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DATE: 07/26/94 ACCT: 415150-07
INDEX: N/A CAT NO: S343500 PO NBR: N/A

SODIUM NITRATE
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MATERIAL SAFETY DATA SHEET

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SUBSTANCE IDENTIFICATION

CAS-NUMBER 7631-99-4

SUBSTANCE: **SODIUM NITRATE**

TRADE NAMES/SYNONYMS:
NITRATINE, SODIUM NITER; CHILE SALTPETER; CUBIC NITER; SODIUM(I) NITRATE; SODIUM(+1) NITRATE; NITRIC ACID, SODIUM SALT; NITER; NITRIC ACID, SODIUM SALT(1:1); SALTPETER(CHILE); SODA NITER; STCC 4918746; UN 1498; S343; S342; BP368, S347; S272; S71998-1, NNAO3; ACC21400

CHEMICAL FAMILY:
Inorganic salt

MOLECULAR FORMULA: NA-N-O3

MOLECULAR WEIGHT: 84.99

CERCLA RATINGS (SCALE 0-3): HEALTH=3 FIRE=0 REACTIVITY=0 PERSISTENCE=0
NFPA RATINGS (SCALE 0-4): HEALTH=1 FIRE=0 REACTIVITY=0

COMPONENTS AND CONTAMINANTS

COMPONENT: SODIUM NITRATE PERCENT: 100
CAS# 7631-99-4

OTHER CONTAMINANTS: NONE

EXPOSURE LIMITS:
No occupational exposure limits established by OSHA, ACGIH, or NIOSH.

PHYSICAL DATA

DESCRIPTION: Odorless, colorless to white deliquescent crystals or powder

with a slightly bitter saline taste

BOILING POINT: 716 F (380 C) decomposes MELTING POINT: 585 F (307 C)

SPECIFIC GRAVITY: 2.261 PH: neutral in solution

SOLUBILITY IN WATER: 92.1% @ 25 C

SOLVENT SOLUBILITY: Soluble in alcohol, methanol, ammonia; slightly soluble in glycerine very slightly soluble in acetone.

FIRE AND EXPLOSION DATA

FIRE AND EXPLOSION HAZARD:
Negligible fire hazard when exposed to heat or flame.

Oxidizer: Oxidizers decompose, especially when heated, to yield oxygen or other gases which will increase the burning rate of combustible matter. Contact with easily oxidizable, organic, or other combustible materials may result in ignition, violent combustion or explosion.

FIREFIGHTING MEDIA:
Water only, no dry chemical, carbon dioxide or halon (1993 Emergency Response Guidebook, RSPA P 5800.6).

For larger fires, flood area with water from a distance (1993 Emergency Response Guidebook, RSPA P 5800.6).

FIREFIGHTING:
Move container from fire area if you can do it without risk. Apply cooling

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water to sides of containers exposed to flames until well after fire is out. For massive fire in cargo area, use unmanned hose holder or monitor nozzles; if this is impossible, withdraw from area and let fire burn (1993 Emergency Response Guidebook, RSPA P 5800.6, Guide Page 35).

Flood with water. Cool containers with flooding quantities of water, apply from as far a distance as possible. Evacuate to a radius of 2500 feet for uncontrollable fires.

TRANSPORTATION DATA

U.S. DEPARTMENT OF TRANSPORTATION SHIPPING NAME-ID NUMBER, 49 CFR 172.101:
Sodium nitrate-UN 1498

U.S. DEPARTMENT OF TRANSPORTATION HAZARD CLASS OR DIVISION, 49 CFR 172.101:
5.1 - Oxidizer

U.S. DEPARTMENT OF TRANSPORTATION PACKING GROUP, 49 CFR 172.101:
PG III

U.S. DEPARTMENT OF TRANSPORTATION LABELING REQUIREMENTS, 49 CFR 172.101 AND SUBPART E:
Oxidizer

U.S. DEPARTMENT OF TRANSPORTATION PACKAGING AUTHORIZATIONS:
EXCEPTIONS: 49 CFR 173.152
NON-BULK PACKAGING: 49 CFR 173.213
BULK PACKAGING: 49 CFR 173.240

U.S. DEPARTMENT OF TRANSPORTATION QUANTITY LIMITATIONS 49 CFR 172.101:
PASSENGER AIRCRAFT OR RAILCAR: 25 kg
CARGO AIRCRAFT ONLY: 100 kg

TOXICITY

SODIUM NITRATE:
TOXICITY DATA: 114 mg/kg oral-man LDLo; 3236 mg/kg oral-rat LD50; 2680 mg/kg oral-rabbit LD50; 175 mg/kg intravenous-mouse LD50; 181 mg/kg intraperitoneal-rat LD; mutagenic data (RTECS); reproductive effects data (RTECS); tumorigenic data (RTECS).
CARCINOGEN STATUS: None.
ACUTE TOXICITY LEVEL: Moderately toxic by ingestion.
TARGET EFFECTS: No data available.

HEALTH EFFECTS AND FIRST AID

INHALATION:
SODIUM NITRATE:
ACUTE EXPOSURE- May cause irritation with coughing and shortness of breath.
CHRONIC EXPOSURE- No data available.

FIRST AID- Remove from exposure area to fresh air immediately. Perform artificial respiration if necessary. Keep person warm and at rest. Treat symptomatically and supportively. Get medical attention immediately.

SKIN CONTACT:
SODIUM NITRATE:
ACUTE EXPOSURE- May cause irritation with redness. Contact with a molten mixture of sodium and potassium nitrate caused thermal burns and methemoglobinemia. Symptoms may include cyanosis, headache, weakness, dizziness, lightheadedness, ataxia, shallow respiration, drowsiness, nausea, vomiting, confusion, lethargy, stupor, dyspnea, tachycardia, convulsions, coma and possibly death.
CHRONIC EXPOSURE- No data available.

FIRST AID- Remove contaminated clothing and shoes immediately. Wash with soap or mild detergent and large amounts of water until no evidence of chemical remains (at least 15-20 minutes). Get medical attention immediately.

EYE CONTACT:
SODIUM NITRATE:
ACUTE EXPOSURE- May cause irritation with redness and pain. In tests on rabbit eyes, a 10% aqueous solution applied continuously for 5 minutes was practically innocuous to the surface of the eyes. The conjunctiva became mildly hyperemic, but the corneas remained clear and recovery was rapid. Continuous application for 3 hours of a 0.1 molar solution at pH of 7.0 or 7.5, also, produced no corneal disturbances.
CHRONIC EXPOSURE- No data available.

FIRST AID- Wash eyes immediately with large amounts of water or normal saline, occasionally lifting upper and lower lids, until no evidence of chemical remains (at least 15-20 minutes). Get medical attention immediately.

INGESTION:
SODIUM NITRATE:
ACUTE EXPOSURE- May cause abdominal spasms, faintness, and muscular spasms.

A girl who ingested 16 grams experienced transitory blindness, deafness speechlessness and tetanic convulsions, but gradually recovered. Nitrates may also produce gastrointestinal irritation, bloody diarrhea, hematuria, catharsis, diuresis, albuminuria and oliguria. Rarely, inorganic nitrates may be converted to nitrites by nitrate-reducing bacteria in the upper gastrointestinal tract, resulting in methemoglobinemia.
CHRONIC EXPOSURE- Reproductive effects have been reported in animals. Repeated or prolonged exposure to nitrates may lead to weakness, general depression, headache, mental impairment, anemia, nephritis, and possibly methemoglobinemia.

FIRST AID- Remove by gastric lavage or emesis. Maintain blood pressure and airway. Give oxygen if respiration is depressed. Do not perform gastric lavage or emesis if victim is unconscious. Get medical attention immediately (Dreisbach, Handbook of Poisoning, 12th Ed.). Administration of gastric lavage or oxygen should be performed by qualified medical personnel.

ANTIDOTE:
The following antidote has been recommended. However, the decision as to whether the severity of poisoning requires administration of any antidote and actual dose required should be made by qualified medical personnel.

METHEMOGLOBINEMIA:
(When methemoglobin concentration is over 25-40% or in presence of symptoms.) Give methylene blue, 1% solution, 0.1 mL/kg intravenously over a 10-minute period. Cyanosis may disappear within minutes or persist longer depending on degree of methemoglobinemia. Intravenous administration of therapeutic doses of methylene blue may cause a rise in blood pressure, nausea, and dizziness. Larger doses (500 mg) cause vomiting, diarrhea, chest pain, mental confusion, cyanosis, and sweating. Hemolytic anemia has also occurred several days after administration. These effects are temporary, and fatalities have not been reported. If methylene blue is not available, give ascorbic acid, 1 gram slowly intravenously. Without treatment, methemoglobinemia levels of 20-30% revert to normal within 3 days (Dreisbach, Handbook of Poisoning, 12th Ed.). Antidote should be administered by qualified medical personnel.

REACTIVITY

REACTIVITY:
Stable under normal temperatures and pressures

INCOMPATIBILITIES:
SODIUM NITRATE:
ACETIC ANHYDRIDE: Possible violent reaction.
ACIDS (STRONG): Incompatible.
ALUMINUM OR ALUMINUM OXIDE: Possible explosion.
ALUMINUM + WATER: Exothermic reaction above 704 C.
ANTIMONY (POWDERED): Explosion hazard on heating.
ARSENIC TRIOXIDE + IRON SULFATE: May ignite spontaneously.
BARIUM RHODANIDE: Explosion hazard.
BARIUM THIOCYANATE: Possible explosion.
BITUMEN: Exothermic reaction at elevated temperatures.
BORON PHOSPHIDE: Deflagration on contact with the molten mixture.
CALCIUM-SILICON ALLOY: May form combustible mixture.
CARBON (POWDER): Possible ignition.
CYANIDES: Explosion hazard.
FIBROUS MATERIAL (WOOD, ETC.): Possible ignition.
IRON (II) SULFATE: May ignite spontaneously.
MAGNESIUM: May ignite.
METAL AMIDOSULFATE: Possible explosion on heating.
METALS (POWDERED): Incompatible.
ORGANIC MATTER: Fire and explosion hazard.
PEROXYFORMIC ACID: Possible explosive decomposition.
PHENOL + TRIFLUOROACETIC ACID: Rapid exothermic reaction.
REDUCING AGENTS (STRONG): Incompatible.
SODIUM: May form an explosive compound.
SODIUM HYPOPHOSPHITE: Explosion hazard.
SODIUM THIOSULFATE: Possible explosion upon heating.
SULFUR + CHARCOAL: Explosion hazard.

DECOMPOSITION:
Thermal decomposition may yield toxic oxides of nitrogen and toxic sodium oxide.

POLYMERIZATION:
Hazardous polymerization has not been reported to occur under normal temperatures and pressures.

STORAGE AND DISPOSAL

Observe all federal, state and local regulations when storing or disposing of this substance.

Storage

Protect against physical damage. Store in a dry, cool place. Separate from

combustible, organic or other readily oxidizable materials. Avoid storage on on wood floors. Immediately remove and dispose of any spilled nitrate (NFPA 49, Hazardous Chemicals Data, 1975).

Store in a cool, dry place; keep container tightly closed when not in use.

Store away from incompatible substances.

Disposal

Disposal must be in accordance with standards applicable to generators of hazardous waste, 40 CFR 262, EPA Hazardous Waste Number D001.
100 pound CERCLA Section 103 Reportable Quantity.

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CONDITIONS TO AVOID

Avoid contact with combustible materials (wood, paper, fuel, oils, etc); ignition or explosion may result. Avoid contamination of water sources.

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SPILL AND LEAK PROCEDURES

OCCUPATIONAL SPILL:
Keep combustibles (wood, paper, oil, etc) away from spilled material. Do not touch spilled material. For small dry spills, with clean shovel place material into clean, dry container and cover; move containers from spill area. For small liquid spills, take up with sand, earth or other absorbent material and place into containers for later disposal. For larger spills, dike far ahead of spill for later disposal. Keep unnecessary people away. Isolate hazard area and deny entry.

PROTECTIVE EQUIPMENT

VENTILATION:
Provide local exhaust ventilation system.

RESPIRATOR:
The following respirators are recommended based on information found in the physical data, toxicity and health effects sections. They are ranked in order from minimum to maximum respiratory protection.
The specific respirator selected must be based on contamination levels found in the work place, must be based on the specific operation, must not exceed the working limits of the respirator and must be jointly approved by the National Institute for Occupational Safety and Health and the Mine Safety and Health Administration (NIOSH-MSHA).

Any dust and mist respirator.

Any air-purifying respirator with a high-efficiency particulate filter.

Any powered air-purifying respirator with a dust and mist filter.

Any powered air-purifying respirator with a high-efficiency particulate filter.

Any type 'C' supplied-air respirator operated in the pressure-demand or other positive pressure or continuous-flow mode.

Any self-contained breathing apparatus.

FOR FIREFIGHTING AND OTHER IMMEDIATELY DANGEROUS TO LIFE OR HEALTH CONDITIONS:

Any self-contained breathing apparatus that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode.

Any supplied-air respirator that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode in combination with an auxiliary self-contained breathing apparatus operated in pressure-demand or other positive-pressure mode.

CLOTHING:
Employee must wear appropriate protective (impervious) clothing and equipment to prevent repeated or prolonged skin contact with this substance.

GLOVES:
Employee must wear appropriate protective gloves to prevent contact with this substance.

EYE PROTECTION:
Employee must wear splash-proof or dust-resistant safety goggles to prevent eye contact with this substance.

Emergency eye wash: Where there is any possibility that an employee's eyes may be exposed to this substance, the employer should provide an eye wash fountain within the immediate work area for emergency use.

AUTHORIZED - FISHER SCIENTIFIC, INC.
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-ADDITIONAL INFORMATION-