0001

MATERIAL SAFETY DATA SHEET

Prepared to U.S. OSHA, CMA, ANSI and Canadian WHMIS Standards

PART I *What is the material and what do I need to know in an emergency?*

1. PRODUCT IDENTIFICATION

TRADE NAMES (AS LABELED):	**POWERNEL 200** **POWERNEL 1500** **POWERNEL 2000** **POWERNEL 2000/KA** **POWERNEL 3000** **POWERNEL PLUS** **POWERNEL BULK EMULSION**
CHEMICAL NAME/CLASS:	Explosive Ammonium Nitrate Mixture
SYNONYMS:	Emulsion Explosives
PRODUCT USE:	Blasting Operations
SUPPLIER/MANUFACTURER'S NAME:	**NELSON BROTHERS, LLC.**
ADDRESS:	820 Shades Creek Parkway Birmingham, AL 35209
EMERGENCY PHONE	CHEMTREC: 1-800-424-9300 INTERNATIONAL: 1-202-483-7616
BUSINESS PHONE:	(800) 972-2684
DATE OF PREPARATION:	February 3, 2000

2. COMPOSITION and INFORMATION ON INGREDIENTS

CHEMICAL NAME	CAS #	% w/w	EXPOSURE LIMITS IN AIR					
			ACGIH-TLV		OSHA-PEL		IDLH	OTHER
			TWA mg/m³	STEL mg/m³	PEL mg/m³	TWA mg/m³	mg/m³	mg/m³
Formulated Mineral Oil (exposure limits are for oil mist, mineral; a similar compound)	64742-52-5	> 0.1	5	10 NIC to delete STEL	5 (CAS # 8012-95-1)	NE	2500	NIOSH REL: (CAS # 8012-95-1) TWA = 5 STEL = 10 Carcinogen: IARC-3
Polyolefin Amino-ester Salt	67762-77-0	> 0.1	NE	NE	NE	NE	NE	NE
Ammonium Nitrate and Water	6484-52-2 7732-18-5	Balance	NE	NE	NE	NE	NE	NE

NE = Not Established NIC = Notice of Intended Change See Section 16 for Definitions of Terms Used

NOTE (1): All WHMIS required information is included. It is located in appropriate sections based on the ANSI Z400.1-1998 format.

NOTE (2): Unless otherwise specified, the information in the following sections of this document is pertain to all product formulations.

3. HAZARD IDENTIFICATION

EMERGENCY OVERVIEW: These products are white, creamy pastes that are explosive. These products can irritate skin, eyes, and other contaminated tissues. These products are not flammable, but they may explode when exposed to extreme heat or other explosives (Class 1.1). Do not fight fires involving these products or any other explosive materials. Emergency responders must wear the personal protective equipment suitable for the situation to which they are responding.

3. HAZARD IDENTIFICATION (Continued)

SYMPTOMS OF OVEREXPOSURE BY ROUTE OF EXPOSURE:
The most significant routes of occupational overexposure are contact with the skin and eyes. The symptoms of overexposure to these products are as follows:

INHALATION: If airborne particulates of this product are inhaled, irritation of the mucous membranes of respiratory tract. Inhalation of high concentration can cause severe lung congestion, coughing, and difficult breathing. Inhalation of high concentration can result in systemic acidosis, excess urination and acid urine and abnormal hemoglobin. Symptoms described for "Ingestion" may also occur. As a nitrate compound, the Ammonium Nitrate component of this product may cause sensitization in susceptible individuals. Subsequent exposure to very low levels may result in allergic respiratory reaction, including difficulty breathing, wheezing, sneezing and cough.

CONTACT WITH SKIN or EYES: Depending on the duration and concentration of overexposure, skin and eye contact may cause irritation or burns. Symptoms may include redness, irritation, and discomfort. Prolonged or repeated skin overexposure may cause dermatitis (dry, red skin).

SKIN ABSORPTION: Ammonium Nitrate (a component of this product) can be absorbed through intact skin. Symptoms can include those described for "Contact with Skin and Eyes" and "Ingestion".

INGESTION: Ingestion is not anticipated to be a significant route of occupational exposure. If this product is swallowed, it can cause nausea, vomiting, headache, flushing, weakness, and faintness. Severe ingestion overexposure may cause a blue color (cyanosis) to the skin and lips, fatigue, difficulty breathing, collapse, and death.

INJECTION: Accidental injection of these products (via cut or puncture with a contaminated object) may cause symptoms described for "Ingestion" in addition to the wound.

HAZARDOUS MATERIAL IDENTIFICATION SYSTEM

HEALTH	(BLUE)	1
FLAMMABILITY	(RED)	0
REACTIVITY (When not initiated by Class 1.1 explosive)	(YELLOW)	0
REACTIVITY (When initiated by Class 1.1 explosive)	(YELLOW)	4
PROTECTIVE EQUIPMENT		X

EYES	RESPIRATORY	HANDS	BODY
	SEE SECTION 8		

For routine industrial applications

See Section 16 for Definition of Ratings

HEALTH EFFECTS OR RISKS FROM EXPOSURE: An Explanation in Lay Terms. In the event of overexposure, the following symptoms may be observed.

ACUTE: These products may irritate or burn contaminated eyes, skin, mouth, throat, and other contaminated tissues. Ingestion, skin absorption, and injection of these products may cause nausea, vomiting, headache, flushing, weakness, cyanosis and faintness. Severe ingestion overexposure may be fatal.

CHRONIC: Prolonged or repeated skin overexposure may cause dermatitis (dry, red skin). Due to the presence of Ammonium Nitrate in this product, sensitization and allergic respiratory reaction may occur in susceptible individuals.

TARGET ORGANS: ACUTE: Skin, eyes, circulatory system. CHRONIC: Skin, respiratory system.

PART II *What should I do if a hazardous situation occurs?*

4. FIRST-AID MEASURES

Victims of chemical exposure must be taken for medical attention. Rescuers should be taken for medical attention, if necessary. Take a copy of label and MSDS to health professional with victim.

SKIN EXPOSURE: If this product contaminates the skin, immediately begin decontamination with running water. Minimum flushing is for 15 minutes. Remove exposed or contaminated clothing, taking care not to contaminate eyes. Victim must seek immediate medical attention.

EYE EXPOSURE: If this product's particulates enter the eyes, open victim's eyes while under gently running water. Use sufficient force to open eyelids. Have victim "roll" eyes. Minimum flushing is for 15 minutes. Victim must seek immediate medical attention.

INHALATION: If particulates of this product are inhaled, remove victim to fresh air. If necessary, use artificial respiration to support vital functions. Remove or cover gross contamination to avoid exposure to rescuers.

4. FIRST-AID MEASURES (Continued)

INGESTION: If this product is swallowed, CALL PHYSICIAN OR POISON CONTROL CENTER FOR MOST CURRENT INFORMATION. DO NOT INDUCE VOMITING unless directed by medical personnel. Have victim rinse mouth with water, conscious, . Never induce vomiting or give diluents (milk or water) to someone who is unconscious, having convulsions, or unable to swallow.

MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE: Preexisting respiratory problems, dermatitis, other skin disorders, and blood disorders may be aggravated by exposure to this product.

RECOMMENDATIONS TO PHYSICIANS: Treat symptoms and eliminate overexposure.

5. FIRE-FIGHTING MEASURES

FLASH POINT: Not applicable.

AUTOIGNITION TEMPERATURE: Not applicable.

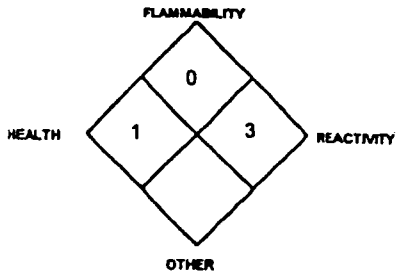
FLAMMABLE LIMITS (in air by volume, %):

Lower (LEL): Not applicable.
Upper (UEL): Not applicable.

FIRE EXTINGUISHING MATERIALS: Use fire-extinguishing material suitable for surrounding area.

Water Spray: YES	Carbon Dioxide: YES
Foam: YES	Dry Chemical: YES
Halon: YES	Other: Any "ABC" Class.

NFPA RATING



See Section 16 for Definition of Ratings

UNUSUAL FIRE AND EXPLOSION HAZARDS: When involved in a fire, these products may decompose and produce irritating fumes and toxic gases (e.g., carbon dioxide, carbon monoxide, and nitrogen oxides). These products are not flammable, but it may explode when exposed to extreme heat, other explosives (Class 1.1), and initiating materials. Although these product are classified as a very insensitive explosives, they present a mass explosion hazard.

Explosion Sensitivity to Mechanical Impact: Not sensitive.
Explosion Sensitivity to Static Discharge: Not sensitive.

SPECIAL FIRE-FIGHTING PROCEDURES: DO NOT FIGHT FIRES INVOLVING EXPLOSIVE MATERIALS. DO NOT FIGHT FIRES INVOLVING CONTAINERS OF THESE PRODUCTS. Withdraw from area and let fire burn. Remove all people from the vicinity of the fire. To fight fires that could potentially involve this material BUT HAVE NOT YET REACHED THE CONTAINERS, structural firefighters must wear Self-Contained Breathing Apparatus and full protective equipment. Incipient fire responders should wear eye protection. Move containers from fire area if it can be done without risk to personnel. Prevent fire from reaching containers by flooding the area with large quantities of water. If possible, prevent runoff water from entering storm drains, bodies of water, or other environmentally sensitive areas.

For additional information, refer to NFPA 495, "Explosive Materials Code".

6. ACCIDENTAL RELEASE MEASURES

RELEASE RESPONSE: In case of a release, clear the affected area and protect people. DO NOT attempt spill clean up under conditions of potential contamination by a Class 1.1 Explosive; contact the appropriate local or state explosive material authorities. Otherwise, these products are very insensitive explosives and uncontrolled releases should be responded to by appropriately trained personnel in proper personal protective equipment, using pre-planned procedures.

In the event of a non-incidental release, minimum Personal Protective Equipment should be **Level C: gloves, safety goggles, boots, and coveralls.** If the concentration of oil mist or ammonia are above the TLVs (oil mist = 5 mg/m^3; ammonia = 17 mg/m^3) or if the oxygen level is below 19.5 percent, **Level B: triple-gloves (rubber gloves and nitrile gloves over latex gloves), chemical resistant suit and boots, hard-hat, and Self-Contained Breathing Apparatus should be worn.** Pick up or sweep up spilled product with a vacuum, non-sparking shovels, or other non-sparking tools. Decontaminate the area thoroughly. Arrangements should be made for safe, controlled detonation or neutralization of the spilled material by an approved authority or company. If necessary, contact the manufacturer or your local waste regulatory authority for specific suggestions regarding these arrangements.

PART III *How can I prevent hazardous situations from occurring?*

7. HANDLING and STORAGE

WORK PRACTICES AND HYGIENE PRACTICES: As with all chemicals, avoid getting these products ON YOU or IN YOU. Wash thoroughly after handling these products. Do not eat, drink, smoke, or apply cosmetics while handling these products. Avoid breathing airborne particulates generated by these products. Use in a well-ventilated location. Remove contaminated clothing immediately.

STORAGE AND HANDLING PRACTICES: Explosive materials pose such significant hazards that specific rules have been developed for their use. All employees who handle this material should be trained to handle it safely. Ensure that proper safety distances are maintained. Use non-sparking tools and avoid open flames. Open containers slowly on a stable surface. Containers of these products must be properly labeled. Empty containers may contain residual amounts of these products; therefore, empty containers should be handled with care.

Store containers in a location that is isolated, well-constructed, weather-resistant, fire-resistant, and theft-resistant. Storage of explosive materials must conform with 27 CFR 55.201–224. The storage location should conform to the isolation area set forth in the American Table of Distances (27 CFR 55.218).

Store away from incompatible materials (see Section 10, Stability and Reactivity). Material should be stored in secondary containers or in a diked area, as appropriate. Keep container tightly closed when not in use. If appropriate, post warning signs in storage and use areas. Inspect all incoming containers before storage to ensure containers are properly labeled and not damaged. Licensed manufacturers must legibly identify by marking all explosive materials manufactured for sale or distribution (27 CFR 55.109). A licensee or permit must be posted on the business premises where explosive materials are manufactures, imported, or distributed (27 CFR 55.101).

The Institute of Makers of Explosives (IME) has published the "Suggested Code of Regulations for the Manufacture, Transportation, Storage, Sale, Possession, and Use of Explosive Materials". The following are some important provisions from Article 6 of this Code for the use of explosives:

- Under the regulations of the Bureau of Alcohol, Tobacco, and Firearms, personnel handling explosive materials will be at least 21 years of age and possess a permit or be at least 18 years of age and be supervised by a permit holder.
- While explosive materials are being handled or used, smoking will not be permitted and no one near the explosive material will possess matches, open light, or fire or flame-producing devices, except that the blaster may possess a device for the specific purpose of igniting the safety fuse.
- Do not handle explosive materials under the influence of liquor, narcotics, or drugs.
- Explosive materials must be used in a manner that is consistent with the recommendations and instructions of the manufacturer. Refer to "Instructions and Warnings" found in the shipping case of these products or contact the manufacturer.

For additional information, refer to 27 CFR 55, "Commerce in Explosives" and IME publication, "Suggested Code of Regulations for the Manufacture, Transportation, Storage, Sale, Possession, and Use of Explosive Materials".

PROTECTIVE PRACTICES DURING MAINTENANCE OF CONTAMINATED EQUIPMENT: Follow practices indicated in Section 6 (Accidental Release Measures). Make certain that application equipment is locked and tagged-out safely, if necessary.

8. EXPOSURE CONTROLS - PERSONAL PROTECTION

VENTILATION AND ENGINEERING CONTROLS: Use with adequate ventilation to ensure exposure levels are maintained below the limits provided in Section 2 (Composition and Information on Ingredients) if applicable. Ensure eyewash/safety shower stations are available near areas where this product is used.

RESPIRATORY PROTECTION: Respiratory protection is not generally needed under normal circumstances of use. Maintain airborne contaminant concentrations below exposure limits listed in Section 2 (Composition and Information on Ingredients) if applicable. If respiratory protection is needed, use only protection authorized in the U.S. Federal OSHA standard (29 CFR 1910.134), applicable U.S. State regulations, or the Canadian CSA Standard Z94.4-93 and applicable standards of Canadian Provinces. Oxygen levels below 19.5% are considered IDLH by OSHA. In such atmospheres, use of a full-facepiece pressure/demand SCBA or a full facepiece, supplied air respirator with auxiliary self-contained air supply is required under OSHA's Respiratory Protection Standard (1910.134-1998).

EYE PROTECTION: Splash goggles or safety glasses. Refer to U.S. OSHA 29 CFR 1910.133, if necessary.

HAND PROTECTION: Wear nitrile rubber or neoprene gloves for routine industrial use. Use triple gloves for spill response, as stated in Section 6 (Accidental Release Measures) of this MSDS.

BODY PROTECTION: Use body protection appropriate for task (e.g., apron, Tyvek suit., hard hat, boots).

9. PHYSICAL and CHEMICAL PROPERTIES

For Ammonium Nitrate unless otherwise specified.

RELATIVE VAPOR DENSITY (air = 1): Not established.

SPECIFIC GRAVITY @ 25°C (water = 1): 1.20–1.25 (for product)

SOLUBILITY IN WATER: Insoluble (for product).

VAPOR PRESSURE, mm Hg @ 20°C: Not established.

ODOR THRESHOLD: Not established.

EVAPORATION RATE (n-BuAc = 1): Not established.

MELTING/FREEZING POINT: 169.6°C (337.3°F).

BOILING POINT: > 210°C (410°F), decomposition.

pH: Not applicable.

COEFFICIENT OF OIL/WATER DISTRIBUTION (PARTITION COEFFICIENT): Not established.

For product unless otherwise specified.

APPEARANCE AND COLOR: These products are a white, creamy paste.

HOW TO DETECT THIS SUBSTANCE (warning properties): The appearance may act as a distinguishing characteristic of these products.

10. STABILITY and REACTIVITY

STABILITY: Stable under normal environmental conditions. The following information is from the Bureau of Mines Test Report or PowerNel 1500. It is representative for all products covered in this MSDS.

TEST	NUMBER OF TRIALS	CONDITIONS	RESULT
Thermal Stability	1	75°C (167°F)/48 hours	Stable
Blasting Cap Sensitivity	3	////////	No Detonation
Impact Sensitivity	10	10 inches	No Explosion
Differential Thermal Analysis	3	under 100°C (212°F)	No Exothermic Reaction
Electrostatic Sensitivity	3	////////	No Ignition
Package Drop	3	7.5" X 50 lb bag/4 foot drop	No Rupture or Loss of Contents
Package Burn Test	1	7.5" X 50 lb bag	No Explosion
Large Scale Vented Bomb Bonfire	2	////////	No Explosion

DECOMPOSITION PRODUCTS: Thermal decomposition of these products can generate carbon monoxide, carbon dioxide, and nitrogen oxides.

MATERIALS WITH WHICH SUBSTANCE IS INCOMPATIBLE: Oil, charcoal, flammables, strong acids, strong reducing agents, corrosive liquids, chlorates, sulfur, finely divided metals, coke, cork, sawdust, phosphorus, urea, potassium permanganate.

HAZARDOUS POLYMERIZATION: Will not occur.

CONDITIONS TO AVOID: Exposure or contact to extreme temperatures, incompatible chemicals.

PART IV *Is there any other useful information about this material?*

11. TOXICOLOGICAL INFORMATION

TOXICITY DATA: The specific toxicology data available for components greater than 1% in concentration are as follows.

AMMONIUM NITRATE:

TDLo (Oral-Rat) 65 mg/kg/26 weeks-intermittent: Behavioral: changes in motor activity (specific assay); Blood: changes in serum composition (e.g. TP, bilirubin, cholesterol); Biochemical: Enzyme inhibition, induction, or change in blood or tissue levels: transaminases

D_{50} (Oral-Rat) 2217 mg/kg

D_{50} (Unreported-Mouse) 2085 mg/kg

D_{50} (Oral-Rat) 2217 mg/kg

D_{50} (Unreported-Mouse) 2085 mg/kg

FORMULATED MINERAL OIL:

Standard Draize Test (Skin-Rabbit) 500 mg: Severe

LD (Oral-Rat) > 5 gm/kg

LD (Skin-Rabbit) > 5 gm/kg

TDLo (Skin-Mouse) 480 gm/kg/80 weeks-intermittent: Tumorigenic: neoplastic by RTECS criteria; Skin and Appendages: tumors, tumors at site of application

TD (Skin-Mouse) 402 gm/kg/78 weeks-intermittent: Tumorigenic: equivocal tumorigenic agent by RTECS criteria; Skin and Appendages: tumors, tumors at site of application

FORMULATED MINERAL OIL (continued):

TD (Skin-Mouse) 398 gm/kg/22 weeks-intermittent: Tumorigenic: equivocal tumorigenic agent by RTECS criteria; Skin and Appendages: tumors, tumors at site of application

Mutation in Microorganisms (Bacteria-Salmonella typhimurium) 10 µL/plate

POLYOLEFIN AMINO-ESTER SALT:

Currently, there are no toxicological data available for this compound.

11. TOXICOLOGICAL INFORMATION (Continued)

SUSPECTED CANCER AGENT: The components of these products are listed as follows:

FORMULATED MINERAL OIL: IARC-3 (Unclassifiable as to Carcinogenicity in Humans)

The remaining components of these products are not found on the following lists: FEDERAL OSHA Z LIST, NTP, IARC-1, IARC-2, and CAL/OSHA and therefore are neither considered to be nor suspected to be cancer-causing agents by these agencies.

IRRITANCY OF PRODUCT: These products may irritate contaminated eyes, skin, mouth, throat, and other contaminated tissues.

SENSITIZATION TO THE PRODUCT: The Ammonium Nitrate component of these products may cause sensitization and allergic in susceptible individuals.

REPRODUCTIVE TOXICITY INFORMATION: Listed below is information concerning the effects of these products and its components on the human reproductive system.

Mutagenicity: These products are not reported to produce mutagenic effects in humans. Animal mutation data are available for Formulated Mineral Oil (a component of these product); these data were obtained during clinical studies on specific animal tissues exposed to high doses of this compound.

Embryotoxicity: These products are not reported to produce embryotoxic effects in humans.

Teratogenicity: These products are not reported to cause teratogenic effects in humans.

Reproductive Toxicity: These products are not reported to cause reproductive effects in humans.

A mutagen is a chemical which causes permanent changes to genetic material (DNA) such that the changes will propagate through generational lines. An embryotoxin is a chemical which causes damage to a developing embryo (i.e. within the first eight weeks of pregnancy in humans), but the damage does not propagate across generational lines. A teratogen is a chemical which causes damage to a developing fetus, but the damage does not propagate across generational lines. A reproductive toxin is any substance which interferes in any way with the reproductive process.

BIOLOGICAL EXPOSURE INDICES: Currently, there are no Biological Exposure Indices (BEIs) associated with the components of these products.

12. ECOLOGICAL INFORMATION

ALL WORK PRACTICES MUST BE AIMED AT ELIMINATING ENVIRONMENTAL CONTAMINATION.

ENVIRONMENTAL STABILITY: This product is expected to slowly degrade in ambient environmental conditions. Additional information on components is available as follows:

AMMONIUM NITRATE:

Aquatic Fate: Ammonium nitrate is a nutrient in water. Spills of ammonium nitrate may cause massive algal blooms in static waters and affect local species population balance in the aquatic environment. Ammonium nitrate is quite soluble in water (250 g/100 mL at 20°C). Thus, if precipitation occurs prior to clean up, or if water is used to disperse the spilled chemical, the solution of ammonium nitrate produced can infiltrate the soil and migrate downward toward the groundwater system.

Biodegradation: Ammonium nitrate will be taken up by bacteria. Nitrate is more persistent in water than the ammonium ion; nitrate degradation is fastest in anaerobic conditions.

Soil Adsorption/Mobility: When spilled on soil, the liquid form will spread on the surface and penetrate into the soil at a rate dependent on the soil type and its water content.

Volatilization from Water/Soil: The immediate loss of fertilizer nitrogen as nitrous oxide (biochemical and microbiological) into the atmosphere was determined by in situ measurements of the nitrous oxide evolution rates from uncultivated Eolian sand. The net loss was equivalent to 0.1% of the applied fertilizer for ammonium chloride, 0.05% for Ammonium Nitrate & 0.01% for sodium nitrate. The total immediate loss of nitrous oxide-nitrogen after application of mineral fertilizer is estimated to be 0.004-1.2 teragram per year.

EFFECT OF MATERIAL ON PLANTS or ANIMALS: Releases of large amount of this product may adversely affect contaminated plant and animal life. .

EFFECT OF CHEMICAL ON AQUATIC LIFE: Releases of large amounts of this product may adversely affect contaminated aquatic plant and animal life. The following aquatic toxicity data are available for the components of this product:

AMMONIUM NITRATE:

LD_{50} (*Aspergillus niger* fungus) 4 hours = 15 mg/L @ 36°C

13. DISPOSAL CONSIDERATIONS

PREPARING WASTES FOR DISPOSAL: Waste disposal must be in accordance with appropriate Federal, State, and local regulations. The preferred method of disposal is a safe, controlled detonation by an approved authority or company. If necessary, contact the manufacturer or your local waste regulatory authority for specific suggestions regarding these arrangements.

NOTE: Under the Codes established by the IME, no explosive materials shall be intentionally abandoned, in any location for any reason, or left in such a manner that the explosive material may be easily obtained by children or unauthorized persons.

EPA WASTE NUMBER: D003 (Characteristic/Reactivity), for wastes consisting only of these products.

14. TRANSPORTATION INFORMATION

THESE MATERIALS ARE HAZARDOUS AS DEFINED BY 49 CFR 172.101 BY THE U.S. DEPARTMENT OF TRANSPORTATION.

PROPER SHIPPING NAME:	Explosive, blasting, type E
HAZARD CLASS NUMBER and DESCRIPTION:	1.5D (Explosives 1.5)
UN IDENTIFICATION NUMBER:	UN 0332
PACKING GROUP:	PG II
DOT LABEL(S) REQUIRED:	EXPLOSIVE 1.5

NORTH AMERICAN EMERGENCY RESPONSE GUIDEBOOK NUMBER, 1996: 112

MARINE POLLUTANT: Not listed per Appendix B to 49 CFR 172.101

TRANSPORT CANADA, TRANSPORTATION OF DANGEROUS GOODS REGULATIONS: This product is considered as dangerous goods, per regulations of Transport Canada. Use the above information for the preparation of Canadian Shipments.

15. REGULATORY INFORMATION

UNITED STATES INFORMATION FOR PRODUCT:

U.S. SARA REPORTING REQUIREMENTS: The components of these products are subject to the reporting requirements of Sections 302, 304, and 313 of Title III of the Superfund Amendments and Reauthorization Act, and are listed as follows:

CHEMICAL NAME	SARA 302 (40 CFR 355, Appendix A)	SARA 304 (40 CFR Table 302.4)	SARA 313 (40 CFR 372.65)
Ammonium Nitrate [Nitrate Compound (water dissociable) Category]	No	No	Yes

U.S. SARA THRESHOLD PLANNING QUANTITY: There are no specific Threshold Planning Quantities for the components of this product. The default Federal MSDS submission and inventory requirement filing threshold of 10,000 lb (4,540 kg) may apply, per 40 CFR 370.20.

U.S. CERCLA REPORTABLE QUANTITY (RQ): Not applicable.

U.S. TSCA INVENTORY STATUS: The components of this product are listed on the TSCA Inventory.

OTHER U.S. FEDERAL REGULATIONS: Commerce in Explosives (27 CFR 55).

U.S. STATE REGULATORY INFORMATION: Components of these products are covered under specific State regulations, as denoted below:

Alaska - Designated Toxic and Hazardous Substances: No.
California - Permissible Exposure Limits for Chemical Contaminants: No.
Florida - Substance List: Ammonium Nitrate.
Illinois - Toxic Substance List: No.
Kansas - Section 302/313 List: Ammonium Nitrate.
Massachusetts - Substance List: Ammonium Nitrate.
Michigan - Critical Materials Register: No.
Minnesota - List of Hazardous Substances: No.
Missouri - Employer Information/Toxic Substance List: No.
New Jersey - Right to Know Hazardous Substance List: Ammonium Nitrate.
North Dakota - List of Hazardous Chemicals, Reportable Quantities: No.
Pennsylvania - Hazardous Substance List: No.
Rhode Island - Hazardous Substance List: Ammonium Nitrate.
Texas - Hazardous Substance List: No.
West Virginia - Hazardous Substance List: No.
Wisconsin - Toxic and Hazardous Substances: No.

15. REGULATORY INFORMATION (Continued)

UNITED STATES INFORMATION FOR PRODUCT (continued):

CALIFORNIA SAFE DRINKING WATER AND TOXIC ENFORCEMENT ACT (PROPOSITION 65): No component of these products is on the California Proposition 65 lists.

LABELING (Precautionary Statements): **DANGER!** EXPLOSIVE. CONTAINS MATERIAL THAT MAY CAUSE SKIN TUMORS (BASED ON ANIMAL STUDIES). MAY BE HARMFUL IF INHALED OR ABSORBED THROUGH SKIN. CAUSES SKIN AND EYE IRRITATION. MAY CAUSE SENSITIZATION AND ALLERGIC REACTION. MAY BE HARMFUL OR FATAL IF SWALLOWED. Use only if trained in explosives handling. Avoid contact with skin, eyes, and clothing. Avoid breathing dust or vapor. Use in well-ventilated area. Wash thoroughly after handling. Do not take internally. Wear gloves, goggles, and appropriate body protection. FIRST-AID: In case of skin or eye contact, flush with water for 15 minutes. Remove contaminated clothing and shoes. If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. If ingested, do not induce vomiting. Seek medical attention. Do not fight fires involving explosive materials. Pick up or sweep up spilled product carefully, avoiding the generation of sparks. Arrangements should be made for safe, controlled detonation or neutralization of the spilled material by an approved authority or company. Store away from incompatible chemicals. Consult Material Safety Data Sheet before use.

ADDITIONAL CANADIAN REGULATIONS:

CANADIAN DSL/NDSL INVENTORY STATUS: The components of this product are listed on the DSL Inventory.

OTHER CANADIAN REGULATIONS: Not applicable.

CANADIAN ENVIRONMENTAL PROTECTION ACT (CEPA) PRIORITIES SUBSTANCES LISTS: The components of this product are not on the CEPA Priorities Substances Lists.

CANADIAN WHMIS SYMBOLS: Explosives (within the meaning of the Explosives Act) are excluded from WHMIS and are exempt from the HPA & CPR requirements (HPA 12).

16. OTHER INFORMATION

PREPARED BY: CHEMICAL SAFETY ASSOCIATES, Inc.
9163 Chesapeake Drive, San Diego, CA 92123-1002
(858) 565-0302

DATE OF PRINTING: June 1, 2001

The information contained herein is based on data considered accurate. However, no warranty is expressed or implied regarding the accuracy of these data or the results to be obtained from the use thereof. NELSON BROTHERS, LLC assumes no responsibility for injury to the vendee or third persons proximately caused by the material if reasonable safety procedures are not adhered to as stipulated in the data sheet. Additionally, NELSON BROTHERS, LLC assumes no responsibility for injury to vendee or third persons proximately caused by abnormal use of the material even if reasonable safety procedures are followed. Furthermore, vendee assumes the risk in his use of the material.

DEFINITIONS OF TERMS

A large number of abbreviations and acronyms appear on a MSDS. Some of these which are commonly used include the following:

CAS #: This is the Chemical Abstract Service Number which uniquely identifies each constituent. It is used for computer-related searching.

EXPOSURE LIMITS IN AIR:

ACGIH - American Conference of Governmental Industrial Hygienists, a professional association which establishes exposure limits. **TLV** - Threshold Limit Value - an airborne concentration of a substance which represents conditions under which it is generally believed that nearly all workers may be repeatedly exposed without adverse effect. The duration must be considered, including the 8-hour Time Weighted Average (TWA), the 15-minute Short Term Exposure Limit, and the instantaneous Ceiling Level (C). Skin absorption effects must also be considered.

OSHA - U.S. Occupational Safety and Health Administration.

PEL - Permissible Exposure Limit - This exposure value means exactly the same as a TLV, except that it is enforceable by OSHA. The OSHA Permissible Exposure Limits are based in the 1989 PELs and the June, 1993 Air Contaminants Rule (Federal Register: 58: 35338-35351 and 58: 40191). Both the current PELs and the vacated PELs are indicated. The phrase, "Vacated 1989 PEL," is placed next to the PEL which was vacated by Court Order.

IDLH - Immediately Dangerous to Life and Health - This level represents a concentration from which one can escape within 30-minutes without suffering escape-preventing or permanent injury. The **DFG - MAK** is the Republic of Germany's Maximum Exposure Level, similar to the U.S. PEL. **NIOSH** is the National Institute of Occupational Safety and Health, which is the research arm of the U.S. Occupational Safety and Health Administration (OSHA). NIOSH issues exposure guidelines called Recommended Exposure Levels (RELs). When no exposure guidelines are established, an entry of NE is made for reference.

HAZARD RATINGS:

HAZARDOUS MATERIALS IDENTIFICATION SYSTEM: Health Hazard: 0 (minimal acute or chronic exposure hazard); 1 (slight acute or chronic exposure hazard); 2 (moderate acute or significant chronic exposure hazard); 3 (severe acute exposure hazard; onetime overexposure can result in permanent injury and may be fatal); 4 extreme acute exposure hazard; onetime overexposure can be fatal). Flammability Hazard: 0 (minimal hazard); 1 (materials that require substantial pre-heating before burning): 2 (combustible liquid or solids; liquids with a flash point of 38-93°C [100-200°F]); 3 (Class IB and IC flammable liquids with flash points below 38°C [100°F]); 4 (Class IA flammable liquids with flash points below 23°C [73°F] and boiling points below 38°C [100°F]. Reactivity Hazard: 0 (normally stable); 1 (material that can become unstable at elevated temperatures or which can react slightly with water); 2 (materials that are unstable but do not detonate or which can react violently with water); 3 (materials that can detonate when initiated or which can react explosively with water); 4 (materials that can detonate at normal temperatures or pressures).

NATIONAL FIRE PROTECTION ASSOCIATION: Health Hazard: 0 material that on exposure under fire conditions would offer no hazard beyond that of ordinary combustible materials); 1 (materials that on exposure under fire conditions could cause irritation or minor residual injury); 2 (materials that on intense or continued exposure under fire conditions could cause temporary incapacitation or possible residual injury); 3 (materials that can on short exposure could cause serious temporary or residual injury); 4 (materials that under very short exposure causes death or major residual injury). Flammability Hazard and Reactivity Hazard: Refer to definitions for "Hazardous Materials Identification System".

FLAMMABILITY LIMITS IN AIR:

Much of the information related to fire and explosion is derived from the National Fire Protection Association (NFPA). Flash Point - Minimum temperature at which a liquid gives off sufficient vapors to form an ignitable mixture with air. Autoignition Temperature: The minimum temperature required to initiate combustion in air with no other source of ignition. LEL - the lowest percent of vapor in air, by volume, that will explode or ignite in the presence of an ignition source. UEL - the highest percent of vapor in air, by volume, that will explode or ignite in the presence of an ignition source.

TOXICOLOGICAL INFORMATION:

Possible health hazards as derived from human data, animal studies, or from the results of studies with similar compounds are presented. Definitions of some terms used in this section are: LD_{50} - Lethal Dose (solids & liquids) which kills 50% of the exposed animals; LC_{50} - Lethal Concentration (gases) which kills 50% of the exposed animals; ppm concentration expressed in parts of material per million parts of air or water; mg/m^3 concentration expressed in weight of substance per volume of air; mg/kg quantity of material, by weight, administered to a test subject, based on their body weight in kg. Data from several sources are used to evaluate the cancer-causing potential of the material. The sources are: **IARC** - the International Agency for Research on Cancer; **NTP** - the National Toxicology Program, **RTECS** - the Registry of Toxic Effects of Chemical Substances, **OSHA** and **CAL/OSHA**. IARC and NTP rate chemicals on a scale of decreasing potential to cause human cancer with rankings from 1 to 4. Subrankings (2A, 2B, etc.) are also used. Other measures of toxicity include **TDLo**, the lowest dose to cause a symptom and **TCLo** the lowest concentration to cause a symptom; **TDo**, **LDLo**, and **LDo**, or **TC**, **TCo**, **LCLo**, and **LCo**, the lowest dose (or concentration) to cause lethal or toxic effects. **BEI** - Biological Exposure Indices, represent the levels of determinants which are most likely to be observed in specimens collected from a healthy worker who has been exposed to chemicals to the same extent as a worker with inhalation exposure to the TLV. Ecological Information: EC is the effect concentration in water.

REGULATORY INFORMATION:

This section explains the impact of various laws and regulations on the material. **EPA** is the U.S. Environmental Protection Agency. **WHMIS** is the Canadian Workplace Hazardous Materials Information System. **DOT** and **TC** are the U.S. Department of Transportation and the Transport Canada, respectively. Superfund Amendments and Reauthorization Act (SARA); the Canadian Domestic/Non-Domestic Substances List (DSL/NDSL); the U.S. Toxic Substance Control Act (TSCA); Marine Pollutant status according to the DOT; the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA or Superfund); and various state regulations.