Products of Combustion	Carbon oxides (CO, CO2), nitrogen oxides (NOx), acrid fumes, smoke and irritating vapours as products of incomplete combustion.
Fire Fighting Media and Instructions	NAERG2004, GUIDE 171, Substances (low to moderate hazard). If tank, rail car or tank truck is involved in a fire, ISOLATE for 800 meters (0.5 mile) in all directions; also, consider initial evacuation for 800 meters (0.5 mile) in all directions. Shut off fuel to fire if it is possible to do so without hazard. If this is impossible, withdraw from area and let fire burn out under controlled conditions. Withdraw immediately in case of rising sound from venting safety device or any discolouration of tank due to fire. Cool containing vessels with water spray in order to prevent pressure build-up, autoignition or explosion. SMALL FIRE: use DRY chemicals, foam, water spray or CO2. LARGE FIRE: use water spray, fog or foam. For small outdoor fires, portable fire extinguishers may be used, and self contained breathing apparatus (SCBA) may not be required. For all indoor fires and any significant outdoor fires, SCBA is required. Respiratory and eye protection are required for fire fighting personnel.

Section 6. Accidental Release Measures

Material Release or Spill	Consult current National Emergency Response Guide Book (NAERG) for appropriate spill measures if necessary. Ensure clean-up personnel wear appropriate personal protective equipment. Extinguish all ignition sources. Stop leak if safe to do so. Dike spilled material. Use appropriate inert absorbent material to absorb spilled product. Collect used absorbent for later disposal. Avoid contact with spilled material. Avoid contaminating sewers, streams, rivers and other water courses with spilled material. Notify appropriate authorities immediately.

Section 7. Handling and Storage

Handling	Avoid contact with any sources of ignition, flames, heat, and sparks. Avoid eye contact. Avoid skin contact. Avoid inhalation of product vapours or mists. Wear proper personal protective equipment (See Section 8). Empty containers may contain product residue. Do not pressurize, cut, heat, or weld empty containers. Do not reuse containers without commercial cleaning and/or reconditioning. Personnel who handle this material should practice good personal hygiene during and after handling to help prevent accidental ingestion of this product. Properly dispose of contaminated leather articles including shoes that cannot be decontaminated.
Storage	Store away from incompatible and reactive materials (See section 5 and 10). Keep container tightly closed. Store in dry, cool, well-ventilated area.

Section 8. Exposure Controls/Personal Protection

Engineering Controls	For normal application, special ventilation is not necessary. If user's operations generate vapours or mist, use ventilation to keep exposure to airborne contaminants below the exposure limit. Make-up air should always be supplied to balance air removed by exhaust ventilation. Ensure that eyewash station and safety shower are close to work-station.
Personal Protection	***The selection of personal protective equipment varies, depending upon conditions of use.***
Eyes	As a minimum, safety glasses with side shields should be worn when handling this material.
Body	If this material may come in contact with the body during handling and use, we recommend wearing appropriate protective clothing to prevent contact with the skin. (Contact your PPE provider for more information.)
Respiratory	A minimum of NIOSH-approved air-purifying respirator with an organic vapour cartridge or canister with a dust, fume of mist filter (R, or P series) may be permissible under certain circumstances where airborne concentrations are expected to exceed exposure limits. Protection provided by air-purifying respirators is limited. A NIOSH-approved positive-pressure, air-supplied respirator or self-contained breathing apparatus may be permissible under certain circumstances where airborne concentrations are expected to exceed exposure limits.
Hands	If this material may come in contact with the hands during handling and use, we recommend wearing gloves of the following material(s): Neoprene, Nitrile, Polyvinyl alcohol (PVA), Fluoro-elastomer. Consult your PPE provider for breakthrough times and the specific glove that is best for you based on your use patterns.
Feet	Wear appropriate footwear to prevent product from coming in contact with feet and skin.

Section 9. Physical and Chemical Properties

Physical State and Appearance	Viscous liquid.	**Viscosity**	21.1 cSt @ 40°C (104°F), 4.5 cSt @ 100°C (212°F), VI=127
Colour	Blue-green	**Pour Point**	<-54°C
Odour	Hydrocarbon.	**Softening Point**	Not applicable.
Odour Threshold	Not available	**Dropping Point**	Not applicable.
Boiling Point	Not available	**Penetration**	Not applicable.
Density	0.88 kg/L @ 15°C (59°F).	**Oil / Water Dist. Coefficient**	Not available
Vapour Density	Not available	**Ionicity (in water)**	Not available

Vapour Pressure	Negligible at ambient temperature and pressure.	**Dispersion Properties**	Not available
Volatility	Non-volatile.	**Solubility**	Insoluble in water.

Section 10. Stability and Reactivity

Corrosivity	Not available		
Stability	The product is stable under normal handling and storage conditions.	**Hazardous Polymerization**	Will not occur under normal working conditions.
Incompatible Substances / Conditions to Avoid	Reactive with oxidizing agents.	**Decomposition Products**	May release COx, NOx, methacrylate monomers, aldehydes, smoke and irritating vapours when heated to decomposition.

Section 11. Toxicological Information

Routes of Entry	Skin contact, eye contact, inhalation and ingestion.
Acute Lethality	Acute toxicity information is not available for the product as a whole, therefore, data for the base oils are provided below: Acute oral toxicity (LD50): >5000 mg/kg (rat). Acute dermal toxicity (LD50): >2000 mg/kg (rabbit). Acute inhalation toxicity (LC50): >2300 mg/m³/4h (rat).
Chronic or Other Toxic Effects	
Dermal Route:	Prolonged or repeated contact may defat and dry skin, and cause dermatitis. Short-term exposure is expected to cause only slight irritation, if any.
Inhalation Route:	With its relatively low vapour pressure, this product is not expected be inhaled in any appreciable quantity at ambient conditions. If heated to high temperatures or subjected to mechanical actions which produce vapours or mists, inhalation may cause respiratory tract irritation.
Oral Route:	Ingestion of this product may lead to aspiration of the liquid, especially if vomiting occurs. This may result in chemical pneumonitis (inflammation of the lungs) and/or pulmonary edema (an accumulation of fluid in the lungs). May produce a laxative effect.
Eye Irritation/Inflammation:	Short-term exposure is expected to cause only slight irritation, if any.
Immunotoxicity:	Not available
Skin Sensitization:	Contact with this product is not expected to cause skin sensitization, based upon the available data and the known hazards of the components.
Respiratory Tract Sensitization:	Contact with this product is not expected to cause respiratory tract sensitization, based upon the available data and the known hazards of the components.
Mutagenic:	This product is not known to contain any components at >= 0.1% that have been shown to cause mutagenicity. Therefore, based upon the available data and the known hazards of the components, this product is not expected to be a mutagen.
Reproductive Toxicity:	This product is not known to contain any components at >= 0.1% that have been shown to cause reproductive toxicity. Therefore, based upon the available data and the known hazards of the components, this product is not expected to be a reproductive toxin.
Teratogenicity/Embryotoxicity:	This product is not known to contain any components at >= 0.1% that have been shown to cause teratogenicity and/or embryotoxicity. Therefore, based upon the available data and the known hazards of the components, this product is not expected to be a teratogen/embryotoxin.
Carcinogenicity (ACGIH):	This product is not known to contain any chemicals at reportable quantities that are listed as Group A1 or A2 carcinogens by ACGIH.
Carcinogenicity (IARC):	This product is not known to contain any chemicals at reportable quantities that are listed as Group 1, 2A, or 2B carcinogens by IARC.
Carcinogenicity (NTP):	This product is not known to contain any chemicals at reportable quantities that are listed as carcinogens by NTP.
Carcinogenicity (IRIS):	This product is not known to contain any chemicals at reportable quantities that are listed as carcinogens by IRIS.
Carcinogenicity (OSHA):	This product is not known to contain any chemicals at reportable quantities that are listed as carcinogens by OSHA.
Other Considerations	No additional remark.

Section 12. Ecological Information

Environmental Fate	Not available	**Persistance/ Bioaccumulation Potential**	Not available
BOD5 and COD	Not available	**Products of Biodegradation**	Not available
Additional Remarks	No additional remark.		

Section 13. Disposal Considerations

Waste Disposal	Spent/ used/ waste product may meet the requirements of a hazardous waste. Consult your local or regional authorities. Ensure that waste management processes are in compliance with government requirements and local disposal regulations.

Section 14. Transport Information

TDG Classification	Not a hazardous material for transport according to the TDG Regulations. (Canada)	**Special Provisions for Transport**	Not applicable.

Section 15. Regulatory Information

Other Regulations

This product is acceptable for use under the provisions of WHMIS-CPR. All components of this formulation are listed on the CEPA-DSL (Domestic Substances List).

All components of this formulation are listed on the US EPA-TSCA Inventory.

All components of this product are on the European Inventory of Existing Commercial Chemical Substances (EINECS).

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

Please contact Product Safety for more information.

DSD/DPD (Europe)	Not classified under the Dangerous Substances or Dangerous Preparations Directives.	**HCS (U.S.A.)**	Does not meet the definitions of a health or physical hazard according to the OSHA - Hazard Communication Standard. (United States)
ADR (Europe) (Pictograms)		**DOT (U.S.A) (Pictograms)**	

HMIS (U.S.A.)

Health Hazard	1
Fire Hazard	1
Reactivity	0
Personal Protection	B

NFPA (U.S.A.)

Rating: 0 Insignificant, 1 Slight, 2 Moderate, 3 High, 4 Extreme

Section 16. Other Information

References Available upon request.

* Marque de commerce de Petro-Canada - Trademark

Glossary

ACGIH - American Conference of Governmental Industrial Hygienists
ADR - Agreement on Dangerous goods by Road (Europe)
ASTM - American Society for Testing and Materials
BOD5 - Biological Oxygen Demand in 5 days
CAN/CGA B149.2 Propane Installation Code
CAS - Chemical Abstract Services
CEPA - Canadian Environmental Protection Act
CERCLA - Comprehensive Environmental Response, Compensation and Liability Act
CFR - Code of Federal Regulations
CHIP - Chemicals Hazard Information and Packaging Approved Supply List
CNS - Central Nervous System
COD5 - Chemical Oxygen Demand in 5 days
CPR - Controlled Products Regulations
DOT - Department of Transport
DSCL - Dangerous Substances Classification and Labeling (Europe)
DSD/DPD - Dangerous Substances or Dangerous Preparations
IRIS - Integrated Risk Information System
LD50/LC50 - Lethal Dose/Concentration kill 50%
LDLo/LCLo - Lowest Published Lethal Dose/Concentration
NAERG'96 - North American Emergency Response Guide Book (1996)
NFPA - National Fire Prevention Association
NIOSH - National Institute for Occupational Safety & Health
NPRI - National Pollutant Release Inventory
NSNR - New Substances Notification Regulations (Canada)
NTP - National Toxicology Program
OSHA - Occupational Safety & Health Administration
PEL - Permissible Exposure Limit
RCRA - Resource Conservation and Recovery Act
RTECS - Registry of Toxic Effects of Chemical Substances
SARA - Superfund Amendments and Reorganization Act
SD - Single Dose
STEL - Short Term Exposure Limit (15 minutes)
TDG - Transportation Dangerous Goods (Canada)
TDLo/TCLo - Lowest Published Toxic Dose/Concentration

Directives (Europe)
DSL - Domestic Substance List
EEC/EU - European Economic Community/European Union
EINECS - European Inventory of Existing Commercial Chemical Substances
EPA - Environmental Protection Agency
EPCRA - Emergency Planning and Community Right to Know Act
FDA - Food and Drug Administration
FIFRA - Federal Insecticide, Fungicide and Rodenticide Act
HCS - Hazard Communication Standard
HMIS - Hazardous Material Information System
IARC - International Agency for Research on Cancer
TLm - Median Tolerance Limit
TLV-TWA - Threshold Limit Value-Time Weighted Average
TSCA - Toxic Substances Control Act
USEPA - United States Environmental Protection Agency
USP - United States Pharmacopoeia
WHMIS - Workplace Hazardous Material Information System

For Copy of MSDS

The Canadian Controlled Products Regulations (CPR) (Under the Hazardous Products Act, part of the WHMIS legislation) only apply to WHMIS Controlled (i.e., hazardous) products. Therefore, the CPR and the 3-year update rule specified therein do not apply to WHMIS Non-Controlled products. Although this is true, customarily Petro-Canada reviews and updates Non-Controlled product MSDS if a customer requests such an update. These Non-Controlled product updates are given a lower priority than Controlled products but are handled as soon as practicable. If you would like to verify if the MSDS you have is the most current, or you require any further information, please contact:

Internet: www.petro-canada.ca/msds

Lubricants:
Western Canada, telephone: 1-800-661-1199; fax: (780) 464-9564
Ontario & Central Canada, telephone: 1-800-268-5850 and (905) 822-4222; fax: 1-800-201-6285
Quebec & Eastern Canada, telephone: 1-800-576-1686; fax: 800-201-6285

For Product Safety Information: (905) 804-4752

Prepared by Product Safety - RS on 4/9/2005.

Data entry by Product Safety - RS.

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

Material Safety Data Sheet

Orica Canada Inc.
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Brownsburg, PQ
For MSDS Requests: 450-533-4201

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

EMERGENCY CONTACTS
FOR EMERGENCIES INVOLVING CHEMICAL SPILL OR RELEASE, CALL THE ORICA CANADA TRANSPORTATION
EMERGENCY RESPONSE SYSTEM AT 1-877-561-3636, or CHEMTREC AT 1-800-424-9300

SECTION 1 - CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

Product Name: **Amex K**
MSDS Number: 20114
Product Use: Reduced energy Anfo for all dry hole wall.

MATS Index: 60962
Date Issued: 05-01-03

SECTION 2 - COMPOSITION / INFORMATION ON INGREDIENTS

HAZARDOUS INGREDIENT(S) % (w/w) ACGIH TWA CAS NO.
Ammonium Nitrate 80-90 Not Listed. 6484-52-2
Potassium Carbonate 5-10 Not Listed. 584-08-7
Kerosene 1-5 Not Listed. 8008-20-6
Alternate Name(s): BL-371, BL-372, BL-373, BL-374

SECTION 3 - HAZARD IDENTIFICATION

Emergency Overview: Risk of explosion by shock, friction, fire or other sources of ignition. Harmful if swallowed. Irritating to eyes and skin. May cause methemoglobinemia. May cause central nervous system (CNR) depression. Read the entire MSDS for a more thorough evaluation of the hazards.

SECTION 4 - FIRST AID MEASURES

General: If you feel unwell seek medical advice (show the product label where possible).
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. Oxygen administration may be beneficial in this situation but should only be administered by personnel trained in its use. Obtain medical attention IMMEDIATELY. Inhalation is not a likely route of exposure at normally encountered temperatures.
Skin Contact: Wash affected areas thoroughly with soap and water. If irritation, redness, or a burning sensation develops and persists, obtain medical advice.
Eye Contact: Immediately flush eyes with running water for a minimum of 20 minutes. Hold eyelids open during flushing. If irritation persists, repeat flushing and obtain medical attention.
Ingestion: If victim is alert and not convulsing, rinse mouth out and give 200-300 mL (1 cup) of water to dilute material. 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. Obtain medical attention IMMEDIATELY.
Note to Physicians: Symptomatic. Administer oxygen if there are signs of cyanosis. If clinical condition deteriorates, administer 10 cc Methylene Blue intravenously. It is unlikely for this to be required with methemoglobin level of less than 40%.
This product contains materials that may cause severe pneumonitis if aspirated. If ingestion has occurred less than 2 hours earlier, carry out careful gastric lavage; use endotracheal cuff if available, to prevent aspiration. Observe patient for respiratory difficulty from aspiration pneumonitis. Give artificial resuscitation and appropriate chemotherapy if respiration is depressed.
Following exposure the patient should be ept under medical review for at least 48 hours as delayed pneumonitis may occur.

SECTION 5 - FIRE-FIGHTING MEASURES

Flash Point: 52°C (125.6°F)
Flammable Limits (Lower): 1.0 %
Flammable Limits (Upper): 4.7 %
Auto Ignition Temperature: 230-265°C (446-509°F)
Decomposition Temperature: 250°C (482°F)
Rate of Burning: Does not sustain burning at atmospheric pressure.
Explosive Power: 200 - 300 kJ/100g.
Sensitivity to Mechanical Impact: Not expected to be sensitive to mechanical impact. Greater than 1 meter.
Sensitivity to Static Discharge: Not expected to be sensitive to static discharge.
Hazardous Reactions: None known.
Fire and Explosion Hazards: Explodes on overheating when contained and, thus, fires involving large quantities of the material should not be fought. This product is a high explosive with a mass detonation hazard. This product is classified as a flammable solid and may detonate under fire conditions.
Extinguishing Media: See below.
Fire Fighting Procedures: DO NOT FIGHT FIRES INVOLVING EXPLOSIVE MATERIALS. Immediately evacuate all personnel from the area to a safe distance. Guard against re-entry.
Fire Fighting Protective Equipment: Use self-contained breathing apparatus and special protective clothing.
NOTE: Also see "Section 10 - Stability and Reactivity"

SECTION 6 - ACCIDENTAL RELEASE MEASURES

Spills, Leaks, or Releases: Avoid the use of metal tools containing iron and/or copper. Be careful to avoid shock, friction, and contact with grit. Collect product for recovery or disposal. For release to land, contain storm water runoff by dyking with earth or other barrier; 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.
Deactivating Chemicals: Detergents will break up emulsions if mixed in.

SECTION 7 - HANDLING AND STORAGE

Handling: This product is an explosive and should only be used under the supervision of trained personnel. Locate safety shower and eyewash station close to chemical handling area. The use of coveralls is recommended. Use normal good industrial hygiene and housekeeping practices.
Storage Requirements: Store under moderate temperatures recommended by a technical service representative. Store under dry conditions in a well-ventilated magazine that has been approved for either detonator storage or explosive storage. Do NOT store explosives in a detonator magazine or detonators in an explosive magazine. Keep away from heat, sparks and flames. Keep containers closed. Explosives should be kept well away from initiating explosives; protected from physical damage; separated from oxidizing materials, combustibles, and sources of heat. Keep away from incompatibles.
Storage Temperature: Ideal storage temperature is 20-40°C. Do not expose sealed containers to temperatures above 40°C (104°F).

SECTION 8 - EXPOSURE CONTROLS / PERSONAL PROTECTION

PREVENTIVE MEASURES:
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.
Engineering Controls: General ventilation is recommended. Full handling precautions should be taken at all times. Where suitable engineering controls are not in place or are inadequate, wear suitable respiratory equipment.
PERSONAL PROTECTIVE EQUIPMENT:
Eye Protection: Use chemical safety goggles when there is potential for eye contact.
Skin Protection: Rubber gloves and protective clothing made from cotton should be impervious under normal conditions of use. User should verify impermeability under normal conditions of use prior to general use.

Respiratory Protection: A NIOSH/MSHA-approved respirator, if required.
EXPOSURE GUIDELINES FOR HAZARDOUS INGREDIENTS:
PRODUCT:
None established for product.
EXPOSURE GUIDELINES FOR HAZARDOUS INGREDIENTS:
Ammonium Nitrate:
Orica Guideline 5 mg/m3 internal TWA
Kerosene:
NIOSH TLV 100 mg/m3 (TWA)

SECTION 9 - PHYSICAL AND CHEMICAL PROPERTIES

Chemical Name: Not applicable.
Chemical Family: Not applicable.
Molecular Formula: Not available.
Appearance: Off-white granules/prills.
Odour: Faint petroleum odour.
Odour Threshold (ppm): 1 (Kerosene)
pH: (Neutral)
Vapour Pressure (mm Hg at 20°C): 0.4 for Diesel fuel. 0.07 (Kerosene)
Vapour Density (Air=1): Not available.
Boiling Point: 176 - 370°C (348.8 - 698°F)
Melting Point: 170°C (338°F)
Solubility (Water): (Completely soluble)
Solubility (Other): Not available.
Specific Gravity: 0.8 - 1.0
Evaporation Rate: Not available.
% Volatile by Volume: 5 %
% Volatile Organic Compounds: 5 %
Bulk density (g/cm3): 0.80 - 1.00

SECTION 10 - STABILITY AND REACTIVITY

Hazardous Decomposition Products: Thermal decomposition products are toxic and may include hydrocarbons, oxides of carbon and nitrogen. Toxic gases and vapours (oxides of nitrogen) will be released by thermal decomposition (about 210°C).
At higher temperatures, decomposition may be explosive, especially if confined. Potassium oxide.
Chemical Stability: Stable at room temperature.
Conditions to Avoid: Keep away from heat, impact, and friction.
Incompatibility with other Substances: Strong oxidizing and reducing agents. Avoid oxidizable materials, metal powder, bronze & other copper alloys, fuels (e.g. lubricants, machine oils), fluorocarbon lubricants, acids, corrosive liquids, chlorates, sulphur, sodium nitrite, charcoal, coke and other finely divided combustibles. Chlorine trifluoride.
Hazardous Polymerization: Will not occur.

SECTION 11 - TOXICOLOGICAL INFORMATION

Summary: May cause irritation. May cause central nervous system (CNS) depression. May cause methemoglobinemia.
TOXICOLOGICAL DATA:
PRODUCT:
None established for product.
INGREDIENTS:
Ammonium Nitrate:
Oral LD50 (rat) = 2217 mg/kg
Dermal LD50 (rabbit) = 3000 mg/kg
Potassium Carbonate:
Oral LD50 (rat) 1870 mg/kg
Kerosene:
LD50 (oral, rat) = 5000 mg/kg
LC50 (inhalation, rat) = 5000 mg/m3/4H

POTENTIAL HEALTH EFFECTS:
Inhalation: Inhalation is not a likely route of exposure at normally encountered temperatures and is thus not applicable.
Combustion products may be irritating.
Skin Contact: May cause skin irritation. Repeated and/or prolonged contact may cause dermatitis.
Eye Contact: Moderate irritant causing moderate initial pain.
Ingestion: Highly unlikely under normal industrial use. Ingestion may cause irritation of the gastrointestinal tract.
Subchronic Effects: Ingestion may cause methemoglobinemia. Initial manifestation of methemoglobinemia is cyanosis, characterized by navy blue lips, tongue and mucous membranes, with skin colour 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. CNS depression is characterized by headache, dizziness, drowsiness, nausea, vomiting and incoordination. Severe overexposures may lead to coma and possible death due to respiratory failure.
Chronic Effects: None known.
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 NTP (National Toxicology Program).
Mutagenicity: There is no evidence of mutagenic potential.
Reproductive Effects: No information is available and no adverse reproductive effects are anticipated.
Teratogenicity and Fetotoxicity: No information is available and no adverse teratogenic/embryotoxic effects are anticipated.
Synergistic Materials: None known.

SECTION 12 - ECOLOGICAL INFORMATION

Ecotoxicological Information: 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 and Degradation: Water-insoluble and remains explosive. With extended time periods, some ingredients will solubilize.

SECTION 13 - DISPOSAL CONSIDERATIONS

Burn under supervision of an expert at an approved explosive burning ground or destroy, by detonation in boreholes, in accordance with applicable local, provincial and federal regulations. Call upon the services of an Orica Technical Representative.

SECTION 14 - TRANSPORT INFORMATION

TDG Name: Explosive, Blasting, Type B
TDG Class/Division: 1.5D
Product Identification Number (PIN): UN0331
Transportation Emergency Telephone Number: 1-877-561-3636.
DOT Class: Not Regulated.

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 (Material Safety Data Sheet) contains all the information required by the CPR.
Controlled Products Regulations (WHMIS) Classification: This product is an explosive and is not regulated by WHMIS.
CEPA / Canadian Domestic Substances List (DSL): The substance(s) in this product is/are on the Canadian Domestic Substances List (CEPA DSL).
IARC Classification: None of the components of this product are listed on IARC.
USA CLASSIFICATION:
OSHA Classification:
Physical: Explosive. Oxidizer.

Health: Irritant.
Target Organ: Eye. Skin. Respiratory tract. Central nervous system. Gastrointestinal tract. Blood/hematopoietic system.
SARA Regulations Sections 313 and 40 CFR 372: This product contains the following toxic chemical(s) subject to reporting requirements: 84% Ammonium Nitrate (6484-52-2)
Ozone Protection and 40 CFR 42: This product does not contain nor is it manufactured with ozone depleting substances.
Other Regulations/Legislation which apply to this product: Florida, New Jersey Special Health Hazard Substance List, New Jersey RTK Environmental Hazardous Substance, Rhode Island Hazardous Substance List, Massachusetts Right-to- Know, Pennsylvania Right-to-Know, New Jersey Right-to-Know.

SECTION 16 - OTHER INFORMATION

MATS Index: 60962
Label Text: Danger! Explosive! Strong Oxidizer! May be harmful if ingested. Avoid contact with skin and eyes.
REFERENCES:
RTECS-Registry of Toxic Effects of Chemical Substances, CCINFOdisc, Canadian Centre for Occupational Health and Safety,
National Institute for Occupational Safety and Health, U.S. Dept. of Health & Human Services, Cincinnati, 1998.
Supplier's Material Safety Data Sheets.
"CHEMINFO", through "CCINFOdisc", Canadian Centre for Occupational Health and Safety, Hamilton, Ontario, Canada.
Sax, N. Irving, Dangerous Properties of Industrial Materials, 7th ed., Van Nostrand Reinhold Co., New York, 1989.

Prepared by: Safety, Health and Environment (303) 268-5000
The information contained herein is offered only as a 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.

ORICA

Material Safety Data Sheet

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33101 E. Quincy Avenue
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EMERGENCY CONTACTS
FOR EMERGENCIES INVOLVING CHEMICAL SPILL OR RELEASE:
IN CANADA 1-877-561-3636 OR IN USA CHEMTREC AT 1-800-424-9300.

SECTION 1 - CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

Product Name: AMEX, AMEX HD, ANFO **MATS Index:** 59531
MSDS Number: 20100 **Date Issued:** 06/16/04
Alternate Name(s): Ammonium Nitrate Fuel Oil.

Product Use: A booster-sensitive blasting agent.

SECTION 2 - COMPOSITION / INFORMATION ON INGREDIENTS

HAZARDOUS INGREDIENT(S)	% (w/w)	ACGIH TWA	CAS NO.
Ammonium Nitrate	90-95	Not Listed.	6484-52-2
Diesel Fuel Oil No. 2	5-10	Not Listed.	68476-34-6

SECTION 3 - HAZARD IDENTIFICATION

Emergency Overview: Risk of explosion when burning. Irritating to eyes. May cause methemoglobinemia. May cause central nervous system (CNS) depression. Read the entire MSDS for a more thorough evaluation of the hazards.

SECTION 4 - FIRST AID MEASURES

General: If you feel unwell seek medical advice (show the label where possible).
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. Oxygen administration may be beneficial in this situation but should only be administered by personnel trained in its use. Obtain medical attention IMMEDIATELY.
Skin Contact: Wash affected areas thoroughly with soap and water. If irritation, redness, or a burning sensation develops and persists, obtain medical advice.
Eye Contact: Immediately flush eyes with running water for a minimum of 20 minutes. Hold eyelids open during flushing. If irritation persists, repeat flushing and obtain medical advice.
Ingestion: If victim is alert and not convulsing, rinse mouth out and give 200-300 mL (1 cup) of water to dilute material. 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. Obtain medical attention IMMEDIATELY.

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

SECTION 5 - FIRE-FIGHTING MEASURES

Flash Point: 52oC (125.6oF) (Diesel Fuel Oil No. 2)
Flammable Limits (Lower): Not applicable.
Flammable Limits (Upper): 4.7% (Diesel Fuel Oil No. 2)
Auto Ignition Temperature: 230-265oC (446-509oF)
Decomposition Temperature: Ammonium nitrate will spontaneously decompose at approximately 210oC (410oF)
Rate of Burning: Does not sustain burning at atmospheric pressure.
Explosive Power: 350 - 400 kJ/100 g.
Sensitivity to Mechanical Impact: 250 cm (USBM Report 7840). Not sensitive.
Sensitivity to Static Discharge: Not sensitive.
Hazardous Reactions: See 'Fire and Explosion Hazards'.
Fire and Explosion Hazards: Explodes on overheating when contained and, thus, fires involving large quantities of the material should not be fought. This product is an explosive with a mass detonation hazard. This product is classified as a flammable solid and may detonate under fire conditions.
Extinguishing Media: Water may be used on small fire. Do not attempt to fight large fires.
Fire Fighting Procedures: DO NOT FIGHT FIRES INVOLVING BLASTING AGENTS OR EXPLOSIVE MATERIALS. Immediately evacuate all personnel from the area.
Fire Fighting Protective Equipment: Use self-contained breathing apparatus and special protective clothing.
NOTE: Also see "Section 10 - Stability and Reactivity".

SECTION 6 - ACCIDENTAL RELEASE MEASURES

Spills, Leaks, or Releases: Collect product for re-use or disposal. For release to land, contain storm water runoff by dyking with earth or other barrier, for release to water, utilize damming, and/or water diversion to minimize the spread of contamination. Collect contaminated soil and water for disposal. Notify applicable government authority if release is reportable or could adversely affect the environment.
Deactivating Chemicals: None known.

SECTION 7 - HANDLING AND STORAGE

Handling: This product is an explosive and should only be used under the supervision of trained personnel. Locate safety shower and eyewash station close to chemical handling area. Use normal good industrial hygiene and housekeeping practices.
Storage Requirements: Store under moderate temperatures recommended by technical service representative. Store under dry conditions in a well ventilated

magazine that has been approved for either blasting agent storage or explosive storage.
Do NOT store explosives in a detonator magazine or detonators in an explosive magazine. Keep away from heat, sparks and flames. Keep containers closed. Blasting agents should be kept well away from initiating explosives; protected from physical damage; separated from oxidizing materials, combustibles, and sources of heat. Keep away from incompatibles.
Storage Temperature: Ideal storage temperature is 10-27oC (50-80.6oF).

SECTION 8 - EXPOSURE CONTROLS / PERSONAL PROTECTION

PREVENTIVE MEASURES:
Recommendations listed in this section indicate the type of equipment that will provide protection against overexposure 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.
Engineering Controls: Full handling precautions should be taken at all times. General ventilation is recommended. Provide adequate ventilation where operational procedures demand it.
PERSONAL PROTECTIVE EQUIPMENT:
Eye Protection: Use chemical safety goggles when there is potential for eye contact.
Skin Protection: Gloves and protective clothing made from rubber should be impervious under conditions of use. User should verify impermeability under normal conditions of use prior to general use.
Respiratory Protection: A NIOSH/MSHA-approved respirator, if required.
EXPOSURE GUIDELINES:
PRODUCT:
None established for product.
HAZARDOUS INGREDIENT(S):
Ammonium Nitrate:
Internal Guideline 5 mg/m3 (internal TWA)

SECTION 9 - PHYSICAL AND CHEMICAL PROPERTIES

Chemical Name: Not applicable.
Chemical Family: Explosive.
Molecular Formula: Not applicable.
Appearance: Off-white prills.
Odour: Smell of fuel oil.
pH: Not available.
Vapour Pressure (mm Hg at 20°C/68°F): 0.4 (Diesel Fuel Oil No. 2)
Vapour Density (Air=1): Not available.
Boiling Point: 176oC (Diesel Fuel Oil No. 2) to 370oC (Diesel Fuel Oil No. 2) (348.8 to 698oF)
Melting Point: 170oC (338oF)
Solubility (Water): Will dissolve slowly with prolonged exposure to water.
Solubility (Other): Not available.

Specific Gravity: (Similar to water).
Evaporation Rate: Not available.
Additional Properties: Bulk density: 0.8 - 0.88 (poured); 0.92 - 1.10 (pneum. loaded).

SECTION 10 - STABILITY AND REACTIVITY

Hazardous Decomposition Products: Thermal decomposition products are toxic and may include hydrocarbons, oxides of carbon and nitrogen. Toxic gases and vapours (oxides of nitrogen) will be released by thermal decomposition (about 210oC). At higher temperatures, decomposition may be explosive, especially if confined.
Chemical Stability: Stable at room temperature.
Conditions to Avoid: Keep away from heat, impact, and friction. High temperatures, sparks, open flames and all other sources of ignition.
Incompatibility with other Substances: Avoid oxidizable materials, metal powder, bronze & other copper alloys, fuels (e.g. lubricants, machine oils), fluorocarbon lubricants, acids, corrosive liquids, chlorates, sulphur, charcoal, coke and other finely divided combustibles. Reducing agents.
Hazardous Polymerization: Will not occur.

SECTION 11 - TOXICOLOGICAL INFORMATION

Summary: May cause irritation. May cause central nervous system (CNS) depression. May cause methemoglobinemia.
TOXICOLOGICAL DATA:
PRODUCT:
None established for product.
INGREDIENTS:
Ammonium Nitrate:
Oral LD50 (rat) = 2217 mg/kg
Dermal LD50 (rabbit) = 3000 mg/kg
Diesel Fuel Oil No. 2:
LD50 (oral, rat) = >5 g/kg
LD50 (dermal, rabbit) = >5 g/kg
POTENTIAL HEALTH EFFECTS:
Inhalation: Inhalation is not a likely route of exposure at normally encountered temperatures and is thus not applicable.
Skin Contact: May cause skin irritation. Repeated and/or prolonged contact may cause dermatitis.
Eye Contact: Moderate irritant causing moderate initial pain.
Ingestion: Highly unlikely under normal industrial use. Ingestion may cause irritation of the gastrointestinal tract.
Subchronic Effects: Ingestion may cause methemoglobinemia. initial manifestation of methemoglobinemia is cyanosis, characterized by navy blue lips, tongue and mucous membranes, with skin colour 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. CNS depression is characterized by headache, dizziness, drowsiness, nausea, vomiting and incoordination. Severe overexposures may lead to coma and possible death due to respiratory failure.
Chronic Effects: None known.
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 NTP (National Toxicology Program).
Mutagenicity: There is no evidence of mutagenic potential.
Reproductive Effects: No information is available and no adverse reproductive effects are anticipated.
Teratogenicity and Fetotoxicity: No information is available and no adverse teratogenic/embryotoxic effects are anticipated.
Synergistic Materials: None known.

SECTION 12 - ECOLOGICAL INFORMATION

Ecotoxicological Information: 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.

SECTION 13 - DISPOSAL CONSIDERATIONS

Burn under supervision of an expert at an approved explosive burning ground or destroy, by detonation in boreholes, in accordance with applicable local, state or provincial, and federal regulations. Call upon the services of an Orica Technical Representative if needed.

SECTION 14 - TRANSPORT INFORMATION

TDG Name: Explosive, Blasting, Type B
TDG Class/Division: 1.5D
Product Identification Number (PIN): UN0331
Packing Group: II
Transportation Emergency Telephone Number: 1-877-561-3636.
DOT Class: Explosive, Blasting, Type B

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 (Material Safety Data Sheet) contains all the information required by the CPR.
Controlled Products Regulations (WHMIS) Classification: This product is an explosive and is not regulated by WHMIS.

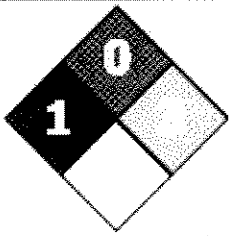
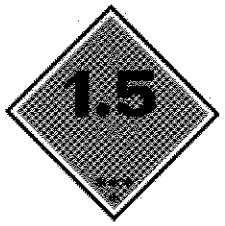
CEPA / Canadian Domestic Substances List (DSL): The substance(s) in this product is/are on the Canadian Domestic Substances List (CEPA DSL).
IARC Classification: None of the components of this product are listed on IARC.
USA CLASSIFICATION:
Physical: Explosive. Oxidizer.
Health: Irritant.
Target Organ: Eye. Skin. Respiratory tract. Central nervous system. Blood/hematopoietic system.
SARA Regulations Sections 313 and 40 CFR 372: This product contains the following toxic chemical(s) subject to reporting requirements: 94% Ammonium Nitrate (6484-52-2).
Ozone Protection and 40 CFR 42: This product does not contain nor is it manufactured with ozone depleting substances.
Other Regulations/Legislation that apply to this product: Massachusetts Right-to-Know, Pennsylvania Right-to-Know, New Jersey Right-to-Know.

SECTION 16 - OTHER INFORMATION

MATS Index: 59531
Label Text: Danger! Explosive! Strong Oxidizer! May be harmful if ingested. Avoid contact with skin and eyes.
REFERENCES:
RTECS-Registry of Toxic Effects of Chemical Substances, CCINFOdisc, Canadian Centre for Occupational Health and Safety RTECS database, National Institute for Occupational Safety and Health, U.S. Dept. of Health and Human Services, Cincinnati, 1998.
Supplier's Material Safety Data Sheets.
"CHEMINFO", through "CCINFOdisc" Canadian Centre for Occupational Health and Safety, Hamilton, Ontario, Canada
Sax, N. Irving, Dangerous Properties of Industrial Materials, 7th ed., Van Nostrand Reinhold Co., New York, 1989.

Prepared by: Safety, Health and Environment (303) 268-5000.
The information contained herein is offered only as a 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 that may result from the use of or reliance on any information contained herein.

Material Safety Data Sheet

NFPA	Personal protective equipment	Transport Symbol
		

Preparation Date 03-23-2006 **Revision Date** *23-Mar-2006* **Revision Number** *1*

1. PRODUCT AND COMPANY IDENTIFICATION

Product name Amex WR
Product code 20076
MATS Index 30392
Supplier Orica USA Inc.
33101 E. Quincy Avenue
Watkins, CO 80137
For MSDS Requests: 303-268-5000

Chemical Name Amex WR
Synonyms No information available.

Recommended use Water resistant blasting agent. Used in surface and underground operations.

Contact manufacturer Orica Canada Inc.
Maple Street
Brownsburg, PQ
For MSDS Requests: 450-533-4201

Emergency telephone number FOR CHEMICAL EMERGENCIES (24 HOUR) INVOLVING TRANSPORTATION, SPILL, LEAK, RELEASE, FIRE OR ACCIDENTS:
IN CANADA CALL THE ORICA CANADA TRANSPORTATION EMERGENCY RESPONSE SYSTEM AT 1-877-561-3636
IN THE U.S. CALL CHEMTREC (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.

2. HAZARDS IDENTIFICATION

Emergency Overview

Risk of explosion by shock, fire or other sources of ignition
May cause skin irritation and/or dermatitis
Irritating to eyes
Harmful if swallowed
Oxidizing agent

Physical state Solid **Odor** Aromatic. Diesel oil.

Potential health effects

Principle Routes of Exposure Eye contact, Skin contact, Ingestion.

Acute effects

Eyes Moderately irritating to the eyes.

Skin Substance may cause slight skin irritation

Inhalation May cause irritation of respiratory tract. Inhalation of high vapour concentrations can cause CNS-depression and narcosis.

Ingestion Ingestion may cause gastrointestinal irritation, nausea, vomiting and diarrhoea. Harmful if swallowed. May cause methemoglobinemia.

Chronic effects May cause methemoglobinemia.

See Section 11 for additional Toxicological information.

Aggravated Medical Conditions No information available

Interactions with other chemicals No information available

Potential environmental effects Harmful to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

3. COMPOSITION/INFORMATION ON INGREDIENTS

Hazardous components

Chemical Name	CAS-No	Weight %
Kerosene	8008-20-6	1 - 5
Guar Gum	9000-30-0	1 - 5
Ammonium Nitrate	6484-52-2	90 - 95

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 not breathing AND no pulse. Obtain medical advice IMMEDIATELY.

Ingestion Immediate medical attention is required. Do not 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 an unconscious person.

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

5. FIRE-FIGHTING MEASURES

Flammable properties Not itself combustible but assists fire in burning materials. The product does not flash. Rate of Burning: Does not sustain burning at atmospheric pressure. Explosive Power: ASV 325 - 375 kJ/100g.

Suitable extinguishing media Use extinguishing measures that are appropriate to local circumstances and the surrounding environment

Unsuitable extinguishing media Attempts to smother a fire involving this product will be ineffective as it is its own oxygen source. Smothering this product could lead to decomposition and explosion. This product is more sensitive to detonation if contaminated with organic or oxidizable 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
Explodes on overheating when contained and, thus, fires involving large quantities of the material should not be fought. DO NOT FIGHT FIRES INVOLVING EXPLOSIVE MATERIALS. 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

NFPA **Health** 1 **Flammability** 0 **Instability** 3

6. ACCIDENTAL RELEASE MEASURES

Personal precautions Evacuate personnel to safe areas. Use personal protective equipment. Avoid contact with skin, eyes and clothing. Ensure adequate ventilation. Remove all sources of ignition.

Environmental precautions Do not flush into surface water or sanitary sewer system. Prevent product from entering drains.

Methods for containment Avoid dust formation. Do not breathe dust.

Methods for clean-up Avoid the use of metal tools containing iron and/or copper. Be careful to avoid shock, friction, and contact with grit. Collect product for recovery or 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.

7. HANDLING AND STORAGE

Handling

This product is an explosive and should only be used under the supervision of trained personnel. The use of coveralls is recommended. Use normal good industrial hygiene and housekeeping practices. Keep away from open flames, hot surfaces and sources of ignition.

Storage

Store under moderate temperatures recommended by a technical services representative. Store under dry conditions in a well ventilated magazine that has been approved for either detonator storage or explosive storage.

Do NOT store explosives in a detonator magazine or detonators in an explosive magazine. Keep away from heat, sparks and flames. Keep containers closed. Explosives should be kept well away from initiating explosives; protected from physical damage; separated from oxidizing materials, combustibles, and sources of heat. Keep away from incompatibles. Ideal storage temperature is 10-27°C (50-80.6°F). Do not expose sealed containers to remperatures above 40°C (104°F).

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Exposure guidelines

Other exposure guidelines Ammonium Nitrate: ORICA Guideline 5 mg/cu m (internal TWA)
Engineering controls Ensure adequate ventilation, especially in confined areas

Personal protective equipment

Eye/face protection Tightly fitting safety goggles
Skin protection User should verify impermeability under normal conditiions of use prior to general use. Impervious butyl rubber gloves.
Respiratory protection In case of insufficient ventilation wear suitable respiratory equipment. A NIOSH-approved respirator, if required.

General hygiene considerations

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..

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance	Silver. prills.
Odor	Aromatic, Diesel oil.
Odor threshold	(No.1 Fuel Oil): 1 ppm.
Physical state	Solid.
pH	~5
Flash point	(Diesel fuel) 126°F / 52°C
Autoignition temperature	230-265°C
Boiling point/range (°F) VALUE	410
Boiling point/range (°C) VALUE	210 (Ammonium nitrate)
Melting point/range	(Ammonium nitrate) 329 - 332.6°F 165 - 167°C
Flammability Limits in Air	**Upper** 7% **Lower** 1%
Explosive properties	Risk of explosion
Oxidizing properties	Oxidizer
Evaporation Rate	No data available
Vapor pressure	0.01 mmHg
Vapor density	No data available
Specific Gravity	0.84 - 0.99
Solubility	Slightly soluble in standard organic solvents
Water solubility	slightly soluble
Partition coefficient (n-octanol/water)	No data available.
Viscosity	No information available.
Oxidizing properties	Oxidizer

10. STABILITY AND REACTIVITY

Chemical 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.
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.
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 oxides. Hydrocarbons.
Possibility of hazardous reactions	None under normal processing. Hazardous polymerisation does not occur. Explosive material under shock conditions.

11. TOXICOLOGICAL INFORMATION

Acute toxicity

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

Component Information

Chemical Name	LD50 Oral	LD50 Dermal	LC50 Inhalation
Kerosene	5000 mg/kg (Rat)		5000 mg/cu m (4h)
Guar Gum	6770 - 7060 mg/kg		
Ammonium Nitrate	2217 mg/kg (rat)	3000 mg/kg (rabbit)	

Chronic toxicity

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).

Chemical Name	ACGIH	IARC	NTP	OSHA
Kerosene	A3			

Subchronic toxicity Ammonium nitrate: Ingestion may cause methemoglobinemia. Initial manifestation of methemoglobinemia is cyanosis, characterized by navy lips, tongue and mucous membranes, with skin colour 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

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

Corrosivity Not applicable.

Sensitization May cause sensitization of susceptible persons.

Neurological effects No information available

Mutagenic effects Did not show mutagenic effects in animal experiments.

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

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

Target Organ effects Eyes, Skin, Respiratory system, Blood, Central nervous system (CNS).

12. ECOLOGICAL INFORMATION

Ecotoxicity

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	Water-insoluble and remains explosive. With extended time periods, some ingredients will solubilize. Over extended time periods, some ingredients will be leached out if package integrity is lost.
Bioaccumulation/ Accumulation	No information available
Mobility in Environmental Media	Dissolves slowly in water.

13. DISPOSAL CONSIDERATIONS

Waste Disposal Method	Burn under supervision of an expert at an explosive burning ground or destroy, by detonation in boreholes, in accordance with applicable local, provincial and federal regulations. Call upon the Services of an Orica Technical Representative
Contaminated packaging	Empty containers should be taken for local recycling, recovery or waste disposal
US EPA Waste Number	No data available

14. TRANSPORT INFORMATION

DOT

Proper shipping name	Explosive, Blasting, Type E
Hazard Class	1.5D
UN-No	UN0331
Packing group	II

TDG

Proper shipping name	Explosive, Blasting, Type E
Hazard Class	1.5D
UN-No	UN0331
Packing group	II

15. REGULATORY INFORMATION

International Inventories

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

TSCA	Complies
DSL	Complies
NDSL	Complies
EINECS	Complies
ELINCS	Does not Comply
ENCS	Does not Comply
CHINA	Does not Comply
KECL	Complies
PICCS	Complies
AICS	Complies

USA

Federal Regulations

SARA 313
Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 (SARA). This product contains a chemical or chemicals which are subject to the reporting requirements of the Act and and Title 40n of the Code of Federal Regulations, Part 372:

Ammonium Nitrate (CAS #: 6484-52-2)

SARA 311/312 Hazardous Categorization

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

Clean Air Act, Section 112 Hazardous Air Pollutants (HAPs) (see 40 CFR 61)
None

State Regulations

California Proposition 65
This product contains the following Proposition 65 chemicals: None

State Right-to-Know

Chemical Name	Massachusetts	New Jersey	Pennsylvania	Illinois	Rhode Island
Kerosene	X	X	X		X

Legend:
X - Listed

Canada

WHMIS hazard class
This product is an explosive and is not regulated by WHMIS.

16. OTHER INFORMATION

Prepared By

Product Stewardship
23 British American Blvd.
Latham, NY 12110
1-800-572-6501

Revision Date

23-Mar-2006

Revision summary

No information available

Other information

REFERENCES:
RTECS-Registry of Toxic Effects of Chemical Substances, CCINFOdisc, Canadian Centre for Occupational Health and Safety, National Institute for Occupational Safety and Health, U.S. Dept. of Health & Human Services, Cincinnati, 1998.

Clayton, G.D. and Clayton, F.E., Eds., Patty's Industrial Hygiene and Toxicology, 3rd ed., Vol. IIA, B, C, John Wiley and Sons, New York, 1981.

Supplier's Material Safety Data Sheets.

CHEMINFO, HSDB, & NIOSH through "CCINFOdisc", Canadian Centre for Occupational Health and Safety, Hamilton, Ontario, Canada, 1998.

"CHEMINFO", "CHRIS", "TDG", "DOT", through "CCINFOdisc", Occupational Health and Safety, Hamilton, Ontario, Canada.

Documenation of the Threshold Limit Values and Biological Exposure Indices, 5th ed., American Conference of Governmental Industrial Hygienists Inc., Cincinnati, 1986.

Threshold Limit Values and Biological Exposure Indices for 1997, American Conference of Governmental Industrial Hygienists, Cincinnati, 1997.

Windholz, Martha, Ed., The Merck Index, 11th ed., Merck and Co., Inc., Rahway, New Jersey, 1989

Disclaimer

The information provided on this MSDS is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guide for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered as a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other material or in any process, unless specified in the text.

End of MSDS