Baffinland Iron Mines Corporation

Mary River Project

Attachment 5: Hazardous Materials and Hazardous Waste Management Plan

Appendix 10C-5

2012-01-10	2	Approved for Use Environmental Permit	A. Grzegorczyk	J. Binns	S. Perry	
2011-12-05	1	Approved for Use	A. Grzegorczyk	J. Binns	S. Perry	
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DATE	REV.	STATUS	PREPARED BY	CHECKED BY	APPROVED BY	APPROVED BY
			HATCH			CLIENT

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Abbreviations

Acronym	Description
Baffinland	Baffinland Iron Mines Corporation
CCME	Canadian Council of Ministers of the Environment
EHS	Environmental, Health and Safety
EIS	environmental impact statement
EPCM	Engineering, procurement, and construction management
EPP	Environmental Protection Plan
ERCB	Energy Resources Conservation Board
IIBA	Inuit Impacts Benefits Agreement
the Project	Mary River Project
NIRB	Nunavut Impact Review Board
NWB	Nunavut Water Board
NWT	Northwest Territories
QIA	Qikiqtani Inuit Association
TDG	Transportation of Dangerous Goods
VEC	valued ecosystem components
WMP	waste management plan

1. Introduction

Baffinland Iron Mines Corporation is committed to taking all necessary steps to ensure that the use, collection, handling, storage, transportation and disposal of hazardous wastes generated during the construction, operation and closure of the Mary River Project is conducted in a safe, efficient and environmentally compliant manner. One of the first steps towards achieving these goals is the preparation of this Hazardous Materials and Hazardous Waste Management Plan for Construction, Operation and Closure. This Hazardous Materials and Hazardous Waste Management Plan (HMMP) establishes the roles and responsibilities of employees, contractors and other site personnel as well as protocols for handling, storing and disposing of all hazardous materials onsite. The intent is to afford a high degree of control over the use, collection, handling, storage, transportation and disposal of hazardous materials.

1.1 Purpose

The purpose of this plan is to provide a consolidated source of information on the safe and environmentally sound transportation, storage, and handling of the major hazardous products to be used at the Mary River Project. A hazardous material is one that, as a result of its physical, chemical, or other properties, poses a hazard to human health or the environment when it is improperly handled, used, stored, disposed of, or otherwise managed. In combination with Baffinland Iron Mines (BIM) “Emergency Response Plan” and “Spill Contingency Plan,” this Hazardous Materials and Hazardous Waste Management Plan (HMMP) provide instruction on the prevention, detection, containment, response, and mitigation of accidents that could result from handling hazardous materials.

The plan is based on the following principles for best practice management of hazardous materials:

- Identify and prepare materials and waste inventories;
- Characterize potential environmental hazards posed by those materials;
- Allocate clear responsibility for managing hazardous materials;
- Describe methods for transport, storage, handling, and use;
- Identify means of long-term storage and disposal;
- Prepare contingency and emergency response plans;
- Ensure training for management, workers, and contractors whose responsibilities include handling hazardous materials; and
- Maintain and review records of hazardous material consumption and incidents in order to anticipate and avoid impacts on personal health and the environment.

BIM recognizes that incorporating proper hazardous material management into other environmental management plans and systems leads to risk reduction, improved process control, and cost savings.

All hazardous materials to be used at the Mary River Project will be manufactured, delivered, stored, and handled in compliance with all applicable federal and territorial regulation. BIM is strongly committed to preventing, to the greatest extent possible, both inadvertent release of these substances to the environment and accidents resulting from mishandling or mishap. BIM will institute programs for employee training, facility inspection, periodic drills to test systems, and procedural review to address deficiencies, accountability, and continuous improvement objectives.

BIM will actively work towards minimizing the generation of hazardous wastes by investigating alternatives to the use of hazardous materials, by recycling products and containers wherever feasible, and by treating wastes using state-of-the-art technologies before any release to the environment.

1.2 Definitions

Project: All necessary tasks and work from construction, operation, closure and reclamation phase, during the lifespan of the Project, on the Site.

Site: All of the areas occupied by the Project facilities (permanent or temporary) during the construction, operation, closure and reclamation phase of the Project.

Contractor: A person or business which provides goods, material, equipment, personnel, and/or services to Baffinland Iron Mines Corporation under terms specified in a contract.

Waste: All residual material (hazardous, non-hazardous or Putrescible) generated during the construction, operation, closure and reclamation phase of the Project.

Hazardous Waste: All kind of wastes generated during the lifespan of the Project and that present a threat to the human health or the environment because they posses one or more of the following characteristics: corrosive, reactive, explosive, toxic, inflammable, or biologically infectious.

Non-Hazardous Waste: All kind of wastes generated during the lifespan of the Project and that do not present a threat to human health or the environment.

Putrescible Wastes: All kind of wastes generated during the lifespan of the Project and that are degraded very rapidly, i.e., plants, food scraps or animal remains.

1.3 Hazardous Materials Regulatory Requirements

Both federal and territorial legislation regulates the management of hazardous materials in Nunavut.

Copies of relevant legal documents will be kept on file at the mine site. Management and safety personnel will provide an overview of the applicable regulations to all employees as part of their initiation and ongoing training.

A number of Acts and Regulations provide specific requirements for the management of the different types of hazardous materials at the Mary River Project. They are:

1.3.1 Federal

- Transportation of Dangerous Goods Act and Regulations (TDGA and TDGR);
- Explosives Act;
- National Fire Code; and
- Canadian Council of Ministers for the Environment (CCME) Guidelines for Above-Ground Storage Tanks.

1.3.2 Territorial

- Transportation of Dangerous Goods Act (RSNWT 1988) and Regulations;
- Explosives Use Act and Regulations;
- Fire Prevention Act and Regulations;
- Mine Health and Safety Act and Regulations; and
- Work Site Hazardous Materials Information System Regulations (WHMIS).

The TDGA classifies hazardous materials into nine main classes according to an internationally recognized system, as follows:

- Class 1 – Explosives;
- Class 1 – Gases;
- Class 3 – Flammable liquids;
- Class 4 – Flammable solids;
- Class 5 – Oxidizing substances and organic products;
- Class 6 – Poisonous (toxic) and infectious substances;
- Class 8 – Corrosives; and
- Class 9 – Miscellaneous products or substances.

1.4 Relationship to Other Management Plans

This plan is based on the concepts and principles found in Appendix 10A-1 EHS Management System Framework Standard and 10A-2 Hazard Identification and Risk Assessment Standard. This plan should be viewed in concert with the following additional plans that have been prepared for the EIS:

- Environmental Protection Plan;
- Surface Water and Aquatic Ecosystem Management Plan;
- Wastewater Management Plan;
- Preliminary Mine Closure and Reclamation Plan;
- Air & Noise Management Plan;
- Emergency Response and Spill Contingency Plan;
- Explosives Management Plan;
- Terrestrial Wildlife Management Plan; and
- Waste Management Plan.

1.5 Baffinland's Commitments

Baffinland provides adequate resources to implement and maintain the EHS Management System including the necessary human, material and financial resources. Baffinland's Sustainable Development Policy is presented in Section 2.

1.6 Update of this Management Plan

The Hazardous Materials and Hazardous Waste Management Plan is a "living document". It will be regularly updated on the basis of management reviews (as outlined in Section 8), incident investigations, regulatory changes or other Project related changes.

2. Sustainable Development Policy

At Baffinland Iron Mines Corporation, we are committed to conducting all aspects of our business in accordance with the principles of sustainable corporate responsibility and always with the needs of future generations in mind. Everything we do is underpinned by our responsibility to protect the environment, to operate safely and fiscally responsibly and to create authentic relationships. We expect each and every employee, contractor, and visitor to demonstrate a personal commitment to this policy through their actions. We will communicate the Sustainable Corporate Policy to the public, all employees and contractors and it will be reviewed and revised as necessary on an annual basis.

These four pillars form the foundation of our corporate responsibility strategy:

- Health and Safety;
- Environment;
- Investing in our Communities and People; and
- Transparent Governance.

2.1 Health and Safety

- We strive to achieve the safest workplace for our employees and contractors; free from occupational injury and illness from the very earliest of planning stages. Why? Because our people are our greatest asset. Nothing is as important as their health and safety.
- We report, manage and learn from injuries, illnesses and high potential incidents to foster a workplace culture focused on safety and the prevention of incidents.
- We foster and maintain a positive culture of shared responsibility based on participation, behaviour and awareness. We allow our workers and contractors the right to stop any work if and when they see something that is not safe.

2.2 Environment

- We employ a balance of the best scientific and traditional Inuit knowledge to safeguard the environment.
- We apply the principles of pollution prevention and continuous improvement to minimize ecosystem impacts, and facilitate biodiversity conservation.
- We continuously seek to use energy, raw materials and natural resources more efficiently and effectively. We strive to develop pioneering new processes and more sustainable practices.
- We understand the importance of closure planning. We ensure that an effective closure strategy is in place at all stages of Project development and that progressive reclamation is undertaken as early as possible to reduce potential long-term environmental and community impacts.

2.3 Investing In Our Communities and People

- We respect human rights and the dignity of others. We honour and respect the unique culture, values and traditions of the Inuit people.
- We contribute to the social, cultural and economic development of sustainable communities adjacent to our operations.
- We honour our commitments by being sensitive to local needs and priorities through engagement with local communities, governments, employees and the public. We work in active partnership to create a shared understanding of relevant social, economic and environmental issues, and take their views into consideration when making decisions.

2.4 Transparent Governance

- We will take steps to understand, evaluate and manage risks on a continuing basis, including those that impact the environment, employees, contractors, local communities, customers and shareholders.
- We ensure that adequate resources are available and that systems are in place to implement risk-based management systems, including defined standards and objectives for continuous improvement.
- We measure and review performance with respect to our environmental, safety, health, socio-economic commitments and set annual targets and objectives.
- We conduct all activities in compliance with the highest applicable legal requirements and internal standards
- We strive to employ our shareholder's capital effectively and efficiently. We demonstrate honesty and integrity by applying the highest standards of ethical conduct.

Tom Paddon
President and Chief Executive Officer
September 2011

3. Targeted VECs

Hazardous Materials will be used throughout the life cycle of the Project. To ensure that hazardous materials are handled, stored and managed in a safe and environmentally acceptable manner, Baffinland will apply best practices for its hazardous materials management activities.

Inadequate handling, storage and elimination of hazardous materials could impact the following VECs:

- Soils (spills and contamination);
- Water quality (contamination of runoff);
- Fish and fish habitat;
- Vegetation (uptake of contaminants or loss of vegetation);
- Birds (exposure and ingestion of contaminants);
- Terrestrial wildlife (exposure and ingestion of contaminants); and
- Human health (exposure and ingestion of contaminants).

3.1 Types of Hazardous Materials

The Mary River Project will require the use of the following types of classified hazardous materials:

- Fuel and Lubricants – diesel fuel, oils, greases, anti-freeze, and solvents used for equipment operation and maintenance;
- Explosives – ammonium nitrate and high explosives used for blasting in the mine; and
- Laboratory Wastes – various by-products classified as hazardous waste and chemicals used in the assay laboratory.

3.1.1 Hazardous Waste Materials of Special Interests

Two particular products: ammonium nitrate and diesel fuel will be used in relatively large quantities throughout the life of the Project. Detailed procedures have been developed to ensure that these materials are handled and used with no adverse effect on people or the environment. Product characteristics and use are briefly described below.

3.1.1.1 Ammonium Nitrate

Ammonium nitrate (AN) (NH4NO3) is essentially a fertilizer product manufactured and used for agricultural purposes in many parts of the world. It is also used in the manufacture of commercial blasting explosives. In addition to ANFO — a combination of ammonium nitrate and fuel oil — AN is a major raw material in the manufacture of nitro-glycerine, water gels/slurries, and other types of blasting emulsions. Trials with modern ANFO blasting agent were conducted through the 1950s and 1960s, leading to its current status as the most widely used commercial explosive in the world, representing about 70% of total usage. AN-based explosives are a vital part of every construction Project and are indispensable in the mining industry. Millions of tonnes of AN are produced annually throughout the world and handled without incident.

3.1.1.2 *AN Physical Properties*

AN is a stable, inorganic, solid compound. It is completely soluble in water and must be kept dry to remain effective for its intended purpose. AN products vary in composition, blend, and surface treatment. For instance, granular fertilizer products are coated with various materials to seal the particles from moisture contamination, whereas AN prills (pellets) produced for use in ANFO explosives are intentionally porous to permit the oil to be absorbed. The prills are generally white or off-white, and shelf life in a tightly closed container is unlimited. AN itself is not an explosive, but it is an oxidizer and can explode or decompose under specific conditions, such as: high temperature (between 160°C and 200°C); bulk storage in a confined space; contamination with organic substances such as oil or waxes; contamination with inorganic materials such as chlorides and metals (chromium, copper, cobalt, nickel); and exposure to strong shock waves from other explosions. Similarly, AN is not combustible in itself, but as an oxidizing agent it increases fire hazard when in contact with other combustible materials, even in the absence of air. AN must be stored in a dry, well-ventilated area away from all possible sources of heat, fire, or explosion. AN is odourless under normal conditions but releases toxic nitrous and ammonia fumes on explosion, decomposition, or involvement in a fire. Direct and unprotected contact with dry AN can cause discomfort and inflammation of eyes, skin, and respiratory membranes. Its oral toxicity is slight to moderate, although swallowing large amounts can have serious, if not fatal, effects from the ammonia and nitrate salts. It has no known chronic effects, however, and repeated or prolonged exposure is not known to aggravate pre-existing medical conditions. AN is of low toxicity to aquatic life but may promote eutrophication in waterways (water becomes pollution rich in dissolved nutrients).

3.1.1.3 *Handling and Storage*

Although AN is classified as a hazardous product, its storage and handling at Mary River is not considered to be a significant risk activity. At site, a qualified explosives contractor will manage AN and all other explosives-related materials. The AN bags will be stored in a safe area away from water bodies and from the explosives storage magazine. AN bags will be handled individually when needed for the preparation of batches of explosive.

Any spills will be swept up and placed in suitable containers for use or disposal. Empty bags are not considered to be hazardous waste, and will likely be burned in the site incinerator. All personnel exposed to AN will wear suitable personal protective equipment.

3.1.1.4 *Regulatory Context*

In Canada, the production, storage, and use of AN are subject to strict precautionary measures under the Explosives Act and Regulations, and the Canada Transportation Act, Ammonium Nitrate Storage Facilities Regulations. The Explosives Act is administered by the Explosives Regulatory Division (ERD) of Natural Resources Canada.

3.1.1.5 Diesel

Products such as combustible diesel fuels, toxic anti-freeze, compressed gases, lubricants, and cutting oils are widely used in the North. These products meet vital needs for power generation, heating, and vehicle operation. Diesel fuel is by far the largest volume of petroleum product shipped annually to communities in Nunavut. The potential environmental dangers of transporting and burning diesel fuels are well understood. The transportation, storage, and handling of diesel products are strictly regulated by both federal and territorial legislation. Baffinland will ensure that all such requirements are met and emphasize the need for regular inspection of all storage and distribution facilities on site to assure mechanical soundness and to prevent leaks or any other uncontained release of diesel fuel.

4. Hazardous Materials Management Approach

The aim of the Hazardous Materials and Hazardous Waste Management Plan is to implement a sound hazardous materials minimization program that will focus upon the principles of Lifecycle Management, with the goal of managing the material from identification to disposal. The Hazardous Materials and Hazardous Waste Management approach must be in compliance with Appendix 10A-2 Hazard Identification and Risk Assessment Standard. It covers product supply, transportation, storage, and handling, recycle, and waste disposal. BIM is committed to ensuring proper life cycle management of all products used at the Mary River sites, including hazardous materials. BIM and its contractors will deal only with reputable, certified suppliers, transporters, and expediters.

4.1 Delivery

All hazardous materials will be delivered to site by commercial carriers in accordance with the requirements of the Canadian Transportation of Dangerous Goods Act (TDGA). Carriers will be licensed and inspected as required by the Department of Transportation. All required permits, licences, and certificates of compliance are the responsibility of the carrier. All shipments must be properly identified and placarded. Shipping papers must be accessible and include information describing the substance, immediate health hazards, fire and explosion risks, immediate precautions, fire-fighting information, procedures for handling leaks or spills, first aid measures, and emergency response telephone numbers.

Each transportation company will be required to develop a spill prevention, control, and countermeasures plan to address the materials they are importing. In the event of a release during transport, the commercial transportation company is responsible for first response and cleanup.

4.2 Hazardous Materials Identification and Handling

Once dangerous goods are received at the workplace, additional regulations apply. The federal Workplace Hazardous Materials Information System (WHMIS) calls for the proper labelling of products, the availability of product information in the form of MSDSs, and employee education on how to identify and handle hazardous products. MSDS sheets of hazardous materials used on site are presented in 0.

All tanks used for the storage of hazardous materials will be installed in secondary containment areas sized to hold at least 110% of the volume of the largest tank. Tanks and vessels in the process plant will be installed on concrete surfaces sloping to interior sumps that will route spilled solutions to lined collection areas.

BIM has prepared emergency response procedures for spilled chemical substances, as provided in Emergency Response and Spill Contingency Plan. These procedures outline the correct response to accidental spills or releases of hazardous materials to minimize health risks and environmental effects. Included are procedures for evacuating personnel, maintaining safety, cleanup and neutralization activities, emergency contacts, internal and external notifications to regulatory authorities, and incident documentation.

Table 4-1: Types of Hazardous Waste

Waste Type	Location Generated	Additional Storage Requirements	Temporary Storage Location
Waste hydrocarbons and hydrocarbon products	Equipment maintenance shops	Store away from sources of heat and ignition.	In contained area in storage containers at on site waste management facility or lay down area (during construction only).
Liquid chemical waste (glycols, solvents, paint, brake fluid, hydraulic fluids, etc.)	Equipment maintenance shops, general maintenance buildings, aircraft maintenance buildings	If greater than 1,000 L (or 1,000 kg) stored for 180 days, site must be registered as hazardous waste storage facility.	In contained area in storage containers at on site waste management facility or lay down area (during construction only).
Solid chemical waste (batteries, fluorescent lights, aerosol cans, etc.)	Equipment maintenance shops, offices, tents, personal equipment	Use pallets to keep containers off ground (batteries). If greater than 1,000 kg stored for 180 days, site must be registered as hazardous waste storage facility.	In contained area in storage containers at on site waste management facility or lay down area (during construction only).
Electronic waste	Offices, personal equipment	Use pallets to keep containers off ground (best management practice).	In contained area in storage containers at on site waste management facility or lay down area (during construction only).
Laboratory chemical waste	On-site laboratory facilities and offices	If greater than 1,000 L stored for 180 days, site must be registered as hazardous waste storage facility.	In contained area in storage containers at on site waste management facility or lay down area (during construction only).

Waste Type	Location Generated	Additional Storage Requirements	Temporary Storage Location
Biomedical waste	Medical office	Storage area totally enclosed and separate from supply rooms or food preparation areas. Storage area lockable and access restricted to authorized personnel. Storage area identified as containing biomedical waste with clearly displayed biohazard symbol. No other materials stored with biomedical waste. Storage thoroughly cleaned in accordance with facility procedures. Waste stored at 4°C or lower if stored more than 4 days (or other time-frame specified by jurisdictional authority). Cold storage lockable and only used for biomedical waste, labelled as containing biomedical waste with clearly displayed biohazard symbol. Contingency plan prepared for large volumes of waste or failure of cold storage. Biomedical waste may not be compacted.	In contained area in storage containers at on site waste management facility or lay down area (during construction only).
Ozone depleting substances (ODS) (i.e. refrigerants, etc.)	Kitchens, vehicles	For on-site disposal of units containing ODS's, the ODS must be removed by qualified technician prior to disposal.	In contained area in storage containers at on site waste management facility or lay down area (during construction only).

Waste Type	Location Generated	Additional Storage Requirements	Temporary Storage Location
		Store ODS in appropriate container as per instructions from qualified technician. ODS to be disposed of off-site as soon as practicable after removal.	
Compressed gas cylinders	Equipment maintenance shops, welding shop	Safely empty containers of all gases. Store away from sources of heat and ignition. When feasible, return containers to manufacturer for re-use following TDG procedures. When not shipped off-site, remove valves and purge cylinder with compressed air or inert gas. Dispose of as scrap metal.	In contained area in storage containers at on site waste management facility or lay down area (during construction only).
Hydrocarbon-impacted soil/water/ice/snow	Dependent on spill location	In contained area in storage containers at on site waste management facility or lay down area (during construction only).	In contained area in storage containers at on site waste management facility or lay down area (during construction only). If available direct transport to landfarm will occur.

Table 4-2: Estimated of Hazardous Waste Quanties[1]

Waste	Waste Description	Disposal Method	Est. Total Annual Production (tonnes)
Construction Phase			
Waste oils and fluids	Maintenance	Shipped off Site	133
Batteries	Maintenance	Shipped off Site	13
Spent activated carbon	Domestic	Shipped off Site	13
Aerosol containers	Misc.	Shipped off Site	8
Empty compressed gas cylinders	Misc.	Shipped off Site	minimal
Kitchen grease	Kitchen	Shipped off Site	57
Crushed drums/plastic pails	Misc.	Shipped off Site	26
Spoiled CaCl	Drilling	Shipped off Site	4
Operation Phase			
Waste oils and fluids	Maintenance	Shipped off Site	76
Batteries	Maintenance	Shipped off Site	7
Spent activated carbon	Domestic	Shipped off Site	8
Aerosol containers	Misc.	Shipped off Site	5
Empty compressed gas cylinders	Misc.	Shipped off Site	minimal
Kitchen grease	Kitchen	Shipped off Site	33
Crushed drums/plastic pails	Misc.	Shipped off Site	15
Spoiled CaCl	Drilling	Shipped off Site	3
Contaminated Soils or Snow to Landfarm during all phases (m^3)[2]			
Soils contaminated with Hydrocarbon	Fuel spill	On-site treatment (landfarm)	8400
Water/ice/snow contaminated with HC	Fuel spill	On-site treatment (landfarm)	25200
1 Composition based on Canutuec Hazardous Waste Shipment Manifest from Mary River Project 2011			
2 Assume 350 m^3 of contaminated soil 1/4 of the year, Landfarm Design and Management Plan, Meadowbank Mine (Golder, 2007)			
3 Assume 350 m^3 of contaminated snow/ice 3/4 of the year, Landfarm Design and Management Plan, Meadowbank Mine (Golder, 2007)			

4.3 Hazardous Material Waste Handling

Hazardous wastes include all liquids or solids designated as hazardous wastes under either federal or provincial regulations , i.e. hydrocarbon liquids, used batteries, various chemicals used during concrete operations, coating materials and a wide variety of other materials including any containers, containing residual amounts of hazardous materials. Timber that is chemically treated shall be considered as a hazardous waste. More generally chemicals or materials of unknown properties will be considered as a hazardous waste unless it can be shown otherwise.

Hazardous waste shall only be handled by certified workers and shall strictly follow the procedures set out in the EPP. All handling and disposal of hazardous waste shall comply with the appropriate legislation. A detailed list of hazardous wastes generated will be kept by BIM and updated on a monthly basis.

All hazardous waste shall be clearly labelled and at no time shall hazardous waste be combined with other solid non-hazardous waste. A spill kit shall be made available inside the hazardous waste storage area (refer to the EPP for requirements of spill kits). Should a hazardous waste spill occur BIM will oversee its cleanup, removal of contaminated material, transportation and disposal of the hazardous waste contaminated material at an approved off-site hazardous waste landfill.

There shall be no smoking within 10 m of the hazardous waste storage location.

A special class of hazardous wastes are biological wastes generated at the medical clinic and first aid stations. While the amounts will be small, the nature of such waste requires separate packaging and disposal. All such waste will be packaged, labelled and transported for disposal to a facility licensed to dispose of such waste.

Waste Oil generated during the construction phase shall be properly handled, stored and disposed of according to Used Oil Control Regulations (82/02).

4.4 Hazardous Waste Temporary Storage On-Site

Hazardous wastes that will be generated on-site will be similar during both construction and operations phases. These wastes will be temporarily stored in containers and/or at designated locations on-site at the Mine Site, Milne Port, and Steensby Port.

4.4.1 Hazardous Waste Containers

The following general waste storage requirements apply to most hazardous wastes:

- Store in original container when possible or in containers manufactured to store hazardous waste;
- Sound, sealable, undamaged containers;
- Store in 16 gauge (or lower) metal or plastic drums, or other appropriate container;
- Label according to WHMIS and TDG;

- Keep containers closed or sealed at all times unless in use;
- Protect containers from damage and weather;
- Store in secure area with controlled access;
- Train personnel in appropriate practices;
- Store in manner to prevent spills to environment; and
- Never store with food or in food containers.

4.4.2 Hazardous Waste Storage Areas

The storage areas will abide by the following criteria:

- Storage areas for hazardous waste will be in lined and bermed facilities that will contain any spillage locally and prevent discharge to adjacent land and water;
- Drainage into and from the site is controlled to prevent spills or leaks from leaving the site and to prevent runoff from entering the site;
- Incompatible wastes are segregated by chemical compatibility to ensure safety of workers and facility;
- The storage areas are secured with controlled access. Only persons authorized to enter and trained in waste handling procedures have access to the storage area;
- Regular inspections are performed and recorded. Containers are placed so that each container can be inspected for signs of leaks or deterioration. Leaking or deteriorated containers will be removed and their content transferred to a sound container;
- A record is maintained of the type and amount of waste in the storage;
- Storage sites have emergency response equipment appropriate for the hazardous waste stored on the site; and
- Storage site will be registered as required by regulations.

On becoming wastes, materials will be stored and/or disposed of in accordance with specific government regulations and guidelines. Overall, hazardous waste treatment, recycling, and disposal facilities are lacking in Nunavut. BIM will therefore store most waste materials in secure facilities until they can be transported south for recycling or disposal.

4.5 Hazardous Waste Transportation Off-Site

Hazardous Wastes will be shipped to registered hazardous waste disposal facilities or to recycling depots as per the Basel Convention. All storage and shipping containers will have appropriate containment measures. Manifests will be prepared for all materials shipped off-site and the receivers will be required to maintain chain of custody records. Shipping will be undertaken only by those trained in the Transportation of Dangerous Goods (TDG). All hazardous waste storage and handling areas will be routinely inspected for leaks, spills, and the implementation of appropriate containment measures.

4.6 EPP Procedures Relevant to this Hazardous Materials Management Plan

Table 4-3 outlines the EPP procedures that are relevant to the Hazardous Materials Management Plan. The EPP is a living document and is subject to on-going updates.

Table 4-3: Content of the EPP Related to the Hazardous Materials Management Plan

Section	Title/Description
2.5	Geotechnical Drilling Operations
2.6	Equipment Operations
2.7	Fuel Storage and Handling
2.14	Solid Waste Management
2.15	Sewage Treatment
2.16	Hazardous Waste Management
2.17	Road Construction and Borrow Development
2.19	Road Traffic Management
2.21	Exploration Drilling Operations
3.7	Off-Site Waste Disposal Log

5. Major Hazardous Materials On-Site

5.1 Fuels and Lubricants

Material categories, site handling and storage requirements, and personal protective equipment recommended by manufacturers in MSDSs are summarized in Table 5-1 and Table 5-2.

Table 5-1: Fuel Products – Hazard Classes, Potential Impacts and Storage Locations

Material	Class	Total Amount - Container	Potential Impact
Diesel	3	Refer to 0	Water and soil contamination
Aviation fuel	3		Water and soil contamination
Motor oil	NR	TBD – Barrels and/or pails	Soil contamination
Hydraulic fluid	NR	TBD – Barrels and/or pails	Soil contamination
Varsol	3	TBD – Barrels and/or pails	Soil contamination
Vehicle grease	NR	TBD – Barrels and/or pails	Negligible risk with proper handling
Ethylene glycol	NR	TBD – Barrels and/or pails	Negligible risk with proper handling

NR: Not Regulated

Table 5-2: Fuel Products – Safe Handling Procedures

Material	Handling Procedure	Personal Protective Equipment
Diesel	Do not get in eyes, on skin, or on clothing. Avoid breathing vapours, mist, fume, or dust. Do not swallow. May be aspirated into lungs. Wear protective equipment and/or garments if exposure conditions warrant. Wash thoroughly after handling. Launder contaminated clothing before reuse. Use with adequate ventilation. Keep away from heat, sparks, and flames. Store in a well-ventilated area. Store in a closed container. Bond and ground during transfer.	Chemical goggles Neoprene or nitrile gloves Protective garments Ensure adequate ventilation
Aviation fuel	See diesel procedures above.	
Motor oil	Wear protective clothing and impervious gloves when working with used motor oils.	Chemical goggles Neoprene or nitrile gloves Protective garments
Hydraulic fluid	Keep container closed until ready for use.	Chemical goggles
Varsol	Avoid eye contact. Use with adequate ventilation. Wash thoroughly after handling. Empty container retains residue. Follow label instructions. Avoid repeated skin contact. Store in cool, ventilated area, away from ignition sources and incompatibles. Keep container tightly closed.	Chemical goggles Rubber gloves Protective garments Ensure adequate ventilation
Vehicle grease	Minimize breathing vapor, mist, or fumes. Avoid prolonged or repeated contact with skin. Remove contaminated clothing; launder or dry-clean before re-use. Remove contaminated shoes and thoroughly clean before re-use; discard if oil-soaked. Cleanse skin thoroughly after contact, before breaks and meals, and at end of work period. Product is readily removed from skin by waterless hand cleaners followed by washing thoroughly with soap and water. To prevent fire or explosion risk from static accumulation and discharge, effectively ground product transfer system in accordance with the National Fire Code. Keep containers closed when not in use. Do not store near heat, sparks, flame, or strong oxidants.	Chemical goggles Neoprene or nitrile gloves Protective garments Ensure adequate ventilation

Material	Handling Procedure	Personal Protective Equipment
Ethylene glycol	Ensure adequate ventilation. Wear protective gloves and chemical safety goggles. Keep in tightly closed container, stored in a cool, dry, ventilated area. Separate from acids and oxidizing materials. Empty containers of this product retain product residues and may be hazardous.	Chemical goggles Neoprene or nitrile Gloves Protective garments Ensure adequate ventilation

A contract supplier will fill the storage tanks in the main tank farm. General procedures to be followed are listed below. Similar procedures would be followed for fuelling remote station tanks.

Before fuel transfer, verify that:

- All fuel transfer hoses have been connected properly and couplings are tight;
- Transfer hoses are not obviously damaged;
- Fuel transfer personnel are familiar with procedures; and
- Personnel are located at both the fuel delivery truck and fuel transfer tank(s) and can manually:
  - Shut off the flow of fuel
  - If a high liquid level shutoff device is installed at the delivery tank, verify that the shutoff is operating correctly each time it is used;
  - Fuel transfer will then proceed per the established procedures of the contract supplier; and
  - Any accidents or spills must be reported immediately to the HSE Manager.

On closure of the mine and facilities, some storage capacity will be left in place at site for diesel fuel for the use of personnel involved in close-out and reclamation activities. Small amounts of other petroleum products will also continue to be available. More details are provided in the "Reclamation and Closure Plan."

5.2 Explosives

Explosives are required for blasting waste rock and ore in the open pit mine. Storage, use, and handling of blasting materials are strictly regulated in Nunavut. All explosives handling, use and storage will be performed in accordance to the Mary River Project: Explosives Management Plan and will be performed by a licensed contractor.

Material categories, site handling and storage requirements, and personal protective equipment recommended by manufacturers in MSDSs are summarized in the Table 5-3.

Table 5-3: Explosives – Hazard Classes and Potential Impacts

Material	Class	Potential Impact
Ammonium nitrate	5.1	Water contamination
High explosive detonators	1	Negligible with proper handling
Blasting caps	1	Negligible with proper handling

6. Roles and Responsibilities

The Sustainable Development department is responsible for environmental management, including ensuring compliance with applicable regulations and permit requirements through on-going monitoring, and the development and implementation of operational standards, procedures and employee training. Roles and responsibilities for implementation of the Hazardous Materials and Hazardous Waste Management Plan are described in Table 6-1.

Table 6-1: Roles and Responsibilities

Position	Responsibilities
Construction Manager	Accountable for the environmental performance on site. Establishes goal and targets for environmental performance. Responsible for the implementation of Baffinland Environmental Management Plans.
HSE Manager	Provides direction on environmental issues to the Site Management Team. Staffing of Environmental Department. Supervise/conduct site inspection and audits. Initiate and manage environmental studies as required. Manage external environmental consultants/specialists. Environmental reporting as required by permits and authorizations. Liaise with regulatory agencies on all environmentally related issues. Conducting surveillance of facilities and Project hazardous materials sites for the presence of wildlife to ensure that predator control measures are effective.
Environmental Lead	Provide specialist advice and input on environmental matters. Conduct environmental studies and monitoring programs. Conducts audits of operations, as requested. Prepare environmental reports.

Position	Responsibilities
Contractors/ Subcontractors	All contractors/subcontractors are considered equivalent to Baffinland staff in all aspects of environmental management and control, and their responsibilities in this respect mirror those of Baffinland personnel. Contractor personnel will be included in the on-site induction process. The responsibilities of the Contractors/subcontractors include the following: • Comply with the requirements of the EPP; • Conduct regular site checks/inspections to ensure that regular maintenance/enhancements are undertaken to minimize potential environmental impacts; • Provide personnel with appropriate environmental toolbox/tailgate meetings and training; and • Work cooperatively and proactively with Environmental Coordinator t and Construction Manager to facilitate implementation of the above.

Table 6-2 presents the management team responsible for overseeing implementation of Baffinland's Environmental Management Plans and their contact information.

Table 6-2: Baffinland Management Members and Contact Information

Position	Individual	Telephone Contact	E-mail Contact
On-site Coordinator			
Environmental Superintendant			
Operations Manager			

NOTE: Upon approval of project, Baffinland Management Members and Contact information (Table 6-2) will be updated to reflect the organization of BIM and the EPCM contractor on site at the commencement of porject construction.

Baffinland's On-Site Co-Coordinators are responsible for enforcement of hazardous materials management practices at the Mary River Project. They train and inform site personnel on matters pertaining to hazardous materials management practices. He works cooperatively to Baffinland's Environmental Superintendant and reports to the Operations Manager.

6.1 HSE Manager

With respect to management of hazardous waste generated on its site, Baffinland's HSE Manager and On-Site Coordinators or their designates, under the guidance of the HSE Director, are responsible for:

- Classifying, labelling and storing the hazardous waste properly;
- Register as a waste generator;
- Ensure manifest is properly completed and accompanies the shipment;
- Ensure the waste is transported by a registered hazardous waste carrier to a registered receiver;
- Registering the hazardous waste management facility as required;
- Ensuring the proper disposal of hazardous waste by an acceptable method;
- Ensuring workers are trained in the management of hazardous waste including emergency response in the event of a discharge; and
- Complying with other applicable regulatory requirements for hazardous waste management including transportation, occupational health and public health.

6.2 Training Programs

Baffinland will identify and document training needs and deliver the appropriate training to all employees and contractors whose work may impact on the risks to health and safety in the work place and whose work may cause a significant environmental impact. During orientation training, all employees and contractors will be made aware of:

- The importance of conformance with the Hazardous Materials and Hazardous Waste Management Plan and its procedures;
- The risk to the environment and health and safety associated with handling of various types of hazardous materials products;
- The consequences to the environment, health and safety if there are deviations from specified operational controls;
- Best management practices related to hazardous materials handling; and
- Their specific roles and responsibilities in achieving conformance.

Staff and sub-contractors working on site will receive environmental training as part of the Site Orientation, to achieve a basic level of environmental awareness understanding of their obligations regarding compliance with regulatory requirements, commitments and best practices.

Operations and Site Managers and contractor supervisors will be provided this Plan and will receive additional orientation with respect to the requirements outlined. In addition, all supervising level staff and sub-contractors will be provided with the Operational Standards (the EPP and applicable work procedures/work instructions) as written guidance/reference for their work.

Targeted environmental awareness training will be provided to both individuals and groups of workers assuming a specific authority or responsibility for environmental management or those undertaking an activity with an elevated high risk of environmental impact, such as in-water work at watercourse crossings. These will be delivered in the form of toolbox/tailgate meetings or other means as appropriate.

- The content of the environmental component of the site induction will include at a minimum:
  - Location of environmental sensitivities;
  - Location of additional information on environmental matters;
  - Due diligence responsibilities;
  - Responsibilities related to hazardous materials management, minimizing noise as necessary, road traffic rules, etc.; and
  - Principles and necessary steps to avoid encounters with bears or other wildlife and what to do if one such encounter occurs.

With respect to hazardous materials management, Baffinland will have a written training and awareness plan which will consider:

- The differing level of risks and potential consequences associated with different types of hazardous materials;
- The different responsibilities, abilities, and literacy of employees;
- The culture of the employees;
- Contractors involved and their relevant experience/expertise;
- The trainers, training methods, and settings;
- Training frequency; and
- Documentation of training and evaluation of training.

Baffinland will regularly review and update the training and awareness plan based on changes in training needs and regulatory required training.

6.3 Communication

The types of communications for which members of the team will participate include the following:

- Formal written correspondence and meetings with stakeholders;
- Site visits by community representatives;
- Design, construction and planning meetings;

- Field inspections and monitoring reports disseminated by the Environmental Health & Safety HSE Manager;
- Electronic communications;
- Tailgate/toolbox meetings;
- Formal written correspondence and meetings with government regulatory bodies; and
- Formal environmental awareness training.

Communications will be appropriately recorded and filed for future reference. Where appropriate, the copies of communications will be forwarded to the Operations Manager(s), and Vice President Sustainability.

6.4 External Communications

Effective forms of communication include the proactive notification to external stakeholders of Project activity. Project activity updates will be provided to the communities of North Baffin through various means including regular meetings, public notices and radio announcements as appropriate. Baffinland will endeavour to maintain Community Liaison Offices to assist in this regard. Information on hazardous materials management will be integral to this external communication effort.

6.5 Construction

During the construction phase of the Project, the EPCM (Engineering Procurement and Construction Management) contractor will be responsible for implementing this Plan. The hazardous materials management will take into account the numerous construction sites, volumes and types of hazardous materials generated. The organizational structure of the EPCM contractor will reflect the hazardous materials management complexity of the construction phase.

6.6 Operation and Closure

During the operations phase, the maintenance and warehouse HSE Manager will be responsible for operation of hazardous materials management facilities in accordance with this Plan, and subsequent updates to the majority of the Plan. Environmental guidance and monitoring will be the responsibility of the Baffinland Environmental HSE Manager.

7. Performance Indicators, Thresholds, and Incident Response

Periodic inspections of hazardous materials management facilities will ensure compliance with this Hazardous Materials Management Plan. The EPP and associated operations procedures/work instructions outline detailed procedures for handling and storage of fuel, lubricants and other hazardous materials. These procedures are in place and training will be provided to all employees and contractors on hazardous materials handling. Accidental spills are the most likely type of environmental incident to occur while conducting the above mentioned activities. Response procedures, documented in the EPP and the Emergency and Spill Response Plan, are in place to deal with these occurrences.

The ultimate performance indicator for hazardous materials management is the number of incidents of non compliance reported on a daily or monthly basis. Incidents of non-compliance are classified by type and each type entails remedial actions as outlined in Appendix 10A-2: Hazard Identification and Risk Assessment Standard.

Where an investigation triggers a review and update of established EPP procedures, these reviews and update will be carried out in accordance the procedures established by Baffinland`s EHS Framework.

8. Monitoring and Reporting Requirements

8.1 Hazardous Materials Monitoring

Hazardous materials monitoring includes the visual inspection of three main components of the hazardous materials management system (described below) and the measurement and recording of all hazardous materials taken off site. The following information will be reported on an annual basis as currently is the practice:

- The quantities hazardous materials transported off-site for disposal;
- The location and name of the disposal facility for each hazardous materials type;
- The date that each was hauled off-site for disposal, for each occasion that these are removed from the site;
- Quantities of non-hazardous inert solid hazardous materials disposed in the landfill; and
- Quantities of hydrocarbon contaminated soils and water processed in treatment facilities.

Regular visual inspection of hazardous materials management facilities will be conducted by the HSE Manager to ensure proper operation and adequate environmental/health and safety controls are in place.

Hazardous materials audits will be undertaken periodically generation points to ensure hazardous materials streams are properly segregated.

8.2 Operations Monitoring

In addition to specific monitoring and reporting requirements under the regulatory approvals such as the water license, QIA land lease, land use permits, and fisheries authorization as well as monitoring of Project effects, the Environmental Lead will coordinate routine inspections of various aspects of the operations. Routine inspections are conducted to confirm overall conformance with the requirements of the Hazardous Materials Management Plan, companion EPP, and operating procedures/work instructions, and will include inspections of site-based hazardous materials management activities.

Compliance Monitoring Forms are used to document the findings and required actions. These reports are generated as an internal operational management tool to promote continuous improvement in environmental performance and stewardship. Checklists are used as internal operational monitoring and compliance tools. These checklists are integrated into the EPP and other operating procedures/work instructions.

8.3 Data Management

The Environmental Lead is responsible for data management and reporting related to hazardous materials management. The data management system includes conducting routine inspections and monitoring, and providing these results to appropriate parties as required.

8.4 Stakeholder Reporting

Reporting of waste management activities will be included in the respective NWB and NIRB annual reports. In addition, interested stakeholders and the public may request detailed information as part of the Stakeholder Consultation Plan.

9. Adaptive Strategies

Baffinland is committed to continual improvement in its work activities with the aim of reducing risks to the environment and improving operational effectiveness. The strategy employed at Baffinland is regular monitoring supported by operational change and adoption of other mitigating measures if warranted.

Housekeeping and operational measures have been instituted. As part of the EPP, work procedures will continuously be adapted with the goal to reduce the use of hazardous materials. Regular scheduled inspections of hazardous materials storage facilities along with the non-compliance reporting system described in Section 6 will ensure continual improvement and adaptation of hazardous materials management strategies throughout the life cycle of the Project.

As per the requirements of Baffinland`s EHS Management Framework, the company will conduct and document management reviews of its Hazardous Materials and Hazardous Waste Management Plan on a regular basis. Such reviews will ensure the integration of monitoring results for the Hazardous Materials and Hazardous Waste Management Plan are integrated with other aspects of the Project and that necessary adjustments are implemented as required. These reviews also provide a formal mechanism to assess the effectiveness of the management in achieving the company's objectives and maintaining on-going compliance with Project permits and authorizations.

10. QA/QC

As per the requirements of Baffinland`s EHS Framework, regular audits will be undertaken to ensure compliance with the current Hazardous Materials and Hazardous Waste Management Plan and that best management practices are implemented for hazardous materials management. The result of these audits will form the basis for an annual written statement of assurance by management on the effectiveness of its Hazardous Materials Management Plan.

11. References

- Canadian Council of Ministers of the Environment. Guidelines for the Management of Biomedical Hazardous materials in Canada. CCME-EPC-WM-42E. CCME, Feb. 1992.
- Environment and Natural Resources. Guidelines for the Management of Biomedical Hazardous materials in the Northwest Territories. April 2005.
- Government of Nunavut. Department of Sustainable Development. Environmental Protection Service. Environmental Guideline for General Management of Waste. January 2002.
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- Government of Nunavut. Department of Sustainable Development. Environmental Protection Service. Environmental Guideline for Site Remediation. January 2002.
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- Government of Nunavut. Department of Environment. Manager, Pollution Control. Eno, Robert. Personal Communication. 15 Aug. 2008.
- Northwest Territories (NWT). Municipal and Community Affairs. Guidelines for the Planning, Design, Operations and Maintenance of Modified Solid Waste Sites in the Northwest Territories. Prepared by Kent, R., P. Marshall and L. Hawke. Yellowknife: Ferguson Simek Clark, (April 21) 2003.

Annex A

Material Safety Data Sheets

1. Jet A-1 Fuel

2. Ultra Low Sulphur Diesel

3. Ammonium Nitrate Solution, Nitric Acid Ammonium Salt Solution

Shell Canada Limited

Material Safety Data Sheet

Effective Date: 2005-08-15
Supersedes: 2002-08-14

Class B3 Combustible Liquid

Class D2B Skin Irritation

1. PRODUCT AND COMPANY IDENTIFICATION

PRODUCT:	**SHELL* JET A-1**
SYNONYMS:	Aviation Turbine Fuel (Kerosene Type) May contain anti-icing additive (Diethylene Glycol Monomethyl Ether)
PRODUCT USE:	Fuel Solvent
MSDS Number:	142-011

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

TELEPHONE NUMBERS	
Shell Emergency Number	1-800-661-7378
CANUTEC 24 HOUR EMERGENCY NUMBER	613-996-6666
For general information:	1-800-661-1600
For MSDS information:	403-691-3982
(From 7:30 to 4:30 Mountain Time)	403-691-2220

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

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

2. COMPOSITION/INFORMATION ON INGREDIENTS

Component Name	CAS Number	% Range	WHMIS Controlled
Kerosene (Petroleum), Hydrodesulfurized	64742-81-0	60 - 100	Yes

See Section 8 for Occupational Exposure Guidelines.

3. HAZARDS IDENTIFICATION

Physical Description: Liquid Bright Clear Hydrocarbon Odour

Routes of Exposure: Exposure will most likely occur through skin contact or inhalation.

Hazards:

Combustible Liquid.
Irritating to skin.

	Vapours are moderately irritating to the eyes. Ingestion may result in vomiting. Avoid aspiration of vomitus into lungs as small quantities may result in aspiration pneumonitis. Vapours are moderately irritating to the respiratory passages.
Handling:	Eliminate all ignition sources. Avoid prolonged exposure to vapours. Wear suitable gloves and eye protection. Bond and ground transfer containers and equipment to avoid static accumulation. Empty containers are hazardous, may contain flammable / explosive dusts, liquid residue or vapours. Keep away from sparks and open flames.

For further information on health effects, see Section 11.

4. FIRST AID

Eyes:	Flush eyes with water for at least 15 minutes while holding eyelids open. If irritation occurs and persists, obtain medical attention.
Skin:	Wash contaminated skin with mild soap and water for at least 15 minutes. If irritation occurs and persists, obtain medical attention.
Ingestion:	DO NOT INDUCE VOMITING! OBTAIN MEDICAL ATTENTION IMMEDIATELY. Guard against aspiration into lungs by having the individual turn on to their left side. If vomiting occurs spontaneously, keep head below hips to prevent aspiration of liquid into the lungs.
Inhalation:	Remove victim from further exposure and restore breathing, if required. Obtain medical attention.
Notes to Physician:	The main hazard following accidental ingestion is aspiration of the liquid into the lungs producing chemical pneumonitis. If more than 2.0 mL/kg has been ingested, vomiting should be induced with supervision. If symptoms such as loss of gag reflex, convulsions or unconsciousness occur before vomiting, gastric lavage with a cuffed endotracheal tube should be considered.

5. FIRE FIGHTING MEASURES

Extinguishing Media:	Carbon Dioxide Foam Dry Chemical Water Fog
Firefighting Instructions:	Caution - Combustible. Vapour forms a flammable/explosive mixture with air between upper and lower flammable limits. Vapours may travel along ground and flashback along vapour trail may occur. Product will float and can be reignited on surface of water. Do not use a direct stream of water as it may spread fire. Containers exposed to intense heat from fires should be cooled with water to prevent vapour pressure buildup, which could result in container rupture. Container areas exposed to direct flame contact should be cooled with large quantities of water as needed to prevent weakening of container structure. Do not enter confined fire space without adequate protective clothing and an approved positive pressure self-contained breathing apparatus.
Hazardous Combustion Products:	A complex mixture of airborne solid, liquid, particulates and gases will evolve when this material undergoes pyrolysis or combustion. Carbon dioxide, carbon monoxide and unidentified organic compounds may be formed upon combustion.

6. ACCIDENTAL RELEASE MEASURES

Issue warning "Combustible". Eliminate all ignition sources. Isolate hazard area and restrict access. Handling equipment must be grounded. Work upwind of spill if it is safe to do so. Avoid direct contact with material. Wear appropriate breathing apparatus (if applicable) and protective clothing. Stop leak only if safe to do so. Dike and contain land spills; contain spills to water by booming. Use water fog to knock down vapours; contain runoff. Absorb residue or small spills with absorbent material and remove to non-leaking containers for disposal. Recommended materials: Clay or Sand Flush area with water to remove trace residue. Dispose of recovered material as noted under Disposal Considerations. Notify appropriate environmental agency(ies).

7. HANDLING AND STORAGE

Handling: Avoid excessive heat, sparks, open flames and all other sources of ignition. Fixed equipment as well as transfer containers and equipment should be grounded to prevent accumulation of static charge. Vapours are heavier than air and will settle and collect in low areas and pits, displacing breathing air. Extinguish pilot lights, cigarettes and turn off other sources of ignition prior to use and until all vapours are gone. Vapours may accumulate and travel to distant ignition sources and flashback. Do not cut, drill, grind, weld or perform similar operations on or near containers. Empty containers are hazardous, may contain flammable/explosive dusts, residues or vapours. Do not pressurize drum containers to empty them. Wash with soap and water prior to eating, drinking, smoking, applying cosmetics or using toilet facilities. Launder contaminated clothing prior to reuse. Use good personal hygiene. Combustible.

Storage: Store in a cool, dry, well ventilated area, away from heat and ignition sources. Keep container tightly closed.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

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

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

Kerosene/Jet fuels, as total hydrocarbon vapour (skin) : 200 mg/m3 (Application restricted to conditions in which there are negligible aerosol exposures.)
Skin Notation: Absorption through skin, eyes and mucous membranes may contribute significantly to the total exposure.

Mechanical Ventilation: Use explosion-proof ventilation as required to control vapour concentrations. Concentrations in air should be maintained below the occupational exposure limit if unprotected personnel are involved. Local ventilation recommended where mechanical ventilation is ineffective in controlling airborne concentrations below the recommended occupational exposure limit. Make up air should always be supplied to balance air exhausted (either generally or locally). For personnel entry into confined spaces (i.e. bulk storage tanks) a proper confined space entry procedure must be followed including ventilation and testing of tank atmosphere.

PERSONAL PROTECTIVE EQUIPMENT:

Eye Protection:	Chemical safety goggles and/or full face shield to protect eyes and face, if product is handled such that it could be splashed into eyes. Provide an eyewash station in the area.
Skin Protection:	Avoid contact with skin. Use protective clothing and gloves manufactured from nitrile. Safety showers should be available for emergency use.
Respiratory Protection:	Avoid breathing vapour or mists. If exposure has the potential to exceed occupational exposure limits, use an appropriate NIOSH-approved respirator. Use a NIOSH-approved chemical cartridge respirator with organic vapour cartridges or use a NIOSH-approved supplied-air respirator.

9. PHYSICAL DATA

Physical State:	Liquid
Appearance:	Bright Clear
Odour:	Hydrocarbon Odour
Odour Threshold:	Not available
Freezing/Pour Point:	Freeze Point < -47 °C
Boiling Point:	145 - 300 °C
Density:	775 - 840 kg/m3 @ 15 °C
Vapour Density (Air = 1):	Not available
Vapour Pressure (absolute):	1 - 1.4 kPa @ 37.8 °C
pH:	Not available
Flash Point:	Tag Closed Cup > 43 °C
Lower Explosion Limit:	0.7 % (vol.)
Upper Explosion Limit:	5 % (vol.)
Autoignition Temperature:	210 °C
Viscosity:	< 8 cSt @ -20 °C
Evaporation Rate (n-BuAc = 1):	Not available
Partition Coefficient (log K_{ow}):	3.3 - 6
Water Solubility:	Insoluble
Other Solvents:	Hydrocarbon Solvents

10. STABILITY AND REACTIVITY

Chemically Stable:	Yes
Hazardous Polymerization:	No
Sensitive to Mechanical Impact:	No
Sensitive to Static Discharge:	Yes
Hazardous Decomposition Products:	Thermal decomposition products are highly dependent on combustion conditions.
Incompatible Materials:	Avoid strong oxidizing agents.
Conditions of Reactivity:	Avoid excessive heat, open flames and all ignition sources.

11. TOXICOLOGICAL INFORMATION

Ingredient (or Product if not specified)	Toxicological Data
Kerosene (Petroleum), Hydrodesulfurized	LD50 Dermal Rabbit > 2000 mg/kg LD50 Oral Rat > 5000 mg/kg

Routes of Exposure: Exposure will most likely occur through skin contact or inhalation.

Irritancy:	This product is expected to be irritating to skin but is not predicted to be a skin sensitizer.
Chronic Effects:	Prolonged and repeated contact with skin can cause defatting and drying of the skin resulting in skin irritation and dermatitis. Prolonged exposure to high vapour concentration can cause headache, dizziness, nausea, blurred vision and central nervous system depression.
Pre-existing Conditions:	Pre-existing eye, skin and respiratory disorders may be aggravated by exposure to this product.
Carcinogenicity and Mutagenicity:	The International Agency for Research on Cancer (IARC) considers that this product is not classifiable as to its carcinogenicity to humans. Middle distillates have caused skin cancers in laboratory animals when applied repeatedly and left in place between applications. This effect is believed to be caused by the continuous irritation of the skin. Good personal hygiene should be maintained to avoid this risk.

12. ECOLOGICAL INFORMATION

Do not allow product or runoff from fire control to enter storm or sanitary sewers, lakes, rivers, streams, or public waterways. Block off drains and ditches. Provincial regulations require and federal regulations may require that environmental and/or other agencies be notified of a spill incident. Spill area must be cleaned and restored to original condition or to the satisfaction of authorities. May cause physical fouling of aquatic organisms.

Biodegradability:	Not readily biodegradable. Rapid volatilization.
Bioaccumulation:	Potential for bioaccumulation.
Partition Coefficient (log K_{ow}):	3.3 - 6

Aquatic Toxicity

Product is expected to be toxic to aquatic organisms.

Ingredient:	Toxicological Data
Kerosene (Petroleum), Hydrodesulfurized	EL50 - growth rate (WAF method) Algae (72hr) 1 - 10 mg/L. EL50 (WAF method) Daphnia Magna (48hr) 1 - 10 mg/L. LL50 (WAF method) Rainbow Trout (96hr) 1 - 10 mg/L.

Definition(s): LL and EL are the lethal loading concentration and effective loading concentration respectively. The concentration represents the amount of substance added to the system to obtain a toxic concentration. They replace the traditional LC and EC for low solubility substances.
WAF is the water accommodated fraction. A slightly soluble hydrocarbon is stirred into water and the insoluble portions are removed. The remaining solution is the water accommodated fraction.

13. DISPOSAL CONSIDERATIONS

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

14. TRANSPORTATION INFORMATION

Canadian Road and Rail Shipping Classification:

UN Number	UN1863
Proper Shipping Name	FUEL, AVIATION, TURBINE ENGINE
Hazard Class	Class 3 Flammable Liquids
Packing Group	PG III
Additional Information	Not Regulated in Containers Less Than or Equal to 450 Litres.
Shipping Description	FUEL, AVIATION, TURBINE ENGINE Class 3 UN1863 PG III Not Regulated in Containers Less Than or Equal to 450 Litres.

15. REGULATORY INFORMATION

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

WHMIS Class:	Class B3 Combustible Liquid Class D2B Skin Irritation
DSL/NDSL Status:	This product, or all components, are listed on the Domestic Substances List, as required under the Canadian Environmental Protection Act.
Other Regulatory Status:	No Canadian federal standards.

16. ADDITIONAL INFORMATION

LABEL STATEMENTS

Hazard Statement :	Combustible Liquid. Irritating to skin.
Handling Statement:	Eliminate all ignition sources. Avoid prolonged exposure to vapours. Wear suitable gloves and eye protection. Bond and ground transfer containers and equipment to avoid static accumulation. Empty containers are hazardous, may contain flammable / explosive dusts, liquid residue or vapours. Keep away from sparks and open flames.
First Aid Statement :	Wash contaminated skin with soap and water. Flush eyes with water. If overcome by vapours remove to fresh air. Do not induce vomiting. Obtain medical attention.

Revisions: This MSDS has been reviewed and updated.
Changes have been made to:
Section 3
Section 4
Section 5
Section 7
Section 8
Section 9
Section 12
Section 14

Shell Canada Limitée

Fiche signalétique

FS en vigueur le : 2005-08-15
Remplace celle du : 2002-08-14

Catégorie B3 Liquide combustible

Catégorie D2B Irritation de la peau

1. IDENTIFICATION DU PRODUIT ET DE LA SOCIÉTÉ

NOM COMMERCIAL :	**CARBUREACTEUR SHELL* A-1**
SYNONYMES :	Carburant aviation pour moteurs à turbines (type kérosène) Peut contenir un additif antigivre (éther monométhylique du diéthylèneglycol)
UTILISATION DU PRODUIT :	Carburant. Solvant.
NUMÉRO DE LA FS :	142-011

NOM DU FABRICANT
Shell Canada Limitée
P.O. Box 100, Station M
400-4th Ave. S.W.
Calgary, AB Canada
T2P 2H5

NUMÉROS DE TÉLÉPHONE	
Numéro d'urgence de Shell	1 800 661-7378
Numéro d'urgence de CANUTEC (24 heures)	(613) 996-6666
Pour information générale	1 800 661-1600
Pour information sur la FS	(403) 691-3982
(De 7 h 30 à 16 h 30, heure des Rocheuses)	(403) 691-2220

Cette FS a été préparée par le groupe de toxicologie et bonne gestion des produits de Shell Canada Limitée.

* L'astérisque dans la désignation du produit signifie <<Marque déposée de Shell Canada Limitée, utilisée en vertu d'une licence par Produits Shell Canada>>.

2. COMPOSITION/INFORMATION SUR LES INGRÉDIENTS

Ingrédients	N° CAS	%	Contrôlé par SIMDUT
Kerosène (pétrole), hydrodésulfurisé	64742-81-0	60 - 100	Oui

Voir la section 8 pour les directives sur l'exposition.

3. IDENTIFICATION DES RISQUES

Description physique : Liquide. Brillant Clair Odeur d'hydrocarbure.

Voies d'entrée : L'exposition à ce produit est le plus susceptible de se produire par contact avec la peau ou inhalation.

Effets potentiels sur la santé :	Liquide combustible. Irritant pour la peau. Les vapeurs sont modérément irritantes pour les yeux. Il peut y avoir vomissement apres ingestion du produit. Éviter d'aspirer le produit vomi dans les poumons étant donné que de petites quantités peuvent causer une pneumonie par aspiration. Les vapeurs sont modérément irritantes pour les voies respiratoires.
Information sur la manipulation :	Éliminer toutes les sources d'inflammation. Éviter l'exposition prolongée aux vapeurs. Porter des protecteurs oculaires et des gants appropriés. Mettre à la masse et à la terre le matériel et les contenants de transfert pour éviter l'accumulation d'électricité statique. Les contenants vides sont dangereux, car ils peuvent contenir des poussières, des vapeurs ou des résidus liquides inflammables/explosifs. Tenir loin des étincelles et de la flamme nue.

Pour plus d'information sur les effets sur la santé, voir la section 11.

4. PREMIERS SOINS

Contact avec les yeux :	Rincer les yeux à grande eau pendant au moins 15 minutes en gardant les paupières ouvertes. En cas d'irritation et si celle-ci persiste, obtenir des soins médicaux.
Contact avec la peau :	Laver la peau contaminée a l'eau et au savon doux pendant au moins 15 minutes. En cas d'irritation et si celle-ci persiste, obtenir des soins médicaux.
Ingestion :	NE PAS FAIRE VOMIR! OBTENIR IMMÉDIATEMENT DES SOINS MÉDICAUX. Empêcher le produit d'être aspiré dans les poumons en plaçant le personne incommodée sur son côté gauche. Si la personne incommodée vomit spontanément, lui faire placer la tête entre les jambes de façon à empêcher que le liquide ne soit aspiré dans les poumons.
Inhalation :	Éloigner la personne incommodée de l'endroit contaminé et rétablir la respiration s'il y a lieu. Obtenir des soins médicaux.
Remarques à l'intention du médecin :	Le principal danger qui puisse résulter de l'ingestion accidentelle de ce produit est son aspiration dans les poumons, ce qui causerait alors une pneumonie chimique. Si plus de 2,0 mL par kg de poids ont été avalés, faire vomir sous surveillance. Si des symptômes tels que la perte du réflexe pharyngé, des convulsions ou la perte de connaissance surviennent avant que la personne ait vomi, envisager la possibilité de procéder à un lavage gastrique avec une sonde endotrachéale à ballonnet.

5. LUTTE EN CAS D'INCENDIE

Moyens d'extinction :	Gaz carbonique Mousse Poudre Brouillard d'eau

Mesures spéciales de lutte en cas d'incendie :	Attention - Produit combustible. Les vapeurs forment un mélange inflammable/détonant dans l'air entre les limites inférieure et supérieure d'inflammabilité. Les vapeurs peuvent se déplacer au niveau du sol et il peut y avoir retour des flammes le long du chemin qu'elles ont emprunté. Le produit va flotter et peut se réenflammer à la surface de l'eau. Ne pas utiliser un jet d'eau direct, ce qui pourrait propager l'incendie. Les contenants exposés à la chaleur intense en cas d'incendie doivent être refroidis à l'eau afin de prévenir une hausse de la pression due aux vapeurs, ce qui pourrait les faire se rupturer. Les parties des contenants exposées au contact direct des flammes doivent être refroidies à grande eau afin de prévenir une faiblesse de laparoi des contenants. Ne pas pénétrer sur les lieux d'un incendie dans un espace clos sans vêtements protecteurs appropriés et sans appareil respiratoire autonome à surpression homologué.
Produits de combustion dangereux :	Un mélange complexe de particules solides et liquides en suspension dans l'air et des gaz seront libérés lors de la pyrolyse ou de la combustion. Gaz carbonique, monoxyde de carbone et composés organiques non identifiés peuvent se former lors de la combustion.

6. MESURES EN CAS DE REJET ACCIDENTEL

Avertir que ce produit est combustible. Éliminer toutes les sources d'inflammation. Circonscrire l'endroit dangereux et en interdire l'accès. Mettre à la terre l'équipement qui sert à manipuler ce produit. Travailler dans le sens du vent par rapport au produit répandu s'il est prudent de le faire. Éviter tout contact direct avec ce produit. Utiliser un appareil respiratoire approprié (s'il y a lieu) et porter des vêtements protecteurs. N'arrêter les fuites que s'il est prudent de le faire. Endiguer et contenir les déversements terrestres; contenir les rejets accidentels dans les eaux au moyen de barrages flottants. Se servir d'eau pulvérisée pour supprimer les vapeurs; empêcher cette eau de se répandre. Absorber les résidus ou les petites quantités répandues avec une matière absorbante et mettre dans des contenants hermétiques avant de s'en débarrasser. Produits recommandés : Argile ou Sable Rincer les lieux à grande eau pour enlever toutes les traces de résidus. Se débarrasser du produit récupéré conformément aux directives d'élimination. Avertir les agences de protection de l'environnement appropriées.

7. ENTREPOSAGE ET MANUTENTION

Manutention :	Éviter la chaleur excessive, les étincelles, les flammes nues et toutes les autres sources d'inflammation. Mettre à la terre l'équipement fixe ainsi que les contenants qui servent au transvasement et le matériel de façon à prévenir l'accumulation d'électricité statique. Les vapeurs sont plus lourdes que l'air et vont s'accumuler dans les regions basses et les fosses en deplacant l'air respirable. Éteindre les lampes pilotes, les cigarettes et fermer toutes les autres sources d'inflammation avant d'utiliser ce produit et jusqu'à ce que toutes les vapeurs se soient dissipées. Les vapeurs peuvent s'accumuler et se propager vers une source d'inflammation éloignée provoquant ainsi un retour des flammes. Ne pas effectuer d'opérations de découpage, de forage, de meulage, de soudage ou autres sur ou près des contenants. Les contenants vides sont dangereux car ils peuvent contenir des poussières, des vapeurs ou des résidus inflammables/explosifs. Ne pas utiliser de pression pour vider les fûts. Se laver à l'eau et au savon avant de manger, boire, fumer, se maquiller ou aller aux toilettes. Laver les vêtements contaminés avant de les porter de nouveau. Observer une bonne hygiène personnelle. Combustible.
Entreposage :	Entreposer dans un endroit frais, sec et bien ventilé, loin de la chaleur et des sources d'inflammation. Garder le contenant fermé hermétiquement.

8. CONTRÔLES DE L'EXPOSITION, PROTECTION PERSONNELLE

LES RENSEIGNEMENTS SUIVANTS, QUOIQUE APPROPRIÉS POUR CE PRODUIT, ONT UNE PORTÉE GÉNÉRALE. LE CHOIX DE L'ÉQUIPEMENT DE PROTECTION PERSONNELLE SERA FONCTION DES CONDITIONS D'UTILISATION.

Limites d'exposition en milieu de travail (VLE/MPT actuelle selon l'ACGIH, sauf avis contraire)
Kérosène/carburéacteurs, sous forme de vapeur d'hydrocarbures totaux (peau): 200 mg/m3 (Application limitée aux conditions où l'exposition aux aérosols est négligeable.)
Mention Peau: L'absorption par la peau, les yeux ou les muqueuses peut contribuer de façon significative à l'exposition totale.

Ventilation mécanique : Système de ventilation requis de façon à prévenir l'accumulation des vapeurs. En présence de personnel non protégé, la concentration du produit dans l'air doit être maintenue sous la limite d'exposition en milieu de travail. Ventilation locale recommandée lorsque le système de ventilation mécanique est insuffisant pour maintenir la concentration du produit dans l'air du lieu de travail sous la limite d'exposition conseillée. De l'air d'appoint doit toujours être fourni pour remplacer l'air rejeté (de façon générale ou locale). Lorsqu'il faut pénétrer dans un espace clos (par exemple, un réservoir de stockage), observer la marche à suivre appropriée, y compris en ce qui a trait à la ventilation et à la vérification de l'air du réservoir.

ÉQUIPEMENT DE PROTECTION PERSONNELLE :

Yeux et visage : Lunettes de sécurité et(ou) masque couvrant tout le visage si le produit est manipulé d'une façon où il pourrait y avoir éclaboussement dans les yeux. Prévoir un poste de lavage des yeux à proximité.

Peau (mains, bras et corps) : Éviter le contact avec la peau. Porter des vêtements et des gants protecteurs faits de nitrile. Des douches doivent être disponibles en cas d'urgence.

Voies respiratoires : Éviter de respirer les vapeurs ou le brouillard. Si l'exposition a le potentiel de dépasser les limites pour le lieu de travail, utiliser le respirateur approprié homologué par le NIOSH. Utiliser un respirateur a cartouche filtrante protégeant contre les vapeurs organiques homologué par le NIOSH ou un respirateur a adduction d'air homologué par le NIOSH.

9. PROPRIÉTÉS PHYSIQUES ET CHIMIQUES

Description physique :	Liquide.
Aspect/couleur :	Brillant Clair
Odeur :	Odeur d'hydrocarbure.
Seuil moyen de perception de l'odeur :	Non disponible
Point de congélation/point d'écoulement :	Point de congélation < -47 °C
Point d'ébullition :	145 - 300 °C
Masse volumique :	775 - 840 kg/m3 @ 15 °C
Densité de vapeur (air = 1) :	Non disponible
Tension de vapeur (absolu) :	1 - 1,4 kPa @ 37,8 °C
pH :	Non disponible
Point d'éclair :	Vase clos Tag > 43 °C
Limite d'inflammabilité inférieure :	0,7 % (vol.)
Limite d'inflammabilité supérieure :	5 % (vol.)
Température d'autoinflammation :	210 °C
Viscosité :	< 8 cSt @ -20 °C

Vitesse d'évaporation (n-BuAc = 1) : Non disponible
Coefficient de distribution eau/huile (log K_{oc}) : 3,3 - 6
Solubilité dans l'eau : Insoluble
Autre solvant : Solvants à base d'hydrocarbures

10. STABILITÉ ET RÉACTIVITÉ

Chimiquement stable : Oui
Polymérisation dangereuse : Non
Sensibilité au choc mécanique : Non
Sensibilité à l'électricité statique : Oui
Produits de décomposition dangereux : Les produits de la décomposition thermique dépendent en grande partie des conditions de la combustion.
Matériaux incompatibles : Éviter les oxydants puissants.
Conditions de réactivité : Éviter la chaleur excessive, les flammes nues et toutes les autres sources d'inflammation.

11. INFORMATION TOXICOLOGIQUE

Ingrédient (ou produit si non précisé)	Données toxicologiques
Kerosène (pétrole), hydrodésulfurisé	DL50 Cutanée Lapin > 2 000 mg/kg DL50 Orale Rat > 5 000 mg/kg

Voies d'entrée : L'exposition à ce produit est le plus susceptible de se produire par contact avec la peau ou inhalation.
Irritation : Ce produit devrait causer une irritation de la peau mais il n'est pas supposé être un agent de sensibilisation de la peau.
Toxicité chronique : Le contact prolongé et répété de ce produit avec la peau peut causer un dégraissement et un dessèchement de la peau se traduisant par une irritation et une dermite. L'exposition prolongée à des vapeurs très concentrées peut causer des maux de tête, des étourdissements, des nausées, une vision brouillée e t une dépression du systeme nerveux central.
Conditions préexistantes : Des troubles préexistants des yeux, de la peau et des voies respiratoires peuvent être aggravés par une exposition à ce produit.
Carcinogénicité et mutagénicité : Selon le Centre international de recherche sur le cancer (CIRC), ce produit ne peut être classé en fonction de sa cancérogénicité pour les humains. Des distillats moyens ont causé des cancers de la peau chez des animaux de laboratoire lorsqu'ils ont été appliqués de façon répétée et laisses en place entre les applications. Cela serait causé par une irritation continue de la peau. Une bonne hygiene personnelle doit être observée pour prevenir ce risque.

12. RENSEIGNEMENTS ÉCOLOGIQUES

Ne pas laisser ce produit ou l'eau qui sert à combattre un incendie où ce produit est en cause pénétrer dans les égouts, les lacs, les cours d'eau ou les canalisations d'eau potable. Boucher les égouts et bloquer les fossés. Les règlements provinciaux exigent et les règlements fédéraux peuvent exiger que les agences de protection de l'environnement ou d'autres organismes soient avertis en cas de déversement. La région polluée doit être nettoyée et remise à son état original ou à la satisfaction des autorités. Peut causer une pollution des organismes aquatiques.

Biodégradabilité:	N'est pas facilement biodégradable. Volatilisation rapide.
Bioaccumulation:	Possibilité d'accumulation dans les organismes vivants.
Partition Coefficient (log K_{ow}):	3,3 - 6

Toxicité en Milieu Aquatique

Le produit devrait être toxique pour les organismes aquatiques.

Ingrédient:	Données toxicologiques
Definition(s):	CL et CE sont respectivement la concentration de la charge létale et la concentration de la charge effective. La concentration représente la quantité de la substance qui est placée dans l'eau de façon à obtenir la concentration toxique. Ces concentrations remplacent les concentrations létales et effectives traditionnelles pour les substances à faible solubilité. WAF (water accomodated fraction) est la fraction adaptée à l'eau. Un hydrocarbure légèrement soluble est remué dans de l'eau, puis la partie insoluble est enlevée. La solution restante correspond à la fraction adaptée à l'eau.
Kerosène (pétrole), hydrodésulfurisé	CE50 - vitesse de croissance (méthode WAF) Algues (72hr) 1 - 10 mg/L CE50 (Méthode WAF) Daphnia Magna (72hr) 1 - 10 mg/L CL50 (méthode WAF) Truite arc-en-ciel (96hr) 1 - 10 mg/L

13. ÉLIMINATION DU PRODUIT

Priorités de gestion des déchets (selon leur volume et leur concentration) : 1. Recycler (retraiter), 2. Récupérer l'énergie 3. Incinérer, 4. Remettre à une intallation d'élimination des déchets autorisée. Ne pas essayer de brûler les déchets sur les lieux. Incinérer avec l'approbation des organismes de protection de l'environnement dans un endroit approuvé détenant un permis.

14. RENSEIGNEMENTS SUR LE TRANSPORT

Description d'expédition du TMD (route et rail)

Numéro de l'ONU	UN1863
Nom d'expédition approprié	CARBURÉACTEUR
Classe de danger	Class 3 Liquides inflammables
Groupe d'emballage	PG III
Renseignements additionnels	Non réglementé en contenants de 450 litres ou moins.
Description d'expédition	CARBURÉACTEUR Class 3 UN1863 PG III Non réglementé en contenants de 450 litres ou moins.

15. RENSEIGNEMENTS SUR LA RÉGLEMENTATION

Ce produit a été classifié conformément aux critères de danger du Règlement sur les produits contrôlés (RPC) du Canada et la FS contient toute l'information requise en vertu du RPC.

Catégorie SIMDUT et description :	Catégorie B3 Liquide combustible Catégorie D2B Irritation de la peau
Statut LPCE/NLPCE :	Ce produit, ou tous ses composants, figurent sur la liste intérieure des substances, en vertu de la Loi canadienne sur la protection de l'environnement.
Autres règlements :	Normes fédérales canadiennes inexistantes.

16. AUTRES RENSEIGNEMENTS

ÉTIQUETTE

Mention de danger :	Liquide combustible. Irritant pour la peau.
Précautions lors de la manipulation :	Éliminer toutes les sources d'inflammation. Éviter l'exposition prolongée aux vapeurs. Porter des protecteurs oculaires et des gants appropriés. Mettre à la masse et à la terre le matériel et les contenants de transfert pour éviter l'accumulation d'électricité statique. Les contenants vides sont dangereux, car ils peuvent contenir des poussières, des vapeurs ou des résidus liquides inflammables/explosifs. Tenir loin des étincelles et de la flamme nue.
Premiers soins :	Laver la peau contaminée à l'eau et au savon. Rincer les yeux à grande eau. Si une personne est incommodée par les vapeurs, l'amener à l'air frais. Ne pas faire vomir. Obtenir des soins médicaux.

Révisions : Cette fiche signalétique a été révisée et mise à jour.
Des modifications ont été apportées à :
Rubrique 3
Rubrique 4
Rubrique 5
Rubrique 7
Rubrique 8
Rubrique 9
Rubrique 12
Rubrique 14

Shell Canada Limited

Material Safety Data Sheet

Effective Date: 2005-11-07
Supersedes: 2002-11-06

Class B3 Combustible Liquid

Class D2B Skin Irritation

1. PRODUCT AND COMPANY IDENTIFICATION

PRODUCT:	**ULTRA LOW SULPHUR DIESEL CP-43**
SYNONYMS:	Diesel Automotive Gas Oil
PRODUCT USE:	Fuel
MSDS Number:	320-043

SUPPLIER	**TELEPHONE NUMBERS**	
Shell Canada Limited (SCL)	**Shell Emergency Number**	1-800-661-7378
P.O. Box 100, Station M	**CANUTEC 24 HOUR EMERGENCY NUMBER**	613-996-6666
400-4th Ave. S.W.		
Calgary, AB Canada	For general information:	1-800-661-1600
T2P 2H5	For MSDS information:	403-691-3982
	(From 7:30 to 4:30 Mountain Time)	

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

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

2. COMPOSITION/INFORMATION ON INGREDIENTS

Component Name	CAS Number	% Range	WHMIS Controlled
Fuels, Diesel, No. 2	68476-34-6	100	Yes

See Section 8 for Occupational Exposure Guidelines.

3. HAZARDS IDENTIFICATION

Physical Description: Liquid Clear To Yellow Hydrocarbon Odour

Routes of Exposure: Exposure will most likely occur through skin contact or inhalation.

Hazards:

Vapour concentrations above the recommended exposure level are irritating to the eyes and respiratory tract, may cause headaches and dizziness, are anesthetic and may have other central nervous system effects.
Combustible Liquid.
Irritating to skin.
Vapours are moderately irritating to the eyes.
Ingestion may result in vomiting. Avoid aspiration of vomitus into lungs as small quantities may result in aspiration pneumonitis.
Vapours are moderately irritating to the respiratory passages.

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

For further information on health effects, see Section 11.

4. FIRST AID

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

Skin: Wash contaminated skin with mild soap and water for at least 15 minutes. If irritation occurs and persists, obtain medical attention.

Ingestion: DO NOT INDUCE VOMITING! OBTAIN MEDICAL ATTENTION IMMEDIATELY. Guard against aspiration into lungs by having the individual turn on to their left side. If vomiting occurs spontaneously, keep head below hips to prevent aspiration of liquid into the lungs. Do not give anything by mouth to an unconscious person.

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

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

5. FIRE FIGHTING MEASURES

Extinguishing Media: Dry Chemical
Carbon Dioxide
Foam
Water Fog

Firefighting Instructions: Caution - Combustible. Do not use a direct stream of water as it may spread fire. Do not enter confined fire space without adequate protective clothing and an approved positive pressure self-contained breathing apparatus. Vapour forms a flammable/explosive mixture with air between upper and lower flammable limits. Vapours may travel along ground and flashback along vapour trail may occur. Avoid inhalation of smoke. Product will float and can be reignited on surface of water. Delayed lung damage can be experienced after exposure to combustion products, sometimes hours after the exposure.

Hazardous Combustion Products: A complex mixture of airborne solid, liquid, particulates and gases will evolve when this material undergoes pyrolysis or combustion. Carbon dioxide, carbon monoxide and unidentified organic compounds may be formed upon combustion.

6. ACCIDENTAL RELEASE MEASURES

Issue warning "Combustible". Eliminate all ignition sources. Isolate hazard area and restrict access. Handling equipment must be grounded. Work upwind of spill if it is safe to do so. Avoid direct contact with material. Wear appropriate breathing apparatus (if applicable) and protective clothing. Stop leak only if safe to do so. Dike and contain land spills; contain spills to water by booming. Use water fog to knock down vapours; contain runoff. Absorb residue or small spills with absorbent material and remove to non-leaking containers for disposal. Recommended materials: Clay or Sand Flush area with water to remove trace residue. Dispose of recovered material as noted under Disposal Considerations. Notify appropriate environmental agency(ies).

7. HANDLING AND STORAGE

Handling: Combustible. Avoid excessive heat, sparks, open flames and all other sources of ignition. Fixed equipment as well as transfer containers and equipment should be grounded to prevent accumulation of static charge. Vapours are heavier than air and will settle and collect in low areas and pits, displacing breathing air. Extinguish pilot lights, cigarettes and turn off other sources of ignition prior to use and until all vapours are gone. Vapours may accumulate and travel to distant ignition sources and flashback. Do not cut, drill, grind, weld or perform similar operations on or near containers. Empty containers are hazardous, may contain flammable/explosive dusts, residues or vapours. Do not pressurize drum containers to empty them. Wash with soap and water prior to eating, drinking, smoking, applying cosmetics or using toilet facilities. Launder contaminated clothing prior to reuse. Use good personal hygiene.

Storage: Store in a cool, dry, well ventilated area, away from heat and ignition sources. Keep container tightly closed.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

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

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

Diesel fuel, as total hydrocarbons (skin): 100 mg/m3
Skin Notation: Absorption through skin, eyes and mucous membranes may contribute significantly to the total exposure.

Mechanical Ventilation: Concentrations in air should be maintained below the occupational exposure limit if unprotected personnel are involved. Use explosion-proof ventilation as required to control vapour concentrations. Make up air should always be supplied to balance air exhausted (either generally or locally). For personnel entry into confined spaces (i.e. bulk storage tanks) a proper confined space entry procedure must be followed including ventilation and testing of tank atmosphere. Local ventilation recommended where mechanical ventilation is ineffective in controlling airborne concentrations below the recommended occupational exposure limit.

PERSONAL PROTECTIVE EQUIPMENT:

Eye Protection:	Chemical safety goggles and/or full face shield to protect eyes and face, if product is handled such that it could be splashed into eyes. Provide an eyewash station in the area.
Skin Protection:	Impervious gloves (viton, nitrile) should be worn at all times when handling this material. In confined spaces or where the risk of skin exposure is much higher, impervious clothing should be worn. Safety showers should be available for emergency use.
Respiratory Protection:	If exposure exceeds occupational exposure limits, use an appropriate NIOSH-approved respirator. Use a NIOSH-approved chemical cartridge respirator with organic vapour cartridges or use a NIOSH-approved supplied-air respirator. For high airborne concentrations, use a NIOSH-approved supplied-air respirator, either self-contained or airline breathing apparatus, operated in positive pressure mode.

9. PHYSICAL DATA

Physical State:	Liquid
Appearance:	Clear To Yellow
Odour:	Hydrocarbon Odour
Odour Threshold:	Not available
Freezing/Pour Point:	Cloud Point-43 °C
Boiling Point:	150 - 330 °C
Density:	< 850 kg/m3 @ 15 °C
Vapour Density (Air = 1):	Not available
Vapour Pressure (absolute):	Not available
pH:	Not available
Flash Point:	Pensky-Martens CC > 40 °C
Lower Flammable Limit:	1 % (vol.)
Upper Flammable Limit:	6 % (vol.)
Autoignition Temperature:	250 °C
Viscosity:	1.3 - 3.6 cSt @ 40 °C
Evaporation Rate (n-BuAc = 1):	Not available
Partition Coefficient (log K_{ow}):	Not available
Water Solubility:	Insoluble
Other Solvents:	Hydrocarbon Solvents

10. STABILITY AND REACTIVITY

Chemically Stable:	Yes
Hazardous Polymerization:	No
Sensitive to Mechanical Impact:	No
Sensitive to Static Discharge:	Yes
Hazardous Decomposition Products:	Thermal decomposition products are highly dependent on combustion conditions.
Incompatible Materials:	Avoid strong oxidizing agents.
Conditions of Reactivity:	Avoid excessive heat, open flames and all ignition sources.

11. TOXICOLOGICAL INFORMATION

Ingredient (or Product if not specified)	Toxicological Data
Fuels, Diesel, No. 2	LD50 Dermal Rabbit > 5000 mg/kg LD50 Oral Rat = 9000 mg/kg

Routes of Exposure: Exposure will most likely occur through skin contact or inhalation.

Irritancy: This product is expected to be irritating to skin but is not predicted to be a skin sensitizer.

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

Chronic Effects: Prolonged and repeated contact with skin can cause defatting and drying of the skin resulting in skin irritation and dermatitis. Prolonged exposure to high vapour concentration can cause headache, dizziness, nausea, blurred vision and central nervous system depression.

Pre-existing Conditions: Pre-existing eye, skin and respiratory disorders may be aggravated by exposure to this product.

Carcinogenicity and Mutagenicity: The International Agency for Research on Cancer (IARC) considers that this product is not classifiable as to its carcinogenicity to humans. Middle distillates have caused skin cancers in laboratory animals when applied repeatedly and left in place between applications. This effect is believed to be caused by the continuous irritation of the skin. Good personal hygiene should be maintained to avoid this risk. The American Conference of Governmental Industrial Hygienists (ACGIH) has classified this product as A3 - confirmed animal carcinogen with unknown relevance to humans.

12. ECOLOGICAL INFORMATION

Do not allow product or runoff from fire control to enter storm or sanitary sewers, lakes, rivers, streams, or public waterways. Block off drains and ditches. Provincial regulations require and federal regulations may require that environmental and/or other agencies be notified of a spill incident. Spill area must be cleaned and restored to original condition or to the satisfaction of authorities. May cause physical fouling of aquatic organisms.

Biodegradability: Not readily biodegradable.

Bioaccumulation: Potential for bioaccumulation.

Partition Coefficient (log K_{ow}): Not available

Aquatic Toxicity

May be harmful to aquatic life.

Ingredient:	Toxicological Data
Fuels, Diesel, No. 2	EL50 - growth rate Algae (72hr) 10 - 100 mg/L. EL50 Daphnia Magna (48hr) 10 - 100 mg/L. LL50 (WAF method) Rainbow Trout (96hr) 10 - 100 mg/L.

Definition(s): LL and EL are the lethal loading concentration and effective loading concentration respectively. The concentration represents the amount of substance added to the system to obtain a toxic concentration. They replace the traditional LC and EC for low solubility substances.

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

13. DISPOSAL CONSIDERATIONS

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

14. TRANSPORTATION INFORMATION

Canadian Road and Rail Shipping Classification:

UN Number	UN1202
Proper Shipping Name	DIESEL FUEL
Hazard Class	Class 3 Flammable Liquids
Packing Group	PG III
Additional Information	Not Regulated in Containers Less Than or Equal to 450 Litres.
Shipping Description	DIESEL FUEL Class 3 UN1202 PG III Not Regulated in Containers Less Than or Equal to 450 Litres.

15. REGULATORY INFORMATION

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

WHMIS Class:	Class B3 Combustible Liquid Class D2B Skin Irritation
DSL/NDSL Status:	This product, or all components, are listed on the Domestic Substances List, as required under the Canadian Environmental Protection Act.
Other Regulatory Status:	No Canadian federal standards.

16. ADDITIONAL INFORMATION

LABEL STATEMENTS

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

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

Revisions: This MSDS has been reviewed and updated.
Changes have been made to:
Section 1
Section 3
Section 5
Section 8
Section 9
Section 12

Shell Canada Limitée

Fiche signalétique

FS en vigueur le : 2005-11-07
Remplace celle du : 2002-11-06

Catégorie B3 Liquide combustible

Catégorie D2B Irritation de la peau

1. IDENTIFICATION DU PRODUIT ET DE LA SOCIÉTÉ

NOM COMMERCIAL :	**CARB. DIESEL A TENEUR ULTRA-FAIBLE EN SOUFRE PT-43**
SYNONYMES :	Diesel Gazole automobile
UTILISATION DU PRODUIT :	Carburant.
NUMÉRO DE LA FS :	320-043

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

NUMÉROS DE TÉLÉPHONE

Numéro d'urgence de Shell	1 800 661-7378
Numéro d'urgence de CANUTEC (24 heures)	(613) 996-6666
Pour information générale	1 800 661-1600
Pour information sur la FS (De 7 h 30 à 16 h 30, heure des Rocheuses)	(403) 691-3982

Cette FS a été préparée par le groupe de toxicologie et bonne gestion des produits de Shell Canada Limitée.

* L'astérisque dans la désignation du produit signifie <<Marque déposée de Shell Canada Limitée, utilisée en vertu d'une licence par Produits Shell Canada>>.

2. COMPOSITION/INFORMATION SUR LES INGRÉDIENTS

Ingrédients	N° CAS	%	Contrôlé par SIMDUT
Carburant, Diesel, No. 2	68476-34-6	100	Oui

Voir la section 8 pour les directives sur l'exposition.

3. IDENTIFICATION DES RISQUES

Description physique : Liquide. De clair à jaune Odeur d'hydrocarbure.

Voies d'entrée : L'exposition à ce produit est le plus susceptible de se produire par contact avec la peau ou inhalation.

Effets potentiels sur la santé :

Les concentrations de vapeurs supérieures au niveau d'exposition recommandé irritent les yeux et les voies respiratoires, peuvent causer des maux de tête et des étourdissements, sont anesthésiques et peuvent avoir d'autres effets sur le système nerveux central.
Liquide combustible.
Irritant pour la peau.
Il peut y avoir vomissement apres ingestion du produit. Éviter d'aspirer le produit vomi dans les poumons étant donné que de petites quantités peuvent causer une pneumonie par aspiration.
Les vapeurs sont modérément irritantes pour les yeux.
Les vapeurs sont modérément irritantes pour les voies respiratoires.

Information sur la manipulation : Éliminer toutes les sources d'inflammation.
Éviter l'exposition prolongée aux vapeurs.
Porter des protecteurs oculaires et des gants appropriés.
Mettre à la masse et à la terre le matériel et les contenants de transfert pour éviter l'accumulation d'électricité statique.
Les contenants vides sont dangereux, car ils peuvent contenir des poussières, des vapeurs ou des résidus liquides inflammables/explosifs. Tenir loin des étincelles et de la flamme nue.

Pour plus d'information sur les effets sur la santé, voir la section 11.

4. PREMIERS SOINS

Contact avec les yeux : Rincer les yeux à grande eau pendant au moins 15 minutes en gardant les paupières ouvertes. En cas d'irritation et si celle-ci persiste, obtenir des soins médicaux.

Contact avec la peau : Laver la peau contaminée a l'eau et au savon doux pendant au moins 15 minutes. En cas d'irritation et si celle-ci persiste, obtenir des soins médicaux.

Ingestion : NE PAS FAIRE VOMIR! OBTENIR IMMÉDIATEMENT DES SOINS MÉDICAUX. Empêcher le produit d'être aspiré dans les poumons en plaçant le personne incommodée sur son côté gauche. Si la personne incommodée vomit spontanément, lui faire placer la tête entre les jambes de façon à empêcher que le liquide ne soit aspiré dans les poumons. Ne rien faire prendre par la bouche à une personne qui a perdu connaissance.

Inhalation : Éloigner la personne incommodée de l'endroit contaminé et rétablir la respiration s'il y a lieu. Obtenir des soins médicaux.

Remarques à l'intention du médecin : Le principal danger qui puisse résulter de l'ingestion accidentelle de ce produit est son aspiration dans les poumons, ce qui causerait alors une pneumonie chimique. Si plus de 2,0 mL par kg de poids ont été avalés, faire vomir sous surveillance. Si des symptômes tels que la perte du réflexe pharyngé, des convulsions ou la perte de connaissance surviennent avant que la personne ait vomi, envisager la possibilité de procéder à un lavage gastrique avec une sonde endotrachéale à ballonnet.

5. LUTTE EN CAS D'INCENDIE

Moyens d'extinction : Poudre
Gaz carbonique
Mousse
Brouillard d'eau

Mesures spéciales de lutte en cas d'incendie :	Attention - Produit combustible. Ne pas utiliser un jet d'eau direct, ce qui pourrait propager l'incendie. Ne pas pénétrer sur les lieux d'un incendie dans un espace clos sans vêtements protecteurs appropriés et sans appareil respiratoire autonome à surpression homologué. Les vapeurs forment un mélange inflammable/détonant dans l'air entre les limites inférieure et supérieure d'inflammabilité. Les vapeurs peuvent se déplacer au niveau du sol et il peut y avoir retour des flammes le long du chemin qu'elles ont emprunté. Ne pas respirer la fumée. Le produit va flotter et peut se réenflammer à la surface de l'eau. Des dommages retardés aux poumons peuvent survenir après exposition aux produits de combustion, parfois des heures après l'exposition.
Produits de combustion dangereux :	Un mélange complexe de particules solides et liquides en suspension dans l'air et des gaz seront libérés lors de la pyrolyse ou de la combustion. Gaz carbonique, monoxyde de carbone et composés organiques non identifiés peuvent se former lors de la combustion.

6. MESURES EN CAS DE REJET ACCIDENTEL

Avertir que ce produit est combustible. Éliminer toutes les sources d'inflammation. Circonscrire l'endroit dangereux et en interdire l'accès. Mettre à la terre l'équipement qui sert à manipuler ce produit. Travailler dans le sens du vent par rapport au produit répandu s'il est prudent de le faire. Éviter tout contact direct avec ce produit. Utiliser un appareil respiratoire approprié (s'il y a lieu) et porter des vêtements protecteurs. N'arrêter les fuites que s'il est prudent de le faire. Endiguer et contenir les déversements terrestres; contenir les rejets accidentels dans les eaux au moyen de barrages flottants. Se servir d'eau pulvérisée pour supprimer les vapeurs; empêcher cette eau de se répandre. Absorber les résidus ou les petites quantités répandues avec une matière absorbante et mettre dans des contenants hermétiques avant de s'en débarrasser. Produits recommandés : Argile ou Sable Rincer les lieux à grande eau pour enlever toutes les traces de résidus. Se débarrasser du produit récupéré conformément aux directives d'élimination. Avertir les agences de protection de l'environnement appropriées.

7. ENTREPOSAGE ET MANUTENTION

Manutention :	Combustible. Éviter la chaleur excessive, les étincelles, les flammes nues et toutes les autres sources d'inflammation. Mettre à la terre l'équipement fixe ainsi que les contenants qui servent au transvasement et le matériel de façon à prévenir l'accumulation d'électricité statique. Les vapeurs sont plus lourdes que l'air et vont s'accumuler dans les regions basses et les fosses en deplacant l'air respirable. Éteindre les lampes pilotes, les cigarettes et fermer toutes les autres sources d'inflammation avant d'utiliser ce produit et jusqu'à ce que toutes les vapeurs se soient dissipées. Les vapeurs peuvent s'accumuler et se propager vers une source d'inflammation éloignée provoquant ainsi un retour des flammes. Ne pas effectuer d'opérations de découpage, de forage, de meulage, de soudage ou autres sur ou près des contenants. Les contenants vides sont dangereux car ils peuvent contenir des poussières, des vapeurs ou des résidus inflammables/explosifs. Ne pas utiliser de pression pour vider les fûts. Se laver à l'eau et au savon avant de manger, boire, fumer, se maquiller ou aller aux toilettes. Laver les vêtements contaminés avant de les porter de nouveau. Observer une bonne hygiène personnelle.
Entreposage :	Entreposer dans un endroit frais, sec et bien ventilé, loin de la chaleur et des sources d'inflammation. Garder le contenant fermé hermétiquement.

8. CONTRÔLES DE L'EXPOSITION, PROTECTION PERSONNELLE

LES RENSEIGNEMENTS SUIVANTS, QUOIQUE APPROPRIÉS POUR CE PRODUIT, ONT UNE PORTÉE GÉNÉRALE. LE CHOIX DE L'ÉQUIPEMENT DE PROTECTION PERSONNELLE SERA FONCTION DES CONDITIONS D'UTILISATION.

Limites d'exposition en milieu de travail (VLE/MPT actuelle selon l'ACGIH, sauf avis contraire)
Carburant diesel, sous forme d'hydrocarbures totaux, vapeurs et aérosol (peau) : 100 mg/m3
Mention Peau: L'absorption par la peau, les yeux ou les muqueuses peut contribuer de façon significative à l'exposition totale.

Ventilation mécanique : En présence de personnel non protégé, la concentration du produit dans l'air doit être maintenue sous la limite d'exposition en milieu de travail. Système de ventilation requis de façon à prévenir l'accumulation des vapeurs. De l'air d'appoint doit toujours être fourni pour remplacer l'air rejeté (de façon générale ou locale). Lorsqu'il faut pénétrer dans un espace clos (par exemple, un réservoir de stockage), observer la marche à suivre appropriée, y compris en ce qui a trait à la ventilation et à la vérification de l'air du réservoir. Ventilation locale recommandée lorsque le système de ventilation mécanique est insuffisant pour maintenir la concentration du produit dans l'air du lieu de travail sous la limite d'exposition conseillée.

ÉQUIPEMENT DE PROTECTION PERSONNELLE :

Yeux et visage : Lunettes de sécurité et(ou) masque couvrant tout le visage si le produit est manipulé d'une façon où il pourrait y avoir éclaboussement dans les yeux. Prévoir un poste de lavage des yeux à proximité.

Peau (mains, bras et corps) : Des gants résistants (Viton, nitrile) doivent toujours être portés lors de la manipulation de ce produit. Dans les espaces clos ou lorsque le risque d'exposition de la peau est plus élevé, porter des vêtements résistant au produit. Des douches doivent être disponibles en cas d'urgence.

Voies respiratoires : Si l'exposition dépasse les limites pour le lieu de travail, utiliser le respirateur approprié homologué par le NIOSH. Utiliser un respirateur a cartouche filtrante protégeant contre les vapeurs organiques homologué par le NIOSH ou un respirateur a adduction d'air homologué par le NIOSH. En cas de concentrations élevées dans l'air, utiliser un respirateur à adduction d'air homologué par le NIOSH, soit autonome ou à canalisation d'air fonctionnant en pression positive intermittente.

9. PROPRIÉTÉS PHYSIQUES ET CHIMIQUES

Description physique :	Liquide.
Aspect/couleur :	De clair à jaune
Odeur :	Odeur d'hydrocarbure.
Seuil moyen de perception de l'odeur :	Non disponible
Point de congélation/point d'écoulement :	Point de trouble-43 °C
Point d'ébullition :	150 - 330 °C
Masse volumique :	< 850 kg/m3 @ 15 °C
Densité de vapeur (air = 1) :	Non disponible
Tension de vapeur (absolu) :	Non disponible
pH :	Non disponible
Point d'éclair :	V.cl. Pensky-Martens > 40 °C
Limite d'inflammabilité inférieure :	1 % (vol.)
Limite d'inflammabilité supérieure :	6 % (vol.)
Température d'autoinflammation :	250 °C
Viscosité :	1,3 - 3,6 cSt @ 40 °C

Vitesse d'évaporation (n-BuAc = 1) :	Non disponible
Coefficient de distribution (log K_{oe}) :	Non disponible
Solubilité dans l'eau :	Insoluble
Autre solvant :	Solvants à base d'hydrocarbures

10. STABILITÉ ET RÉACTIVITÉ

Chimiquement stable :	Oui
Polymérisation dangereuse :	Non
Sensibilité au choc mécanique :	Non
Sensibilité à l'électricité statique :	Oui
Produits de décomposition dangereux :	Les produits de la décomposition thermique dépendent en grande partie des conditions de la combustion.
Matériaux incompatibles :	Éviter les oxydants puissants.
Conditions de réactivité :	Éviter la chaleur excessive, les flammes nues et toutes les autres sources d'inflammation.

11. INFORMATION TOXICOLOGIQUE

Ingrédient (ou produit si non précisé)	Données toxicologiques
Carburant, Diesel, No. 2	DL50 Cutanée Lapin > 5 000 mg/kg DL50 Orale Rat = 9 000 mg/kg

Voies d'entrée :	L'exposition à ce produit est le plus susceptible de se produire par contact avec la peau ou inhalation.
Irritation :	Ce produit devrait causer une irritation de la peau mais il n'est pas supposé être un agent de sensibilisation de la peau.
Toxicité aiguë :	Les concentrations de vapeurs supérieures au niveau d'exposition recommandé irritent les yeux et les voies respiratoires, peuvent causer des maux de tête et des étourdissements, sont anesthésiques et peuvent avoir d'autres effets sur le système nerveux central.
Toxicité chronique :	Le contact prolongé et répété de ce produit avec la peau peut causer un dégraissement et un dessèchement de la peau se traduisant par une irritation et une dermite. L'exposition prolongée à des vapeurs très concentrées peut causer des maux de tête, des étourdissements, des nausées, une vision brouillée e t une dépression du systeme nerveux central.
Conditions préexistantes :	Des troubles préexistants des yeux, de la peau et des voies respiratoires peuvent être aggravés par une exposition à ce produit.
Carcinogénicité et mutagénicité :	Selon le Centre international de recherche sur le cancer (CIRC), ce produit ne peut être classé en fonction de sa cancérogénicité pour les humains. Des distillats moyens ont causé des cancers de la peau chez des animaux de laboratoire lorsqu'ils ont été appliqués de façon répétée et laisses en place entre les applications. Cela serait causé par une irritation continue de la peau. Une bonne hygiene personnelle doit être observée pour prevenir ce risque. L'American Conference of Governmental Industrial Hygienists (ACGIH) a classé ce produit A3 - cancérogène connu pour les animaux, sans effet connu pour les humains.

12. RENSEIGNEMENTS ÉCOLOGIQUES

Ne pas laisser ce produit ou l'eau qui sert à combattre un incendie où ce produit est en cause pénétrer dans les égouts, les lacs, les cours d'eau ou les canalisations d'eau potable. Boucher les égouts et bloquer les fossés. Les règlements provinciaux exigent et les règlements fédéraux peuvent exiger que les agences de protection de l'environnement ou d'autres organismes soient avertis en cas de déversement. La région polluée doit être nettoyée et remise à son état original ou à la satisfaction des autorités. Peut causer une pollution des organismes aquatiques.

Biodégradabilité: N'est pas facilement biodégradable.
Bioaccumulation: Possibilité d'accumulation dans les organismes vivants.
Coefficient de distribution (log K_{oe}): Non disponible

Toxicité en Milieu Aquatique

Peut être nocif pour la vie aquatique.

Ingrédient:	Données toxicologiques
Definition(s):	CL et CE sont respectivement la concentration de la charge létale et la concentration de la charge effective. La concentration représente la quantité de la substance qui est placée dans l'eau de façon à obtenir la concentration toxique. Ces concentrations remplacent les concentrations létales et effectives traditionnelles pour les substances à faible solubilité. WAF (water accomodated fraction) est la fraction adaptée à l'eau. Un hydrocarbure légèrement soluble est remué dans de l'eau, puis la partie insoluble est enlevée. La solution restante correspond à la fraction adaptée à l'eau.
Carburant, Diesel, No. 2	CE50 - vitesse de croissance Algues (72hr) 10 - 100 mg/L CE50 Daphnia Magna (72hr) 10 - 100 mg/L CL50 (méthode WAF) Truite arc-en-ciel (96hr) 10 - 100 mg/L

13. ÉLIMINATION DU PRODUIT

Priorités de gestion des déchets (selon leur volume et leur concentration) : 1. Recycler (retraiter), 2. Récupérer l'énergie 3. Incinérer, 4. Remettre à une intallation d'élimination des déchets autorisée. Ne pas essayer de brûler les déchets sur les lieux. Incinérer avec l'approbation des organismes de protection de l'environnement dans un endroit approuvé détenant un permis.

14. RENSEIGNEMENTS SUR LE TRANSPORT

Description d'expédition du TMD (route et rail)

Numéro de l'ONU	UN1202
Nom d'expédition approprié	DIESEL
Classe de danger	Class 3 Liquides inflammables
Groupe d'emballage	PG III
Renseignements additionnels	Non réglementé en contenants de 450 litres ou moins.
Description d'expédition	DIESEL Class 3 UN1202 PG III Non réglementé en contenants de 450 litres ou moins.

15. RENSEIGNEMENTS SUR LA RÉGLEMENTATION

Ce produit a été classifié conformément aux critères de danger du Règlement sur les produits contrôlés (RPC) du Canada et la FS contient toute l'information requise en vertu du RPC.

Catégorie SIMDUT et description :	Catégorie B3 Liquide combustible Catégorie D2B Irritation de la peau
Statut LPCE/NLPCE :	Ce produit, ou tous ses composants, figurent sur la liste intérieure des substances, en vertu de la Loi canadienne sur la protection de l'environnement.
Autres règlements :	Normes fédérales canadiennes inexistantes.

16. AUTRES RENSEIGNEMENTS

ÉTIQUETTE

Mention de danger :	Liquide combustible. Irritant pour la peau.
Précautions lors de la manipulation :	Éliminer toutes les sources d'inflammation. Éviter l'exposition prolongée aux vapeurs. Porter des protecteurs oculaires et des gants appropriés. Mettre à la masse et à la terre le matériel et les contenants de transfert pour éviter l'accumulation d'électricité statique. Les contenants vides sont dangereux, car ils peuvent contenir des poussières, des vapeurs ou des résidus liquides inflammables/explosifs. Tenir loin des étincelles et de la flamme nue.
Premiers soins :	Laver la peau contaminée à l'eau et au savon. Rincer les yeux à grande eau. Si une personne est incommodée par les vapeurs, l'amener à l'air frais. Ne pas faire vomir. Obtenir des soins médicaux.

Révisions : Cette fiche signalétique a été révisée et mise à jour.
Des modifications ont été apportées à :
Rubrique 1
Rubrique 3
Rubrique 5
Rubrique 8
Rubrique 9
Rubrique 12

Material Safety Data Sheet

Preparation Date: 21-Nov-2006 **Revision Date:** 1-May-2009 **Revision Number:** 1

SECTION 1 – PRODUCT AND COMPANY IDENTIFICATION

Supplier(s):

Orica Canada Inc.
Maple Street
Brownsburg, QC
For MSDS Requests: 1-450-533-4201

Orica USA Inc.
33101 E. Quincy Avenue
Watkins, CO 80137-9406
For MSDS Requests: 1-303-268-5000

Product Name:	**Ammonium Nitrate Solution, Nitric Acid Ammonium Salt Solution**
Product Code:	20011
Alternate Name(s):	Not Available
UN-No:	UN2426
Recommended Use:	Fertilizer, manufacture of explosives.

Emergency Telephone Number: FOR CHEMICAL EMERGENCIES (24 HOUR) INVOLVING TRANSPORTATION, SPILL, LEAK, RELEASE, FIRE OR ACCIDENTS: **IN CANADA CALL:** THE ORICA TRANSPORTATION EMERGENCY RESPONSE SYSTEM AT **1-877-561-3636. IN THE U.S. CALL: CHEMTREC 1-800-424-9300. IN THE U.S.:** FOR LOST, STOLEN, OR MISPLACED EXPLOSIVES CALL: BATF **1-800-800-3855.** FORM ATF F 5400.0 MUST BE COMPLETED AND LOCAL AUTHORITIES (STATE/MUNICIPAL POLICE, ETC.) MUST BE ADVISED.

SECTION 2 – HAZARD IDENTIFICATION

Emergency Overview:
Danger. Oxidizing agent. The product causes burns of eyes, skin and mucous membranes. Irritating to respiratory system. May cause methemoglobinemia.

Appearance:	**Physical State:**	**Odor:**
Opaque Liquid	Liquid	Mild ammoniacal

SECTION 3 – COMPOSITION/INFORMATION ON INGREDIENTS

Chemical Name	**CAS-No**	**Weight %**
Ammonium Nitrate	6484-52-2	80-90

SECTION 4 – FIRST AID MEASURES

General Advice:	In case of accident or if you feel unwell, seek medical advice IMMEDIATELY (show the product label where possible)
Eye Contact:	Immediately flush with plenty of water, also under the eyelids, for at leat 15 minutes. After initial flushing, remove any contact lenses and continue flushing for at least 15 minutes. Immediate medical attention is required.
Skin Contact:	Wash off immediately with soap and plenty of water, removing all contaminated clothes and shoes. If skin irritation persists, call a physician.
Inhalation:	Move victim to fresh air. Give artificial respiration ONLY if breathing has stopped. If breathing is difficult, give oxygen. Give cardiopulmonary resuscitation (CPR) if there is no breathing AND no pulse. Obtain medical advice IMMEDIATELY.
Ingestion:	Rinse mouth. Do not induce vomiting. Never give anything by mouth to an unconscious person. If spontaneous vomiting occurs, have victim lean forward with head positioned to avoid breathing in of vomitus, rinse mouth and administer more water. Immediate medical attention is required.

Notes to physician: Symptomatic. Administer oxygen if there are signs of cyanosis. If clinical condition deteriorates, administer 10cc Methylene Blue intravenously. It is unlikely for this to be required with methemoglobin level of less than 40%.

SECTION 5 – FIRE-FIGHTING MEASURES

Flammable properties: Oxidizer. The product itself does not burn.

Suitable extinguishing media: Use Water only, in as much volume as possible to cool the burning mass quickly. Chemical extinguishers will not work. Fire-fighters should wear positive pressure self-containing breathing apparatus (SCBA) and full turnout gear. Water may be applied through fixed extinguishing system (sprinklers) as long as people need not be present for the system to operate.

Unsuitable extinguishing media: Chemical extinguishers will not work. Attempts to smother a fire involving this product will be ineffective as it is its own oxygen source. Smother this product could lead to decomposition and explosion. This product is more sensitive to detonation if contaminated with organic or oxidisable material or if heated while confined. Unless the mass of product on fire is flooded with water, re-ignition is possible.

Specific hazards arising from the chemical: Toxic gases and vapours will be released by the thermal decomposition of this material. At higher temperatures, decomposition may be explosive, especially if confined. Immediately evacuate all personnel from the area to a safe distance. Guard against re-entry.

Protective equipment and precautions for firefighters: As in any fire, wear self-contained breathing apparatus pressure-demand, NIOSH approved (or equivalent) and full protective gear.

SECTION 6 – ACCIDENTAL RELEASE MEASURES

Methods for containment: No information available.

Methods for cleaning up: Carefully collect spilled material in a closed, metal container. Keep in suitable, closed containers for disposal. For release to land, contain discharge by constructing dykes or applying inert absorbent; for release to water, utilize damming and/or water diversion to minimize the spread of contamination. Collect contaminated soil and water, and absorbent for proper disposal. Notify applicable government authority if release is reportable or could adversely affect the environment. Clean contaminated surface thoroughly.

SECTION 7 – HANDLING AND STORAGE

Handling: Use only in area provided with appropriate exhaust ventilation. Avoid breathing vapors or mists. Handle in accordance with good industrial hygiene and safety practice. Wear personal protective equipment.

Storage: 10-30°C above crystallization temperature of product. Ammonium Nitrate Liquor, in low concentrations, is very corrosive to mild steel and untreated concrete. Stainless steel and aluminium are adequate. Avoid materials made of copper, iron, or bronze.

SECTION 8 – EXPOSURE CONTROLS/PERSONAL PROTECTION

Other exposure guidelines: Ammonium Nitrate: ORICA Guideline 5 mg/m^3 (internal TWA)

Engineering Measures: Full-Handling precautions should be taken at all times. Where reasonably practicable this should be achieved by the use of local exhaust ventilation and good general extraction.

Personal Protective Equipment

- **Eye/Face Protection:** Face-shield. Tightly fitting safety goggles.
- **Skin Protection:** Impervious gloves and protective clothing made from cotton
- **Respiratory Protection:** In case of insufficient ventilation wear suitable respiratory equipment. A NIOSH-approved respirator, if concentrations in air are unknown or in excess of established exposure guidelines

Hygiene Measures: Handle in accordance with good industrial hygiene and safety practice.

SECTION 9 – PHYSICAL AND CHEMICAL PROPERTIES

Chemical Name:	Nitric Acid Ammonium Salt Solution	**Chemical Family:**	Nitrates
Appearance:	Opaque Liquid	**Odor:**	Mild Ammoniacal
Physical State:	Liquid	**Viscosity:**	No information available
pH:	5 – 6 (0.1M solution in water)	**Flash Point:**	Not applicable
Autoignition Temperature:	Not applicable	**Boiling Point/Range:**	Not applicable
Melting Point/Range:	Not available	**Flammable Limits (Upper):**	Not applicable
Flammable Limits (Lower):	Not applicable	**Explosion Power:**	No data available
Specific Gravity:	1.3-1.38 g/cc	**Water Solubility:**	Not applicable
Other Solubility:	Soluble in alcohols.	**Vapor Pressure:**	no data available
Oxidizing Properties:	Oxidizer	**Partition Coefficient (n-octanol/water):**	No data available

SECTION 10 – STABILITY AND REACTIVITY

Stability: Stable under recommended storage conditions.

Conditions to avoid: Keep away from heat, flame, and sparks.

Incompatible materials: Avoid oxidizable materials, metal powder, bronze & copper alloys, fuels (e.g. lubricants, machine oils), fluorocarbon lubricants, acids, corrosive liquids, chlorate, sulphur, sodium nitrite, charcoal, coke and other finely divided combustibles, strong oxidizing and reducing agents. Keep away from combustible material.

Hazardous decomposition products: The following toxic decomposition products may be released. At temperatures above 210°C, decomposition may be explosive, especially if confined. Nitrogen oxides (NOx). Carbon oxide. Hydrocarbons. At higher temperatures, decomposition may be explosive, especially if confined.

Hazardous Polymerization: Hazardous polymerization does not occur

SECTION 11 – TOXICOLOGICAL INFORMATION

Acute Toxicity

Product Information: Irritating to eyes. May cause skin irritation. Harmful if swallowed. May cause methemoglobinemia.

Chemical name	LD50 Oral	LD50 Dermal	LC50 Inhalation
Ammonium Nitrate	2217 mg/kg Rat	3000 mg/kg Rabbit	88.8 mg/L Rat 4 h

Subchronic Toxicity (28 Days): Ammonium Nitrate: Ingestion may cause methemoglobinemia. Initial manifestation of methemoglobinemia is cyanosis, characterized by navy lips, tongue and mucous membranes, with skin color being slate grey. Further manifestation is characterized by headache, weakness, dyspnea, dizziness, stupor, respiratory distress and death due to anoxia. If ingested, nitrates may be reduced to nitrites by bacteria in the digestive tract. Signs and symptoms of nitrite poisoning include methemoglobinemia, nausea, dizziness, increased heart rate, hypotension, fainting and, possibly shock.

Chronic Toxicity: May cause methemoglobinemia.

Carcinogenicity: The ingredients of this product are not classified as carcinogenic by ACGIH (American Conference of Governmental Industrial Hygienists) or IARC (International Agency for Research on Cancer), not regulated as carcinogens by OSHA (Occupational Safety and Health Administration), and not listed as carcinogens by T\NTP (National Toxicology Program).

Mutagenic effects: There is no evidence of mutagenic potential.

Irritation: Irritating to eyes. May cause irritation of respiratory tract. May cause skin irritation in susceptible persons.

Reproductive effects: No information is available and no adverse reproductive effects are anticipated.

Developmental effects: No information is available and no adverse developmental effects are anticipated.

Target Organ: Eyes, skin, respiratory system, blood, liver, urinary tract, gastrointestinal tract (GI), endocrine system, & immune system.

SECTION 12 – ECOLOGICAL INFORMATION

Ecotoxicity effects: There is no known ecological information for this product.

SECTION 13 – DISPOSAL CONSIDERATIONS

Waste Disposal Method: Dispose of in accordance with National, State and local regulations. Should not be released into the environment. Do not dispose of waste with normal garbage, or to sewer systems. Call upon the services of an Orica Technical Representative.

Contaminated packaging Empty containers should be taken for local recycling, recovery or waste disposal.

SECTION 14 – TRANSPORT INFORMATION

DOT Proper Shipping Name: Ammonium Nitrate Liquid
Hazard Class: 5.1
UN-No: UN2426
Packing group: II
TDG Proper Shipping Name: Ammonium Nitrate Liquid
Hazard Class: 5.1
UN-No: UN2426
Packing group: II

Transportation Emergency Telephone Number: 1-877-561-3636 or CHEMTREC: 1-800-424-9300

SECTION 15 – REGULATORY INFORMATION

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

WHMIS hazard class: C: Oxidizer. D-2B. Toxic.

USA CLASSIFICATION:

SARA Regulations Sections 313 and 40 CFR 372: This product contains the following toxic chemical(s) subject to reporting requirements, Ammonium Nitrate (6484-52-2).

SARA 311/312 Hazardous Categorization

Acute Heath Hazard: Yes
Chronic Health Hazard: No
Fire Hazard: Yes
Reactive Hazard: No
Sudden Release of Pressure Hazard: No

Ozone Protection and 40 CFR 42: No reportable quantities of ozone depleting agents

Other Regulations/Legislations which apply to this product: New Jersey Right-to-Know, Pennsylvania Right-to-Know, Massachusetts Right-to-Know, Rhode Island Right-to-Know, Florida, New Jersey Special Health Hazard Substance List, Minnesota Hazardous Substance List, California Director's List of Hazardous Substances, California Proposition 65.

TSCA: Complies **DSL:** Complies **NDSL:** Complies

The components in the product are on the following international inventory lists:

Chemical Name	TSCA	DSL	NDSL	ENCS	EINECS	ELINCS	CHINA	KECL	PICCS	AICS
Ammonium Nitrate	X	X	-	X	X	-	X	X	X	X

Legend: X – Listed

SECTION 16 – OTHER INFORMATION

Prepared by: **Safety Health & Environment**
303-268-5000

Preparation Date: 14-May-2004
Revision Date: 1-May-2009

The information contained herein is offered only as guide to the handling of this specific material and has been prepared in good faith by technically knowledgeable personnel. It is not intended to be all-inclusive and the manner and conditions of use and handling may involve other and additional considerations. No warranty of any kind is given or implied and Orica will not be liable for any damages, losses, injuries or consequential damages which may result from the use of or reliance on any information contained herein.

End of MSDS

Technical Data Sheet

The Power of Partnership

Ammonium Nitrate Solution

Description

Liquid Ammonium Nitrate (NH4NO3: hot concentrated solution).

Application

Ammonium Nitrate (AN) Solution is the primary oxidizer used in the manufacture of bulk and packaged emulsion explosives; required for more complex blasting applications than conventional ammonium nitrate fuel oil (ANFO) mixtures.

Key Benefits

- AN Solution is low cost.
- Easily moved by bulk, rail or truck shipments.
- Ammonium Nitrate Solution is transported as an oxidizer.
- Solution can be used in the production of bulk and packaged explosives.

Technical Properties

Ammonium Nitrate Solution (ANS)	
AN (wt%)	65-85[1]
PH	3.5-5.5
Appearance	Clear
Hole Type	Wet or Dry
Delivery System	Pumped
Freeze Point	18°-75°C (64°-167°F)[2]
Shipping Temperature (summer)	93°-107°C (200°-225°F)[2]
Shipping Temperature (winter)	104°-116°C (220°-245°F)[2]

Packaging

Available in Bulk loads only. Shipments can be made in either an insulated DOT approved bulk road truck or rail car.

Product Classification USA

Authorized Name:	*Ammonium nitrate, liquid*
Proper Shipping Name:	Ammonium Nitrate, Liquid
Classification:	5.1
UN No:	2426

Product Classification Canada

Authorized Name:	*Ammonium nitrate, liquid*
Proper Shipping Name:	Ammonium Nitrate, Liquid
Classification:	5.1
UN No:	2426

Storage and Handling

Storage

Ammonium Nitrate (AN) Solution must be stored at 10°-30° C (18°-48° F) above the product's freeze point, dependent upon concentration required / shipped.

If there is any concern an Orica Technical Representative should be contacted.

Disposal

Disposal of explosive materials can be hazardous. Methods of safe disposal of explosives may vary, depending on the user's situation. Please contact an Orica Technical Representative for information on safe practices.

Safety

Ammonium Nitrate Solution poses the following hazards:

- Supports combustion
- Decomposes with excessive heating, releasing toxic fumes
- Thermal and chemical burns
- Toxic to aquatic organisms
- See the MSDS for complete product details.

Trademarks

ORICA
www.oricaminingservices.com

Ammonium Nitrate Solution

Disclaimer

The information contained herein is based on experience and is believed to be accurate and up to date as at the date of its preparation. However, uses and conditions of use are not within the manufacturer's control and users should determine the suitability of such products and methods of use for their purposes. Neither the manufacturer nor the seller makes any warranty of any kind, express or implied, statutory or otherwise, except that the products described herein shall conform to the manufacturer's or seller's specifications. The manufacturer and the seller expressly disclaim all other warranties, INCLUDING, WITHOUT LIMITATION, WARRANTIES CONCERNING MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. Under no circumstances shall the manufacturer or the seller be liable for indirect, special, consequential, or incidental damages without limitation, damages for lost or anticipated profits. Explosives based on Ammonium Nitrate may react with pyritic materials in the ground and create potentially hazardous situations. Orica accepts no responsibility for any loss or liability arising from use of the product in ground containing pyritic or other reactive material.

Orica Canada Inc.
301 Hotel De Ville
Brownsburg, QC J8G 3B5
Tel: +1 303 268 5000
Fax: +1 303 268 5250

Orica USA Inc.
33101 East Quincy Ave
Watkins, CO 80137
Tel: +1 303 268 5000
Fax: +1 303 268 5250

Emergency Contact Telephone Numbers

For chemical emergencies (24 hour) involving transportation, spill, leak, release, fire or accidents:
Canada: Orica Canada emergency response **1-877-561-3636**
USA: Chemtrec **1-800- 424-9300**

For lost, stolen or misplaced explosives:
USA: BATFE **1-800-800-3855**. Form ATF F5400.0 must be completed and local authorities (state / municipal police, etc) must be advised.

Notes

1. Minimum of 65%.
2. Dependent upon concentration required / shipped, maximum shipping temperature 116° C (240° F).

Material Safety Data Sheet

Preparation Date: 18-Feb-2008 **Revision Date:** 15-Mar-2011 **Revision Number:** 2

SECTION 1 – PRODUCT AND COMPANY IDENTIFICATION

Supplier(s):

Orica Canada Inc.
Maple Street
Brownsburg, QC
For MSDS Requests: 1-450-533-4201

Orica USA Inc.
33101 E. Quincy Avenue
Watkins, CO 80137-9406
For MSDS Requests: 1-303-268-5000

Product Name:	**Ammonium Nitrate Prill**
Product Code:	40002
Alternate Name(s):	AN Prill
UN-No:	UN1942
Uses:	Fertilizer, Manufacture of Explosives. Manufacture of Blasting Agents.

Emergency Telephone Number: FOR CHEMICAL EMERGENCIES (24 HOUR) INVOLVING TRANSPORTATION, SPILL, LEAK, RELEASE, FIRE OR ACCIDENTS: **IN CANADA CALL:** THE ORICA TRANSPORTATION EMERGENCY RESPONSE SYSTEM AT **1-877-561-3636. IN THE U.S. CALL: CHEMTREC 1-800-424-9300. IN THE U.S.:** FOR LOST, STOLEN, OR MISPLACED EXPLOSIVES CALL: BATF **1-800-800-3855.** FORM ATF F 5400.0 MUST BE COMPLETED AND LOCAL AUTHORITIES (STATE/MUNICIPAL POLICE, ETC.) MUST BE ADVISED.

SECTION 2 – HAZARD IDENTIFICATION

Emergency Overview:
Irritating to eyes, respiratory system and skin. May cause methemoglobinemia.

Appearance:	**Physical State:**	**Odor:**
Grey or white prills	Prills	Odorless

SECTION 3 – COMPOSITION/INFORMATION ON INGREDIENTS

Chemical Name	**CAS-No**	**Weight %**
Ammonium Nitrate	6484-52-2	98-100

SECTION 4 – FIRST AID MEASURES

General Advice:	In case of accident or if you feel unwell, seek medical advice IMMEDIATELY (show the product label where possible)
Eye Contact:	Immediately flush with plenty of water. After initial flushing, remove any contact lenses and continue flushing for at least 15 minutes. Immediate medical attention is required.
Skin Contact:	Wash off immediately with soap and plenty of water, removing all contaminated clothes and shoes. If skin irritation persists, call a physician.
Inhalation:	Move victim to fresh air. Give artificial respiration ONLY if breathing has stopped. Give cardiopulmonary resuscitation (CPR) if there is no breathing AND no pulse. Obtain medical advice IMMEDIATELY.
Ingestion:	Immediate medical attention is required. If victim is alert and not convulsing, rinse mouth out and give 200-300 mL (1 cup) of water to dilute material. Do no induce vomiting. Clean mouth with water and afterwards drink plenty of water. If spontaneous vomiting occurs, have victim lean forward with head positioned to avoid breathing in of vomitus, rinse mouth and administer more water. Never give anything by mouth to and unconscious person.

Notes to physician: Symptomatic. Administer oxygen if there are signs of cyanosis. If clinical condition deteriorates, administer 10cc Methylene Blue intravenously. It is unlikely for this to be required with methemoglobin level of less than 40%.

SECTION 5 – FIRE-FIGHTING MEASURES

Flammable properties: Not itself combustible by assists fire in burning materials. The product does not flash. Rate of burning: attempts to smother a fire involving this product will be ineffective as it is its own oxygen source.

Suitable extinguishing media: Use Water only, in as much volume as possible to cool the burning mass quickly. Chemical extinguishers will not work. Fire-fighters should wear positive pressure self-containing breathing apparatus (SCBA) and full turnout gear. Water may be applied through fixed extinguishing system (sprinklers) as long as people need not be present for the system to operate.

Unsuitable extinguishing media: Chemical extinguishers will not work. Attempts to smother a fire involving this product will be ineffective as it is its own oxygen source. Smother this product could lead to decomposition and explosion. This product is more sensitive to detonation if contaminated with organic or oxidisable material or if heated while confined. Unless the mass of product on fire is flooded with water, re-ignition is possible.

Specific hazards arising from the chemical: Toxic gases and vapours will be released by the thermal decomposition of this material. At higher temperatures, decomposition may be explosive, especially if confined. Immediately evacuate all personnel from the area to a safe distance. Guard against re-entry.

Protective equipment and precautions for firefighters: As in any fire, wear self-contained breathing apparatus pressure-demand, NIOSH approved (or equivalent) and full protective gear.

SECTION 6 – ACCIDENTAL RELEASE MEASURES

Methods for containment: Avoid dust formation. Do not breathe dust. Prevent further leak if safe to do so.

Methods for cleaning up: Avoid the use of metal tools containing iron and/or copper. Collect product in suitable containers for recovery or disposal. Prevent product from entering drains. Notify applicable government authority if release is reportable or could adversely affect the environment.

SECTION 7 – HANDLING AND STORAGE

Handling: Avoid contact with eyes or skin. Wash thoroughly with soap and water after handling. Wash clothing before re-use. Locate safety shower and eyewash station closest to chemical handling area. The use of coveralls is recommended. Use good industrial hygiene and housekeeping practices. Keep away from open flames, hot surfaces and sources of ignition

Storage: Store in a cool, well-ventilated area. Keep away from heat, sparks, and flames. Keep storage containers closed. Store at 10-27°C (50-80°F). Do not expose closed containers to temperatures above 40°C (104°F). Product is mildly corrosive to concrete and steel. Stainless steel and aluminium are adequate. Avoid materials made of copper, iron, or bronze.

SECTION 8 – EXPOSURE CONTROLS/PERSONAL PROTECTION

Other exposure guidelines: Ammonium Nitrate: ORICA Guideline 5 mg/m^3 (internal TWA)

Engineering Measures: Where reasonably practicable this should be achieved by the use of local exhaust ventilation and good general extraction.

Personal Protective Equipment

Eye/Face Protection: Tightly fitting safety goggles.

Skin Protection: Gloves and protective clothing made from cotton should be impervious under normal conditions

Respiratory Protection: In case of insufficient ventilation wear suitable respiratory equipment. A NIOSH-approved respirator, if concentrations in air are unknown or in excess of established exposure guidelines

Hygiene Measures: Handle in accordance with good industrial hygiene and safety practice. Recommendations listed in this section indicate the type of equipment, which will provide protection against over exposure to this product. Conditions of use, adequacy of engineering or other control measures, and actual exposures will dictate the need for specific protective devices at your workplace.

SECTION 9 – PHYSICAL AND CHEMICAL PROPERTIES

Chemical Name:	Nitric Acid Ammonium Salt	**Chemical Family:**	Nitrates
Appearance:	Grey or white prills	**Odor:**	Odorless
Physical State:	Solid prills	**Viscosity:**	No information available
pH:	5 – 6 (0.1M solution in water)	**Flash Point:**	Not applicable
Autoignition Temperature:	Not applicable	**Boiling Point/Range:**	210°C/ 410°F
Melting Point/Range:	160–165°C/ 320-329°F	**Flammable Limits (Upper):**	Not applicable
Flammable Limits (Lower):	Not applicable	**Explosion Power:**	No data available
Specific Gravity:	1.72 g/cc	**Water Solubility:**	79% @25
Other Solubility:	Soluble in Alkalies, alcohols, acetone. Insoluble in ether.	**Vapor Pressure:**	0 mm Hg @20°C
Oxidizing Properties:	Oxidizer	**Partition Coefficient (n-octanol/water):**	No data available

SECTION 10 – STABILITY AND REACTIVITY

Stability: Stable under normal conditions. Decomposition Temperature: Ammonium Nitrate will spontaneously decompose at 210°C.

Conditions to avoid: Keep away from open flames, hot surfaces and sources of ignition. Not expected to be sensitive to static discharge. Not expected to be sensitive to mechanical impact. Keep away from light.

Incompatible materials: Avoid oxidizable materials, metal powder, bronze & copper alloys, fuels (e.g. lubricants, machine oils), fluorocarbon lubricants, acids, corrosive liquids, chlorate, sulphur, sodium nitrite, charcoal, coke and other finely divided combustibles, strong oxidizing and reducing agents. Keep away from combustible material.

Hazardous decomposition products: The following toxic decomposition products may be released. At temperatures above 210°C, decomposition may be explosive, especially if confined. Nitrogen oxides (NOx). Carbon oxide. Hydrocarbons. At higher temperatures, decomposition may be explosive, especially if confined.

Hazardous Polymerization: None under normal processing. Hazardous polymerization does not occur. Explosive material under shock conditions.

SECTION 11 – TOXICOLOGICAL INFORMATION

Acute Toxicity

Product Information: Irritating to eyes. May cause skin irritation. Harmful if swallowed. May cause methemoglobinemia.

Chemical name	LD50 Oral	LD50 Dermal	LC50 Inhalation
Ammonium Nitrate	2217 mg/kg Rat	3000 mg/kg Rabbit	88.8 mg/L Rat 4 h

Subchronic Toxicity (28 Days): Ammonium Nitrate: Ingestion may cause methemoglobinemia. Initial manifestation of methemoglobinemia is cyanosis, characterized by navy lips, tongue and mucous membranes, with skin color being slate grey. Further manifestation is characterized by headache, weakness, dyspnea, dizziness, stupor, respiratory distress and death due to anoxia. If ingested, nitrates may be reduced to nitrites by bacteria in the digestive tract. Signs and symptoms of nitrite poisoning include methemoglobinemia, nausea, dizziness, increased heart rate, hypotension, fainting and, possibly shock.

Chronic Toxicity: May cause methemoglobinemia.

Carcinogenicity: The ingredients of this product are not classified as carcinogenic by ACGIH (American Conference of Governmental Industrial Hygienists) or IARC (International Agency for Research on Cancer), not regulated as carcinogens by OSHA (Occupational Safety and Health Administration), and not listed as carcinogens by T\NTP (National Toxicology Program).

Mutagenic effects: There is no evidence of mutagenic potential.

Irritation: Irritating to eyes. May cause irritation of respiratory tract. May cause skin irritation in susceptible persons.

Reproductive effects:	No information is available and no adverse reproductive effects are anticipated.
Developmental effects:	No information is available and no adverse developmental effects are anticipated.
Target Organ:	Eyes, skin, respiratory system, blood, liver, urinary tract, gastrointestinal tract (GI), endocrine system, & immune system.

SECTION 12 – ECOLOGICAL INFORMATION

Ecotoxicity effects:	Dissolves slowly in water. Harmful to aquatic life at low concentrations. Environmental Effects: Can be dangerous if allowed to enter drinking water intakes. Do not contaminate domestic or irrigation water supplies, lakes, streams, ponds, or rivers.
Persistence/Degradability:	No data available.
Mobility in Environmental media:	Dissolves slowly in water

SECTION 13 – DISPOSAL CONSIDERATIONS

Waste Disposal Method:	Dispose of in accordance with National, State and local regulations. Should not be released into the environment. Do not dispose of waste with normal garbage, or to sewer systems. Call upon the services of an Orica Technical Representative.

SECTION 14 – TRANSPORT INFORMATION

DOT Proper Shipping Name:	Ammonium Nitrate
Hazard Class:	5.1
UN-No:	UN1942
Packing group:	III
TDG Proper Shipping Name:	Ammonium Nitrate
Hazard Class:	5.1
UN-No:	UN1942
Packing group:	III

Transportation Emergency Telephone Number: 1-877-561-3636 or CHEMTREC: 1-800-424-9300

SECTION 15 – REGULATORY INFORMATION

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

WHMIS hazard class: C: Oxidizer. D-2B. Toxic.

USA CLASSIFICATION:

SARA Regulations Sections 313 and 40 CFR 372: This product contains the following toxic chemical(s) subject to reporting requirements, Ammonium Nitrate (6484-52-2).

SARA 311/312 Hazardous Categorization

Acute Heath Hazard:	Yes
Chronic Health Hazard:	No
Fire Hazard:	Yes
Reactive Hazard:	No
Sudden Release of Pressure Hazard:	No

Ozone Protection and 40 CFR 42: No reportable quantities of ozone depleting agents

Other Regulations/Legislations which apply to this product: New Jersey Right-to-Know, Pennsylvania Right-to-Know, Massachusetts Right-to-Know, Rhode Island Right-to-Know, Florida, New Jersey Special Health Hazard Substance List, Minnesota Hazardous Substance List, California Director's List of Hazardous Substances, California Proposition 65.

TSCA: Complies **DSL:** Complies **NDSL:** Complies

The components in the product are on the following international inventory lists:

Chemical Name	TSCA	DSL	NDSL	ENCS	EINECS	ELINCS	CHINA	KECL	PICCS	AICS
Ammonium Nitrate	X	X	-	X	X	-	X	X	X	X

Legend: X – Listed

SECTION 16 – OTHER INFORMATION

Prepared by: **Safety Health & Environment**
303-268-5000

Preparation Date: 18-Feb-2008
Revision Date: 15-Mar-2011

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End of MSDS

Annex B

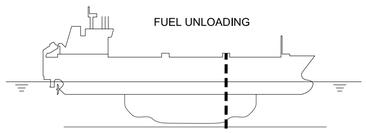
Fuel Storage and Distribution Schematic

H337697-0000-60-013-0001

DWG. NO. H337697-0000-60-013-0001

MILNE INLET

FUEL UNLOADING



4110-TK -003 DIESEL 10M L
4110-TK -004 DIESEL 10M L
4110-TK -002 DIESEL 10M L
4110-TK -005 DIESEL 10M L
EXISTING TANK 4110-TK -001 DIESEL 5M L
4110-TK -006 JET A–1 1M L

MILNE INLET FUEL STORAGE

TO MINE SITE

JET A-1 TRUCK LOADING TO AIRSTRIP

AIR STRIP

MARY RIVER MINE SITE

MINE SITE POWER GENERATION SYSTEM FUEL STORAGE

DIESEL 4470-TK-004 290 000 L DAY TANK
DIESEL 4470-TK-005 290 000 L DAY TANK

MINE EQUIPMENT FUEL STORAGE

DIESEL 4470-TK-007 5.2M L
GAS 4470-TK-009

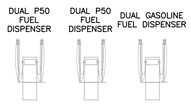
FUEL MODULE
4470-TK-008

HEAVY EQUIPMENT FUELLING STATION

DIESEL TRUCK FUELLING

GASOLINE TRUCK FUELLING

DUAL P50 FUEL DISPENSER
DUAL P50 FUEL DISPENSER
DUAL GASOLINE FUEL DISPENSER



TRUCK OFFLOAD FROM MINE SITE FUEL STORAGE TANK FARM AND MILNE INLET

TRUCK LOADING TO MINE EQUIPMENT FUEL STORAGE

JET A-1 TRUCK LOADING TO AIRSTRIP

AIR STRIP

MINE SITE FUEL STORAGE

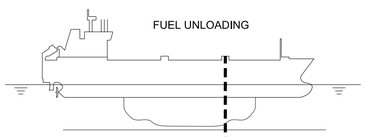
4470-TK-003 3.0M L JET A–1
4470-TK-002 5.2M L DIESEL
4470-TK-001 5.2M L DIESEL

4470-TK-006 PUMP HOUSE

RAILCAR OFFLOADING FROM STEENSBY INLET

STEENSBY INLET

FUEL UNLOADING



TUGBOAT FUELLING

FREIGHT DOCK AND FUEL UNLOADING

DIESEL 4640-TK-029 7.5M L

FUEL TRANSFER AND TUG FUELLING STORAGE

STEENSBY INLET FUEL STORAGE

DIESEL 4640-TK-001 40M L
DIESEL 4640-TK-003 40M L
DIESEL 4640-TK-002 40M L
DIESEL 4640-TK-004 40M L
GAS 4640-TK-026

4640-TK-005 DIESEL 1M L
4640-TK-010 DIESEL 1M L
4640-TK-015 DIESEL 1M L
4640-TK-020 JET A–1 1M L
4640-TK-006 DIESEL 1M L
4640-TK-011 DIESEL 1M L
4640-TK-016 DIESEL 1M L
4640-TK-021 JET A–1 1M L
4640-TK-007 DIESEL 1M L
4640-TK-012 DIESEL 1M L
4640-TK-017 DIESEL 1M L
4640-TK-022 JET A–1 1M L
4640-TK-008 DIESEL 1M L
4640-TK-013 DIESEL 1M L
4640-TK-018 DIESEL 1M L
4640-TK-023 JET A–1 1M L
4640-TK-009 DIESEL 1M L
4640-TK-014 DIESEL 1M L
4640-TK-019 DIESEL 1M L
4640-TK-024 JET A–1 1M L

RAILCAR LOADING TO MINE SITE

DIESEL DTK 027
DIESEL DTK 028
POWER PLANT BUILDING

4640-TK-025
PUMP HOUSE

GASOLINE TRUCK FUELLING

DUAL P50 FUEL DISPENSER
DUAL P50 FUEL DISPENSER
DUAL P50 FUEL DISPENSER
DUAL GASOLINE FUEL DISPENSER

DIESEL TRUCK FUELLING

JET A-1 TRUCK LOADING TO AIRSTRIP

AIR STRIP

DIESEL TRUCK LOADING

DRAWING NO.	DRAWING TITLE
REFERENCE DRAWINGS	

PERMIT TO PRACTICE
HATCH LTD.
Signature_____
Date_____
PERMIT NUMBER: P 512
The Association of Professional Engineers, Geologists and Geophysicists of NWT/NU

NO.	DESCRIPTION	BY	CHK'D	APP'D	DATE
REVISIONS					

REV.	ISSUE FOR	AUTH. BY	DATE
A	ISSUED FOR ENVIRONMENTAL PERMIT	FB	11–09–27
ISSUE AUTHORIZATION			

HATCH™

DESIGNED BY DS DATE 11–09–27	DRAWN BY MMI DATE 11–09–27
CHECKED BY JM DATE 11–09–27	DISCIP. ENGR. FB DATE 11–09–27
PROJ. DES. COORD. DATE	PROJ. ENGR. F. BUTTS DATE
PROJ. MGR. DATE	

Baffinland Iron Mines Corporation

MARY RIVER PROJECT

FUEL STORAGE AND DISTRIBUTION FLOW SCHEMATIC

SCALE NTS OR AS NOTED
DWG. NO. H337697-0000-60-013-0001
REV. A