficient (log K_{OW}):	Not available
Aquatic Toxicity:	Product is expected to be toxic to aquatic organisms.

Ingredient:	Toxicological Data
Naphtha (Petroleum), Light Alkylate	LL50 (WAF method) Rainbow Trout (96hr) 1 - 10 mg/L. EL50 (WAF method) Daphnia Magna (48hr) 1 - 10 mg/L. EL50 - growth rate (WAF method) Algae (72hr) 1 - 10 mg/L.
Toluene	LL50 Rainbow Trout (96hr) 10 - 100 mg/L. EL50 Daphnia Magna (48hr) 10 - 100 mg/L. EL50 - growth rate Algae (72hr) 10 - 100 mg/L.
i-Pentane	
Ethanol, 2-(2-methoxyethoxy)-	

Definition(s): LL and EL are the lethal loading concentration and effective loading concentration

respectively. The concentration represents the amount of substance added to the system to obtain a toxic concentration. They replace the traditional LC and EC for low solubility substances.

WAF is the water accommodated fraction. A slightly soluble hydrocarbon is stirred into water and the insoluble portions are removed. The remaining solution is the water accommodated fraction.

13. DISPOSAL CONSIDERATIONS

Waste management priorities (depending on volumes and concentration of waste) are: 1. recycle (reprocess), 2. energy recovery 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.

14. TRANSPORT INFORMATION

Canadian Road and Rail Shipping Classification:

UN Number	UN1203
Proper Shipping Name	GASOLINE
Hazard Class	Class 3 Flammable Liquids
Packing Group	PG II
Additional Information	Marine Pollutant
Shipping Description	GASOLINE Class 3 UN1203 PG II Marine Pollutant

15. REGULATORY INFORMATION

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

WHMIS Class:	Class B2 Flammable Liquid Class D2A Embryo/Fetotoxicity Class D2B Skin Irritation
DSL/NDL Status:	This product, or all components, are listed on the Domestic Substances List, as required under the Canadian Environmental Protection Act.
Other Regulatory Status:	No Canadian federal standards. Provincial criteria are likely and should be requested when notifying provincial authorities.

16. OTHER INFORMATION

LABEL STATEMENTS

Hazard Statement :	Flammable Liquid. Irritating to skin. May be absorbed by skin contact.
Handling Statement:	Eliminate all ignition sources. Wear suitable gloves and eye protection. Bond and ground transfer containers and equipment to avoid static accumulation. Empty containers are hazardous, may contain flammable / explosive dusts, liquid

First Aid Statement : residue or vapours. Keep away from sparks and open flames.
Avoid prolonged exposure to vapours.
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.

Revisions: This MSDS has been reviewed and updated. Changes have been made to: Section 1 Section 2 Section 3 Section 4 Section 5 Section 6 Section 7 Section 8 Section 9 Section 10 Section 11 Section 12 Section 15



Material Safety Data Sheet

CALCIUM CHLORIDE, FLAKE

A. GENERAL INFORMATION

TRADE NAME (COMMON NAME): FLAKE CALCIUM CHLORIDE		CAS NUMBER: 10043-52-4 (anhydrous)	
CHEMICAL NAME AND/OR SYNONYM: Calcium Chloride, Dihydrate			
FORMULA: CaCl ₂ - 2H ₂ O		MOLECULAR WEIGHT: 147.02	
MANUFACTURER/ADDRESS: GENERAL CHEMICAL CORPORATION 90 East Halsey Road Parsippany, NJ 07054			
CONTACT: Manager, Product Safety	PHONE NUMBER: (973) 515-1840	LAST ISSUE DATE: September, 1994	CURRENT ISSUE DATE: May, 2001

B. FIRST AID MEASURES

		EMERGENCY PHONE NUMBER: (800) 631-8050
EYES:	Flush promptly with plenty of water, continuing for at least 15 minutes. Get medical attention.	
SKIN:	Wash with plenty of water.	
INHALATION:	Remove to fresh air.	
INGESTION:	If conscious, immediately give 2 to 4 glasses of water, and induce vomiting by touching finger to back of throat. Get medical attention for irritation, ingestion, or discomfort from inhalation.	

C. HAZARDS INFORMATION

INHALATION: Dust or mist inhalation may irritate nose, throat, and lungs.	
INGESTION: Low in toxicity. LD ₅₀ (rat): 1.4 g/kg.* - Reference (e) May irritate gastrointestinal tract. *anhydrous basis.	
SKIN: May cause skin irritation. Under conditions of prolonged contact or when moisture is present, superficial burns may result. Contact with abraded skin or cuts can cause severe necrosis.	
EYES: May irritate or burn eyes.	
PERMISSIBLE CONCENTRATION: AIR (SEE SECTION J) Also, no TLV established by ACGIH.	BIOLOGICAL None
UNUSUAL CHRONIC TOXICITY: None.	

C. HAZARDS (Cont.)

FLASH POINT: Not flammable	AUTO IGNITION TEMPERATURE NA	FLAMMABLE LIMITS IN AIR (% BY VOL.) LOWER - NA UPPER - NA
OPEN CUP <input type="checkbox"/> CLOSED CUP <input type="checkbox"/>		
UNUSUAL FIRE AND EXPLOSION HAZARDS See hazard of contact with zinc as in galvanized iron: Section G.		

D. PRECAUTIONS/PROCEDURES

FIRE EXTINGUISHING AGENTS RECOMMENDED: NA	
FIRE EXTINGUISHING AGENTS TO AVOID: NA	
SPECIAL FIREFIGHTING PRECAUTIONS: None.	
VENTILATION: Local exhaust: In packaging and unloading areas, over open processing equipment, and any other places where dusty or misty condition prevails. Natural ventilation: Adequate for other areas.	
NORMAL HANDLING: Avoid contact with eyes, skin or clothing. Avoid breathing mist. Use good personal hygiene and housekeeping.	
STORAGE: Store in a cool, dry area. Prolonged storage may cause product to cake and become wet from atmospheric moisture.	
SPILL OR LEAK (ALWAYS WEAR PERSONAL PROTECTIVE EQUIPMENT – SECTION E) Shovel up dry chemical and place in metal drum with a cover. Cautiously spray residue with plenty of water.	
SPECIAL: PRECAUTIONS/PROCEDURES/LABEL INSTRUCTIONS:	SIGNAL WORD WARNING!

E. PERSONAL PROTECTIVE EQUIPMENT

RESPIRATORY PROTECTION: For dusty or misty condition, wear NIOSH-approved mist respirator.
EYES AND FACE: For dusty or misty condition, or when handling solution where there is reasonable probability of eye contact, wear chemical safety goggles and hat. Under these conditions, do not wear contact lenses.
HANDS, ARMS, AND BODY: As a minimum, wear long-sleeve shirt and trousers, boots, and gloves for routine product use. Cotton gloves permitted for dry product, impervious gloves when using solutions.
OTHER CLOTHING AND EQUIPMENT: Eye-wash facility.

F. PHYSICAL DATA

MATERIAL IS AT NORMAL CONDITIONS: LIQUID <input type="checkbox"/> SOLID <input checked="" type="checkbox"/> GAS <input type="checkbox"/> <input type="checkbox"/> _____		APPEARANCE AND COLOR: Small white flakes; odorless.	
BOILING POINT: Unknown °C MELTING POINT: 176 °C	SPECIFIC GRAVITY: (H ₂ O = 1) 0.835 - Reference (b)		VAPOR DENSITY: (AIR =1) NA: water vapor only.
SOLUBILITY IN WATER: (% BY WEIGHT) 42 (anhydrous) @ 20°C	pH: Neutral or slightly alkaline - Reference (c).		VAPOR PRESSURE: (mm Hg @ 20°C) <input type="checkbox"/> (PSIG) <input type="checkbox"/> NA
EVAPORATION RATE: (Butyl acetate=1) <input type="checkbox"/> (Ether = 1.0) <input type="checkbox"/> NA	% VOLATILES BY VOLUME: (AT 20°C) NA		

G. REACTIVITY DATA

STABILITY: UNSTABLE <input type="checkbox"/> STABLE <input checked="" type="checkbox"/>	CONDITIONS TO AVOID: NA
INCOMPATIBILITY (MATERIALS TO AVOID): Sulfuric acid: yields hydrogen chloride gas, which is corrosive, irritating, and reactive. Water-reactive materials, such as sodium: cause an exothermic reaction. Methyl vinyl ether: starts runaway polymerization reaction – Reference (d). Zinc as in galvanized iron: yields hydrogen gas with solutions, which may explode under these conditions. – Reference (d).	
HAZARDOUS DECOMPOSITION PRODUCTS: None.	
HAZARDOUS POLYMERIZATION: MAY OCCUR <input type="checkbox"/> WILL NOT OCCUR <input checked="" type="checkbox"/>	CONDITIONS TO AVOID: NA

H. HAZARDOUS INGREDIENTS (MIXTURES ONLY)

MATERIAL OR COMPONENT/C.A.S. #	WT. %	HAZARD DATA (See Sect. J)
NA		

I. ENVIRONMENTAL

DEGRADABILITY/AQUATIC TOXICITY:		OCTANOL/WATER PARTITION COEFFICIENT NA
Aquatic Toxicity: TLM96: over 1000 ppm (anhydrous) – Reference (a).		
EPA HAZARDOUS SUBSTANCE? (CLEAN WATER ACT SECT. 311) YES <input type="checkbox"/> NO <input checked="" type="checkbox"/> IF SO, REPORTABLE QUANTITY:		40 CFR 116-117
WASTE DISPOSAL METHODS (DISPOSER MUST COMPLY WITH FEDERAL, STATE AND LOCAL DISPOSAL OR DISCHARGE LAWS): Treatment or disposal of waste generated by use of this product should be reviewed in terms of applicable federal, state and local laws and regulations. Users are advised to consult with appropriate regulatory agencies before discharge, treatment or disposal.		
RCRA STATUS OF UNUSED MATERIAL IF DISCARDED: Not a "hazardous waste".	HAZARDOUS WASTE NUMBER: (IF APPLICABLE) --	40 CFR 261

J. REFERENCES

PERMISSIBLE CONCENTRATIONS REFERENCES: None.		
REGULATORY STANDARDS	DOT CLASSIFICATION: Not regulated	49 CFR 173
None.		
GENERAL: (a) NIOSH, Registry of Toxic Effects of Chemical Substances, 1979, Accession No. EV 98 00 000. (b) Weast, R.C. editor, CRC Handbook of Chemistry and Physics, 60 th Edition, 1979-80, CRC Press, Inc., Boca Raton 33431. (c) Hawley, G.N., editor, Condensed Chemical Dictionary, 9 th Edition, 1977, Van Nostrand Reinhold, NYC. (d) Brethwick, L., Handbook of Reactive Chemical Hazards, 2 nd Edition, 1979, Butterworths, Boston. (e) General Chemical Corporation tests, unpublished. (A solution of 25 g/100 ml water was used).		

K. ADDITIONAL INFORMATION

None.

GC-1002

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