Englobe
Soils Materials Environment

PUBLIC WORKS AND GOVERNMENT SERVICES CANADA

FOX-D Kivitoo Site Remediation
Kivitoo, Nunavut

(Ref.: EW699-160795)

Spill Contingency Plan

Date: May 2017
O/Ref. N°: P10635

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Spill Contingency Plan

Submitted to:

Janice Lee
Project Manager
Public Works and Government Services Canada

Submitted by:

Guillaume Robert
Project Manager
Environmental Engineering - Northern Canada

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Property and Confidentiality

REVISION AND PUBLICATION REGISTER		
Revision N°	**Date**	**Modification and/or Publication Details**
0A	2016-05-17	Preliminary issue
1	2016-08-18	Version 1
2	2017-05-22	Version 2 – Annual revision

1 INTRODUCTION AND PROJECT DETAILS

1.1 COMPANY NAME, LOCATION AND MAILING ADDRESS

Englobe Corp.

1200 Saint-Martin Blvd. West, suite 400
Laval, Quebec H7S 2E4
Phone: (450) 961-3535 Fax (450) 961-0220

Email: guillaume.robert@englobecorp.com

Attention: Guillaume Robert, Director – Environmental Engineering, Northern Canada

1.2 EFFECTIVE DATE OF SPILL CONTINGENCY PLAN AND REVISION

The effective date of the Spill Contingency Plan will be: June 2017.

The latest revision to the Spill Contingency Plan was completed: May 22, 2017.

1.3 DISTRIBUTION LIST

This plan and its most recent revisions have been distributed to the following people:

- Guillaume Robert –Director, Northern Canada Office, Englobe
- Alexandre Leclair – Project Lead, Northern Canada Office, Englobe
- Brandon Mackay, Site Superintendent, Northern Canada Office, Englobe
- Nancy Davis, Project Manager, Northern Canada Office, Englobe
- Luc Dussault, Off-site Health and Safety Coordinator, Englobe
- Janice Lee, P.Eng, PWGSC –Environmental Services and Contaminated Sites Management Western Region
- Lilianne Kydd, Project Manager, INAC – Lands and Contaminated Sites, Nunavut Region

1.4 PURPOSE AND SCOPE

This plan has been developed to provide a procedure for responding to spills of any size that may occur during the Environmental Site Remediation at FOX-D Kivitoo, Nunavut. This plan identifies:

- The roles and responsibilities of key response personnel in regards to spill response
- Resources available to respond to a spill
- Spill response procedures

This plan seeks to minimize potential health and safety hazards, and damage to the environment while providing required time to respond to any spill quickly and efficiently.

1.5 COMPANY ENVIRONMENTAL POLICY

Please refer to Appendix A for Englobe's Environmental policy.

1.6 SITE DESCRIPTION

A relic of the Cold War, FOX-D was an intermediate site of the Distant Early Warning (DEW) Line radar stations. Built in 1957 along the shores of Kivitoo, the station was abandoned 6 years later in 1963. Kivitoo is located on eastern Baffin Island, approximately 50 km northwest of the community of Qikiqtarjuaq. The site is littered with debris – hazardous and non-hazardous in nature, contains soils contaminated with PCBs, metals as well as hydrocarbons, areas of buried debris and dilapidated infrastructure and buildings.

Please refer to Appendix B for maps detailing the proposed location of fuel storage areas and the camp facility.

Environmentally sensitive areas will be identified during the site visit and after mobilization.

1.7 PROJECT DESCRIPTION

This project includes the remediation of the former DEW Line Site FOX-D at Kivitoo, Nunavut.

The scope of work for this project includes the following:

- Documentation
  - Prepare and submit all documents outlined in the specifications.
- Mobilization and Demobilization
  - Mobilize and demobilize all resources required to complete the work (equipment, manpower, Departmental Representatives (DR), accommodations, food, etc.) to and from site. Demobilization also includes the transport (marine and ground) of all hazardous waste, non-hazardous waste and untreatable soils for southern disposal.
- Camp Operation
  - Provide lodging and all camp services for the workforce and the DR until the completion of the project.
- Upgrading of Site Infrastructure
  - Upgrade the roads to provide access to areas of work in a safe and timely manner. Perform regular maintenance to maintain integrity of site roads.
- Surveying
  - Complete survey requirements including but not limited to establishing temporary control points and volume calculations for excavated and regraded areas. Surveying will be performed by a qualified third party.
- Civil Works
  - Construct a Soil treatment facility for the onsite treatment of Type B contaminated soils originating from soil and buried debris excavations.

- Non-Hazardous Waste
  - Incinerate all non-hazardous, unpainted, and untreated wood on-site.
  - Collect all non-hazardous waste that cannot be incinerated and transport it to the onsite NHWL for disposal
- Contaminated Soil
  - Excavate, containerize and transport of approximately 1,050 m3 of Tier I, Tier II and/or Type A PHC contaminated soil offsite for disposal.
  - Excavate and transport of approximately 3,005 m3 of Type B PHC contaminated soil to the Soil Treatment facility for onsite treatment
  - Excavate, containerize and transport a potential 8,739 m3 of PHC contaminated soil from APEC-11. The soil/debris will be segregated and the soil will be loaded into trucks and transported to the Material Processing Area. The soil will be piled for testing.
- Buried Debris
  - Excavate, segregate, and dispose offsite of all buried debris according to waste stream. The debris will be segregated to sort barrels, asbestos-containing material, creosote-treated timber, non-hazardous debris, hazardous or potentially hazardous debris, etc. It will be piled accordingly until final off site transport and disposal.
- Hazardous Waste
  - Remove, segregate and containerize hazardous waste from site building structures, buried debris excavations and debris areas. All work to be performed in accordance with site health and safety procedures as well as Transportation of Dangerous Goods (TDG) regulations and dispose of these wastes at the appropriate off-site disposal facility.
  - Construct and operate Hazardous Waste Processing Areas.
  - Construct Temporary Waste Storage Areas (TWSA) for containerized hazardous material gathered from site, until it is shipped south via sealift for disposal.
- Debris Areas
  - Remove, segregate, and package for off-site disposal hazardous materials and non-hazardous debris including barrels
  - Incinerate unpainted wood debris and applicable barrel contents on-site.
- Demolition
  - Demolish site buildings and other structures, including the removal of asbestos-containing material, and the containerization of contaminated building components such as walls, cladding, steel, and painted surfaces.
  - Package and transport the demolition debris to the Temporary Waste Storage Area for off-site disposal.
  - Incinerate applicable demolition materials on-site.
- Site Barrels
  - Collect, segregate, clean barrels (76) and dispose of their contents at the appropriate off-site disposal facility and/or on-site treatment or incineration.

- Other
  - Reshape work areas to be consistent with the surrounding topography and promote positive drainage.
  - Complete potential additional work as per request of the DR.
  - Establish staging areas and Temporary Waste Storage Areas.
- Benefits to the Inuit of the Nunavut Settlement Areas
  - A Community Meeting will be held at the beginning of the project to inform residents of employment opportunities as well as the nature and progress of the project and another will be held upon project completion.
  - On-site training will be offered to employees regarding specific work requirements (please refer to Section 3 for more details).
  - Inuit employment will be maximized, and contractors and firms from Nunavut recognized by Nunavut Tunngavik Inc. (NTI) with a focus on Qikiqtaaluk firms.
  - Any other measure that is deemed beneficial to the social and economic growth of surrounding Nunavut communities.

1.8 INVENTORY OF MATERIALS OF CONCERN ON-SITE

Table 1 below details the quantities of all materials of concern that will be on-site in large quantities.

Table 1 Estimate of quantities of materials of concern

MATERIAL	STORAGE CONTAINER	MAXIMUM ON-SITE	USE
Diesel Fuel	205 L Drum	319,550 L	Power equipment and camp generators
Jet A	205 L Drums	12,000 L	Emergency reserve for the plane
Gasoline	205 L Drums	13 040 L	ATVs and pumps
Acetylene	45 kg Cylinders	675 kg (10)	Welding
Propane	45 kg Cylinders	90 kg (2)	Camp operation
Oxygen	45 kg cylinders	225 kg	Garage and medical

Diesel, Jet A and gasoline will be stored in Insta-berm containment devices, refer to Appendix B for the proposed storage areas of these materials. Propane cylinders will be stored adjacent to the garage in appropriate cages.

The following fuel storage tanks will be used on-site:

- Two 150-gallon tanks mounted on pick-up trucks for refuelling equipment.
- One 2,500-gallon tank used for camp generators.

The specifications for these tanks are presented in Appendix C.

Materials of concern that will be present on-site in very small quantities (< 20 L) include kitchen and cleaning supplies, lubricants for machinery. Waste oil will be incinerated on-site.

MSDS of the materials included in Table 1 are available in Appendix D.

1.9 EXISTING PREVENTATIVE MEASURES

Appropriate Personal Protective Equipment (PPE) will be used while handling all materials of concern. Spill kits will be present at all fuel storage areas and at strategic locations on site (locations TBD). Drip trays will be used during refueling operations, and the site fuel person will complete regular inspections of fuel caches to identify any areas of concern. Routine maintenance will be performed by the site mechanics to help prevent leaks of lubricants or fuel.

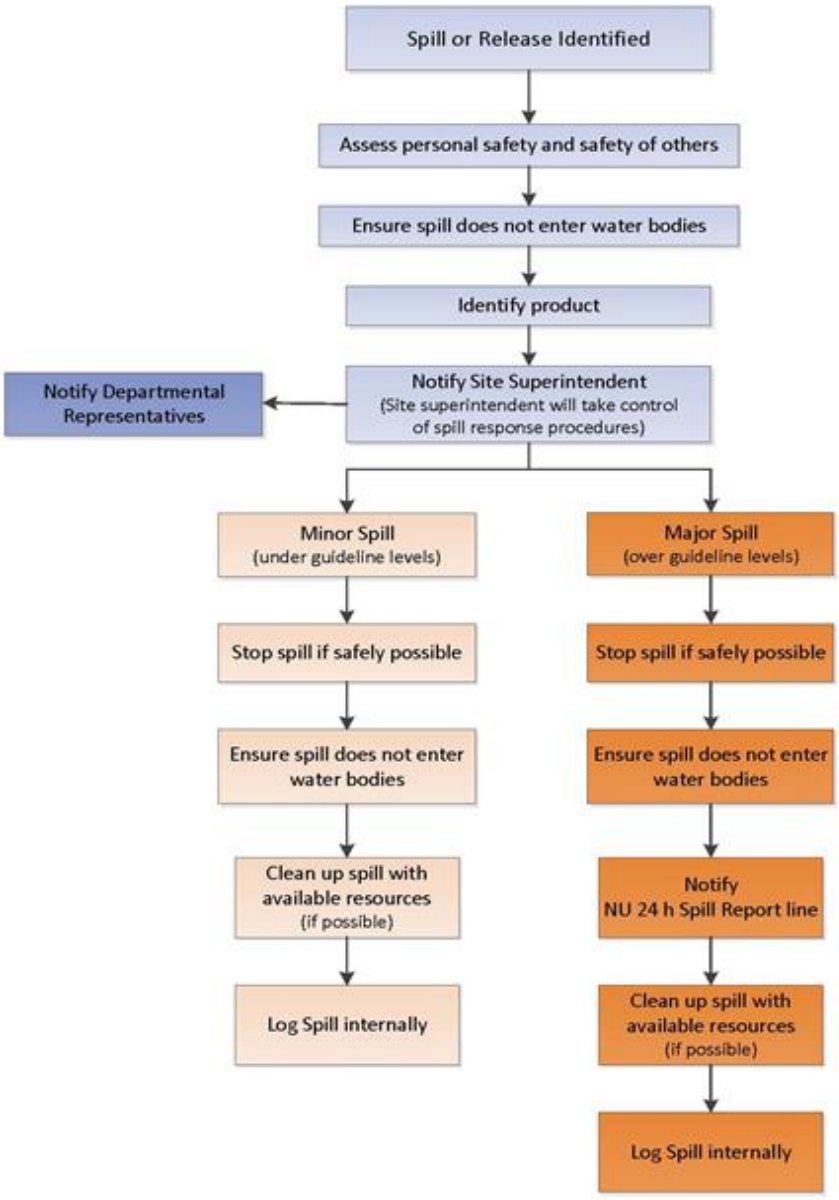
1.10 ADDITIONAL COPIES AND MEDIA AND PUBLIC INQUIRIES

Additional copies of the Spill Contingency plan can be obtained by contacting Guillaume Robert at the phone number and email address in Section 1.1. All media and public enquiries are to be made to Guillaume Robert as well.

2 RESPONSE ORGANIZATION AND ACTION PLAN

In the event of a spill the flow chart depicted in Figure 1 below is to be followed. A major spill is defined as a release of a substance that is above the guidelines set in Appendix D (from the Guideline for Spill Contingency Planning, prepared by the Water Resource Division Indian and Northern Affairs Canada, April 2007) and must be reported immediately to the Nunavut Spill Report Line (867) 920-8130. The office phone can be used for contacting the required authorities. A blank fuel report is included in Appendix E.

Figure 1: Response Organization



2.1 POTENTIAL SPILL SIZES, SOURCES AND ENVIRONMENTAL IMPACTS

Table 2 below details potential spill events, sources and environmental impact. This section will be finalized as quantities and locations of materials of concern are finalized.

Table 2 :Potential Spill Events

MATERIAL	POTENTIAL DISCHARGE EVENT	DISCHARGE VOLUME	DIRECTION OF POTENTIAL DISCHARGE	POTENTIAL ENVIRONMENTAL IMPACT
Diesel Fuel	1. Overfilling of equipment 2. Leaking from equipment 3. Leaking fuel lines for camp generator 4. Punctured drum 5. All drums punctured (Worst Case)	Likely <205 L Worst case 300,000 L – very unlikely	TBD	May be harmful to animal and plant life. Not readily biodegradable. Must not be allowed to enter water bodies. Have means to clean and treat spills on site.
Jet A	1. Overfilling of helicopter 2. Punctured drum 3. Leaking fuel hose 4. All drums punctured (Worst Case)	Likely <205 L Worst Case 820 L	TBD	May be harmful to animal and plant life. Not readily biodegradable. Must not be allowed to enter water bodies. Have means to clean and treat spills on site.
Gasoline	1. Overfilling of helicopter 2. Punctured drum 3. Leaking fuel hose 4. All drums punctured 5. (Worst Case)	Likely < 205 L	TBD	May be harmful to animal and plant life. Not readily biodegradable. Must not be allowed to enter water bodies. Have means to clean and treat spills on site.
Acetylene	1. Faulty connection 2. Punctured cylinder	Likely < 45 kg Worst case 675 kg	TBD	Explosive properties are of most concern.
Propane	1. Faulty connection 2. Punctured cylinder	Likely < 45 kg	N/A	Explosive properties are of most concern.

2.2 PROCEDURES

In the event of a spill, the first person noticing the incident shall:

- Assess personal safety and safety of others;
- Identify the product;
- Isolate or eliminate all sources of ignition and identify the spilled material, if possible;
- If possible, stop the source of the spill;
- Warn people, isolate and/or evacuate the area, as necessary;
- Report the following to the Site Superintendent:
  - the location of the spill;
  - the known or suspected time of the spill;
  - the substance spilled;
  - the estimated volume spilled;
  - the cause of the spill;
  - the flow direction of the spill.
- Ensure adequate use of spill response equipment;
- Contact Nunavut spill Hotline;
- Document all events and measures taken.

Depending on the physical location of the spill, specific supplemental precautions will be taken with regards to the spill response procedures.

- ***On Land***
  - Prevent dispersion in drainage system and ditch;
  - Contain material with sorbent booms, dyke of snow or earth;
  - Remove small spills with sorbent pads and dig by hand the impacted soil.
- ***Muskeg***
  - Ensure integrity of marsh or vegetation;
  - Remove free-phase product with pumps and skimmer and low pressure point equipment;
  - Minimize damage caused by equipment.
- ***Snow and Ice***
  - Prevent dispersion into waterways by containment with snow or other material;
  - If necessary, pump water surface to recover diesel under ice;
  - Remove minor spills with sorbent pads.

- ***On Water***
  - Contain spill as close to release point as possible;
  - Use sorbent booms to contain free-phase product;
  - Use skimmer or sorbent pads to recover free-phase product;
  - Do not deploy personnel or equipment on wetlands.

Verbal notice to DR will be given immediately or as soon as possible in the event of a moderate or higher level spill.

The Departmental Representative will be consulted on how to best remediate the area affected by the spill.

3 RESOURCE INVENTORY

The resource inventory will be finalized prior to mobilization to site. An inventory of the proposed remediation supplies has been included in Appendix F.

4 TRAINING PROGRAM

During the Worker Orientation Seminar (WOS) in which all site personnel are required to participate, the Spill Contingency Plan, the Emergency Response Plan and the location of all spill response resources will be reviewed. Site personnel will also be shown the contents of a spill kit and the function of the contents will be explained.

Appendix A Englobe's Environmental Policy

QUALITY, OCCUPATIONAL HEALTH & SAFETY AND ENVIRONMENTAL POLICY

The senior management of Englobe Corp. (Englobe), one of Canada's leaders in soil, materials and environmental engineering, having additional places of business in France and the United Kingdom and completing projects on an international scale, considers quality, occupational health & safety as well as the protection of the environment to be fundamental priorities for the company.

Englobe is committed to the highest standards concerning ethical professional practices and business conduct as well as:

OCCUPATIONAL HEALTH & SAFETY	• Taking the necessary steps to ensure that all operations are conducted in the safest possible manner for the prevention of work-related injuries and illnesses as well as promoting personal well-being • Providing human, financial and material resources to develop and implement a core prevention program to eliminate any risks that could endanger the physical health, safety and integrity of employees or other individuals in the workplace in addition to overseeing its application and applying corrective measures when necessary • Providing employees with all necessary training, information, tools, protective equipment and coaching required to work safely • Ensuring that we comply with legal requirements and regulations in effect in areas where our operations are conducted and with rules, instructions, procedures and methods established by the company and its clients as well as all permits, organizations and certifications to which we subscribe • Determining and communicating objectives and periodically assessing and reviewing results to determine whether objectives are being met and ensure the continuous improvement of its management system • Ensuring that subcontractors are properly informed of the company policy and that they agree to adopt the same principles
QUALITY	• Maintaining reliable and quality services that meet the needs of its clients • Determining and communicating objectives and periodically assessing and reviewing results to determine whether objectives are being met and ensure the continuous improvement of its management system • Ensuring that we comply with rules, instructions, procedures and methods established by the company and its clients as well as organizations and certifications to which we subscribe
ENVIRONMENT	• Reducing environmental nuisances and the impact of their activities • Ensuring that we comply with legal requirements and regulations in effect in areas where our operations are conducted and with rules, instructions, procedures and methods established by the company and its clients as well as all permits, organizations and certifications to which we subscribe

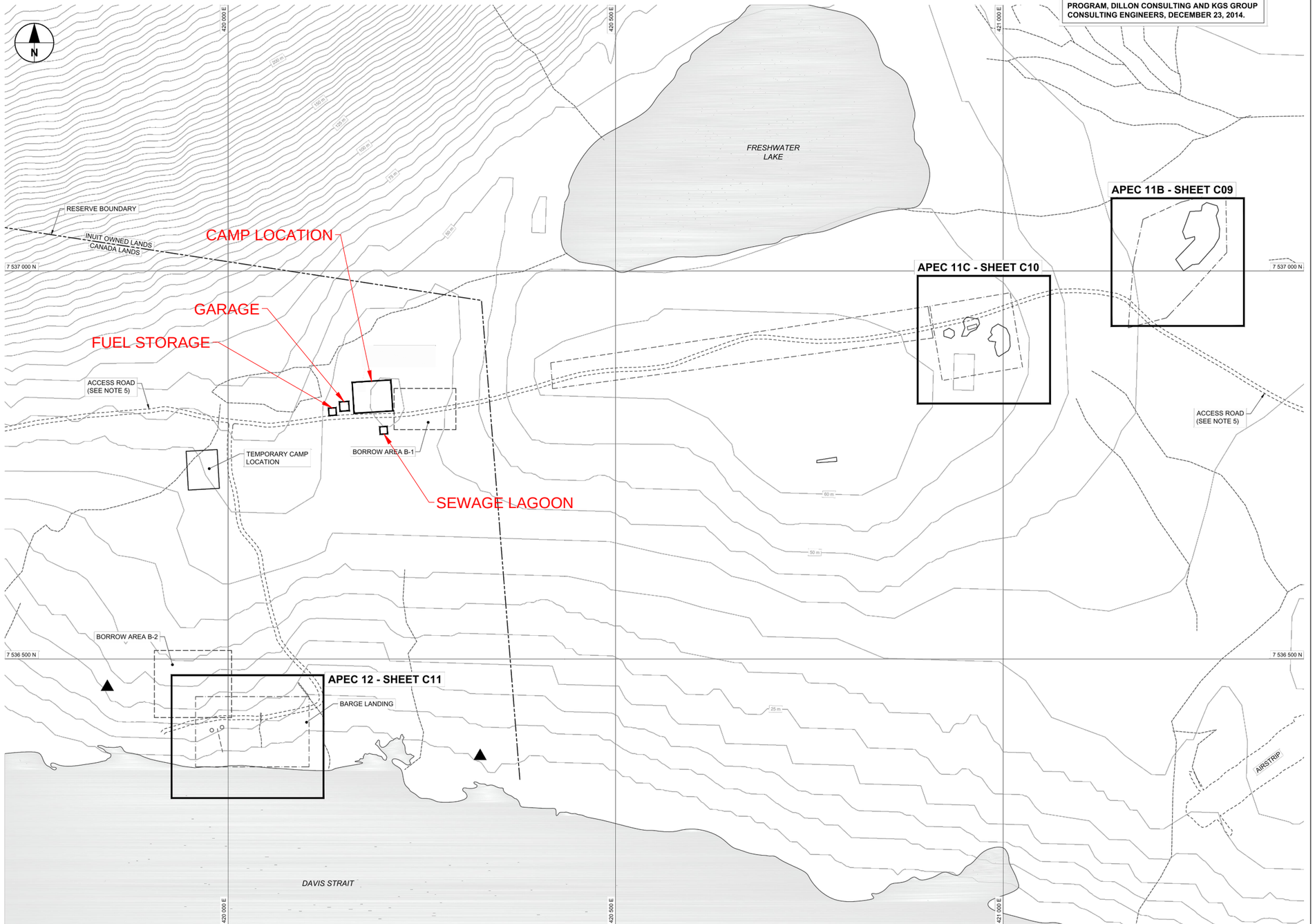
Each employee is responsible to apply the established rules and report events that could adversely affect quality, occupational health & safety and the environment. All members of the organization must actively participate in the success of this policy by seriously considering quality, occupational health & safety and the environment as well as continuous improvement when conducting daily activities.

This policy is reviewed annually, communicated to all personnel and displayed. It is also made available to all interested parties.

Robert Paul Youden
Chairman of the Board of Directors

Appendix B Camp Layout and Fuel Storage Locations

NOTE:
DRAWING DETAILS BASED ON THE ISSUED FOR TENDER DRAWINGS FOR THE FOX-D REMEDIATION PROGRAM, DILLON CONSULTING AND KGS GROUP CONSULTING ENGINEERS, DECEMBER 23, 2014.



REV.	Y - M - D DATE	DESCRIPTION	Prepared By	Checked By
0A	2017-05-16	PRELIMINARY	S.D.	N.D.

ISSUES / REVISIONS

ALL DIMENSIONS MUST BE TAKEN AND CHECKED BEFORE BEGINNING THE WORKS

Seal

Client

Public Works and Government Services Canada

Travaux publics et Services gouvernementaux Canada

Client's references

Project

FOX-D (Kivitoo) Dew Line site Remediation

Kivitoo, Nunavut

Title

Camp Siting

Englobe Corp.
1200, Saint-Martin Blvd West, suite 400
Laval (Québec) H7S 2E4
Phone : 514.281.5151
Fax : 450.668.5532

Prepared	N. Davis	Discipline	Geoenvironment Northern Canada
Drawn	S. Deshaies	Scale	None
Checked	N. Davis	Date	2017-05-16

Project Manager: **N. Davis**

Sequence No.: **02 of 03**

Serv. char.	Project	Wbs	Disc.	Type	Drawing No.	Rev.
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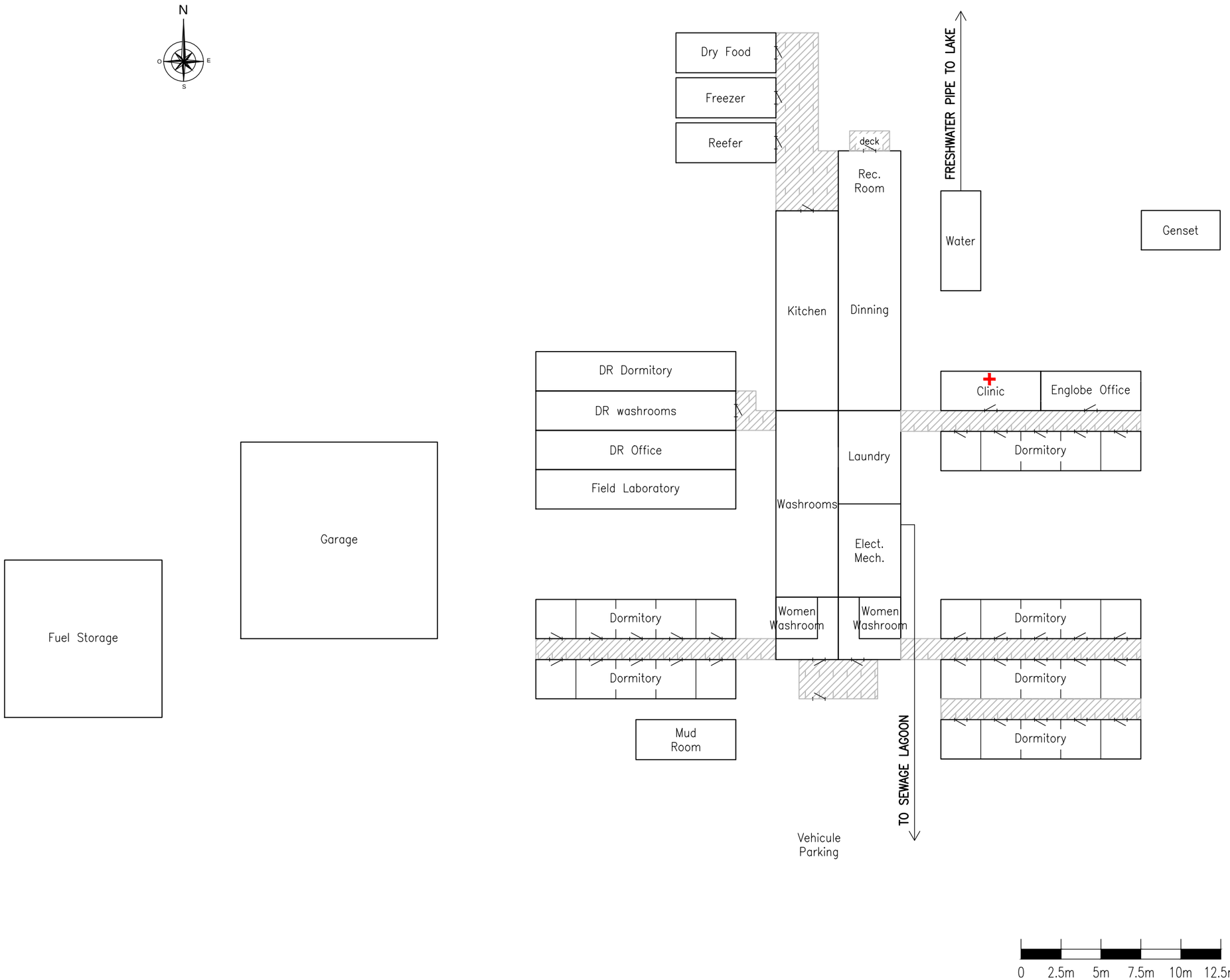

REV.	Y - M - D DATE	DESCRIPTION	Prepared By	Checked By
0A	2017-05-16	PRELIMINARY	S.D.	N.D.

ISSUES / REVISIONS

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Seal

Client

Public Works and Government Services Canada

Travaux publics et Services gouvernementaux Canada

Client's references

Project

FOX-D (Kivitoo) Dew Line site Remediation

Kivitoo, Nunavut

Title

Camp layout

Englobe Corp.
1200, Saint-Martin Blvd West, suite 400
Laval (Québec) H7S 2E4
Phone : 514.281.5151
Fax : 450.668.5532

Prepared	N. Davis	Discipline	Geoenvironment Northern Canada
Drawn	S. Deshaies	Scale	None
Checked	N. Davis	Date	2017-05-16

Project Manager: N. Davis

Sequence No.: 03 of 03

Serv. char.	Project	Wbs	Disc.	Type	Drawing No.	Rev.
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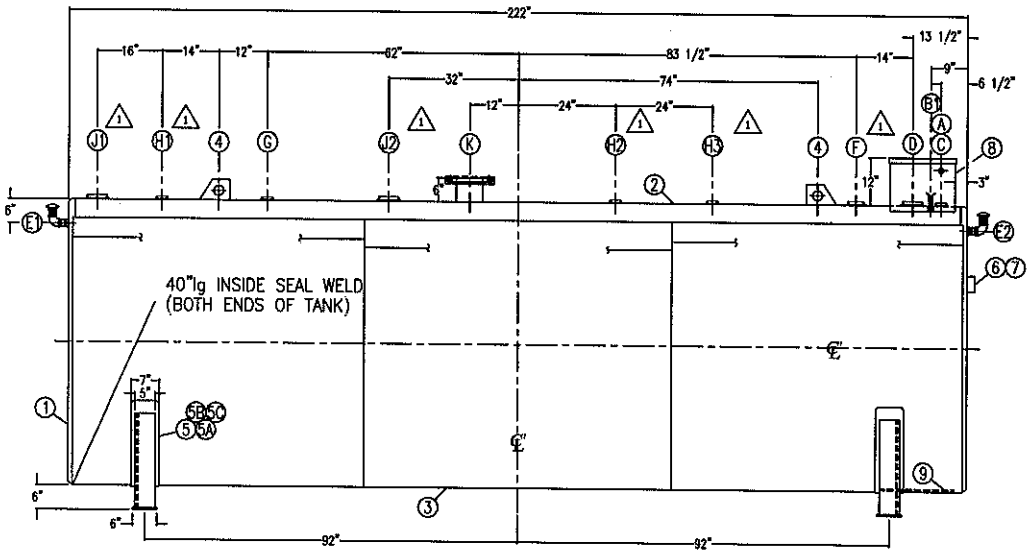
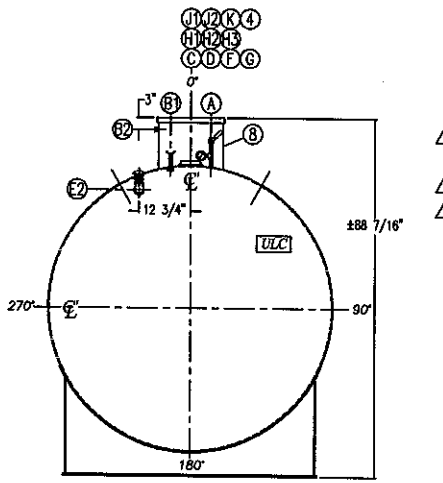
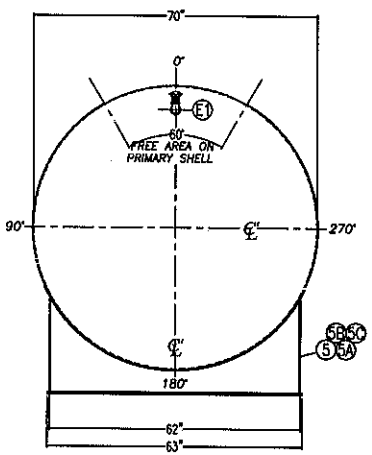
Appendix C Fuel Storage Tank Specifications



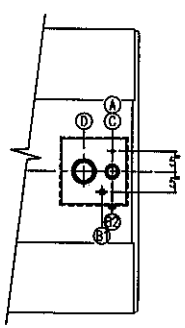
ELEVATION



RIGHT END VIEW



LEFT END VIEW



SPILLBOX TOP VIEW

LIST OF OPENINGS

No.	QTY	DIA.	TYPE	CL.	MAT'L	PIPE MAT'L	PIPE LENGHT	SCH	NOTE
A	1	1/4"	TH'D COUPLING	3000	SA105	--	-	-	VACUUM GAUGE
B	2	3/4"	TH'D HALF COUPLING	150	STEEL				DRAIN
C	1	2"	W.T.F.	250	SA181-70				GAUGE
D	1	4"							FILL
E	2	1 1/2"							INTERST. REL. VALVE
F	1	3"							INLET
G	1	2"							NORMAL VENT
H	3	2"							CONTROL
J	2	4"							SUCTION
K	1	6"	S.O.R.F.	150	B-10033				EMERGENCY VENT

LIST OF MATERIAL

ITEM	QTY	DESCRIPTION	MAT'L	NOTE
(1)	2	70"o.d. x 4.0mm FLANGED COVERS	A-569 or G40.21-44W	
(1A)	2	70 1/4"o.d. x 4.0mm FLANGED COVERS		
(2)	3	8' 72"x 222 1/2"x 4.0mm (360° shell)		
(3)	2	8' 72"x 184"x 3.0mm (300° shell)		
(3A)	1	8' 84"x 184"x 3.0mm (300° shell)		
(4)	2	6mm LIFTING LUG (TYPE 1)		
(5)	2	7"x 82"lg x 3/16"thk WEAR PLATES		
(5A)	4	5"x ±23 1/4"lg x 1/4"thk SIDE PLATES		
(5B)	2	6"x 63"lg x 1/2"thk BASE PLATES		
(5C)	2	±25"x 61 1/2"lg x 1/4"thk PLATES		
(6)	1	"ULC" NAMEPLATE BRACKET	G40.21-44W	
(7)	1	"ULC" S-601 NAMEPLATE	BRASS	#9959
(8)	1	16"x 16"x 12"high SPILLBOX	B-10024	
(9)	1	18"x 18"x 1/4"thk WEAR PLATE	G40.21-44W	
(10)				
(11)				
(12)				
(13)				
(14)	2	1/4"ø STD SHORT NIPPLE	A-53	
(15)	2	1 1/2"ø 150# 90° STREET ELBOW	M.I.	
(16)	1	1/4"ø TH'D TEE		
(17)	1	1/4"ø 150# SQ. HEAD PIPE PLUG		
(18)	1	1/4"ø BALL VALVE (water, oil or gas)		
(19)	1	VACUUM GAUGE	#7211	
(20)	2	1 1/2"ø CHECK VALVE	#212-V-15	
(21)	2	1 1/2"ø MUSHROOM CAP	#41-15	
(22)	1	"ULC" LABEL KIT		
(23)	1	DIP STICK	WOOD	
(24)	1	VOLUMETRIC CHART		

FINISH: SANDBLAST: SSPC-SP6

PAINTING: PRIMER + WHITE MACROPOXY 646

NOTES:
- Saddles wear plates 100% welded to tank.
- VACUUM GAUGE to be located in spill containment box.

GENERAL NOTES

BUILT AS PER "ULC" S601-93 SPECIFICATIONS.
AIR TEST: 2.9 PSIG (20 KPa) min.
4.3 PSIG (30 KPa) max.
* A SOAPY WATER SOLUTION WILL POURED OVER ALL WELDS DURING THE AIR TEST.

* A VACUUM OF 81 KPa min. WILL BE APPLIED IN THE INTERSTICE FOR 5 HOURS. THE READING SHALL NOT BE LESS THAN 67.5 KPa ON THE GAUGE.

EMERGENCY VENT CAPACITY: 127 m³/min.
ACTUAL CAPACITY: 3054 IMP. GAL'S / 13 883 LITERS / 3667 US GAL'S
APPROX. SHIPPING WEIGHT: 5200 LBS / 2358 Kg

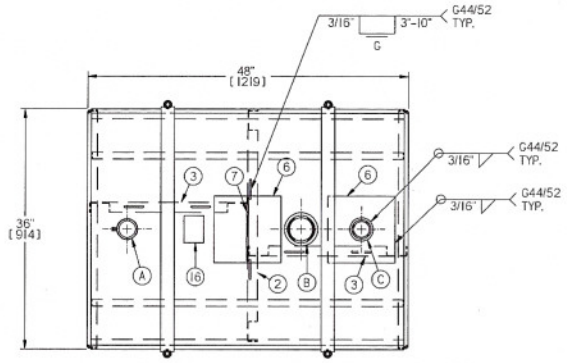
No	DATE	REVISIONS	BY	APPR.
01	12/10/01	NOZZLES ADDED	D.M	K.H

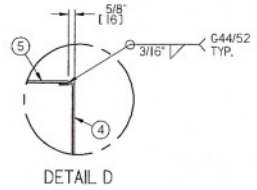
les réservoirs gil fab Tanks Int'l inc.
625, boulevard Industriel
Moscouche (Québec)
J7K 3G6
Tel.: (450) 474-7400
Fax.: (450) 474-7404

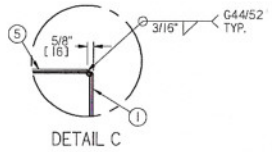
TITLE: 3000 GAL'S ABOVEGROUND DOUBLE WALL TANK "ULC-S601" (300°)

CUSTOMER: ARMCO
ORDER No: 20011005-01
PROJECT: MONCTON DISTRICT GARAGE

FILE No: 16464 | JOB No: G7575
DRAWN BY: D.M | CHECKED BY: | APPROVED BY:
DATE: 01/10/06 | SCALE: 1/2"=1' | DRAWING No: GF-6550 | REV.: 01

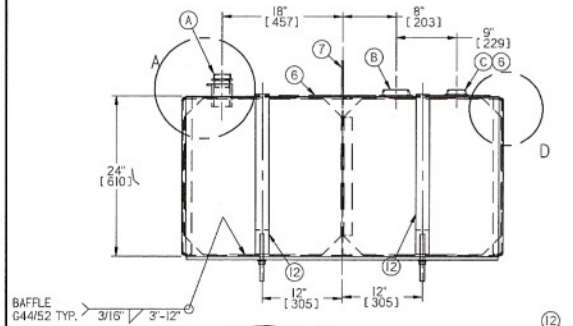


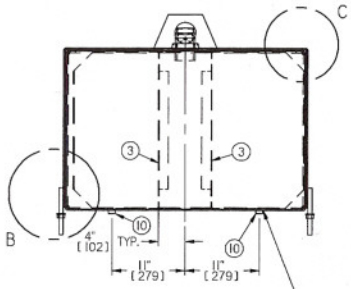


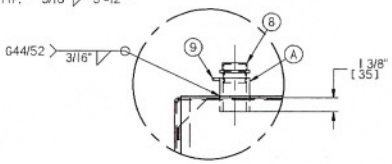


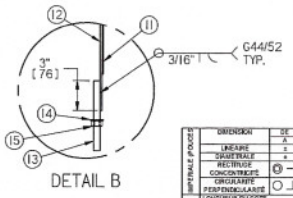
LISTE DES OUVERTURES								
No	QTE	DIA	TYPE	CL	MAT.	MAT. TUYAU	LONG. TUYAU	CED.	NOTE
A	1	2"	MANCHON	3000	SA105	-	-	-	REMPL.
B	1	3"	W.T.F.	250	SA105	-	-	-	FUTUR
C	1	2"	W.T.F.	250	SA105	-	-	-	POMPE

Item	Qte	Description	Ep. (po)	Largeur (po)	Longueur (po)	Poids (#)	Materiel
1	1	PLAQUE PLIÉE	0.187	46.750	85.335	212	AIOII
2	1	CHICANE PLIÉE 11 GA.	0.120	26.212	37.212	31	AIOII
3	2	CHICANE PLIÉE 11 GA.	0.120	26.212	26.275	43	AIOII
4	2	TETE FLANGÉE	0.187	25.980	37.980	104	AIOII
5	1	PLAQUE - DESSUS	0.187	46.750	34.750	85	AIOII
6	2	RENFORT	0.188	10.000	10.000	11	AIOII
7	1	ATTACHE DE LEVAGE 6mm TYPE III	0.250			2	AIOII
8	1	BOUCHON 2"DIA BAYCO #200-PV-9				0	ALUMINIUM
9	1	DEMI-MAILLE CHAINE				0	-
10	2	FER PLAT	0.500	1.000	46.500	13	AIOII
11	2	NEOPRENE 2" X 10' LG	0.125			1	NEOPRENE
12	2	COURROIE - FER PLAT PLIÉ	0.188	2.000	83.854	18	AIOII
13	4	TIGE FILETE 5/8"DIA X 7"LG				2	-
14	4	RONDELLE PLATE 5/8"DIA	0.125			0	AIOII
15	4	HEX. NUT 5/8"-11NC				0	GRII
16	1	IDENTIFICATION ONGC				0	-









IMPERIAL (POUCE)	DIMENSION	DE	0°	> 45°	> 90°	> 135°	> 320°
	LINEAIRE	A	40"	80"	160"	320"	640"
	DIAMETRALE	B	1/8"	5/32"	1/4"	9/16"	3/8"
	RECTITUDE	C	1/4"	5/32"	1/4"	5/16"	3/8"
	CONCENTRICITE	D	3/32"	5/32"	1/4"	5/16"	3/8"
	CIRCULARITE	E	3/16"	5/16"	1/2"	5/8"	3/4"
	PERPENDICULARITE	F	3/16"	5/16"	1/2"	5/8"	3/4"
DIM. NOM.	LONGUEUR DU COTE LE PLUS COURT	DE	< 3/8"	3/8"	2"	5"	
		A		2"	5"	16"	
	DEGRE ET MINUTE	B	1°	0°-30'	0°-20'	0°-10'	

METRIQUE (mm)	DIMENSION	DE	0	> 1000	> 2000
	LINEAIRE	A	1000	2000	4000
	DIAMETRALE	B	3	4	6
	RECTITUDE	C	3	4	6
	CONCENTRICITE	D	2.5	4	6
	CIRCULARITE	E	5	8	12
	PERPENDICULARITE	F	5	8	12
DIM. NOM.	LONGUEUR DU COTE LE PLUS COURT	DE	< 10		
		A			50
	DEGRE ET MINUTE	B	1°	0°-30'	0°-10'

NOTES GENERALES

FABRIQUÉ SELON ONGC-43.146-2000

TEST PNEUMATIQUE: 5.0 PSI / 35 KPa

FINITION INT.: AUCUNE
FINITION EXT.: SSPC-SP6 + 1 COUCHE EPOXY ROUGE AMERLOCK 2
64-8mils DFT) 57 pi.ca.

CAPACITE EVENT URGENCE: 48 me.cu/min.
CAPACITE REELLE: 141 G.I. / 640 LITRES / 170 G.U.S.
POIDS D'EXPEDITION APPROX. 546 LBS / 248 kg
POIDS RES. PLEIN APPROX. 1 967 LBS / 894 kg

No	DATE	REVISION	PAR	APPR.

GAT&S DIVISION GIL-FAB
DIVISION GIL-FAB
625, boul. Industriel
Mascouche (Quebec) J7K 3G6
Tel: (450) 474-7400
Fax: (450) 474-7404

TITRE:
1x RESERVOIR MOBILE 150 G.I.

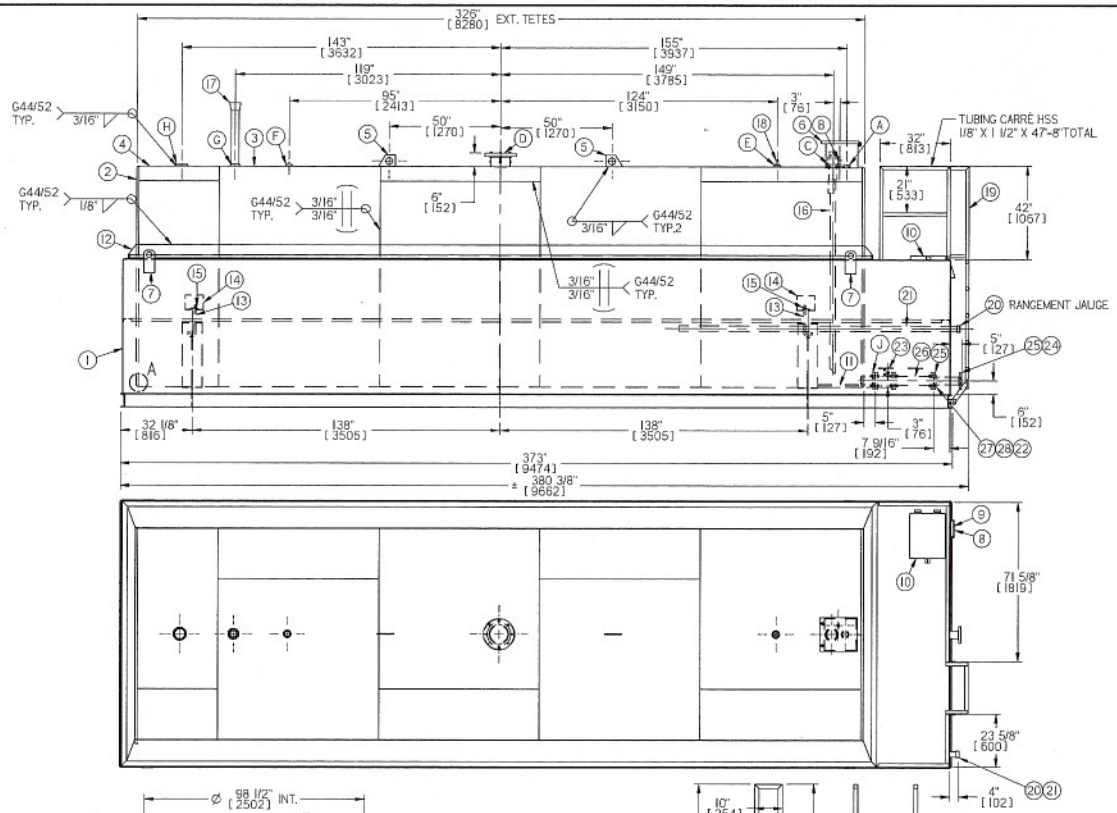
CLIENT: AARRUJA DEVELOPMENT CORP. LTD

JOB No: 5915.1 | DESSINE PAR: JEAN LEPAGE

COMMANDE No: 100 | DATE: 2008-06-19 | VERIFIE PAR: | APPROUVÉ PAR:

PROJET | FORMAT: B | DESSIN No: 59154AAR-ONGC-150 | REV: 0

08.06.20



LISTE DES OUVERTURES									
No	QTE	DIA	TYPE	CL.	MAT.	MAT. TUYAU	LONG. TUYAU	CED.	NOTE
A	1	2"	W.T.F.	250	SA105	-	-	-	PIDE
B	1	3/4"	DEMI-MANCHON	3000	SA105	-	-	-	DRAIN COL
C	1	4"	W.T.F.	250	SA105	-	-	-	REMPL.
D	1	8"	BRIDE SORF	150	SA105	-	-	-	EV.URG.
E	1	2"	W.T.F.	250	SA105	-	-	-	JAUGE
F	1	2"	W.T.F.	250	SA105	-	-	-	SUCCION
G	1	3"	W.T.F.	250	SA105	-	-	-	EVENT
H	1	4"	W.T.F.	250	SA105	-	-	-	RETOUR
J	1	3"	BRIDE SORF	150	SA105	SA53B	6"	40	SORTIE

Item	Qte	Description	Ep. Ipol	Largeur Ipol	Longueur Ipol	Poids lbs	Materiel
1	1	BASSIN 120" X 372" X 60"				10175	
2	2	TETE FLANGÉ 98 1/2"O.D. X 5.0mm	0.187			843	G40.21-44W
3	4	PLAQUE 5.0mm	0.187	72.000	309.890	4734	G40.21-44W
4	1	PLAQUE 5.0mm	0.187	36.000	309.890	592	G40.21-44W
5	2	ATTACHE DE LEVAGE 10mm TYPE I	0.375			5	A101
6	1	COL RECT. 14" X 14"				35	
7	4	ATTACHE DE LEVAGE BASSIN	0.500	5.000	10.000	25	A101
8	1	SUPPORT DE PLAQUE ULC				3	A101
9	1	PLAQUE ULC				0	Copper
10	1	ACCES 18" X 14"				17	
11	1	PLAQUE D'USURE	0.250	18.000	18.000	23	G40.21-44W
12	1	BAVETTE PLIÉE	0.125			336	A101
13	4	TIGE FILETE 3/4"DIA				9	PLZINC
14	4	ATTACHE BASSIN PLAQUE PLIÉE	0.375	6.000	9.354	31	G40.21-44W
15	4	ECROU HEX. 3/4"-10NC (A-325)				1	PLZINC
16	1	LIMITEUR REMPL. 2" OPW #61FSTOP-1000				27	-
17	1	EVENT NORMAL. 3"dia X 48"LG + V-VENT BAYCO #49				20	GALV.
18	1	IND. DE NIVEAU SCULLY #03197 AJUSTÉ				1	-
19	1	ECHELLE D'ACCES				75	
20	1	BOUCHON VISSÉ FEM. 2"DIA				2	GALV.
21	1	TUYAU 2"DIA CED.40 T.D.E.			126.0000	38	SA53B
22	3	RING GASKET POUR BRIDE 3"DIA 150#	0.063			0	GARLOCK
23	1	VALVE @ BILLE 3"DIA FLG.150# KF IND. #CF1800				31	-
24	1	TUYAU 3"DIA CED.40				8	SA53B
25	2	S.O.R.F. 3"-Class 150				18	SA-105
26	1	FLEXIBLE 3"DIA X 18"LG FLG/FLG 150#				53	S.S.
27	12	HEX. BOLT 5/8"-11NC X 3 1/4"LG				4	GRII
28	12	HEX. NUT 5/8"-11NC				1	GRII

JAUGE DE BOIS + CHARTE DE CAPACITÉ INCLUS

NOTES GENERALES

CONSTRUIT SELON ULC-S601 & S653 DERNIERE EDITION

TEST PNEUMATIQUE: 2.9 @ 4.3 PSIG / 20 @ 30 KPa

FINITION INT. RESERVOIR: AUCUNE
FINITION INT. BASSIN + DESSOUS RES.: SSPC-SP6 + 1 COUCHE APPRET AMERCOAT 5105 (2-3mils DFT) 1506 p.i.c.o.
FINITION EXT. BASSIN + RES.: SSPC-SP6 + 1 COUCHE EPOXY BLANC AMERLOCK 2 (4-8mils DFT) 1223 p.i.c.o.

CAPACITE EVENT URGENCE: 154 cume / min.
CAPACITE REELLE: 8 941 G.I. / 40 592 L. / 10 772 G.U.S.
POIDS D'EXPEDITION APPROX.: 17 255 lbs / 7 843 Kg

No	DATE	REVISION	PAR	APPR

DIVISION GIL-FAB
625, boul. Industriel
Moscouche (Quebec) J7K 3G6
Tel: (450) 474-7400
Fax: (450) 474-7404

TITRE: 3x RESERVOIR BASSIN 40 000 LITRES

CLIENT: AARRUJA DEVELOPMENT CORP. LTD

COMMANDE No: 100

PROJET:

JOB No: 5915.I | DESSINÉ PAR: JEAN LEPAGE

DATE: 2008-06-19 | VERIFIÉ PAR: | APPROUVÉ PAR:

FORMAT: B | DESSIN No: 5915IAAR-653-40KL | PAGE: 1/2 | REV: 0

08.06.20

Appendix D MSDS

Material Safety Data Sheet

DIESEL FUEL

1 . Product and company identification

Product name : DIESEL FUEL

Synonym : Seasonal Diesel, #1 Diesel, #2 Heating Oil, #1 Heating Oil, D50, D60, P40, P50, Arctic Diesel, Farm Diesel, Marine Diesel, Low Sulphur Diesel, LSD, Ultra Low Sulphur Diesel, ULSD, Mining Diesel, Naval Distillate, Dyed Diesel, Marked Diesel, Coloured Diesel, Furnace special, Biodiesel blend, B1, B2, B5, Diesel Low Cloud (LC).

Code : W104, W293; SAP: 120, 121, 122, 125, 126, 129, 130, 135, 287, 288

Material uses : Diesel fuels are distillate fuels suitable for use in high and medium speed internal combustion engines of the compression ignition type. Mining Diesel has a higher flash point requirement, for safe use in underground mines.

Manufacturer : PETRO-CANADA
P.O. Box 2844
150 – 6th Avenue South-West
Calgary, Alberta
T2P 3E3

In case of emergency : Petro-Canada: 403-296-3000
Canutec Transportation: 613-996-6666
Poison Control Centre: Consult local telephone directory for emergency number(s).

2 . Hazards identification

Physical state : Bright oily liquid.

Odour : Mild petroleum oil like.

WHMIS (Canada) :

Class B-3: Combustible liquid with a flash point between 37.8°C (100°F) and 93.3°C (200°F).
Class D-2A: Material causing other toxic effects (Very toxic).
Class D-2B: Material causing other toxic effects (Toxic).

OSHA/HCS status : This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200).

Emergency overview : WARNING!

COMBUSTIBLE LIQUID AND VAPOUR. CAUSES EYE AND SKIN IRRITATION.

Combustible liquid. Severely irritating to the skin. Irritating to eyes. Keep away from heat, sparks and flame. Do not get in eyes. Avoid breathing vapour or mist. Avoid contact with skin and clothing. Use only with adequate ventilation. Wash thoroughly after handling.

Routes of entry : Dermal contact. Eye contact. Inhalation. Ingestion.

Potential acute health effects

Inhalation : Inhalation of this product may cause respiratory tract irritation and Central Nervous System (CNS) Depression, symptoms of which may include; weakness, dizziness, slurred speech, drowsiness, unconsciousness and in cases of severe overexposure; coma and death.

Ingestion : Ingestion of this product may cause gastro-intestinal irritation. Aspiration of this product may result in severe irritation or burns to the respiratory tract.

Skin : Severely irritating to the skin.

Eyes : Irritating to eyes.

Potential chronic health effects

Chronic effects : No known significant effects or critical hazards.

Carcinogenicity : Diesel engine exhaust particulate is probably carcinogenic to humans (IARC Group 2A).

Mutagenicity : No known significant effects or critical hazards.

Teratogenicity : No known significant effects or critical hazards.

2 . Hazards identification

Developmental effects : No known significant effects or critical hazards.

Fertility effects : No known significant effects or critical hazards.

Medical conditions aggravated by over-exposure : Avoid prolonged or repeated skin contact to diesel fuels which can lead to dermal irritation and may be associated with an increased risk of skin cancer.

See toxicological information (section 11)

3 . Composition/information on ingredients

Name	CAS number	%
Kerosine (petroleum), hydrodesulfurized / Fuels, diesel / Fuel Oil No. 2	64742-81-0 / 68334-30-5 / 68476-30-2	95 - 100
Fatty acids methyl esters	61788-61-2 / 67784-80-9 / 73891-99-3	0 - 5

There are no additional ingredients present which, within the current knowledge of the supplier and in the concentrations applicable, are classified as hazardous to health or the environment and hence require reporting in this section.

4 . First-aid measures

Eye contact : Check for and remove any contact lenses. Immediately flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Get medical attention immediately.

Skin contact : In case of contact, immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Wash skin thoroughly with soap and water or use recognised skin cleanser. Wash clothing before reuse. Clean shoes thoroughly before reuse. Get medical attention immediately.

Inhalation : Move exposed person to fresh air. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. Loosen tight clothing such as a collar, tie, belt or waistband. Get medical attention immediately.

Ingestion : Wash out mouth with water. Do not induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person. Get medical attention immediately.

Protection of first-aiders : No action shall be taken involving any personal risk or without suitable training. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation.

Notes to physician : No specific treatment. Treat symptomatically. Contact poison treatment specialist immediately if large quantities have been ingested or inhaled.

5 . Fire-fighting measures

Flammability of the product : Combustible liquid

Extinguishing media

Suitable : Use dry chemical, CO_2, water spray (fog) or foam.

Not suitable : Do not use water jet.

Special exposure hazards : Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training. Move containers from fire area if this can be done without risk. Use water spray to keep fire-exposed containers cool.

Products of combustion : Carbon oxides (CO, CO2), nitrogen oxides (NOx), sulphur oxides (SOx), sulphur compounds (H2S), smoke and irritating vapours as products of incomplete combustion.

Special protective equipment for fire-fighters : Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.

5 . Fire-fighting measures

Special remarks on fire hazards : Flammable in presence of open flames, sparks and heat. Vapours are heavier than air and may travel considerable distance to sources of ignition and flash back. This product can accumulate static charge and ignite.

Special remarks on explosion hazards : Do not pressurise, cut, weld, braze, solder, drill, grind or expose containers to heat or sources of ignition. Runoff to sewer may create fire or explosion hazard.

6 . Accidental release measures

Personal precautions : No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilt material. Shut off all ignition sources. No flares, smoking or flames in hazard area. Avoid breathing vapour or mist. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment (see section 8).

Environmental precautions : Avoid dispersal of spilt material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air).

Methods for cleaning up

Small spill : Stop leak if without risk. Move containers from spill area. Dilute with water and mop up if water-soluble. Alternatively, or if water-insoluble, absorb with an inert dry material and place in an appropriate waste disposal container. Use spark-proof tools and explosion-proof equipment. Dispose of via a licensed waste disposal contractor.

Large spill : Stop leak if without risk. Move containers from spill area. Approach the release from upwind. Prevent entry into sewers, water courses, basements or confined areas. Wash spillages into an effluent treatment plant or proceed as follows. Contain and collect spillage with non-combustible, absorbent material e.g. sand, earth, vermiculite or diatomaceous earth and place in container for disposal according to local regulations (see section 13). Use spark-proof tools and explosion-proof equipment. Dispose of via a licensed waste disposal contractor. Contaminated absorbent material may pose the same hazard as the spilt product. Note: see section 1 for emergency contact information and section 13 for waste disposal.

7 . Handling and storage

Handling : Put on appropriate personal protective equipment (see section 8). Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Workers should wash hands and face before eating, drinking and smoking. Do not ingest. Avoid contact with eyes, skin and clothing. Avoid breathing vapour or mist. Use only with adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Do not enter storage areas and confined spaces unless adequately ventilated. Keep in the original container or an approved alternative made from a compatible material, kept tightly closed when not in use. Store and use away from heat, sparks, open flame or any other ignition source. Use explosion-proof electrical (ventilating, lighting and material handling) equipment. Use non-sparking tools. Take precautionary measures against electrostatic discharges. To avoid fire or explosion, dissipate static electricity during transfer by earthing and bonding containers and equipment before transferring material. Empty containers retain product residue and can be hazardous. Do not reuse container.

Storage : Store in accordance with local regulations. Store in a segregated and approved area. Store in original container protected from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see section 10) and food and drink. Eliminate all ignition sources. Separate from oxidizing materials. Keep container tightly closed and sealed until ready for use. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Do not store in unlabelled containers. Use appropriate containment to avoid environmental contamination. Ensure the storage containers are grounded/bonded.

8 . Exposure controls/personal protection

Ingredient	Exposure limits
Kerosine (petroleum), hydrodesulfurized	**ACGIH TLV (United States). Absorbed through skin.** TWA: 200 mg/m³ 8 hour(s).
Fuels, diesel	**ACGIH TLV (United States). Absorbed through skin.** TWA: 100 mg/m³, (Inhalable fraction and vapour) 8 hour(s).
Fuel oil No. 2	**ACGIH TLV (United States). Absorbed through skin.** TWA: 100 mg/m³, (Inhalable fraction and vapour) 8 hour(s).

Consult local authorities for acceptable exposure limits.

Recommended monitoring procedures : If this product contains ingredients with exposure limits, personal, workplace atmosphere or biological monitoring may be required to determine the effectiveness of the ventilation or other control measures and/or the necessity to use respiratory protective equipment.

Engineering measures : Use only with adequate ventilation. Use process enclosures, local exhaust ventilation or other engineering controls to keep worker exposure to airborne contaminants below any recommended or statutory limits. The engineering controls also need to keep gas, vapour or dust concentrations below any lower explosive limits. Use explosion-proof ventilation equipment.

Hygiene measures : Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and using the lavatory and at the end of the working period. Appropriate techniques should be used to remove potentially contaminated clothing. Wash contaminated clothing before reusing. Ensure that eyewash stations and safety showers are close to the workstation location.

Personal protection

Respiratory : Use a properly fitted, air-purifying or air-fed respirator complying with an approved standard if a risk assessment indicates this is necessary. Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator. Recommended: organic vapour cartridge or canister may be permissible under certain circumstances where airborne concentrations are expected to exceed exposure limits. Protection provided by air-purifying respirators is limited. Use a positive-pressure, air-supplied respirator if there is any potential for uncontrolled release, exposure levels are unknown, or any other circumstances where air-purifying respirators may not provide adequate protection.

Hands : Chemical-resistant, impervious gloves complying with an approved standard should be worn at all times when handling chemical products if a risk assessment indicates this is necessary.
Recommended: nitrile, neoprene, polyvinyl alcohol (PVA), Viton. Consult your PPE provider for breakthrough times and the specific glove that is best for you based on your use patterns. It should be realized that eventually any material regardless of their imperviousness, will get permeated by chemicals. Therefore, protective gloves should be regularly checked for wear and tear. At the first signs of hardening and cracks, they should be changed.

Eyes : Safety eyewear complying with an approved standard should be used when a risk assessment indicates this is necessary to avoid exposure to liquid splashes, mists or dusts.

Skin : Personal protective equipment for the body should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.

Environmental exposure controls : Emissions from ventilation or work process equipment should be checked to ensure they comply with the requirements of environmental protection legislation. In some cases, fume scrubbers, filters or engineering modifications to the process equipment will be necessary to reduce emissions to acceptable levels.

9 . Physical and chemical properties

Physical state : Bright oily liquid.

Flash point : Diesel fuel: Closed cup: ≥40°C (≥104°F)
Marine Diesel Fuel: Closed Cup: ≥60°C (≥140°F)
Mining Diesel: Closed Cup: ≥52°C (≥126°F)

Auto-ignition temperature : 225°C (437°F)

Flammable limits : Lower: 0.7%
Upper: 6%

Colour : Clear to yellow (This product may be dyed red for taxation purposes).

Odour : Mild petroleum oil like.

Odour threshold : Not available.

pH : Not available.

Boiling/condensation point : 150 to 371°C (302 to 699.8°F)

Melting/freezing point : Not available.

Relative density : 0.80 to 0.88 kg/L @ 15°C (59°F)

Vapour pressure : 1 kPa (7.5 mm Hg) @ 20°C (68ºF).

Vapour density : 4.5 [Air = 1]

Volatility : Semivolatile to volatile.

Evaporation rate : Not available.

Viscosity : Diesel fuel: 1.3 - 4.1 cSt @ 40°C (104°F)
Marine Diesel Fuel: 1.3 - 4.4 cSt @ 40°C (104°F)

Pour point : Not available.

Solubility : Insoluble in cold water, soluble in non-polar hydrocarbon solvents.

10 . Stability and reactivity

Chemical stability : The product is stable.

Hazardous polymerisation : Under normal conditions of storage and use, hazardous polymerisation will not occur.

Materials to avoid : Reactive with oxidising agents and acids.

Hazardous decomposition products : May release COx, NOx, SOx, H2S, smoke and irritating vapours when heated to decomposition.

11 . Toxicological information

Acute toxicity

Product/ingredient name	Result	Species	Dose	Exposure
Kerosine (petroleum), hydrodesulfurized	LD50 Dermal	Rabbit	>2000 mg/kg	-
	LD50 Oral	Rat	>5000 mg/kg	-
	LC50 Inhalation Vapour	Rat	>5000 mg/m³	4 hours
Fuels, diesel	LD50 Dermal	Mouse	24500 mg/kg	-
	LD50 Oral	Rat	7500 mg/kg	-
Fuel oil No. 2	LD50 Oral	Rat	12000 mg/kg	-

Conclusion/Summary : Not available.

Chronic toxicity

Conclusion/Summary : Not available.

Irritation/Corrosion

Conclusion/Summary : Not available.

Sensitiser

Conclusion/Summary : Not available.

Carcinogenicity

Conclusion/Summary : Diesel engine exhaust particulate is probably carcinogenic to humans (IARC Group 2A).

11 . Toxicological information

Classification

Product/ingredient name	ACGIH	IARC	EPA	NIOSH	NTP	OSHA
Kerosine (petroleum), hydrodesulfurized	A3	-	-	-	-	-
Fuels, diesel	A3	3	-	-	-	-
Fuel oil No. 2	A3	3	-	-	-	-

Mutagenicity

Conclusion/Summary : Not available.

Teratogenicity

Conclusion/Summary : Not available.

Reproductive toxicity

Conclusion/Summary : Not available.

12 . Ecological information

Environmental effects : No known significant effects or critical hazards.

Aquatic ecotoxicity

Conclusion/Summary : Not available.

Biodegradability

Conclusion/Summary : Not available.

13 . Disposal considerations

Waste disposal : The generation of waste should be avoided or minimised wherever possible. Empty containers or liners may retain some product residues. This material and its container must be disposed of in a safe way. Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. Disposal of this product, solutions and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements. Avoid dispersal of spilt material and runoff and contact with soil, waterways, drains and sewers.

Disposal should be in accordance with applicable regional, national and local laws and regulations.

Refer to Section 7: HANDLING AND STORAGE and Section 8: EXPOSURE CONTROLS/PERSONAL PROTECTION for additional handling information and protection of employees.

14 . Transport information

Regulatory information	UN number	Proper shipping name	Classes	PG*	Label	Additional information
TDG Classification	UN1202	DIESEL FUEL	3	III		-
DOT Classification	Not available.	Not available.	Not available.	-		-

PG* : Packing group

15 . Regulatory information

United States

HCS Classification : Combustible liquid
Irritating material

Canada

WHMIS (Canada) : Class B-3: Combustible liquid with a flash point between 37.8°C (100°F) and 93.3°C (200°F).
Class D-2A: Material causing other toxic effects (Very toxic).
Class D-2B: Material causing other toxic effects (Toxic).

15 . Regulatory information

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

International regulations

Canada inventory : All components are listed or exempted.

United States inventory (TSCA 8b) : All components are listed or exempted.

Europe inventory : All components are listed or exempted.

16 . Other information

Label requirements : COMBUSTIBLE LIQUID AND VAPOUR. CAUSES EYE AND SKIN IRRITATION.

Hazardous Material Information System (U.S.A.) :

Health	2
Flammability	2
Physical hazards	0
Personal protection	H

National Fire Protection Association (U.S.A.) :

References : Available upon request.
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Date of printing : **7/6/2010.**

Date of issue : 6 July 2010

Date of previous issue : 7/3/2009.

Responsible name : **Product Safety - JDW**

Indicates information that has changed from previously issued version.

For Copy of (M)SDS : Internet: www.petro-canada.ca/msds

Canada-wide: telephone: 1-800-668-0220; fax: 1-800-837-1228

For Product Safety Information: (905) 804-4752

Notice to reader

To the best of our knowledge, the information contained herein is accurate. However, neither the above-named supplier, nor any of its subsidiaries, assumes any liability whatsoever for the accuracy or completeness of the information contained herein.
Final determination of suitability of any material is the sole responsibility of the user. All materials may present unknown hazards and should be used with caution. Although certain hazards are described herein, we cannot guarantee that these are the only hazards that exist.

Material Safety Data Sheet

GASOLINE, UNLEADED

1 . Product and company identification

Product name : GASOLINE, UNLEADED

Synonym : Regular, Unleaded Gasoline (US Grade), Mid-Grade, Plus, Super, WinterGas, SummerGas, Supreme, SuperClean WinterGas, RegularClean, PlusClean, Premium, marked or dyed gasoline, TQRUL, transitional quality regular unleaded, BOB, Blendstock for Oxygenate Blending

Code : W102E, SAP: 102 to 117

Material uses : Unleaded gasoline is used in spark ignition engines including motor vehicles, inboard and outboard boat engines, small engines such as chain saws and lawn mowers, and recreational vehicles.

Manufacturer : PETRO-CANADA
P.O. Box 2844
150 – 6th Avenue South-West
Calgary, Alberta
T2P 3E3

In case of emergency : Petro-Canada: 403-296-3000
Canutec Transportation: 613-996-6666
Poison Control Centre: Consult local telephone directory for emergency number(s).

2 . Hazards identification

Physical state : Clear liquid.

Odour : Gasoline

WHMIS (Canada) :

Class B-2: Flammable liquid
Class D-2A: Material causing other toxic effects (Very toxic).
Class D-2B: Material causing other toxic effects (Toxic).

OSHA/HCS status : This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200).

Emergency overview : WARNING!

FLAMMABLE LIQUID AND VAPOUR. CAUSES RESPIRATORY TRACT, EYE AND SKIN IRRITATION. CANCER HAZARD - CONTAINS MATERIAL WHICH CAN CAUSE CANCER. CONTAINS MATERIAL WHICH CAN CAUSE HERITABLE GENETIC EFFECTS.

Flammable liquid. Irritating to eyes, respiratory system and skin. Keep away from heat, sparks and flame. Avoid exposure - obtain special instructions before use. Do not breathe vapour or mist. Avoid contact with eyes, skin and clothing. Contains material which can cause cancer. Risk of cancer depends on duration and level of exposure. Contains material which can cause heritable genetic effects. Use only with adequate ventilation. Keep container tightly closed and sealed until ready for use. Wash thoroughly after handling.

Routes of entry : Dermal contact. Eye contact. Inhalation. Ingestion.

Potential acute health effects

Inhalation : Inhalation of this product may cause respiratory tract irritation. Inhalation of this product may cause respiratory tract irritation and Central Nervous System (CNS) Depression, symptoms of which may include; weakness, dizziness, slurred speech, drowsiness, unconsciousness and in cases of severe overexposure; coma and death.

Ingestion : Ingestion of this product may cause gastro-intestinal irritation. Aspiration of this product may result in severe irritation or burns to the respiratory tract. Ingestion of this product may cause Central Nervous System (CNS) Depression, symptoms of which may include; weakness, dizziness, slurred speech, drowsiness, unconsciousness and in cases of severe overexposure; coma and death.

2 . Hazards identification

Skin : Irritating to skin.

Eyes : Irritating to eyes.

Potential chronic health effects

Chronic effects : This product contains an ingredient or ingredients, which have been shown to cause chronic toxic effects. Repeated or prolonged exposure to the substance can produce blood disorders.

Carcinogenicity : Contains material which can cause cancer. Risk of cancer depends on duration and level of exposure.

Mutagenicity : Contains material which can cause heritable genetic effects.

Teratogenicity : No known significant effects or critical hazards.

Developmental effects : No known significant effects or critical hazards.

Fertility effects : No known significant effects or critical hazards.

Medical conditions aggravated by over-exposure : Repeated or prolonged contact with spray or mist may produce chronic eye irritation and severe skin irritation. Repeated skin exposure can produce local skin destruction or dermatitis.

See toxicological information (section 11)

3 . Composition/information on ingredients

Name	CAS number	%
Gasoline	86290-81-5	85-100
Ethanol	64-17-5	0.1-1
Benzene	71-43-2	0.5-1.5
Toluene	108-88-3	15-40*

**Montreal: may vary from 3-40%*
**Edmonton: may vary from 1-5%*

There are no additional ingredients present which, within the current knowledge of the supplier and in the concentrations applicable, are classified as hazardous to health or the environment and hence require reporting in this section.

4 . First-aid measures

Eye contact : Check for and remove any contact lenses. Immediately flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Get medical attention immediately.

Skin contact : In case of contact, immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Wash skin thoroughly with soap and water or use recognised skin cleanser. Wash clothing before reuse. Clean shoes thoroughly before reuse. Get medical attention immediately.

Inhalation : Move exposed person to fresh air. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. Loosen tight clothing such as a collar, tie, belt or waistband. Get medical attention immediately.

Ingestion : Wash out mouth with water. Do not induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person. Get medical attention immediately.

Protection of first-aiders : No action shall be taken involving any personal risk or without suitable training. If it is suspected that fumes are still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. Wash contaminated clothing thoroughly with water before removing it, or wear gloves.

Notes to physician : No specific treatment. Treat symptomatically. Contact poison treatment specialist immediately if large quantities have been ingested or inhaled.

5 . Fire-fighting measures

Flammability of the product : Flammable liquid (NFPA) .

Extinguishing media

Suitable : Use dry chemical, CO_2, water spray (fog) or foam.

Not suitable : Do not use water jet.

Special exposure hazards : Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training. Move containers from fire area if this can be done without risk. Use water spray to keep fire-exposed containers cool.

Products of combustion : Carbon oxides (CO, CO2), nitrogen oxides (NOx), polynuclear aromatic hydrocarbons, phenols, aldehydes, ketones, smoke and irritating vapours as products of incomplete combustion.

Special protective equipment for fire-fighters : Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.

Special remarks on fire hazards : Extremely flammable in presence of open flames, sparks, shocks, and heat. Vapours are heavier than air and may travel considerable distance to sources of ignition and flash back. Rapid escape of vapour may generate static charge causing ignition. May accumulate in confined spaces.

Special remarks on explosion hazards : Do not pressurise, cut, weld, braze, solder, drill, grind or expose containers to heat or sources of ignition. Containers may explode in heat of fire. Vapours may form explosive mixtures with air.

6 . Accidental release measures

Personal precautions : No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilt material. Shut off all ignition sources. No flares, smoking or flames in hazard area. Avoid breathing vapour or mist. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment (see section 8).

Environmental precautions : Avoid dispersal of spilt material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air).

Methods for cleaning up

Small spill : Stop leak if without risk. Move containers from spill area. Dilute with water and mop up if water-soluble or absorb with an inert dry material and place in an appropriate waste disposal container. Use spark-proof tools and explosion-proof equipment. Dispose of via a licensed waste disposal contractor.

Large spill : Stop leak if without risk. Move containers from spill area. Approach the release from upwind. Prevent entry into sewers, water courses, basements or confined areas. Wash spillages into an effluent treatment plant or proceed as follows. Contain and collect spillage with non-combustible, absorbent material e.g. sand, earth, vermiculite or diatomaceous earth and place in container for disposal according to local regulations (see section 13). Use spark-proof tools and explosion-proof equipment. Dispose of via a licensed waste disposal contractor. Contaminated absorbent material may pose the same hazard as the spilt product. Note: see section 1 for emergency contact information and section 13 for waste disposal.

7 . Handling and storage

Handling : Put on appropriate personal protective equipment (see section 8). Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Workers should wash hands and face before eating, drinking and smoking. Do not get in eyes or on skin or clothing. Do not ingest. Avoid breathing vapour or mist. Use only with adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Do not enter storage areas and confined spaces unless adequately ventilated. Keep in the original container or an approved alternative made from a compatible material, kept tightly closed when not in use. Store and use away from heat, sparks, open flame or any other ignition source. Use explosion-proof electrical

7 . Handling and storage

(ventilating, lighting and material handling) equipment. Use non-sparking tools. Take precautionary measures against electrostatic discharges. To avoid fire or explosion, dissipate static electricity during transfer by earthing and bonding containers and equipment before transferring material. Empty containers retain product residue and can be hazardous. Do not reuse container.

Storage : Store in accordance with local regulations. Store in a segregated and approved area. Store in original container protected from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see section 10) and food and drink. Eliminate all ignition sources. Separate from oxidizing materials. Keep container tightly closed and sealed until ready for use. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Do not store in unlabelled containers. Use appropriate containment to avoid environmental contamination. Ensure the storage containers are grounded/bonded.

8 . Exposure controls/personal protection

Ingredient	Exposure limits
Gasoline	**ACGIH TLV (United States).** TWA: 300 ppm 8 hour(s). STEL: 500 ppm 15 minute(s).
Ethanol	**ACGIH TLV (United States).** STEL: 1000 ppm 15 minute(s).
Benzene	**ACGIH TLV (United States). Absorbed through skin.** TWA: 0.5 ppm 8 hour(s). STEL: 2.5 ppm 15 minute(s).
Toluene	**ACGIH TLV (United States).** TWA: 20 ppm 8 hour(s).

Consult local authorities for acceptable exposure limits.

Recommended monitoring procedures : If this product contains ingredients with exposure limits, personal, workplace atmosphere or biological monitoring may be required to determine the effectiveness of the ventilation or other control measures and/or the necessity to use respiratory protective equipment.

Engineering measures : Use only with adequate ventilation. Use process enclosures, local exhaust ventilation or other engineering controls to keep worker exposure to airborne contaminants below any recommended or statutory limits. The engineering controls also need to keep gas, vapour or dust concentrations below any lower explosive limits. Use explosion-proof ventilation equipment.

Hygiene measures : Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and using the lavatory and at the end of the working period. Appropriate techniques should be used to remove potentially contaminated clothing. Wash contaminated clothing before reusing. Ensure that eyewash stations and safety showers are close to the workstation location.

Personal protection

Respiratory : Use a properly fitted, air-purifying or air-fed respirator complying with an approved standard if a risk assessment indicates this is necessary. Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator. Recommended: A NIOSH-approved air-purifying respirator with an organic vapour cartridge or canister may be permissible under certain circumstances where airborne concentrations are expected to exceed exposure limits. Protection provided by air-purifying respirators is limited. Use a positive-pressure, air-supplied respirator if there is any potential for uncontrolled release, exposure levels are unknown, or any other circumstances where air-purifying respirators may not provide adequate protection.

8 . Exposure controls/personal protection

Hands : Chemical-resistant, impervious gloves complying with an approved standard should be worn at all times when handling chemical products if a risk assessment indicates this is necessary.
Recommended: polyvinyl alcohol (PVA), Viton. Consult your PPE provider for breakthrough times and the specific glove that is best for you based on your use patterns. It should be realized that eventually any material regardless of their imperviousness, will get permeated by chemicals. Therefore, protective gloves should be regularly checked for wear and tear. At the first signs of hardening and cracks, they should be changed.

Eyes : Safety eyewear complying with an approved standard should be used when a risk assessment indicates this is necessary to avoid exposure to liquid splashes, mists or dusts.

Skin : Personal protective equipment for the body should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.

Environmental exposure controls : Emissions from ventilation or work process equipment should be checked to ensure they comply with the requirements of environmental protection legislation. In some cases, fume scrubbers, filters or engineering modifications to the process equipment will be necessary to reduce emissions to acceptable levels.

9 . Physical and chemical properties

Physical state : Clear liquid.

Flash point : Closed cup: -50 to -38°C (-58 to -36.4°F) [Tagliabue.]

Auto-ignition temperature : 257°C (494.6°F) (NFPA)

Flammable limits : Lower: 1.3% (NFPA)
Upper: 7.6% (NFPA)

Colour : Clear to slightly yellow or green, undyed liquid. May be dyed red for taxation purposes.

Odour : Gasoline

Odour threshold : Not available.

pH : Not available.

Boiling/condensation point : 25 to 220°C (77 to 428°F) (ASTM D86)

Melting/freezing point : Not available.

Relative density : 0.685 to 0.8 kg/L @ 15°C (59°F)

Vapour pressure : <107 kPa (<802.5 mm Hg) @ 37.8°C (100°F)

Vapour density : 3 to 4 [Air = 1] (NFPA)

Volatility : Not available.

Evaporation rate : Not available.

Viscosity : Not available.

Pour point : Not available.

Solubility : Hydrocarbon components virtually insoluble in water. Soluble in alcohol, ether, chloroform and benzene. Dissolves fats, oils and natural resins.

10 . Stability and reactivity

Chemical stability : The product is stable.

Hazardous polymerisation : Under normal conditions of storage and use, hazardous polymerisation will not occur.

Materials to avoid : Reactive with oxidising agents, acids and interhalogens.

Hazardous decomposition products : May release COx, NOx, phenols, polycyclic aromatic hydrocarbons, aldehydes, ketones, smoke and irritating vapours when heated to decomposition.

11 . Toxicological information

Acute toxicity

Product/ingredient name	Result	Species	Dose	Exposure
Gasoline	LD50 Dermal	Rabbit	>5000 mg/kg	-
	LD50 Oral	Rat	13600 mg/kg	-
Ethanol	LD50 Dermal	Rabbit	>15800 mg/kg	-
	LD50 Oral	Mouse	3450 mg/kg	-
	LC50 Inhalation Vapour	Rat	8850 mg/m³	4 hours
Benzene	LD50 Dermal	Rabbit	>8240 mg/kg	-
	LD50 Oral	Rat	930 mg/kg	-
	LC50 Inhalation Vapour	Rat	13228 ppm	4 hours
Toluene	LD50 Dermal	Rabbit	12125 mg/kg	-
	LD50 Oral	Rat	636 mg/kg	-
	LC50 Inhalation Vapour	Rat	7585 ppm	4 hours

Conclusion/Summary : Not available.

Chronic toxicity

Conclusion/Summary : Not available.

Irritation/Corrosion

Conclusion/Summary : Not available.

Sensitiser

Conclusion/Summary : Not available.

Carcinogenicity

Conclusion/Summary : Not available.

Classification

Product/ingredient name	ACGIH	IARC	EPA	NIOSH	NTP	OSHA
Gasoline	A3	2B	-	-	-	-
Ethanol	A3	-	-	-	-	-
Benzene	A1	1	A	+	Proven.	+
Toluene	A4	3	D	-	-	-

Mutagenicity

Conclusion/Summary : Not available.

Teratogenicity

Conclusion/Summary : There is a wealth of information about the teratogenic hazards of Toluene in the literature; however, based upon professional judgement regarding the body of evidence, WHMIS classification as a teratogen is not warranted.

Reproductive toxicity

Conclusion/Summary : Not available.

12 . Ecological information

Environmental effects : No known significant effects or critical hazards.

Aquatic ecotoxicity

Conclusion/Summary : Not available.

Biodegradability

Conclusion/Summary : Not available.

13 . Disposal considerations

Waste disposal : The generation of waste should be avoided or minimised wherever possible. Empty containers or liners may retain some product residues. This material and its container must be disposed of in a safe way. Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. Disposal of this product, solutions and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements. Avoid dispersal of spilt material and runoff and contact with soil, waterways, drains and sewers.

Disposal should be in accordance with applicable regional, national and local laws and regulations.

Refer to Section 7: HANDLING AND STORAGE and Section 8: EXPOSURE CONTROLS/PERSONAL PROTECTION for additional handling information and protection of employees.

14 . Transport information

Regulatory information	UN number	Proper shipping name	Classes	PG*	Label	Additional information
TDG Classification	UN1203	GASOLINE	3	II		-
DOT Classification	Not available.	Not available.	Not available.	-		-

PG* : Packing group

15 . Regulatory information

United States

HCS Classification : Flammable liquid
Irritating material
Carcinogen

Canada

WHMIS (Canada) : Class B-2: Flammable liquid
Class D-2A: Material causing other toxic effects (Very toxic).
Class D-2B: Material causing other toxic effects (Toxic).

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

International regulations

Canada inventory : All components are listed or exempted.

United States inventory (TSCA 8b) : All components are listed or exempted.

Europe inventory : All components are listed or exempted.

16 . Other information

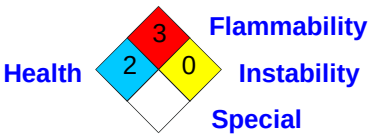
Label requirements : FLAMMABLE LIQUID AND VAPOUR. CAUSES RESPIRATORY TRACT, EYE AND SKIN IRRITATION. CANCER HAZARD - CONTAINS MATERIAL WHICH CAN CAUSE CANCER. CONTAINS MATERIAL WHICH CAN CAUSE HERITABLE GENETIC EFFECTS.

Hazardous Material Information System (U.S.A.) :

Health	*	2
Flammability		3
Physical hazards		0
Personal protection		H

16 . Other information

National Fire Protection Association (U.S.A.) :



References : Available upon request.
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Date of printing : **4/21/2010.**

Date of issue : 9 April 2010

Date of previous issue : No previous validation.

Responsible name : **Product Safety - RS**

Indicates information that has changed from previously issued version.

For Copy of (M)SDS : Internet: www.petro-canada.ca/msds

Canada-wide: telephone: 1-800-668-0220; fax: 1-800-837-1228

For Product Safety Information: (905) 804-4752

Notice to reader

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Material Safety Data Sheet

JET A/A-1 AVIATION TURBINE FUEL

1 . Product and company identification

Product name : JET A/A-1 AVIATION TURBINE FUEL

Synonym : Jet A-1; Jet A-1-DI; Aviation Turbine Kerosene (ATK); JP-8; NATO F-34; Jet F-34; Turbine Fuel, Aviation, Kerosene Type (CAN/CGSB-3.32)

Code : W213, SAP: 149

Material uses : Used as aviation turbine fuel. May contain a fuel system icing inhibitor. In the arctic, Jet A-1 may also be used as diesel fuel and heating oil.

Manufacturer : PETRO-CANADA
P.O. Box 2844
150 – 6th Avenue South-West
Calgary, Alberta
T2P 3E3

In case of emergency : Petro-Canada: 403-296-3000
Canutec Transportation: 613-996-6666
Poison Control Centre: Consult local telephone directory for emergency number(s).

2 . Hazards identification

Physical state : Clear liquid.

Odour : Kerosene-like.

WHMIS (Canada) :

Class B-3: Combustible liquid with a flash point between 37.8°C (100°F) and 93.3°C (200°F).
Class D-2A: Material causing other toxic effects (Very toxic).

The WHMIS classification of Jet A/A-1 is B3.
The WHMIS classification of Jet A/A-1-DI, JP-8, Jet F-34 and NATO F-34, which all contain FSII (Diethylene Glycol Monomethyl Ether), is B3, D2A.

OSHA/HCS status : This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200).

Emergency overview : COMBUSTIBLE LIQUID AND VAPOUR. MAY CAUSE EYE AND SKIN IRRITATION. POSSIBLE BIRTH DEFECT HAZARD - CONTAINS MATERIAL WHICH MAY CAUSE BIRTH DEFECTS, BASED ON ANIMAL DATA.

Combustible liquid. Slightly irritating to the eyes and skin. Keep away from heat, sparks and flame. Avoid exposure - obtain special instructions before use. Do not breathe vapour or mist. Avoid contact with eyes, skin and clothing. Contains material which may cause birth defects, based on animal data. Avoid exposure during pregnancy. Use only with adequate ventilation. Wash thoroughly after handling.

Routes of entry : Dermal contact. Eye contact. Inhalation. Ingestion.

Potential acute health effects

Inhalation : Inhalation of this product may cause respiratory tract irritation and Central Nervous System (CNS) Depression, symptoms of which may include; weakness, dizziness, slurred speech, drowsiness, unconsciousness and in cases of severe overexposure; coma and death.

Ingestion : Ingestion of this product may cause gastro-intestinal irritation. Aspiration of this product may result in severe irritation or burns to the respiratory tract.

Skin : Slightly irritating to the skin.

Eyes : Slightly irritating to the eyes.

Potential chronic health effects

Chronic effects : No known significant effects or critical hazards.

Carcinogenicity : No known significant effects or critical hazards.

Mutagenicity : No known significant effects or critical hazards.

2 . Hazards identification

Teratogenicity : Contains material which may cause birth defects, based on animal data.

Developmental effects : No known significant effects or critical hazards.

Fertility effects : No known significant effects or critical hazards.

Medical conditions aggravated by over-exposure : Repeated skin exposure can produce local skin destruction or dermatitis.

See toxicological information (section 11)

3 . Composition/information on ingredients

Name	CAS number	%
Complex mixture of petroleum hydrocarbons (C9-C16)*(Kerosene)	8008-20-6	99.9
Fuel System Icing Inhibitor (FSII) (if added**): (Diethylene Glycol Monomethyl Ether)	111-77-3	0.1 - 0.15
Anti-static, antioxidant and metal deactivator additives	Not applicable	<0.1

*Aromatic content is 25% maximum (benzene: nil).
**Please note that Jet A-1-DI, JP-8, Jet F-34 and NATO F-34 all contain Fuel System Icing Inhibitor.

There are no additional ingredients present which, within the current knowledge of the supplier and in the concentrations applicable, are classified as hazardous to health or the environment and hence require reporting in this section.

4 . First-aid measures

Eye contact : Check for and remove any contact lenses. Immediately flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Get medical attention immediately.

Skin contact : In case of contact, immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Wash skin thoroughly with soap and water or use recognised skin cleanser. Wash clothing before reuse. Clean shoes thoroughly before reuse. Get medical attention immediately.

Inhalation : Move exposed person to fresh air. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. Loosen tight clothing such as a collar, tie, belt or waistband. Get medical attention immediately.

Ingestion : Wash out mouth with water. Do not induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person. Get medical attention immediately.

Protection of first-aiders : No action shall be taken involving any personal risk or without suitable training. If it is suspected that fumes are still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. Wash contaminated clothing thoroughly with water before removing it, or wear gloves.

Notes to physician : No specific treatment. Treat symptomatically. Contact poison treatment specialist immediately if large quantities have been ingested or inhaled.

5 . Fire-fighting measures

Flammability of the product : Class II - combustible liquid (NFPA).

Extinguishing media

Suitable : Use dry chemical, CO_2, water spray (fog) or foam.

Not suitable : Do not use water jet.

Special exposure hazards : Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training. Move containers from fire area if this can be done without risk. Use water spray to keep fire-exposed containers cool.

Products of combustion : Carbon oxides (CO, CO2), nitrogen oxides (NOx), sulphur oxides (SOx), smoke and irritating vapours as products of incomplete combustion.

5 . Fire-fighting measures

Special protective equipment for fire-fighters : Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.

Special remarks on fire hazards : Flammable in presence of open flames, sparks, and heat. Vapours are heavier than air and may travel considerable distance to sources of ignition and flash back. This product can accumulate static charge and ignite. May accumulate in confined spaces.

Special remarks on explosion hazards : Do not pressurise, cut, weld, braze, solder, drill, grind or expose containers to heat or sources of ignition. Containers may explode in heat of fire.

6 . Accidental release measures

Personal precautions : No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilt material. Shut off all ignition sources. No flares, smoking or flames in hazard area. Avoid breathing vapour or mist. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment (see section 8).

Environmental precautions : Avoid dispersal of spilt material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air).

Methods for cleaning up

Small spill : Stop leak if without risk. Move containers from spill area. Dilute with water and mop up if water-soluble or absorb with an inert dry material and place in an appropriate waste disposal container. Use spark-proof tools and explosion-proof equipment. Dispose of via a licensed waste disposal contractor.

Large spill : Stop leak if without risk. Move containers from spill area. Approach the release from upwind. Prevent entry into sewers, water courses, basements or confined areas. Wash spillages into an effluent treatment plant or proceed as follows. Contain and collect spillage with non-combustible, absorbent material e.g. sand, earth, vermiculite or diatomaceous earth and place in container for disposal according to local regulations (see section 13). Use spark-proof tools and explosion-proof equipment. Dispose of via a licensed waste disposal contractor. Contaminated absorbent material may pose the same hazard as the spilt product. Note: see section 1 for emergency contact information and section 13 for waste disposal.

7 . Handling and storage

Handling : Put on appropriate personal protective equipment (see section 8). Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Workers should wash hands and face before eating, drinking and smoking. Avoid exposure during pregnancy. Do not get in eyes or on skin or clothing. Do not ingest. Avoid breathing vapour or mist. Use only with adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Do not enter storage areas and confined spaces unless adequately ventilated. Keep in the original container or an approved alternative made from a compatible material, kept tightly closed when not in use. Store and use away from heat, sparks, open flame or any other ignition source. Use explosion-proof electrical (ventilating, lighting and material handling) equipment. Use non-sparking tools. Take precautionary measures against electrostatic discharges. To avoid fire or explosion, dissipate static electricity during transfer by earthing and bonding containers and equipment before transferring material. Empty containers retain product residue and can be hazardous. Do not reuse container.

Storage : Store in accordance with local regulations. Store in a segregated and approved area. Store in original container protected from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see section 10) and food and drink. Eliminate all ignition sources. Separate from oxidizing materials. Keep container tightly closed and sealed until ready for use. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Do not store in unlabelled containers. Use appropriate containment to avoid environmental contamination. Ensure the storage containers are grounded/bonded.

8 . Exposure controls/personal protection

Ingredient	Exposure limits
Kerosene	**ACGIH TLV (United States).** TWA: 200 mg/m³

Consult local authorities for acceptable exposure limits.

Recommended monitoring procedures : If this product contains ingredients with exposure limits, personal, workplace atmosphere or biological monitoring may be required to determine the effectiveness of the ventilation or other control measures and/or the necessity to use respiratory protective equipment.

Engineering measures : Use only with adequate ventilation. Use process enclosures, local exhaust ventilation or other engineering controls to keep worker exposure to airborne contaminants below any recommended or statutory limits. The engineering controls also need to keep gas, vapour or dust concentrations below any lower explosive limits. Use explosion-proof ventilation equipment.

Hygiene measures : Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and using the lavatory and at the end of the working period. Appropriate techniques should be used to remove potentially contaminated clothing. Wash contaminated clothing before reusing. Ensure that eyewash stations and safety showers are close to the workstation location.

Personal protection

Respiratory : Use a properly fitted, air-purifying or air-fed respirator complying with an approved standard if a risk assessment indicates this is necessary. Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator. Recommended: A NIOSH-approved air-purifying respirator with an organic vapour cartridge or canister may be permissible under certain circumstances where airborne concentrations are expected to exceed exposure limits. Protection provided by air-purifying respirators is limited. Use a positive-pressure, air-supplied respirator if there is any potential for uncontrolled release, exposure levels are unknown, or any other circumstances where air-purifying respirators may not provide adequate protection.

Hands : Chemical-resistant, impervious gloves complying with an approved standard should be worn at all times when handling chemical products if a risk assessment indicates this is necessary.
Recommended: polyvinyl alcohol (PVA), Viton. Consult your PPE provider for breakthrough times and the specific glove that is best for you based on your use patterns. It should be realized that eventually any material regardless of their imperviousness, will get permeated by chemicals. Therefore, protective gloves should be regularly checked for wear and tear. At the first signs of hardening and cracks, they should be changed.

Eyes : Safety eyewear complying with an approved standard should be used when a risk assessment indicates this is necessary to avoid exposure to liquid splashes, mists or dusts.

Skin : Personal protective equipment for the body should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.

Environmental exposure controls : Emissions from ventilation or work process equipment should be checked to ensure they comply with the requirements of environmental protection legislation. In some cases, fume scrubbers, filters or engineering modifications to the process equipment will be necessary to reduce emissions to acceptable levels.

9 . Physical and chemical properties

Physical state : Clear liquid.

Flash point : Closed cup: ≥38°C (≥100.4°F) [Tag. Closed Cup]

Auto-ignition temperature : 210°C (410°F)

Flammable limits : Lower: 0.7%
Upper: 5%

Colour : Clear and colourless.

9 . Physical and chemical properties

Odour : Kerosene-like.

Odour threshold : Not available.

pH : Not available.

Boiling/condensation point : 140 to 300°C (284 to 572°F)

Melting/freezing point : Not available.

Relative density : 0.775 to 0.84 (Water=1)

Vapour pressure : 0.7 kPa (5.25 mm Hg) @ 20°C (68ºF).

Vapour density : 4.5 [Air = 1]

Volatility : Volatile.

Evaporation rate : Not available.

Viscosity : 1.0 - 1.9 cSt @ 40ºC (104ºF)

Pour point : <-51ºC (<-60°F)

Solubility : Insoluble in water. Partially miscible in some alcohols. Miscible with other petroleum solvents.

10 . Stability and reactivity

Chemical stability : The product is stable.

Hazardous polymerisation : Under normal conditions of storage and use, hazardous polymerisation will not occur.

Materials to avoid : Reactive with oxidising agents, acids and alkalis.

Hazardous decomposition products : May release COx, NOx, SOx, aldehydes, acids, ketones, smoke and irritating vapours when heated to decomposition.

11 . Toxicological information

Acute toxicity

Product/ingredient name	Result	Species	Dose	Exposure
Kerosene	LD50 Dermal	Rabbit	>2000 mg/kg	-
	LD50 Oral	Rat	>5000 mg/kg	-
	LC50 Inhalation Vapour	Rat	>5000 mg/m³	4 hours
Diethylene Glycol Monomethyl Ether	LD50 Dermal	Rabbit	>2000 mg/kg	-
	LD50 Oral	Rat	4000 mg/kg	-
	LC50 Inhalation Vapour	Rat	>50000 mg/m³	4 hours

Conclusion/Summary : Not available.

Chronic toxicity

Conclusion/Summary : Not available.

Irritation/Corrosion

Conclusion/Summary : Not available.

Sensitiser

Conclusion/Summary : Not available.

Carcinogenicity

Conclusion/Summary : Not available.

Classification

Product/ingredient name	ACGIH	IARC	EPA	NIOSH	NTP	OSHA
Kerosene	A3	3	-	-	-	-

Mutagenicity

Conclusion/Summary : Not available.

Teratogenicity

Conclusion/Summary : Not available.

11 . Toxicological information

Reproductive toxicity

Conclusion/Summary : Not available.

12 . Ecological information

Environmental effects : No known significant effects or critical hazards.

Aquatic ecotoxicity

Conclusion/Summary : Not available.

Biodegradability

Conclusion/Summary : Not available.

13 . Disposal considerations

Waste disposal : The generation of waste should be avoided or minimised wherever possible. Empty containers or liners may retain some product residues. This material and its container must be disposed of in a safe way. Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. Disposal of this product, solutions and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements. Avoid dispersal of spilt material and runoff and contact with soil, waterways, drains and sewers.

Disposal should be in accordance with applicable regional, national and local laws and regulations.

Refer to Section 7: HANDLING AND STORAGE and Section 8: EXPOSURE CONTROLS/PERSONAL PROTECTION for additional handling information and protection of employees.

14 . Transport information

Regulatory information	UN number	Proper shipping name	Classes	PG*	Label	Additional information
TDG Classification	UN1863	FUEL, AVIATION, TURBINE ENGINE	3	III		-
DOT Classification	Not available.	Not available.	Not available.	-		-

PG* : Packing group

15 . Regulatory information

United States

HCS Classification : Combustible liquid

Canada

WHMIS (Canada) : Class B-3: Combustible liquid with a flash point between 37.8°C (100°F) and 93.3°C (200°F).
Class D-2A: Material causing other toxic effects (Very toxic).

The WHMIS classification of Jet A/A-1 is B3.
The WHMIS classification of Jet A/A-1-DI, JP-8, Jet F-34 and NATO F-34, which all contain FSII (Diethylene Glycol Monomethyl Ether), is B3, D2A.

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

International regulations

Canada inventory : All components are listed or exempted.

United States inventory (TSCA 8b) : All components are listed or exempted.

Europe inventory : All components are listed or exempted.

16 . Other information

Label requirements : COMBUSTIBLE LIQUID AND VAPOUR. MAY CAUSE EYE AND SKIN IRRITATION. POSSIBLE BIRTH DEFECT HAZARD - CONTAINS MATERIAL WHICH MAY CAUSE BIRTH DEFECTS, BASED ON ANIMAL DATA.

Hazardous Material Information System (U.S.A.) :

Health	*	2
Flammability		2
Physical hazards		0
Personal protection		H

National Fire Protection Association (U.S.A.) :

References : Available upon request.
TM/MC Marque de commerce de Petro-Canada - Trademark

Date of printing : **11/20/2009.**

Date of issue : 20 November 2009

Date of previous issue : No previous validation.

Responsible name : **Product Safety - DSR**

Indicates information that has changed from previously issued version.

For Copy of (M)SDS : Internet: www.petro-canada.ca/msds

Canada-wide: telephone: 1-800-668-0220; fax: 1-800-837-1228

For Product Safety Information: (905) 804-4752

Notice to reader

To the best of our knowledge, the information contained herein is accurate. However, neither the above-named supplier, nor any of its subsidiaries, assumes any liability whatsoever for the accuracy or completeness of the information contained herein.
Final determination of suitability of any material is the sole responsibility of the user. All materials may present unknown hazards and should be used with caution. Although certain hazards are described herein, we cannot guarantee that these are the only hazards that exist.

Material Safety Data Sheet

Oxygen

Section 1. Chemical product and company identification

Product name : Oxygen

Supplier : AIRGAS INC., on behalf of its subsidiaries
259 North Radnor-Chester Road
Suite 100
Radnor, PA 19087-5283
1-610-687-5253

Product use : Synthetic/Analytical chemistry.

Synonym : Molecular oxygen; Oxygen molecule; Pure oxygen; O2; Liquid-oxygen-; UN 1072; UN 1073; Dioxygen; Oxygen USP, Aviator's Breathing Oxygen (ABO)

MSDS # : 001043

Date of Preparation/Revision : **6/16/2011.**

In case of emergency : 1-866-734-3438

Section 2. Hazards identification

Physical state : Gas.

Emergency overview : DANGER!

GAS:
OXIDIZER.
CONTACT WITH COMBUSTIBLE MATERIAL MAY CAUSE FIRE.
CONTENTS UNDER PRESURE.
Do not puncture or incinerate container.
May cause severe frostbite.
LIQUID:
OXIDIZER.
CONTACT WITH COMBUSTIBLE MATERIAL MAY CAUSE FIRE.
Extremely cold liquid and gas under pressure.
May cause severe frostbite.

Do not puncture or incinerate container. Store in tightly-closed container. Avoid contact with combustible materials.

Contact with rapidly expanding gases or liquids can cause frostbite.

Routes of entry : Inhalation

Potential acute health effects

Eyes : May cause eye irritation. Contact with rapidly expanding gas may cause burns or frostbite. Contact with cryogenic liquid can cause frostbite and cryogenic burns.

Skin : May cause skin irritation. Contact with rapidly expanding gas may cause burns or frostbite. Contact with cryogenic liquid can cause frostbite and cryogenic burns.

Inhalation : Respiratory system irritation after overexposure to high oxygen concentrations.

Ingestion : Ingestion is not a normal route of exposure for gases. Contact with cryogenic liquid can cause frostbite and cryogenic burns.

Medical conditions aggravated by over-exposure : Acute or chronic respiratory conditions may be aggravated by overexposure to this gas.

See toxicological information (Section 11)

Section 3. Composition, Information on Ingredients

Name	CAS number	% Volume	Exposure limits
Oxygen	7782-44-7	100	

Section 4. First aid measures

No action shall be taken involving any personal risk or without suitable training.If it is suspected that fumes are still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus.It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation.

Eye contact : Check for and remove any contact lenses. Immediately flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Get medical attention immediately.

Skin contact : None expected.

Frostbite : Try to warm up the frozen tissues and seek medical attention.

Inhalation : If inhaled, remove to fresh air. If not breathing, give artificial respiration. Get medical attention.

Ingestion : As this product is a gas, refer to the inhalation section.

Section 5. Fire-fighting measures

Flammability of the product : Non-flammable.

Products of combustion : No specific data.

Fire hazards in the presence of various substances : Extremely flammable in the presence of the following materials or conditions: reducing materials, combustible materials and organic materials.

Fire-fighting media and instructions : Use an extinguishing agent suitable for the surrounding fire.

Apply water from a safe distance to cool container and protect surrounding area. If involved in fire, shut off flow immediately if it can be done without risk.

Contains gas under pressure. Contact with combustible material may cause fire. This material increases the risk of fire and may aid combustion. In a fire or if heated, a pressure increase will occur and the container may burst or explode.

Special protective equipment for fire-fighters : Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.

Section 6. Accidental release measures

Personal precautions : Immediately contact emergency personnel. Keep unnecessary personnel away. Use suitable protective equipment (section 8). Eliminate all ignition sources if safe to do so. Do not touch or walk through spilled material. Shut off gas supply if this can be done safely. Isolate area until gas has dispersed.

Environmental precautions : Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers.

Methods for cleaning up : Immediately contact emergency personnel. Stop leak if without risk. Use spark-proof tools and explosion-proof equipment. Note: see section 1 for emergency contact information and section 13 for waste disposal.

Section 7. Handling and storage

Handling : High pressure gas. Do not puncture or incinerate container. Use equipment rated for cylinder pressure. Close valve after each use and when empty. Store in tightly-closed container. Avoid contact with combustible materials. Protect cylinders from physical damage; do not drag, roll, slide, or drop. Use a suitable hand truck for cylinder movement.

Never allow any unprotected part of the body to touch uninsulated pipes or vessels that contain cryogenic liquids. Prevent entrapment of liquid in closed systems or piping without pressure relief devices. Some materials may become brittle at low temperatures and will easily fracture.

Storage : Keep container tightly closed. Keep container in a cool, well-ventilated area. Separate from acids, alkalies, reducing agents and combustibles. Cylinders should be stored upright, with valve protection cap in place, and firmly secured to prevent falling or being knocked over. Cylinder temperatures should not exceed 52 °C (125 °F).
For additional information concerning storage and handling refer to Compressed Gas Association pamphlets P-1 Safe Handling of Compressed Gases in Containers and P-12 Safe Handling of Cryogenic Liquids available from the Compressed Gas Association, Inc.

Section 8. Exposure controls/personal protection

Engineering controls : Use only with adequate ventilation. Use process enclosures, local exhaust ventilation or other engineering controls to keep worker exposure to airborne contaminants below any recommended or statutory limits.

Personal protection

Eyes : Safety eyewear complying with an approved standard should be used when a risk assessment indicates this is necessary to avoid exposure to liquid splashes, mists or dusts.

When working with cryogenic liquids, wear a full face shield.

Skin : Personal protective equipment for the body should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.

Respiratory : Use a properly fitted, air-purifying or air-fed respirator complying with an approved standard if a risk assessment indicates this is necessary. Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator.

The applicable standards are (US) 29 CFR 1910.134 and (Canada) Z94.4-93

Hands : Chemical-resistant, impervious gloves complying with an approved standard should be worn at all times when handling chemical products if a risk assessment indicates this is necessary.

Insulated gloves suitable for low temperatures

Personal protection in case of a large spill : Self-contained breathing apparatus (SCBA) should be used to avoid inhalation of the product.

Product name

Oxygen

Consult local authorities for acceptable exposure limits.

Section 9. Physical and chemical properties

Molecular weight : 32 g/mole

Molecular formula : O2

Boiling/condensation point : -183°C (-297.4°F)

Melting/freezing point : -218.4°C (-361.1°F)

Critical temperature : -118.6°C (-181.5°F)

Vapor density : 1.105 (Air = 1) Liquid Density@BP: 71.23 lb/ft3 (1141 kg/m3)

Specific Volume (ft^3/lb) : 12.0482

Gas Density (lb/ft^3) : 0.083

Section 10. Stability and reactivity

Stability and reactivity : The product is stable.

Incompatibility with various substances : Extremely reactive or incompatible with the following materials: oxidizing materials, reducing materials and combustible materials.

Hazardous decomposition products : Under normal conditions of storage and use, hazardous decomposition products should not be produced.

Hazardous polymerization : Under normal conditions of storage and use, hazardous polymerization will not occur.

Section 11. Toxicological information

Toxicity data

Other toxic effects on humans : No specific information is available in our database regarding the other toxic effects of this material to humans.

Specific effects

Carcinogenic effects : No known significant effects or critical hazards.

Mutagenic effects : No known significant effects or critical hazards.

Reproduction toxicity : No known significant effects or critical hazards.

Section 12. Ecological information

Aquatic ecotoxicity

Not available.

Environmental fate : Not available.

Environmental hazards : This product shows a low bioaccumulation potential.

Toxicity to the environment : Not available.

Section 13. Disposal considerations

Product removed from the cylinder must be disposed of in accordance with appropriate Federal, State, local regulation.Return cylinders with residual product to Airgas, Inc.Do not dispose of locally.

Section 14. Transport information

Regulatory information	UN number	Proper shipping name	Class	Packing group	Label	Additional information
DOT Classification	UN1072 UN1073	OXYGEN, COMPRESSED Oxygen, refrigerated liquid	2.2	Not applicable (gas).	 	**Limited quantity** Yes. **Packaging instruction** **Passenger aircraft** Quantity limitation: 75 kg **Cargo aircraft** Quantity limitation: 150 kg **Special provisions** A52
TDG Classification	UN1072 UN1073	OXYGEN, COMPRESSED Oxygen, refrigerated liquid	2.2	Not applicable (gas).	 	**Explosive Limit and Limited Quantity Index** 0.125 **ERAP Index** 3000 **Passenger Carrying Ship**

						Index 50 **Passenger Carrying Road or Rail Index** 75 **Special provisions** 42
Mexico Classification	UN1072 UN1073	OXYGEN, COMPRESSED Oxygen, refrigerated liquid	2.2	Not applicable (gas).		-

"Refer to CFR 49 (or authority having jurisdiction) to determine the information required for shipment of the product."

Section 15. Regulatory information

United States

U.S. Federal regulations :

TSCA 8(a) IUR: Partial exemption
United States inventory (TSCA 8b): This material is listed or exempted.

SARA 302/304/311/312 extremely hazardous substances: No products were found.
SARA 302/304 emergency planning and notification: No products were found.
SARA 302/304/311/312 hazardous chemicals: Oxygen
SARA 311/312 MSDS distribution - chemical inventory - hazard identification: Oxygen: Fire hazard, Sudden release of pressure, Delayed (chronic) health hazard

State regulations :

Connecticut Carcinogen Reporting: This material is not listed.
Connecticut Hazardous Material Survey: This material is not listed.
Florida substances: This material is not listed.
Illinois Chemical Safety Act: This material is not listed.
Illinois Toxic Substances Disclosure to Employee Act: This material is not listed.
Louisiana Reporting: This material is not listed.
Louisiana Spill: This material is not listed.
Massachusetts Spill: This material is not listed.
Massachusetts Substances: This material is listed.
Michigan Critical Material: This material is not listed.
Minnesota Hazardous Substances: This material is not listed.
New Jersey Hazardous Substances: This material is listed.
New Jersey Spill: This material is not listed.
New Jersey Toxic Catastrophe Prevention Act: This material is not listed.
New York Acutely Hazardous Substances: This material is not listed.
New York Toxic Chemical Release Reporting: This material is not listed.
Pennsylvania RTK Hazardous Substances: This material is listed.
Rhode Island Hazardous Substances: This material is not listed.

Canada

WHMIS (Canada) :

Class A: Compressed gas.
Class C: Oxidizing material.

CEPA Toxic substances: This material is not listed.
Canadian ARET: This material is not listed.
Canadian NPRI: This material is not listed.
Alberta Designated Substances: This material is not listed.
Ontario Designated Substances: This material is not listed.
Quebec Designated Substances: This material is not listed.

Section 16. Other information

United States

Label requirements : GAS:
OXIDIZER.
CONTACT WITH COMBUSTIBLE MATERIAL MAY CAUSE FIRE.
CONTENTS UNDER PRESURE.
Do not puncture or incinerate container.
May cause severe frostbite.
LIQUID:
OXIDIZER.
CONTACT WITH COMBUSTIBLE MATERIAL MAY CAUSE FIRE.
Extremely cold liquid and gas under pressure.
May cause severe frostbite.

Canada

Label requirements : Class A: Compressed gas.
Class C: Oxidizing material.

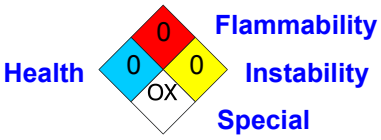
Hazardous Material Information System (U.S.A.) :

Health	0
Flammability	0
Physical hazards	0

liquid:

Health	3
Fire hazard	0
Reactivity	0
Personal protection	

National Fire Protection Association (U.S.A.) :



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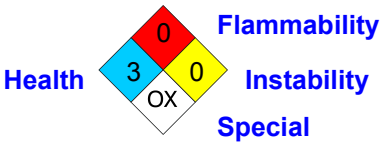

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Material Safety Data Sheet

Acetylene

Section 1. Chemical product and company identification

Product name : Acetylene

Supplier : AIRGAS INC., on behalf of its subsidiaries
259 North Radnor-Chester Road
Suite 100
Radnor, PA 19087-5283
1-610-687-5253

Product use : Synthetic/Analytical chemistry.

Synonym : acetylen; acetylene ; ethine; ethyne; narcylen

MSDS # : 001001

Date of Preparation/Revision : **5/11/2011.**

In case of emergency : 1-866-734-3438

Section 2. Hazards identification

Physical state : Gas.

Emergency overview : WARNING!

FLAMMABLE GAS.
MAY CAUSE FLASH FIRE.
MAY CAUSE TARGET ORGAN DAMAGE, BASED ON ANIMAL DATA.
CONTENTS UNDER PRESSURE.

Keep away from heat, sparks and flame. Do not puncture or incinerate container. May cause target organ damage, based on animal data. Use only with adequate ventilation. Keep container closed.

Contact with rapidly expanding gases can cause frostbite.

Target organs : May cause damage to the following organs: lungs, upper respiratory tract, central nervous system (CNS).

Routes of entry : Inhalation

Potential acute health effects

Eyes : Contact with rapidly expanding gas may cause burns or frostbite.

Skin : Contact with rapidly expanding gas may cause burns or frostbite.

Inhalation : Acts as a simple asphyxiant.

Ingestion : Ingestion is not a normal route of exposure for gases

Potential chronic health effects

Chronic effects : May cause target organ damage, based on animal data.

Target organs : May cause damage to the following organs: lungs, upper respiratory tract, central nervous system (CNS).

Medical conditions aggravated by over-exposure : Pre-existing disorders involving any target organs mentioned in this MSDS as being at risk may be aggravated by over-exposure to this product.

See toxicological information (Section 11)

Section 3. Composition, Information on Ingredients

Name	CAS number	% Volume	Exposure limits
Acetylene	74-86-2	100	**NIOSH REL (United States, 6/2009).** CEIL: 2662 mg/m³ CEIL: 2500 ppm

Section 4. First aid measures

No action shall be taken involving any personal risk or without suitable training.If it is suspected that fumes are still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus.It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation.

Eye contact : Check for and remove any contact lenses. Immediately flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Get medical attention immediately.

Skin contact : In case of contact, immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. To avoid the risk of static discharges and gas ignition, soak contaminated clothing thoroughly with water before removing it. Wash clothing before reuse. Clean shoes thoroughly before reuse. Get medical attention immediately.

Frostbite : Try to warm up the frozen tissues and seek medical attention.

Inhalation : Move exposed person to fresh air. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. Loosen tight clothing such as a collar, tie, belt or waistband. Get medical attention immediately.

Ingestion : As this product is a gas, refer to the inhalation section.

Section 5. Fire-fighting measures

Flammability of the product : Flammable.

Auto-ignition temperature : 305°C (581°F)

Flash point : Closed cup: -18.15°C (-0.7°F).

Flammable limits : Lower: 2.5% Upper: 100%

Products of combustion : Decomposition products may include the following materials:
carbon dioxide
carbon monoxide

Fire hazards in the presence of various substances : Extremely flammable in the presence of the following materials or conditions: open flames, sparks and static discharge, heat and oxidizing materials.

Fire-fighting media and instructions : In case of fire, use water spray (fog), foam or dry chemical.

In case of fire, allow gas to burn if flow cannot be shut off immediately. Apply water from a safe distance to cool container and protect surrounding area. If involved in fire, shut off flow immediately if it can be done without risk.

Contains gas under pressure. Flammable gas. In a fire or if heated, a pressure increase will occur and the container may burst, with the risk of a subsequent explosion.

Special protective equipment for fire-fighters : Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.

Section 6. Accidental release measures

Personal precautions : Immediately contact emergency personnel. Keep unnecessary personnel away. Use suitable protective equipment (section 8). Shut off gas supply if this can be done safely. Isolate area until gas has dispersed.

Environmental precautions : Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers.

Methods for cleaning up : Immediately contact emergency personnel. Stop leak if without risk. Use spark-proof tools and explosion-proof equipment. Note: see section 1 for emergency contact information and section 13 for waste disposal.

Section 7. Handling and storage

Handling : Use only with adequate ventilation. Use explosion-proof electrical (ventilating, lighting and material handling) equipment. High pressure gas. Do not puncture or incinerate container. Use equipment rated for cylinder pressure. Close valve after each use and when empty. Keep container closed. Keep away from heat, sparks and flame. To avoid fire, eliminate ignition sources. Protect cylinders from physical damage; do not drag, roll, slide, or drop. Use a suitable hand truck for cylinder movement.

Storage : Keep container in a cool, well-ventilated area. Keep container tightly closed and sealed until ready for use. Avoid all possible sources of ignition (spark or flame). Segregate from oxidizing materials. Cylinders should be stored upright, with valve protection cap in place, and firmly secured to prevent falling or being knocked over. Cylinder temperatures should not exceed 52 °C (125 °F).

Section 8. Exposure controls/personal protection

Engineering controls : Use only with adequate ventilation. Use process enclosures, local exhaust ventilation or other engineering controls to keep worker exposure to airborne contaminants below any recommended or statutory limits. The engineering controls also need to keep gas, vapor or dust concentrations below any lower explosive limits. Use explosion-proof ventilation equipment.

Personal protection

Eyes : Safety eyewear complying with an approved standard should be used when a risk assessment indicates this is necessary to avoid exposure to liquid splashes, mists or dusts.

Skin : Personal protective equipment for the body should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.

Respiratory : Use a properly fitted, air-purifying or air-fed respirator complying with an approved standard if a risk assessment indicates this is necessary. Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator.

The applicable standards are (US) 29 CFR 1910.134 and (Canada) Z94.4-93

Hands : Chemical-resistant, impervious gloves complying with an approved standard should be worn at all times when handling chemical products if a risk assessment indicates this is necessary.

Personal protection in case of a large spill : Self-contained breathing apparatus (SCBA) should be used to avoid inhalation of the product.

Product name

Ethyne

NIOSH REL (United States, 6/2009).
CEIL: 2662 mg/m³
CEIL: 2500 ppm

Consult local authorities for acceptable exposure limits.

Section 9. Physical and chemical properties

Molecular weight : 26.04 g/mole

Molecular formula : C2-H2

Melting/freezing point : Sublimation temperature: -81.8°C (-115.2 to °F)

Critical temperature : 35.3°C (95.5°F)

Vapor pressure : 635 (psig)

Vapor density : 0.907 (Air = 1)

Specific Volume (ft ^{3}/lb) : 14.7058

Gas Density (lb/ft ^{3}) : 0.0691 (-80°C / -112 to °F)

Section 10. Stability and reactivity

Stability and reactivity : The product is stable.

Incompatibility with various substances : Extremely reactive or incompatible with the following materials: oxidizing materials.

Hazardous decomposition products : Under normal conditions of storage and use, hazardous decomposition products should not be produced.

Hazardous polymerization : Under normal conditions of storage and use, hazardous polymerization will not occur.

Section 11. Toxicological information

Toxicity data

Chronic effects on humans : May cause damage to the following organs: lungs, upper respiratory tract, central nervous system (CNS).

Other toxic effects on humans : No specific information is available in our database regarding the other toxic effects of this material to humans.

Specific effects

Carcinogenic effects : No known significant effects or critical hazards.

Mutagenic effects : No known significant effects or critical hazards.

Reproduction toxicity : No known significant effects or critical hazards.

Section 12. Ecological information

Aquatic ecotoxicity

Not available.

Products of degradation : Products of degradation: carbon oxides (CO, CO_2) and water.

Environmental fate : Not available.

Environmental hazards : This product shows a low bioaccumulation potential.

Toxicity to the environment : Not available.

Section 13. Disposal considerations

Product removed from the cylinder must be disposed of in accordance with appropriate Federal, State, local regulation.Return cylinders with residual product to Airgas, Inc.Do not dispose of locally.

Section 14. Transport information

Regulatory information	UN number	Proper shipping name	Class	Packing group	Label	Additional information
DOT Classification	UN1001	ACETYLENE, DISSOLVED	2.1	Not applicable (gas).		**Limited quantity** Yes. **Packaging instruction** **Passenger aircraft** Quantity limitation: Forbidden. **Cargo aircraft** Quantity limitation: 15 kg

Acetylene						
TDG Classification	UN1001	ACETYLENE, DISSOLVED	2.1	Not applicable (gas).		**Explosive Limit and Limited Quantity Index** 0 **Passenger Carrying Ship Index** 75 **Passenger Carrying Road or Rail Index** Forbidden **Special provisions** 38, 42
Mexico Classification	UN1001	ACETYLENE, DISSOLVED	2.1	Not applicable (gas).		-

"Refer to CFR 49 (or authority having jurisdiction) to determine the information required for shipment of the product."

Section 15. Regulatory information

United States

U.S. Federal regulations :

TSCA 8(a) IUR: Partial exemption
United States inventory (TSCA 8b): This material is listed or exempted.

SARA 302/304/311/312 extremely hazardous substances: No products were found.
SARA 302/304 emergency planning and notification: No products were found.
SARA 302/304/311/312 hazardous chemicals: Ethyne
SARA 311/312 MSDS distribution - chemical inventory - hazard identification: Ethyne: Fire hazard, reactive, Sudden release of pressure, Immediate (acute) health hazard

Clean Air Act (CAA) 112 accidental release prevention - Flammable Substances: Acetylene

Clean Air Act (CAA) 112 regulated flammable substances: Ethyne

State regulations :

Connecticut Carcinogen Reporting: This material is not listed.
Connecticut Hazardous Material Survey: This material is not listed.
Florida substances: This material is not listed.
Illinois Chemical Safety Act: This material is not listed.
Illinois Toxic Substances Disclosure to Employee Act: This material is not listed.
Louisiana Reporting: This material is not listed.
Louisiana Spill: This material is not listed.
Massachusetts Spill: This material is not listed.
Massachusetts Substances: This material is listed.
Michigan Critical Material: This material is not listed.
Minnesota Hazardous Substances: This material is not listed.
New Jersey Hazardous Substances: This material is listed.
New Jersey Spill: This material is not listed.
New Jersey Toxic Catastrophe Prevention Act: This material is not listed.
New York Acutely Hazardous Substances: This material is not listed.
New York Toxic Chemical Release Reporting: This material is not listed.
Pennsylvania RTK Hazardous Substances: This material is listed.

Rhode Island Hazardous Substances: This material is not listed.

Canada

WHMIS (Canada) : Class A: Compressed gas.
Class B-1: Flammable gas.
Class F: Dangerously reactive material.

CEPA Toxic substances: This material is not listed.
Canadian ARET: This material is not listed.
Canadian NPRI: This material is listed.
Alberta Designated Substances: This material is not listed.
Ontario Designated Substances: This material is not listed.
Quebec Designated Substances: This material is not listed.

Section 16. Other information

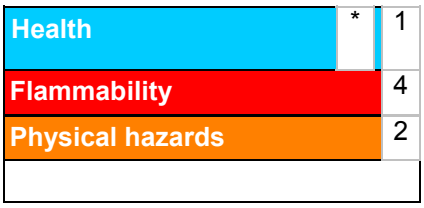
United States

Label requirements : FLAMMABLE GAS.
MAY CAUSE FLASH FIRE.
MAY CAUSE TARGET ORGAN DAMAGE, BASED ON ANIMAL DATA.
CONTENTS UNDER PRESSURE.

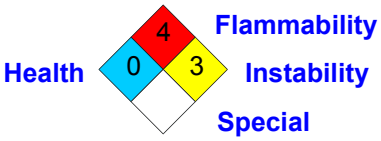
Canada

Label requirements : Class A: Compressed gas.
Class B-1: Flammable gas.
Class F: Dangerously reactive material.

Hazardous Material Information System (U.S.A.) :



National Fire Protection Association (U.S.A.) :



Notice to reader

To the best of our knowledge, the information contained herein is accurate. However, neither the above-named supplier, nor any of its subsidiaries, assumes any liability whatsoever for the accuracy or completeness of the information contained herein.
Final determination of suitability of any material is the sole responsibility of the user. All materials may present unknown hazards and should be used with caution. Although certain hazards are described herein, we cannot guarantee that these are the only hazards that exist.

MATERIAL SAFETY DATA SHEET

SECTION I – PRODUCT INFORMATION

Product Name: Propane
Trade Name: LPG (Liquefied Petroleum Gas)
Chemical Formula: C3H8
WHMIS Classification: Class A – Compressed Gas
Class B, Division I – Flammable Gas

Supplier:

Business:

Non Medical Emergency:

Uses and Occurrence: Propane is commonly used as fuel for heating, cooking, automobiles, forklift trucks, crop drying and welding and cutting operations. Propane is used in industry as a refrigerant, solvent and as a chemical feedstock.

CEPA: CANADIAN ENVIRONMENTAL PROTECTION ACT

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

SECTION II – HAZARDOUS INGREDIENTS

Components	**CAS Registry No.**	**Proportion of Product**	**LC50**	**LD50**
Propane	74-98-6	95% - 98%	N/A	N/A
Ethane	74-84-0	3% - 5%	N/A	N/A
Butane	106-97-8	1% - 3%	N/A	N/A
Iso-Butane	75-28-5	0.1% - 0.3%	N/A	N/A
Methane	74-82-8	0.1% - 0.2%	N/A	N/A

Note: Composition given is typical for Grade 1 Propane; exact composition will vary from shipment to shipment.

- Explanation for change – HD5 refers to American specification, Grade 1 is Canadian equivalent in CGSB 3.14 Standard

SECTION III – CHEMICAL AND PHYSICAL DATA

Form: While stored under pressure – liquid and/or vapour
Boiling Point: -42 ^{o}C atm
Freezing Point: -188 ^{o}C
Evapouration Rate: Rapid (Gas at Normal Ambient Conditions)
Vapour Pressure: 1,013 (kPa) @ 26.0 ^{o}C
Vapour Density: 1.52 (Air = 1)
Coefficient of Water/Oil Distribution: Not available
PH: Not available
Soluble in Water: 6.1% by Volume @ 17.8 ^{o}C and 753 mmHg
Specific Gravity: 0.51 (Water = 1)
Appearance: Colourless liquid and vapour while stored under pressure.
Colourless and odourless gas in natural state at any concentration.
Commercial propane has an odourant added which is commonly ethyl mercaptan which has an odour similar to boiling cabbage or rotten eggs.
Odour Threshold: 4800 PPM
See Note 1 - Odourants

SECTION IV – FIRE OR EXPLOSION HAZARD DATA

Flash Point: -103.4 ^{o}C **Method**: Closed Cup
Flammable Limits: Lower 2.4%, Upper 9.5%
Auto Ignition Temperature: 432 ^{o}C
Products Evolved Due to Heat or Combustion: Carbon monoxide can be produced when primary and secondary airs are deficient while combustion is taking place.
Fire and Explosive Hazards: Explosive air-vapour mixtures may form if allowed to leak to atmosphere.
Sensitivity to Impact: No
Sensitivity to Static Discharge: Yes
Fire Extinguishing Precautions: Use water spray to cool exposed cylinders or tanks. Do not extinguish fire unless the source of the escaping gas that is fuelling the fire can be turned off. Fire can be extinguished with carbon dioxide and/or dry chemical (BC). Container metal shells require cooling with water to prevent flame impingement and the weakening of metal. If weakening, the area must be evacuated. If gas has not ignited, liquid and vapour may be dispersed by water spray or flooding.
Special Fire Fighting Equipment: Protective clothing, hose monitors, fog nozzles, self contained breathing apparatus.

SECTION V – REACTIVITY DATA

Stability: Stable
Conditions to Avoid: Keep separate from oxidizing agents. Gas explodes spontaneously when mixed with chlorine dioxide.
Incompatibility: Remove sources of ignition and observe distance requirements for storage tanks from combustible material, drains, and openings to buildings.
Hazardous Decomposition Products: Deficient primary and secondary air can produce carbon monoxide.
Hazardous Polymerization: Will not occur.

SECTION VI – TOXICOLOGICAL PROPERTIES OF MATERIAL

ACUTE EXPOSURE:

Eyes: As a gas, none, Liquid causes "cold burns'.
Respiratory System: Little physiological effect at concentrations below 10.000 PPM. Higher concentrations may cause dizziness and unconsciousness due to asphyxiation. ***SEE NOTE 2 – ASPHYXIANT.***
Chronic Exposure: There are no reported effects from long-term low-level exposure.
Other: Liquid can cause burns and frostbite if in direct contact with skin.
Sensitization Properties: Skin – unknown, **Respiratory** – unknown.
Carcinogenicity: Not determined. ***SEE NOTE 3 (NORM).***

MEDIAN LETHAL DOSE:
Oral: Not applicable for gas.
Inhalation: Not determined.
Dermal: Not applicable for gas.
Other: Not determined.
IRRITATION INDEX:
Skin: No appreciable effect (gas).
Eyes: No appreciable effect (gas).
Symptoms of Exposure: Above 10,000 PPM – dizziness, stupor, unconsciousness. ***SEE NOTE 2 attached.*** American Conference of Governmental Industrial Hygienists (ACGIH) classifies propane as an asphyxiate; there is no recommended "Threshold Limit Value" (TLV).
Teratogenicity: Not determined.
Mutagenicity: Not determined.

SECTION VII – OCCUPATION CONTROL PROCEDURES

Eyes: Safety glasses, goggles, or face shield required when transferring product.
Skin: Insulated gloves if contact with liquid or liquid cooled equipment is expected. Wear gloves and long sleeves when transferring product.
Inhalation: In atmosphere, where the concentration of propane would reduce oxygen level below 18% in inhaled air, self contained breathing apparatus required. ***SEE NOTE 3 – (NORM).***
Ventilation: Explosion proof ventilation equipment required in confined spaces.

SECTION VIII – EMERGENCY AND FIRST AID PROCEDURES

FIRST AID:
Eyes: Should eye contact with liquid occur, flush eyes with lukewarm water for 15 minutes. Obtain immediate medical care.
Skin: In case of "Cold Burn" from contact with liquid, immediately place affected area in lukewarm water and keep at this temperature until circulation returns. If fingers or hands are frostbitten, have the victim hold his hand next to his body such as under the armpit. Obtain immediate medical care.

SPILL OR LEAK:
Eliminate leak if possible.
Eliminate source of ignition.
Ensure cylinder is upright.
Disperse vapours with hose streams using fog nozzles, watch for low area, as propane is heavier than air and can settle in low areas. Remain upwind of leak, keep people away.
Prevent vapour and/or liquid from entering into sewers, basements or confined areas.

SECTION 1X – TRANSPORTATION, HANDLING AND STORAGE

- Transport and store cylinders and tanks secured in an upright position in a ventilated space, away from ignition sources (so relief valve is in contact with vapour space of cylinder or tank).
- Cylinders that are not in use must have the valves in the closed position and be equipped with a protective cap or guard.
- Do not store with oxidizing agents, oxygen or chlorine cylinders.
- Transport, handle and store according to applicable federal and provincial regulations (CGA B149.2). ***SEE NOTE 4 – MAGNETIC RESIDUES.***

TDG Classification: 2.1 (gas)
TDG Shipping Name: Liquid Petroleum Gas (Propane)
TDG Special Provisions: 56, 90, and 102
PIN UN: 1075

SECTION X – PREPARATION INFORMATION

Prepared by: Propane Gas Association of Canada
(403) 543-6500

Date prepared: November 2010

This information is in addition to the information supplied on the MSDS and forms a part of the MSDS by reference to note numbers indicated:

NOTE 1 ODOURANTS:

Odourants are not completely effective warning agents in all cases.
Certain odourants are polar and/or chemically reactive and may be depleted by reaction or absorption.
Sensitivity to odourants differs from person to person and may decrease with age or impaired physical conditions such as colds or respiratory allergies.
Prolonged exposure to odourants can create desensitization to the odour.

NOTE 2 ASPHYXIANT AND NARCOTIC EFFECTS OF PROPANE:

LPG's can displace air and can act as an asphyxiant. Lack of oxygen may cause dizziness, headaches, diminished awareness, faulty judgment, increase in fatigue and impaired muscular co-ordination. If these symptoms are identified while working in close proximity to propane that is released, go immediately into a fresh air environment.

LPG's are anaesthetic gases within the upper explosive limits and higher concentrations. A person working around propane in an enclosed space or in close proximity to a propane source such as filling cylinders, purging lines, investigating leaks, etc. who feels light-headed, dizzy, drunken, sleepy, or intoxicated should go immediately into fresh air. This narcotic effect may impair a person's judgment temporarily but will rapidly disappear in fresh air.

NOTE 3 NATURALLY OCCURRING RADIOACTIVE MATERIAL (NORM):

Sludges and tank scale from propane storage tanks, bulk delivery truck tanks, railway tank cars, and fuel filters and strainers screens may contain Naturally Occurring Radioactive Material (NORM) in the form of lead 210.

Equipment used for the transfer of propane such as propane piping and hoses, pumps and compressors may have detectable levels of radioactive lead 210 on inner surfaces.

Workers involved in cleaning, repair or maintenance on inner surfaces of such equipment should avoid breathing dust generated from such activities. Suitable codes of practice should be developed for the activities, detailing appropriate occupational hygiene and disposal practices.

NOTE 4 MAGNETIC RESIDUES IN PROPANE:

Magnetic residues generated in automotive fuel tanks from "mill scale" or corrosion processes may impair the operation of magnetic gauges and electronic solenoid valves.

Collection of gross amounts of solid residues can affect the proper operation of lock offs, mixers, pressure release valves, etc.

Solid residues could contain NORM (see note 3).

MATERIAL SAFETY DATA SHEET

Aluminium Sulphate

Section 01 -Product And Company Information

Product Identifier ..... Aluminium Sulphate, granular

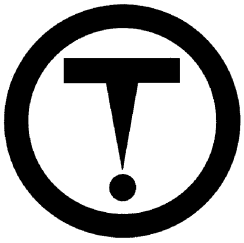
Product Use .....Coagulating agent in water treatment and pulp and paper, production of aluminum chemicals, general purpose food additive, fire extinguisher compounds, soaps, greases, drugs and cosmetics.

Supplier Name..... ClearTech Industries Inc.
1500 Quebec Avenue
Saskatoon, SK. Canada
S7K 1V7

Prepared By..... ClearTech Industries Inc. Technical Department
Phone: 1 (800) 387-7503

Preparation Date..... February 14, 2013

24-Hour Emergency Phone..... 1 (800) 387-7503



Section 02 - Composition / Information on Ingredients

Hazardous Ingredients.....	Aluminium Sulphate Anhydrous	57-60% (anhydrous)
CAS Number.....	Aluminium Sulphate Anhydrous	10043-01-3
Synonym (s).....	Dry alum, papermaker's alum, dialuminum trisulphate, aluminum sulphate anhydrous, aluminum sulphate octadecahydrate	

Section 03 - Hazard Identification

Inhalation..... Dust or mist inhalation may irritate nose, throat, and lungs. Product hydrolyzes in lungs to form sulphuric acid.

Skin Contact / Absorption..... May cause skin irritation, especially under repeated or prolonged contact, or when moisture is present. May cause pain and severe burns to skin and brownish or yellow stains. May cause redness, drying, and cracking of skin.

Eye Contact..... May irritate or burn eyes. Possible corneal damage.

Ingestion..... May irritate the gastrointestinal tract and cause nausea, vomiting, and purging. Acute exposure can cause loss of coordination, muscle spasms, and kidney effects.

Exposure Limits..... OEL/TWA: 2mg/m3

Section 04 - First Aid Measures

Inhalation..... Remove victim to fresh air. Give artificial respiration only if breathing has stopped. If breathing is difficult, give oxygen. Seek immediate medical attention.

Skin Contact / Absorption..... Remove contaminated clothing. Wash affected area with soap and water. Seek medical attention if irritation occurs or persists.

Eye Contact..... Flush immediately with water for at least 20 minutes. Forcibly hold eyelids apart to ensure complete irrigation of eye tissue. Seek immediate medical attention.

Ingestion..... Do not induce vomiting. If vomiting occurs, lean victim forward to prevent breathing in vomitus. Rince mouth thoroughly with water. Give 1-2 glasses of water to the victim to drink. If vomiting occurs naturally, rince the mouth out again and give another 1-2 glasses of water. Do not give anything by mouth to an unconscious or convulsing person. Seek immediate medical attention.

Additional Information..... Advice to physician: treat symptomatically.

Section 05 - Fire Fighting Measures

Conditions of Flammability..... Non-flammable

Means of Extinction..... Product does not burn. Where fire is involved, use any fire fighting agent appropriate for surrounding material; use water spray to cool fire-exposed surfaces.

Flash Point..... Not applicable

Auto-ignition Temperature..... Not applicable

Upper Flammable Limit ..... Not applicable

Lower Flammable Limit..... Not applicable

Hazardous Combustible Products... At above 760℃ or heated in open flame, sulphur oxi de (toxic, corrosive, oxidizer), sulphur trioxide (toxic,corrosive, flammable) and aluminum oxide are released. The remaining residue is caustic.

Special Fire Fighting Procedures..... Wear NIOSH-approved self-contained breathing apparatus and protective clothing.

Explosion Hazards..... None

Section 06 - Accidental Release Measures

Leak / Spill..... Wear appropriate personal protective equipment. Ventilate area. Stop or reduce leak if safe to do so. Spray residue with plenty of water. Prevent material from entering sewers. Collect liquid and/or residue and dispose of in accordance with applicable regulations.

Deactivating Materials..... Soda ash, lime or limestone. Note that adequate ventilation is required if soda ash or limestone is used because of possible carbon dioxide gas formation.

Section 07 - Handling and Storage

Handling Procedures..... Use proper equipment for lifting and transporting all containers. Use sensible industrial hygiene and housekeeping practices. Wash thoroughly after handling. Avoid all situations that could lead to harmful exposure.

Storage Requirements..... Store in a cool, dry, well-ventilated place. Keep container tightly closed, and away from incompatible materials.

Section 08 - Personal Protection and Exposure Controls

Protective Equipment

Eyes..... Chemical goggles, full-face shield, or a full-face respirator is to be worn at all times when product is handled. Contact lenses should not be worn; they may contribute to severe eye injury.

Respiratory..... For dusty conditions wear a NIOSH/MSHA-approved dust or mist respirator. A respiratory protection program that meets OSHA 1910.134 and ANSI Z88.2 or applicable federal/provincial requirements must be followed whenever workplace conditions warrant respirator use. NIOSH's "Respirator Decision Logic" may be useful in determining the suitability of various types of respirators.

Gloves..... Impervious gloves of chemically resistant material should be worn at all times. Wash contaminated clothing and dry thoroughly before reuse.

Clothing..... Body suits, aprons, and/or coveralls of chemical resistant material should be worn at all times. Wash contaminated clothing and dry thoroughly before reuse.

Footwear..... Impervious boots of chemically resistant material should be worn.

Engineering Controls

Ventilation Requirements..... Mechanical ventilation (dilution or local exhaust), process or personnel enclosure and control of process conditions should be provided. Supply sufficient replacement air to make up for air removed by exhaust systems.

Other..... Emergency shower and eyewash should be in close proximity.

Section 09 - Physical and Chemical Properties

Physical State..... Solid

Odor and Appearance..... White to creamy white odourless granules or powder

Odor Threshold..... Non applicable

Specific Gravity (Water=1)..... 1.61

Vapor Pressure (mm Hg, 20C)..... Not applicable

Vapor Density (Air=1)..... Not applicable

Evaporation Rate..... Not applicable

Boiling Point..... Not applicable

Freeze/Melting Point..... Not applicable

pH....... 3.5 (1% solution)

Water/Oil Distribution Coefficient.... Not applicable

Bulk Density..... 63-71 lbs/ft^3 (ground), 38-45 lbs/ft^3 (powdered)

% Volatiles by Volume..... Not available

Solubility in Water..... 50% w/w at 0℃

Molecular Formula..... $Al_2(SO_4)_3 \cdot 14H_2O$

Molecular Weight..... 594

Section 10 - Stability and Reactivity

Stability..... Stable under normal conditions. Avoid temperatures above 760°C as this can yield toxic and corrosive gases.

Incompatibility..... Avoid moist air and strong bases. Incompatible with alkalies and water reactive materials such as oleum, which causes exothermic reactions.

Hazardous Products of Decomposition.. In contact with moist air and strong bases, this product hydrolyzes readily to form acidic salts. Contact with alkalies and water-reactive materials causes exothermic reactions. May corrode ferrous metals and mild steel in presence of moisture.

Polymerization..... Will not occur.

Section 11 - Toxicological Information

Irritancy..... Moderate irritant

Sensitization..... Not available

Chronic/Acute Effects..... This product has been shown to cause liver, kidney, and nervous system toxicity when tested with laboratory animals. Repeated ingestion may cause phosphate deficiency, which can weaken bones.

Synergistic Materials..... Not available

Animal Toxicity Data..... LD_{50}(oral,mouse): 6207mg/kg
LD_{50}(oral,rat): 1930mg/kg
Human fatal dose recorded at 30 g.

Carcinogenicity..... There are no known carcinogenic chemicals in this product.

Reproductive Toxicity..... Not available

Teratogenicity..... Not available

Mutagenicity..... Not available

Section 12 - Ecological Information

Fish Toxicity..... LC_{50}(Goldfish, 96 hr): 100mg/L
LC_{50}(Mosquitofish, 96 hr): 37mg/L
LC_{50}(Largemouth bass, 96 hr): 250mg/L
EC_{50}(Water Flea, 15 min): 136mg/L

Biodegradability..... Not available

Environmental Effects..... May be harmful to aquatic life. Toxicity is primarily associated with acidic pH.

Section 13 - Disposal Consideration

Waste Disposal.....Dispose in accordance with all federal, provincial, and/or local regulations including the Canadian Environmental Protection Act.

Section 14 - Transport Information

TDG Classification

Class..... 9(only regulated for TDG if intended for disposal)

Group..... III(only regulated for TDG if intended for disposal)

PIN Number..... UN 3077(only regulated for TDG if intended for disposal)

Other..... Secure containers (full and/or empty) with suitable hold down devises during shipment and ensure all caps, valves, or closures are secured in the closed position.

PRODUCT CLASSIFICATION: This product has been classified on the preparation date specified at section 16 of this MSDS / SDS, for transportation in accordance with the requirements of part 2 of the Transportation of Dangerous Goods Regulations. If applicable, testing and/or published test data regarding the classification of this product are listed in the references at section 16 of this MSDS / SDS.

Section 15 - Regulatory Information

WHMIS Classification.....……..D2

Revision Date.....February 4, 2014

NOTE: THE PRODUCT LISTED ON THIS MSDS HAS BEEN CLASSIFIED IN ACCORDANCE WITH THE HAZARD CRITERIA OF THE CANADIAN CONTROLLED PRODUCTS REGULATIONS. THIS MSDS CONTAINS ALL INFORMATION REQUIRED BY THOSE REGULATIONS.

Section 16 - Other Information

Note: The responsibility to provide a safe workplace remains with the user. The user should consider the health hazards and safety information contained herein as a guide and should take those precautions required in an individual operation to instruct employees and develop work practice procedures for a safe work environment. The information contained herein is, to the best of our knowledge and belief, accurate. However, since the conditions of handling and use are beyond our control, we make no guarantee of results, and assume no liability for damages incurred by the use of this material. It is the responsibility of the user to comply with all applicable laws and regulations.

Attention: Receiver of the chemical goods / MSDS coordinator

As part of our commitment to the Canadian Association of Chemical Distributors (CACD) Responsible Distribution® initiative, ClearTech Industries Inc. and its associated companies require, as a condition of sale, that you forward the attached Material Safety Data Sheet(s) to all affected employees, customers, and end-users. ClearTech will send any available supplementary handling, health, and safety information to you at your request.

If you have any questions or concerns please call our customer service or technical service department.

ClearTech Industries Inc. - Locations

Corporate Head Office: 1500 Quebec Avenue, Saskatoon, SK, S7K 1V7
Phone: 1 (800) 387-7503
Fax: 1 (888) 281-8109

www.ClearTech.ca

Location	Address	Postal Code	Phone Number	Fax Number
Richmond, B.C.	12431 Horseshoe Way	V7A 4X6	1 (800) 287-7503	1 (888) 281-8109
Port Coquitlam, B.C.	2023 Kingsway Ave	V3C 1S9	1 (800) 287-7503	1 (888) 281-8109
Calgary, AB.	5516E - 40th St. S.E.	T2C 2A1	1 (800) 287-7503	1 (888) 281-8109
Edmonton, AB.	11750 - 180th Street	T5S 1N7	1 (800) 287-7503	1 (888) 281-8109
Saskatoon, SK.	19 Peters Ave, North Corman Park	S7K 1V7	1 (800) 287-7503	1 (888) 281-8109
Regina, SK.	555 Henderson Drive	S42 5X2	1 (800) 287-7503	1 (888) 281-8109
Winnipeg, MB.	340 Saulteaux Crescent	R3J 3T2	1 (800) 287-7503	1 (888) 281-8109
Mississauga, ON.	7480 Bath Road	L4T 1L2	1 (800) 287-7503	1 (888) 281-8109

24 Hour Emergency Number - All Locations – 1 (800) 387-7503

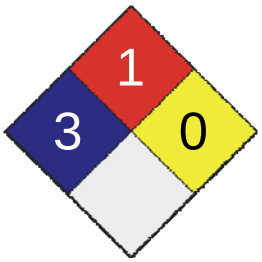
MATERIAL SAFETY DATA SHEET

1. Product and Company Identification

Product Name	**EASY-OFF® Oven Cleaner - Heavy Duty**
UPC CODES	Refer to section 16
CAS #	Mixture
Product use	Oven cleaner
Manufacturer	Reckitt Benckiser Morris Corporate Center IV 399 Interpace Parkway P.O. Box 225 Parsippany, NJ 07054-0225 In Case of Emergency: 1-800-228-4722 Transportation Emergencies: 24 Hour Number: North America: CHEMTREC: 1-800-424-9300 Outside North America: 1-703-527-3887

LEGEND HMIS/NFPA	
Severe	4
Serious	3
Moderate	2
Slight	1
Minimal	0

Health	/	3
Flammability		2
Physical Hazard		0
Personal Protection		D



2. Hazards Identification

Emergency overview

DANGER -- CORROSIVE
CONTAINS SODIUM HYDROXIDE (LYE).
CAUSES BURNS TO SKIN AND EYES ON CONTACT.
HARMFUL IF SWALLOWED.
Contents under pressure.
Avoid contact with eyes, skin, mucous membranes and clothing.
DO NOT ingest. Use only with adequate ventilation. Avoid breathing spray mist.
Wear long rubber gloves when using.

KEEP OUT OF REACH OF CHILDREN.

Potential short term health effects

Routes of exposure	Eye, Skin contact, Inhalation, Ingestion.
Eyes	Causes burns.
Skin	Causes burns.
Inhalation	None expected during normal conditions of use. However intentional misuse by deliberately concentrating and inhaling the contents may be harmful or fatal.
Ingestion	Harmful if swallowed.
Target organs	Eyes. Respiratory system. Skin. Gastrointestinal tract.
Chronic effects	The finished product is not expected to have chronic health effects.
Signs and symptoms	The product causes burns of eyes, skin and mucous membranes.

3. Composition / Information on Ingredients

Ingredient(s)	CAS #	Percent
Ethanol, 2-(2-butoxyethoxy)-	112-34-5	2.5 - 10
Petroleum gases, liquefied, sweetened	68476-86-8	2.5 - 10
Sodium hydroxide	1310-73-2	2.5 - 10
Ethanol, 2-amino-	141-43-5	1 - 2.5

4. First Aid Measures

First aid procedures

Eye contact IMMEDIATELY flush eyes with water. Remove any contact lenses and continue to flush eyes for at least 15 minutes. If irritation persists, seek medical attention immediately.

Skin contact Rinse immediately and remove contaminated clothing. Wash thoroughly with soap and water and continue flushing for at least 10 minutes. If discomfort persists, seek medical attention immediately.

Inhalation Move to fresh air. If symptoms develop or persist, seek medical advice.

Ingestion Do not induce vomiting. Rinse mouth thoroughly and seek medical attention immediately.

Notes to physician Treat patient symptomatically.

General advice Keep away from sources of ignition. No smoking. If you feel unwell, seek medical advice (show the label where possible). Ensure that medical personnel are aware of the material(s) involved, and take precautions to protect themselves. Show this safety data sheet to the doctor in attendance. Avoid contact with eyes and skin. Keep out of reach of children.

5. Fire Fighting Measures

Flammable properties Aerosol flame extension less than 18 inches (45 cm).

Extinguishing media

Suitable extinguishing media Dry chemical. Alcohol foam. Water spray.

Unsuitable extinguishing media Not available

Protection of firefighters

Specific hazards arising from the chemical Contents under pressure. Pressurized container may explode when exposed to heat or flame. Cool containers with flooding quantities of water until well after fire is out.

Protective equipment for firefighters Firefighters should wear full protective clothing including self contained breathing apparatus.

Hazardous combustion products May include and are not limited to: Oxides of carbon. Oxides of nitrogen.

Explosion data

Sensitivity to mechanical impact Not available

Sensitivity to static discharge Not available

6. Accidental Release Measures

Personal precautions Keep unnecessary personnel away. Do not touch or walk through spilled material. Do not touch damaged containers or spilled material unless wearing appropriate protective clothing. Keep people away from and upwind of spill/leak.

Methods for containment Eliminate all ignition sources (no smoking, flares, sparks, or flames in immediate area). Stop leak if you can do so without risk. Prevent entry into waterways, sewers, basements or confined areas.

Methods for cleaning up Before attempting clean up, refer to hazard data given above. Remove sources of ignition. Although the chance of a significant spill or leak is unlikely in aerosol containers, in the event of such an occurrence, absorb spilled material with a non-flammable absorbent such as sand or vermiculite.

7. Handling and Storage

Handling

Use good industrial hygiene practices in handling this material. Do not get this material in your eyes, on your skin, or on your clothing. Do not ingest. Do not breathe vapours or spray mist.

Storage

Keep out of reach of children. Do not store at temperatures above 49 °C (120.2°F). Keep away from heat, open flames or other sources of ignition.
Keep from freezing.

NOTE TO PARENTS: Intentional misuse by deliberately concentrating and inhaling aerosol products may be harmful or fatal. Help stop inhalation abuse; for information visit www.inhalant.org.

8. Exposure Controls / Personal Protection

Exposure limits

Ingredient(s)	Exposure Limits
Ethanol, 2-(2-butoxyethoxy)-	**ACGIH-TLV** Not established **OSHA-PEL** Not established
Ethanol, 2-amino-	**ACGIH-TLV** TWA: 3 ppm STEL: 6 ppm **OSHA-PEL** TWA: 3 ppm
Petroleum gases, liquefied, sweetened	**ACGIH-TLV** Not established **OSHA-PEL** Not established
Sodium hydroxide	**ACGIH-TLV** Ceiling: 2 mg/m3 **OSHA-PEL** TWA: 2 mg/m3

Engineering controls Provide adequate ventilation.

Personal protective equipment

Eye / face protection tightly fitting safety goggles

Hand protection Rubber gloves. Confirm with a reputable supplier first.

Skin and body protection As required by employer code. long sleeved clothing
Follow label directions carefully.

Respiratory protection Not normally required under normal use conditions.

General hygiene considerations Handle in accordance with good industrial hygiene and safety practice. When using do not eat or drink. Wash hands before breaks and immediately after handling the product.

9. Physical and Chemical Properties

Appearance Aerosol.

Color White.

Form compressed liquefied gas

Odor Characteristic

Odor threshold Not available

Physical state Gas

pH 13.3

Freezing point Not available

Pour point Not available

Boiling point	Not available
Flash point	> 200 °F (> 93.33 °C) (Liquid)
Evaporation rate	Not available
Flammability limits in air, lower, % by volume	Not available
Flammability limits in air, upper, % by volume	Not available
Vapor pressure	Not available
Vapor density	Not available
Specific gravity	1.052 @ 25°C
Octanol/water coefficient	Not available
Solubility (H2O)	> 95 % @ 70°F
Auto-ignition temperature	Not available
VOC (Weight %)	Not available
Viscosity	Not available

10. Stability and Reactivity

Chemical stability	Stable under recommended storage conditions.
Conditions to avoid	Aerosol containers are unstable at temperatures above 49°C (120.2°F). Do not spray on pilot light, electrical connections, switch, heating elements, or thermostats. Do not spray onto aluminum or painted surfaces as damage to these surfaces may occur. Do not use on grill exterior, interior or components.
Incompatible materials	Acids. Oxidizing agents. Aluminum.
Hazardous decomposition products	May include and are not limited to: Oxides of carbon. Oxides of nitrogen.
Possibility of hazardous reactions	Hazardous polymerization does not occur.

11. Toxicological Information

Component analysis - LC50

Ingredient(s)	LC50
Ethanol, 2-(2-butoxyethoxy)-	Not available
Ethanol, 2-amino-	1210 mg/m3 mouse
Petroleum gases, liquefied, sweetened	Not available
Sodium hydroxide	Not available

Component analysis - Oral LD50

Ingredient(s)	LD50
Ethanol, 2-(2-butoxyethoxy)-	2000 mg/kg guinea pig; 3384 mg/kg rat; 2200 mg/kg rabbit
Ethanol, 2-amino-	1720 mg/kg rat; 700 mg/kg mouse
Petroleum gases, liquefied, sweetened	Not available
Sodium hydroxide	Not available

Effects of acute exposure

Eye	Causes burns.
Skin	Causes burns.
Inhalation	None expected during normal conditions of use. However intentional misuse by deliberately concentrating and inhaling the contents may be harmful or fatal.
Ingestion	Harmful if swallowed.
Sensitization	The finished product is not expected to have chronic health effects.
Chronic effects	The finished product is not expected to have chronic health effects.
Carcinogenicity	The finished product is not expected to have chronic health effects.
Mutagenicity	The finished product is not expected to have chronic health effects.

Reproductive effects The finished product is not expected to have chronic health effects.

Teratogenicity The finished product is not expected to have chronic health effects.

Synergistic Materials Not available

12. Ecological Information

Ecotoxicity Components of this product have been identified as having potential environmental concerns.

Ecotoxicity - Freshwater Algae Data

Ethanol, 2-(2-butoxyethoxy)-	112-34-5	96 Hr EC50 Desmodesmus subspicatus: >100 mg/L
Ethanol, 2-amino-	141-43-5	72 Hr EC50 Desmodesmus subspicatus: 15 mg/L

Ecotoxicity - Freshwater Fish Species Data

Ethanol, 2-(2-butoxyethoxy)-	112-34-5	96 Hr LC50 Lepomis macrochirus: 1300 mg/L [static]
Ethanol, 2-amino-	141-43-5	96 Hr LC50 Pimephales promelas: 227 mg/L [flow-through]; 96 Hr LC50 Brachydanio rerio: 3684 mg/L [static]; 96 Hr LC50 Lepomis macrochirus: 300-1000 mg/L [static]; 96 Hr LC50 Oncorhynchus mykiss: 114-196 mg/L [static]; 96 Hr LC50 Oncorhynchus mykiss: >200 mg/L [flow-through]
Sodium hydroxide	1310-73-2	96 Hr LC50 Oncorhynchus mykiss: 45.4 mg/L [static]

Ecotoxicity - Microtox Data

Ethanol, 2-amino-	141-43-5	30 Min EC50 Photobacterium phosphoreum: 13.7 mg/L; 17 Hr EC50 Pseudomonas putida: 110 mg/L; 2 Hr EC50 Nitrosomonas: 12200 mg/L

Ecotoxicity - Water Flea Data

Ethanol, 2-(2-butoxyethoxy)-	112-34-5	24 Hr EC50 Daphnia magna: 2850 mg/L; 48 Hr EC50 Daphnia magna: >100 mg/L
Ethanol, 2-amino-	141-43-5	48 Hr EC50 Daphnia magna: 65 mg/L

Environmental effects Not available

Aquatic toxicity Not available

Persistence / degradability Not available

Bioaccumulation / accumulation Not available

Partition coefficient Not available

Mobility in environmental media Not available

Chemical fate information Not available

13. Disposal Considerations

Waste codes Not available

Disposal instructions Dispose in accordance with all applicable regulations.

Waste from residues / unused products Not available

Contaminated packaging Not available

14. Transport Information

U.S. Department of Transportation (DOT)

UN1950, Aerosols, Class 2.2 (8), Re-classed as Consumer Commodity ORM-D, FORBIDDEN FROM AIR TRANSPORT

Transportation of Dangerous Goods (TDG - Canada)

UN1950, Aerosols, Class 2.2 (8), Re-classed as Consumer Commodity/ Limited Quantity, FORBIDDEN FROM AIR TRANSPORT

IMDG (Marine Transport)

UN1950, Aerosols, Class 2.2 (8), Limited Quantity

IATA/ICAO (Air)

UN 1950, Aerosols, non-flammable, containing substances in Class 8, Packing Group II, 2.2 (8),
FORBIDDEN FROM AIR TRANSPORT

15. Regulatory Information

US Federal regulations

This product is a "Hazardous Chemical" as defined by the OSHA Hazard Communication Standard, 29 CFR 1910.1200.

U.S. - CERCLA/SARA - Hazardous Substances and their Reportable Quantities

Ethanol, 2-(2-butoxyethoxy)-	112-34-5	1 Lb statutory RQ (no final RQ is being assigned to the generic or broad class. Includes mono- and di- ethers of ethylene glycol, diethylene glycol and triethylene glycol R-(OCH2CH2)n-OR" where n = 1, 2 or 3, R = alkyl or aryl groups, R" = R h or groups which when removed yield glycol ethers with the structure R-(OCH2CH2)n-OH. Polymers are excluded from glycol category); 0.454 k
Sodium hydroxide	1310-73-2	1000 Lb final RQ; 454 kg final RQ

U.S. - CERCLA/SARA - Section 313 - Emission Reporting

Ethanol, 2-(2-butoxyethoxy)-	112-34-5	1.0 Percent de minimis concentration (applies to R-(OCH2CH2)n-OR' ethers, where n = 1,2, or 3, R=alkyl C7 or less or R = phenyl or alkyl subst. phenyl, R' = H or alkyl C7 or less, or OR' consisting of carboxylic acid ester, sulfate, phosphate, nitrate, or sulfonate, Chemical Category N230)

U.S. - CWA (Clean Water Act) - Hazardous Substances

Sodium hydroxide	1310-73-2	Present

Occupational Safety and Health Administration (OSHA)

29 CFR 1910.1200 hazardous chemical Yes

CERCLA (Superfund) reportable quantity

Sodium hydroxide: 1000.0000

Superfund Amendments and Reauthorization Act of 1986 (SARA)

Hazard categories Immediate Hazard - Yes
Delayed Hazard - No
Fire Hazard - No
Pressure Hazard - Yes
Reactivity Hazard - No

Section 302 extremely hazardous substance No

Section 311 hazardous chemical Yes

Clean Air Act (CAA) Not available

Clean Water Act (CWA) Not available

State regulations This product does not contain a chemical known to the State of California to cause cancer, birth defects or other reproductive harm.

U.S. - California - 8 CCR Section 339 - Director's List of Hazardous Substances

Ethanol, 2-amino-	141-43-5	Present
Sodium hydroxide	1310-73-2	Present

U.S. - Illinois - Toxic Air Contaminants

Ethanol, 2-(2-butoxyethoxy)-	112-34-5	Present
Ethanol, 2-amino-	141-43-5	Present

U.S. - Louisiana - Reportable Quantity List for Pollutants

Ethanol, 2-(2-butoxyethoxy)-	112-34-5	100 Lb RQ
Sodium hydroxide	1310-73-2	1000 Lb final RQ; 454 kg final RQ

U.S. - Massachusetts - Right To Know List

Ethanol, 2-amino-	141-43-5	Present
Sodium hydroxide	1310-73-2	Present

U.S. - Minnesota - Hazardous Substance List

Ethanol, 2-amino-	141-43-5	Present
Sodium hydroxide	1310-73-2	Present

U.S. - New Jersey - Right to Know Hazardous Substance List

Ethanol, 2-(2-butoxyethoxy)-	112-34-5	sn 2265
Ethanol, 2-amino-	141-43-5	sn 0835
Sodium hydroxide	1310-73-2	sn 1706

U.S. - New York - Reporting of Releases Part 597 - List of Hazardous Substances

Sodium hydroxide	1310-73-2	1000 Lb RQ (air); 100 lb RQ (land/water)

U.S. - Pennsylvania - RTK (Right to Know) List

Ethanol, 2-(2-butoxyethoxy)-	112-34-5	environmental hazard
Ethanol, 2-amino-	141-43-5	Present
Sodium hydroxide	1310-73-2	Environmental hazard

U.S. - Rhode Island - Hazardous Substance List

Ethanol, 2-amino-	141-43-5	Toxic; Flammable
Sodium hydroxide	1310-73-2	Toxic; Flammable

Inventory status

Country(s) or region	Inventory name	On inventory (yes/no)*
United States & Puerto Rico	Toxic Substances Control Act (TSCA) Inventory	Yes

A "Yes" indicates that all components of this product comply with the inventory requirements administered by the governing country(s)

16. Other Information

Disclaimer This product should only be used as directed on the label and for the purpose intended. To the best of our knowledge, the information contained herein is accurate. However, neither the above named supplier nor any of its subsidiaries assumes any liability whatsoever for the accuracy or completeness of the information contained herein. Final determination of suitability of any material is the sole responsibility of the user. All materials may present unknown hazards and should be used with caution. Although certain hazards are described herein, we cannot guarantee that these are the only hazards that exist.

Further information	62338-00138 - 16 oz., EASY-OFF® Oven Cleaner - Heavy Duty Regular Scent: 371752 (772-004)
	62338-81397 - 24 oz., EASY-OFF® Heavy Duty Oven Cleaner - Club Pack: 367270
Issue date	07-Jan-2010
Effective date	01-Jan-2010
Prepared by	Reckitt Benckiser Regulatory Department 800-333-3899
Other information	For an updated MSDS, please contact the supplier/manufacturer listed on the first page of the document.

Appendix E Spill Guidelines

IMMEDIATELY REPORTABLE SPILL QUANTITIES

TDG Class	Substance for NWT 24 Hour Spill Line	Immediately Reportable Quantities
1 2.3 2.4 6.2 7 None	Explosives Compressed gas (toxic) Compressed gas (corrosive) Infectious substances Radioactive Unknown substance	Any amount
2.1 2.2	Compressed gas (flammable) Compressed gas (non-corrosive, non-flammable)	Any amount of gas from containers with a capacity greater than 100 L
3.1 3.2 3.3	Flammable liquids	> 100 L
4.1 4.2 4.3	Flammable solids Spontaneously combustible solids Water reactant	> 25 kg
5.1 9.1	Oxidizing substances Miscellaneous products or substances excluding PCB mixtures	> 50 L or 50 kg
5.2 9.2	Organic peroxides Environmentally hazardous	> 1 L or 1 kg
6.1 8 9.3	Poisonous substances Corrosive substances Dangerous wastes	> 5 L or 5 kg
9.1	PCB mixtures of 5 or more ppm	> 0.5 L or 0.5 kg
None	Other contaminants (e.g. crude oil, drilling fluid, produced water, waste or spent chemicals, used or waste oil, vehicle fluids, waste water, etc.)	> 100 L or 100 kg
None	Sour natural gas (i.e. contains H2S) Sweet natural gas	Uncontrolled release or sustained flow of 10 minutes or more

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Appendix F NU-NT Spill Report Form

NT-NU SPILL REPORT

OIL, GASOLINE, CHEMICALS AND OTHER HAZARDOUS MATERIALS

NT-NU 24-HOUR SPILL REPORT LINE
TEL: (867) 920-8130
FAX: (867) 873-6924
EMAIL: spills@gov.nt.ca

REPORT LINE USE ONLY

A	REPORT DATE: MONTH – DAY – YEAR	REPORT TIME	☐ ORIGINAL SPILL REPORT, OR ☐ UPDATE # _____ TO THE ORIGINAL SPILL REPORT	REPORT NUMBER ____-_____
B	OCCURRENCE DATE: MONTH – DAY – YEAR	OCCURRENCE TIME		

C	LAND USE PERMIT NUMBER (IF APPLICABLE)	WATER LICENCE NUMBER (IF APPLICABLE)
D	GEOGRAPHIC PLACE NAME OR DISTANCE AND DIRECTION FROM NAMED LOCATION	REGION ☐ NWT ☐ NUNAVUT ☐ ADJACENT JURISDICTION OR OCEAN
E	LATITUDE DEGREES MINUTES SECONDS	LONGITUDE DEGREES MINUTES SECONDS

F	RESPONSIBLE PARTY OR VESSEL NAME	RESPONSIBLE PARTY ADDRESS OR OFFICE LOCATION	
G	ANY CONTRACTOR INVOLVED	CONTRACTOR ADDRESS OR OFFICE LOCATION	
H	PRODUCT SPILLED	QUANTITY IN LITRES, KILOGRAMS OR CUBIC METRES	U.N. NUMBER
	SECOND PRODUCT SPILLED (IF APPLICABLE)	QUANTITY IN LITRES, KILOGRAMS OR CUBIC METRES	U.N. 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) 920-8130

LEAD AGENCY ☐ EC ☐ CCG ☐ GNWT ☐ GN ☐ ILA ☐ INAC ☐ NEB ☐ TC

SIGNIFICANCE ☐ MINOR ☐ MAJOR ☐ UNKNOWN

FILE STATUS ☐ OPEN ☐ CLOSED

AGENCY	CONTACT NAME	CONTACT TIME	REMARKS
LEAD AGENCY			
FIRST SUPPORT AGENCY			
SECOND SUPPORT AGENCY			
THIRD SUPPORT AGENCY			

Appendix G List of Remediation Equipment

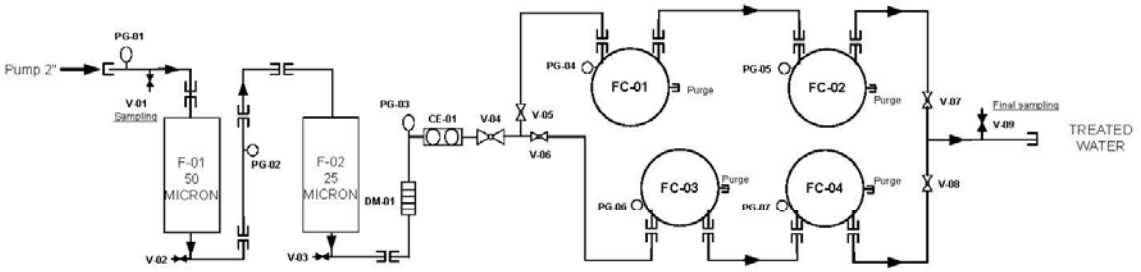
Remediation Supplies to be mobilized to FOX-D Kivitoo

Description	Quantity
Power and temporary utilities equipment	
Generator 2 to 6 kw	2
Tower lights	3
Scaffolding	2
Erosion protection equipment	
Silt fences and stakes	minimum 100 m
Geotextile	3700 m2
Drainage piping (6-inch)	100 m
Culverts	4
Environmental protection	
Fish exclusion nets	2
Fish nets	2
200 mm hydrophobic sorbent booms	min. 50 lin. metres
OR-RPE liner	1250 m2
Absorbent pads	30 packs
Spill intervention kits (tools & containment bags)	4
Spill kits	6
Pumps and water treatment	
Sump pump (2 in.)	3
Hoses (varying sizes)	100 lin. metres
Steam cleaning unit	1
Pressure washer	1
Demolition and hazardous removal tools supply	
Asbestos HEPA vacuum	2
Negative air unit	1
6-mil polyethylene sheeting	20 rolls
6-mil asbestos diposal bags	300
Asbestos encapsulant	45 gal.
Water sprayer	1
Various hand tools	1
Duct tape	50 rolls
Paint stripper and scrapers	several
Plasma cutting device	1
Jigsaw and spare blades	3
Chainsaw and spare chain	1
Treatment / incineration device	
Water treatment unit (20 GPM)	1
Activated carbon media (25-kg bags)	30
Filter sand	Enough for 5 media
Bag filter (25 micron)	50
Bag filter (50 micron)	50
Smart ash incinerator	1
Battery bags	10
Overpack drums	7
Buckets (20-litre)	150

MAXIMUM OPERATING FLOW: 20 GPM

PROJECT NUMBER:

OPERATED BY:



Date	Time	PG-01 (psi)	PG-02 (psi)	PG-03 (psi)	PG-04 (psi)	PG-05 (psi)	PG-06 (psi)	PG-07 (psi)	DM-01 (gpm)	CE-01 (m^3)

: V-00 : normally closed valve

: V-00 : normally open valve

DM-00 : flowmeter

PG-00 : Pressure gauge

CE-00 : Water meter

FC-00 : Carbon filter

F-00 : Bag filter

Inlet sampling (V-01)

Time _____ # Sample _____

_____ _____

Outlet sampling (V-09)

Time _____ # Sample _____

_____ _____

PURGE :

☐ YES

☐ NO

☐ See Observations

EQUIPMENTS CHECK-UP

ITEM	CHECK-UP	CLEANING	REPLACEMENT
F-01 Filter (bag filter)	☐	N/A	☐
F-02 Filter (bag filter)	☐	N/A	☐
FC-01 Filter	☐	N/A	☐
FC-02 Filter	☐	N/A	☐
FC-03 Filter	☐	N/A	☐
FC-04 Filter	☐	N/A	☐

enGlobe Corp
350 Franquet Street, Ste-Foy, QC, G1P 4P3
Tel.: (418) 653-2074 Fax: (418) 653-1598

Water Treatment Unit
4374
Piping Diagram and Follow-up Sheet

Units:	Scale	Date:
None	None	07/08/20
Drawn by: Y.Tremblay	Verified by: Y.Tremblay	Approved by: Y.Tremblay
Project: EG6021-374	Identification Code : 1560-300-EN05	Drawing No: SUM4374_ang.pdf Page: 1/1

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