Explosives Management Plan

North Country Gold Corp.

December 2012

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1 Introduction

1.1 Project Description

North Country Gold Corp (NCG) has been conducting mineral exploration in the Committee Bay area since 1992. The lands in the exploration area are Federal and Kitikmeot region Inuit Owned Lands (IOL). Land use for the exploration activities has been authorized by the Kitikmeot Inuit Association (KIA), Indian and Northern Affairs Canada (INAC) and the Nunavut Water Board (NWB). NCG operates 4 camps and a number of drill sites in the Committee Bay area (**Table 1**). Hayes camp is the main camp in the area and is supported by a natural esker airstrip and a prepared winter icestrip on Sandspit Lake located next to the camp. Bullion, Ingot and Crater camps are smaller camps used as bases for seasonal exploration in various parts of the area. Drill sites are located in geologically favorable various parts of the area where small amounts of drill equipment and/or fuel may be temporarily stored for future use (small remote fuel caches).

Table 1 – North Country Gold Corp camp and cache locations.

CAMPS	Easting or Latitude	Northing or Longitude
Hayes Camp		
UTM (Nad83 z15)	564613	7394173
Lat/Long	66°39'30"	91°32'11"
Bullion Camp		
UTM (Nad83 z15)	494850	7363850
Lat/Long	66°23'39"	93°06'55"
Ingot Camp		
UTM (Nad83 z15)	516500	7386100
Lat/Long	66°35'40"	92°37'34"
Crater Camp		
UTM (Nad83 z15)	677781	7478788
Lat/Long	67°22'19"	88°51'24"
Three Bluffs Drilling		
UTM (Nad83 z15)	569153	7392660
Lat/Long	66°38'42"	91°26'12"
Ibex Cache		
UTM (Nad83 z15)	493060	7342810
Lat/Long	66°12'19"	93°9'14"
West Plains Cache		
UTM (Nad83 z15)	479650	7334330
Lat/Long	66°7'43"	93°27'2"

NCG has begun making enhancements to the Hayes camp and the airstrip that supports this camp. The enhancements will allow for additional people to be

accommodated, improvements to the airstrip will allow larger aircraft to land and improve safety for flights landing and will enable NCG to house equipment necessary to move into advanced exploration.

1.2 Explosives Project Description

In supporting the overall Hayes Camp infrastructure improvements, the use of explosives will be required to provide rock for covering the upgraded airstrip and building the new proposed road. The use of pre-packaged, ammonium nitrate based explosives is being proposed based on the expected site conditions. The purpose of this Explosives Management Plan is to outline the systems, procedures and best practices to minimize environmental impacts, and ensure the safety and security during the period where blasting operations will be conducted.

General infrastructure to support the project includes:

- Storage for pre-packaged explosives

- Explosive Materials Storage e.g. detonators etc.

For operations, explosives will be contracted to a licensed contractor who will have a detailed operations manual for the transportation, storage and handling of explosives.

1.3 General Operating Considerations

Based on the remote nature of the site, ensuring adequate on-site support and response to any potential environmental considerations is critical. All essential equipment required to support spill containment and recovery will be located at Hayes Camp and will be operated by the NCG site staff.

1.4 Management Plan - General

This plan will outline the actions that will be taken to address any environmental and safety issues relating to the use of explosives. The control and use of explosives within Canada and the Territorial area are covered by existing federal and territorial regulations. The blasting contractor (e.g. Orica Canada Inc.) will put into place operational manual and procedures which meet or exceed the required regulations. The main applicable regulations in the case of the Committee Bay Project include (but are not limited to):

- The Canada Explosives Act

- Transportation of Dangerous Goods Act

- Occupational Health & Safety, Nunavut - Explosives Use Act

- Northwest Territories / Nunavut Mine Health and Safety Act and Regulations

NCG will maintain a detailed documentation for the safe handling, transport, and use of explosives. As a precondition of receipt of federal licensing for the storage, use, and transportation of explosives there is the requirement to have in place a detailed site

specific Emergency Response Plan (ERP). NCG will utilize the CAN/CSA Z731-95 Standard for "Emergency Preparedness and Response" as the guiding document for the preparation of site specific ERP's. A detailed ERP, prepared in accordance with the guidance provided in this standard will be prepared during development of the project. It will be integrated with the site ERP to maximize resource utilization, training and planning efforts.

1.5 Explosive Operations - General

This document details procedures at Hayes Camp site for the transportation, storage, handling of explosives. The recommended products are currently listed as approved products federally. They are industry proven for use in northern climates and are accepted globally.

NCG will utilise up to 10000kg of pre-packaged commercial explosives to support the operations at the Hayes Camp site annually. This will include detonators, boosters, pre-packaged commercial explosives for specialty operations and detonating cord. All of these materials will be transported and stored in accordance with the regulations identified above. Magazine storage sites will be included in the overall federally issued explosives license.

2 Explosives Management

2.1 Overview

NCG has strict handling policies with regards to the safe handling, transportation, manufacture and storage of explosives. Through this documentation and established procedures, sites will be established to ensure adherence to all relevant regulations and safety.

2.2 Hayes Camp Site - Storage

Pre-packaged explosives will be stored in an explosives magazine storage area (see Appendix A). 2 Magazines will be of an appropriate type (refer to the document "Explosives Storage Standards - 2001 published by the NR Can Explosives Regulatory Division for specific means of construction). One magazine will be used to store the packaged explosives, and one to store the detonators. It is forecasted that up to 8,000 kilograms of pre-packaged product will be required to support the initial activities to finish the all-weather airstrip during the 2012 season. The magazines will be located 280m from camp and 50m apart and the magazine storage site will be established respecting the requirements outlined in the NR Can ERD issued Quantity Distance. Based on the climatic conditions, it is highly likely that at least one magazine in each set-up will require internal heating to ensure product performance. The magazines will be locked at all times and the blast controller and camp managers will maintain keys to the magazines.

Hazard warning signs will be posted around the magazines and storage area indicating that only authorised personnel may enter the area, as well as no smoking signs and no fuel transfer within 100m of the storage area.

Any detonating cord or boosters, since they contain small amount of explosives, their explosive potential must always be borne in mind. They will always be stored in the blasting explosives magazine (never with the detontators) and kept in closed cases. Cut ends of detonating cords should be sealed with masking or other suitable tape to prevent loss of explosives.

Only materials and equipment that do not increase the risk of fire or explosion and that are needed for handling explosives in the magazine may be brought into the magazine.

Fuse lighters, igniter cord, and igniter cord connectors are explosives, but present more of a fire hazard than an explosion risk. For this reason, these items must not be stored with either the blasting explosives, or the detonators, but rather in a separate, dry and secure location.

The magazines should be grounded to reduce the possibility of being struck by lightning. In addition, use of portable electrical devices, (cell phones, GPS's) will be strictly prohibited in the explosive storage area.

Fire is a hazard that must always be borne in mind with considering explosive storage. To guard against fire risk, the surrounding area must be kept clear of debris and all combustible materials for a distance of at least 8 m.

The explosive storage area will be located more than 30m from the nearest high water mark of any stream or water body.

Regular follow-up by magazine operators must be made to ensure: observance of the "No Smoking" rule, magazine is exclusively for the storage of the explosives, magazine is kept clean and orderly and dust free, proper staking of explosives below staking line, and packaging of explosives properly identified with owners identification.

Cases of prepackaged explosives should be removed from the magazine before opening then properly closed before returning to the magazine.

Empty cases or other combustible material must not be allowed to accumulate inside or in proximity to the magazine. All empty explosives packages and packing material must be carefully collected and destroyed as they constitute a potential explosive and fire hazard.

On the interior wall of the magazine, a 'stacking line' must be painted or otherwise permanently marked with a red line at least 10mm wide and a distance of at least 15 cm below the height of the bullet-resistant material. Cases should never be piled too high or above the staking line.

Attention must always be paid to the turnover of the stock. The older stock must be used first since most explosives deteriorate over time. Care must be taken not to leave old stock at the back when new stock is brought into the magazine.

The presence of corrosion on the metal shells of detonators indicates that deterioration may be advanced and the detonators should be destroyed with care. Damaged detonators should not be used. In addition, pre-packaged explosives should be inspected regularly for deterioration. Damaged explosive packages should not be used.

Instructions sheets for blasting explosives and initiation systems must be posted inside each magazine and reviewed frequently by the magazine keeper.

2.2.1 Inventories

Careful inventory must be kept of all receipts of blasting explosives and initiation systems to the magazine and for every issue from it. Care must be taken that the stocks do not exceed the licence limits for the magazine. See Appendix B for the NCG control sheets.

A magazine keeper who issues the shot firers, blasters etc must keep a record of the amount of blasting explosives and detonators used. “Returns” must also be carefully recorded. Every precaution must be taken to ensure that no explosives have been “mislaid” or lost. A signature must be obtained for every issue or return of explosives.

A record must be kept of every explosive that us put into and taken out of storage. The record must be retained of at least three years after the date the explosive is taken out of storage. All stock must be counted at least monthly and results from stock counts must be recorded in the inventory book. Unresolved discrepancies must be reported to police and the Explosives Regulatory Division.

Records must be kept in a secure location to preclude loss of records in the event of a theft.

Every package or case of blasting explosives or detonators must be properly and permanently marked to indicate ownership, and magazine licence number.

No explosives will be stored at the camp storage site when camp is not active and in operation.

2.3 On-Site Handling/Transport

All on-site transportation will be done in accordance with Section 14 of the Mines Act and Regulations as well as with the Transportation of Dangerous Goods Act. Non-process vehicles (i.e. Forklifts, on-site vehicles etc.) will be maintained in sound mechanical condition and equipped with safety equipment as required under mine site policy / regulations.

All vehicles used to transport explosives must be:

Equipped with two fire extinguishers readily available

Electrical wiring us insulted and firmly secured

Fuel tanks and lines have no leaks

Chassis and engine are clean and free from excess oil and grease

Brakes and steering in good condition

Tires not worn

No vehicles will travel with more than 2000kg of explosive sat any one time without an Explosives Vehicle Certificate

The portion of the vehicle containing explosives must be kept free of grit, combustible or abrasive materials, matches, and any spark producing device.

Detonators must be kept separate from the other explosives in a vehicle, and in a completely closed container or compartment that protects them from detonation. There must be no access to the detonators from inside the cargo compartment of the vehicle.

A driver of a vehicle must be a minimum of 18 years of age, and 21 years old if more than 2000kg is being transported. A vehicle should be equipped with a tracking and communication system to allow NCG to locate the vehicle at any time.

4 Orange Transport of Dangerous Goods placards are to be displayed in each side of a vehicle while it contains explosives. All explosives of the same compatibility group may be transported together.

All explosive equipment will be brought into camp according to the Transportation of Dangerous Goods Act.

2.4 Personnel Qualifications /Exposure

The base premise when dealing with explosives is to reduce exposure to non-essential personnel. The site will be established with appropriate man-limits agreed to by the NR Can Explosives Regulatory Division and published on the site license. As required under either federal or territorial regulations all personnel will hold valid permits / certificates.

2.5 Blast Design/Operations

Blast design and control of blasting parameters will be controlled by NCG. The current blasting parameters anticipate that 254mm bore holes will be drilled. Blasting patterns will be determined to optimise efficient use of explosives.

3 Safety Procedures

NCG will maintain procedures which outline explosives activities as well as safety systems required for the handling, transport of explosives. In addition, all personnel, contractors or otherwise, are trained in the use of explosives, and all NCG site safety policies including use of PPE. NCG is committed to ensuring that federal and territorial individual mandated qualifications and skills are maintained.

Prior to undertaking any explosive activities, a safety meeting is conducted by the blaster in charge. Any access to the blasting site must be authorized by the blasting supervisor. All loading is done under the direct supervision of the blaster in charge of the pattern. Loading is based on the engineered design. As an example of standard blast protocols, no personnel are permitted within 500m of the blast area. This safety zone is also under observation for the potential entry of local wildlife. Blast will not be fired if this area is not clear. When the area is clear and the pattern is ready for blasting, there are a number of notifications that will occur (including sirens and radio communications as required). Following the blast, guards will remain in place.

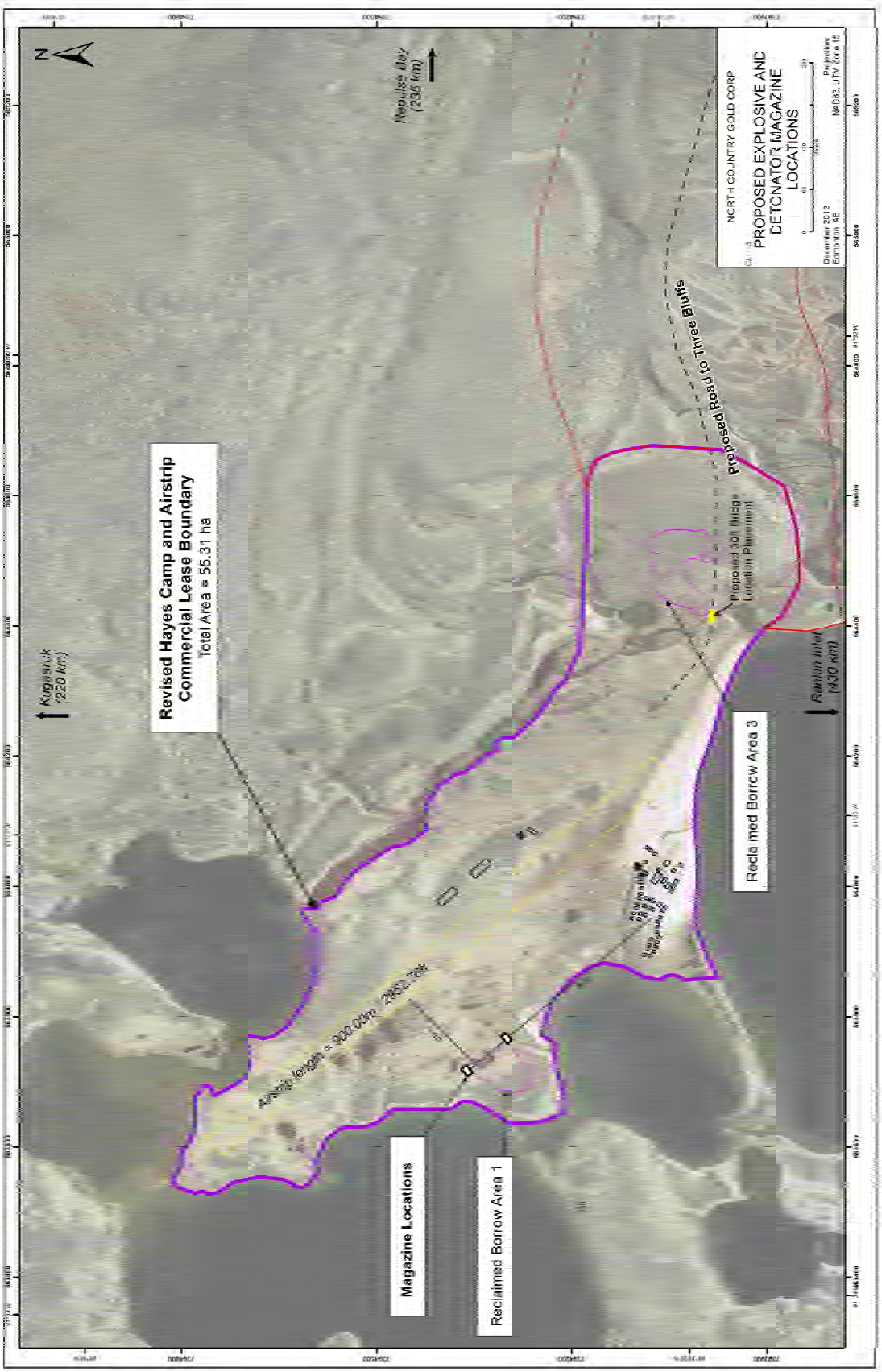
4 Spills & Spill Containment

NCG maintains a stringent Spills Prevention and Response Plan.

Ammonium Nitrate is commonly used in a variety of agricultural applications and as itself is not classified as an explosive. It is WHMIS classified as 5.1 (Oxidizer). AN is soluble in water and can be dissolved to create AN Solution (ANS) which is in turn used in the manufacture of explosives. A copy of the AN Prill technical data sheet and MSDS is attached at Appendix C. The attached data sheet outlines the nature of the product and the appropriate spill response. Areas will be monitored for the presence of ammonia present to indicate any potential for AN leaching into ground water. The site will be loading and blasting in the same day so the potential for any AN leaching is minimized. Typical spill response measures for AN Prill are recovery using non-sparking shovels and packaging into designated containers. Spilled AN Prill will be worked into product and consumed in subsequent blasts. Spills of ANS will typically be recovered through excavation and soil disposal. All on site containers of hazardous material will be located inside of a secondary means of containment. Response to any chemical spill or loss of containment will be covered under the site emergency response plan.

Appendix A

Camp Layout and Explosives Storage Location


N
Kugaruk (220 km)
Nepulse Bay (235 km)
Revised Hayes Camp and Airstrip Commercial Lease Boundary
Total Area = 55.31 ha
Proposed Road to Three Bluffs
Proposed 30ft Bridge Location Placement
Reclaimed Borrow Area 3
Rankin Inlet (430 km)
Magazine Locations
Reclaimed Borrow Area 1
NORTH COUNTRY GOLD CORP
PROPOSED EXPLOSIVE AND DETONATOR MAGAZINE LOCATIONS
December 2012
Edmonton, AB
NAD83, UTM Zone 15

Appendix B

NCG Control Sheets

DATE	Shipped to / Received from	STOCK			SIGNATURE
		IN	OUT	BALANCE	

Appendix C

AN Prill technical data sheet and MSDS

Technical Data Sheet

The Power of Partnership

Ammonium Nitrate

Description
Low density Industrial Grade Prills.

Application
Prilled Ammonium Nitrate (NH4NO3) is the primary oxidizer used in the production of ammonium nitrate fuel oil mixtures (ANFO); the most cost-effective bulk explosive for dry, surface and underground blasting applications.

Key Benefits
- Manufacture of Ammonium Nitrate / Fuel Oil blends, bulk emulsion blends, packaged emulsion products, packaged slurry products, and NCN explosives.
- Ammonium Nitrate is transported as an oxidizer.

Technical Properties

Ammonium Nitrate	
Bulk Density (g / cc)	0.74 – 0.87
Oil Absorption (wt%)	> 5.7
Size Distribution (wt%)	Tyler 6 – 20 (3.3 – 0.83 mm) > 95%
Total Nitrogen (wt%)	> 34
Moisture[1]	< 0.25
Coating (wt%)	0.04 - 0.15 organic
PH (10% solution)	4.5 – 6.0

Packaging
Bagged Production: Available in 25 kg (55 lb) two-ply polyethylene valve bags, or 25 kg (55 lb) polypropylene bags.

FIBC Production: Available in 400 kg (882 lb) to 1000 kg (2205 lb) capacities.

Bulk: Available in road truck, or rail car quantities (volumes per DOT restrictions).

Product Classification USA

Authorized Name:	*Ammonium nitrate*
Proper Shipping Name:	Ammonium nitrate
Classification:	5.1
UN No:	1942
Packaging Group :	III

Product Classification Canada

Authorized Name:	*Ammonium Nitrate*
Proper Shipping Name:	*Ammonium Nitrate*
Classification:	5.1
UN No:	1942
Packaging Group :	III

Storage and Handling
Storage

Due to its hygroscopic nature, it is important that the product be stored in dry silos or storage sheds, and not in humid or wet conditions. The internal crystalline structure of the product transitions at 32° C (90° F) and -18° C (0° F). In conjunction with these changes there are corresponding volume changes of 3.6% and 2.8% respectively. Repeated cycling through these temperatures can break down the structure of the product. This is most important during summer and winter months, where day/night temperature variations pass through either of these transition temperatures. If such exposure is unavoidable, expedient consumption is recommended.

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 poses the following hazards:
- Supports combustion
- Decomposes with excessive heating, releasing toxic fumes
- Potential for fire of explosion if heated during confinement
- Thermal and chemical burns
- Toxic to aquatic organisms
- See the MSDS for complete product details.

Ammonium Nitrate

Trademarks

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. Ammonium Nitrate is hygroscopic. Any contact with moisture or humid air can weaken and break down the prill's internal crystalline structure.

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

Description
Low density Industrial Grade Prills.

Application
Prilled Ammonium Nitrate (NH4NO3) is the primary oxidizer used in the production of ammonium nitrate fuel oil mixtures (ANFO); the most cost-effective bulk explosive for dry, surface and underground blasting applications.

Key Benefits
- Manufacture of Ammonium Nitrate / Fuel Oil blends, bulk emulsion blends, packaged emulsion products, packaged slurry products, and NCN explosives.
- Ammonium Nitrate is transported as an oxidizer.

Technical Properties

Ammonium Nitrate	
Bulk Density (g / cc)	0.74 – 0.87
Oil Absorption (wt%)	> 5.7
Size Distribution (wt%)	Tyler 6 – 20 (3.3 – 0.83 mm) > 95%
Total Nitrogen (wt%)	> 34
Moisture[1]	< 0.25
Coating (wt%)	0.04 - 0.15 organic
PH (10% solution)	4.5 – 6.0

Packaging
Bagged Production: Available in 25 kg (55 lb) two-ply polyethylene valve bags, or 25 kg (55 lb) polypropylene bags.

FIBC Production: Available in 400 kg (882 lb) to 1000 kg (2205 lb) capacities.

Bulk: Available in road truck, or rail car quantities (volumes per DOT restrictions).

Product Classification USA

Authorized Name:	*Ammonium nitrate*
Proper Shipping Name:	Ammonium nitrate
Classification:	5.1
UN No:	1942
Packaging Group :	III

Product Classification Canada

Authorized Name:	*Ammonium Nitrate*
Proper Shipping Name:	*Ammonium Nitrate*
Classification:	5.1
UN No:	1942
Packaging Group :	III

Storage and Handling
Storage

Due to its hygroscopic nature, it is important that the product be stored in dry silos or storage sheds, and not in humid or wet conditions. The internal crystalline structure of the product transitions at 32° C (90° F) and -18° C (0° F). In conjunction with these changes there are corresponding volume changes of 3.6% and 2.8% respectively. Repeated cycling through these temperatures can break down the structure of the product. This is most important during summer and winter months, where day/night temperature variations pass through either of these transition temperatures. If such exposure is unavoidable, expedient consumption is recommended.

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 poses the following hazards:
- Supports combustion
- Decomposes with excessive heating, releasing toxic fumes
- Potential for fire of explosion if heated during confinement
- Thermal and chemical burns
- Toxic to aquatic organisms
- See the MSDS for complete product details.

Ammonium Nitrate

Trademarks

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. Ammonium Nitrate is hygroscopic. Any contact with moisture or humid air can weaken and break down the prill's internal crystalline structure.

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

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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

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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

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Revision Date: 15-Mar-2011

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