



Material Safety Data Sheet

NFPA Classification	DOT/TDG Pictograms	WHMIS Classification	Protective Clothing

Section I. Chemical Product and Company Identification

PRODUCT NAME/ TRADE NAME	Ammonium Nitrate, Prills		
SYNONYM	Prilled Ammonium Nitrate (PAN), Low Density Ammonium Nitrate (LDAN)		
CHEMICAL NAME	Ammonium Nitrate	Revision Number:1	
CHEMICAL FAMILY	Nitrate Salt. (Oxidizing agent)	MSDS prepared by Technical Services on: June 27, 2005	
CHEMICAL FORMULA	NH ₄ NO ₃	24 Hour Emergency Telephone Number: (520) 720-2150 (Ask for the Shift Supervisor) CHEMTREC 1-800-424-9300	
MATERIAL USES	Agricultural industry: Fertilizer. Industrial applications: Manufacture of chemicals. Manufacture of specialty fertilizers. Mining: Ingredient for ANFO.		
MANUFACTURER	SUPPLIER		
Apache Nitrogen Products, Inc. P. O. Box 700 Benson, AZ 85602 Fax (520) 720-4158 www.apachenitro.com	Apache Nitrogen Products, Inc. P. O. Box 700 Benson, AZ 85602 Fax (520) 720-4158 www.apachenitro.com		

Section II. Hazardous Ingredients

NAME	CAS #	Exposure Limits (ACGIH)						% by Weight
		TLV-TWA 10mg/m ³	TLV-TWA ppm	STEL 10mg/m ³	STEL ppm	CEIL 10mg/m ³	CEIL ppm	
Ammonium Nitrate	6484-52-2	10						99.8

Other Information on Ingredients: Treat as nuisance dust at concentration of 5mg/m³ or higher.

Section III. Hazards Identification

POTENTIAL ACUTE HEALTH EFFECTS	<p>May interfere with the oxygen carrying capacity of the blood if ingested in large quantities or over a prolonged period of time. Persons with anemia, bowel diseases, or infants, are more likely to develop effects. Over-exposure by ingestion is unlikely under normal working conditions. Inhalation of dusts may cause respiratory irritation. This product may irritate eyes and skin upon contact but is unlikely to injure tissue.</p> <p>Symptoms of overexposure may include:</p> <ul style="list-style-type: none"> Cardiovascular: methemoglobinemia, low blood pressure (hypotension), irregular heart beat (arrhythmia), shock (vasodilation) CNS: headache, dizziness, generalized tingling sensation (paresthesia) Gastrointestinal: nausea, vomiting, diarrhea, abdominal pain Eye: redness and inflammation (conjunctivitis) Skin: bluish discoloration (cyanosis) with profuse sweating following ingestion or irritation and flushed skin following contact with moist skin surfaces.
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Section III. Hazards Identification

POTENTIAL CHRONIC HEALTH EFFECTS	<p>CARCINOGENIC EFFECTS: NONE by ACGIH, EPA, IARC, NTP, OSHA. MUTAGENIC EFFECTS: NONE by ACGIH, EPA, IARC, NTP, OSHA. TERATOGENIC EFFECTS: NONE by ACGIH, EPA, IARC, NTP, OSHA.</p> <p>Repeated or prolonged overexposure by ingestion can reduce the oxygen carrying capacity of the blood producing anoxia in infants or individuals with preexisting bowel or blood diseases. Ensure that nitrate containing fertilizers are not applied near wells where contamination may occur. Consult your agronomist regarding the advisability and precautions for use of nitrate fertilizers on fruit or vegetable crops.</p> <p>If breathing fumes of decomposition, a sensation of tightness, burning of the chest and shortness of breath may occur in 6-48 hours.</p>
ROUTE(S) of ENTRY	Inhalation – Yes Skin – Yes Ingestion - Yes

Section IV. First Aid Measures

EYE CONTACT	Immediately flush eyes with running water for at least 15 minutes, keeping eyelids open. Obtain medical attention if irritation persists.
MINOR SKIN CONTACT	May cause skin irritation. Wash contaminated skin with soap and water. Cover dry or irritated skin with a good quality skin lotion. If irritation persists, seek medical attention.
EXTENSIVE SKIN CONTACT	No additional information.
MINOR INHALATION	Inhalation of dust may produce irritation, burning, sneezing and coughing. Long term exposure may cause headache, nausea or weakness. Loosen tight clothing. Allow affected persons to rest in a well ventilated area. Obtain medical attention if irritation persists.
SEVERE INHALATION	In emergency situations use proper respiratory protection to evacuate affected individuals to a safe area as soon as possible. Loosen tight clothing around the person's neck and waist. Oxygen may be administered if breathing is difficult. If the person is not breathing, perform artificial respiration. Obtain immediate medical attention.
SLIGHT INGESTION	Have conscious person drink several glasses of water or milk. Induce vomiting. Lower the head so that the vomit will not reenter the mouth and throat. NEVER give an unconscious person anything to drink. Obtain medical attention.
EXTENSIVE INGESTION	No additional information.

Section V. Fire and Explosion Data

THE PRODUCT IS	Non-flammable.
AUTO-IGNITION TEMPERATURE	Not applicable.
FLASH POINT	Not applicable.
FLAMMABILITY LIMITS	Not applicable.
PRODUCTS OF COMBUSTION	Material will not burn, but thermal decomposition may result in flammable/toxic gases being formed. These products are nitrogen oxides and ammonia (NO, NO ₂ , NH ₃).
FIRE HAZARD IN THE PRESENCE OF VARIOUS SUBSTANCES	Not applicable.
EXPLOSION HAZARD IN THE PRESENCE OF VARIOUS SUBSTANCES	<p>Oxidizer: Material is an oxidizer which may react readily with other materials, especially upon heating.</p> <p>In confinement and in the presence of a strong detonation source, the material can explode when subject to sudden shock, pressure, or high temperature. Avoid temperatures above 210°C (410 OF) which may cause thermal decomposition or explosion, especially in confined or poorly ventilated spaces. Incompatible with sulfur, chlorides, reducing agents, or other oxidizers.</p> <p>Incompatible with finely powdered metals (cadmium, copper, lead, cobalt, nickel, bismuth, chromium, <u>magnesium, zinc, sodium, potassium and aluminum</u>).</p>
FIRE FIGHTING MEDIA AND INSTRUCTIONS	Oxidizing material. Cool containing vessels, bins or buildings with water jets in order to prevent pressure build-up, or explosion. Establish unmanned monitors and apply flooding quantities of water. Withdraw to a safe location. Evacuate surrounding area. Material will not burn. Undergoes thermal decomposition at elevated temperatures to release toxic and combustible gases (ammonia, carbon dioxide, and oxides of nitrogen). If fumes or gases are present, fire fighters should wear self contained breathing apparatus.
SPECIAL REMARKS ON FIRE HAZARDS	Material supports combustion. Powerful oxidizing agent supports combustion by liberating oxygen even if smothered. Avoid temperatures above 210°C (410°F) in confined or poorly ventilated spaces. Explosive when exposed to heat or flame <u>under confinement</u> . Avoid pressure build-up. Thermal decomposition or explosion may result. Ventilate to cool and flood with water to stop decomposition reaction. Contain and collect all runoff for treatment. Prevent fire water from reaching water courses or aquifers.

Section V. Fire and Explosion Data**SPECIAL REMARKS ON EXPLOSION HAZARDS**

Industry studies have proposed the following rules for blends of ammonium nitrate with phosphate and potassium containing fertilizers:

- a) Ammonium nitrate fertilizers are reported not to detonate unless the fertilizer contains at least 70% ammonium nitrate, unless ammonium sulfate is present in the blend. Blended ammonium nitrate - ammonium sulfate fertilizers may detonate with as little as 45% ammonium nitrate present.
- b) It has been reported that it is desirable to keep the ammonium to nitrate ratio above 1.5 in fertilizer blends in order to minimize toxic gas release during "cigar burn" fires.
- c) "Cigar burn" is considered to be a hazard primarily when the ammonium nitrate content of a blend is between 20-40%. Cigar burn is a rare phenomenon which requires the combustion of a separate combustible material such as sulfur which can cause thermal decomposition of nearby ammonium nitrate.

Note - Dry Ammonium Nitrate, of any grade, when contaminated with oil, charcoal, and other organic substances and flammable liquids, should be considered an explosive, capable of detonation by combustion, or by explosion of adjacent explosives.

Section VI. Accidental Release Measures**SMALL SPILL**

Use appropriate tools to put the spilled solid in a convenient container for reuse or disposal.

LARGE SPILL

In the event of a spill, prevent additional discharge of material, if possible to do so without hazard. Prevent spills from entering sewers, watercourses, wells, etc. Product will promote algae growth which may degrade water quality and taste. Notify downstream water users. Nitrate in potable drinking water should be maintained below 10 mg/L. Will dissolve and disperse in water. Put the material into suitable container for reuse or disposal.

Section VII. Handling and Storage**PRECAUTIONS**

Keep away from heat, combustible materials, and reducing agents. Avoid contact with skin and eyes. Do not ingest or breathe dust. Take precautions against electrostatic discharges. Keep out of reach of children. Keep away from food, drink and animal feed. Notify police and fire departments for assistance. Comply with all federal, state and/or local rules and regulations in the use of Ammonium Nitrate.

STORAGE

Store in a dry, cool and well ventilated area. Keep away from food, drink and animal feeds. Keep away from combustible materials. Keep away from incompatible materials. Do not blend or store in contact with urea. Dry urea and dry ammonium nitrate will react together to produce a slurry.

Section VIII. Exposure Controls / Personal Protection**ENGINEERING CONTROLS**

Use process enclosures, local exhaust ventilation, or other engineering controls to keep airborne levels below recommended exposure limits. If user operations generate dust, use ventilation to keep exposure to airborne contaminants below the exposure limit.

PERSONAL PROTECTION

The selection of personal protective equipment varies, depending upon conditions of use. Wear appropriate respiratory protection for dust/mist when ventilation is inadequate. A filtering face piece dust mask is recommended for most applications if respiratory protection is needed. Where skin and eye contact may occur as a result of brief periodic exposures, wear long sleeved clothing, coveralls, chemical resistant gloves, and safety glasses with side shields.

Wash hands thoroughly after handling product. Do not contaminate food products. Equipment used in handling the material must be thoroughly cleaned before repair or maintenance. Maintain a high standard of housekeeping in storage and processing areas.

PERSONAL PROTECTION IN CASE OF LARGE RELEASE

No additional information.

EXPOSURE LIMITS

U.S. OSHA PEL: 5mg/m³ as particulate not otherwise regulated.

Permissible exposures may vary from jurisdiction to jurisdiction. Consult local authorities for acceptable exposure limits in your area.

Section IX. Physical and Chemical Properties**PHYSICAL STATE AND APPEARANCE**

White spherical grain

MOLECULAR WEIGHT

Not applicable.

COLOR

White

pH (10% SOLN/WATER)

4.0-6.0

ODOR

Odorless

BOILING POINT

Decomposes.

ODOR THRESHOLD

Not applicable.

MELTING POINT

170°C (338°F)

TASTE

Disagreeable. Acrid. Strong.

CRITICAL TEMPERATURE

Not applicable.

VOLATILITY

Not applicable.

SPECIFIC GRAVITY g/cc

1.26 @70° F (Water = 1)

SOLUBILITY

Easily soluble in cold water, hot water.

Section IX. Physical and Chemical Properties

BULK DENSITY kg/m³; lbs/ft³	Loose: 875 kg/m ³ ; 54.6 lbs/ft ³ ; Tapped: 914 kg/m ³ ; 57.1 lbs/ft ³	DISPERSION PROPERTIES	See solubility in water, methanol, and acetone.
VAPOR PRESSURE	0 mm of Hg @ 20°C	WATER/OIL DIST. COEFF.	Not available.
VAPOR DENSITY	Not applicable		

Section X. Stability and Reactivity Data

STABILITY	The product is stable.		
INSTABILITY TEMPERATURE	Exposure above 400° F can cause decomposition which may be violent under confinement.		
CONDITIONS OF INSTABILITY	No additional remark.		
INCOMPATIBILITY WITH VARIOUS SUBSTANCES	Reactive with combustible materials. Slightly reactive to reactive with reducing agents, organic materials, metals, moisture. Very slightly to slightly reactive with alkalis. Non-reactive with acids.		
CORROSIVITY	Slightly corrosive to aluminum, zinc, and copper. Non-corrosive to steel and stainless steel (304 or 316).		
SPECIAL REMARKS ON REACTIVITY	Absorbs moisture from the air. Incompatible with magnesium, zinc, sodium, potassium, and other finely powdered metals. May explode by detonation, heat or shock.		
SPECIAL REMARKS ON CORROSIVITY	Avoid contact with moisture. Slow hydrolysis may produce acids corrosive to metals. Contact your sales representative or a metallurgical specialist to ensure compatibility with system equipment.		

Section XI. Toxicological Information

SIGNIFICANT ROUTES OF EXPOSURE	Ingestion. Inhalation. Skin contact.		
SPECIAL REMARKS ON TOXICITY TO ANIMALS	Toxic to livestock, wildlife, and domestic animals if directly ingested. Ensure that all spillage is cleaned up and that top dressing on pasture lands is applied uniformly. Allow 2 - 4 days to pass after application before returning livestock to pasture. The product itself and its products of degradation are not harmful under normal conditions of careful and responsible use.		
OTHER EFFECTS ON HUMANS	Recent studies undertaken by the U.S. Government using Canadian and American databases have determined that ammonium nitrate fertilizer does not demonstrate any risk of gastrointestinal cancer.		
INHALATION	Ammonium Nitrate is an irritant substance and inhalation of vapor or dust can be expected to cause irritation of the respiratory passages. It is considered unlikely that absorption of a sufficient quantity of the compound to cause general poisoning could occur by this route if personnel are adequately protected in dusty conditions.		
SKIN CONTACT	Ammonium Nitrate may cause itching and other signs of irritation, delays healing and may cause ulceration. Occasionally, individuals may exhibit sensitivity to Ammonium Nitrate and may develop an urticarial rash.		
EYE CONTACT	Ammonium Nitrate dust or strong solutions of the salt cause eye irritation.		
INGESTION	Relatively large amounts of Ammonium Nitrate must be ingested to produce toxic effects. In humans, 6 to 12 grams daily in divided doses may cause nausea and vomiting, acidosis, and in some individuals, methemoglobin formation.		
SPECIAL REMARKS ON CHRONIC EFFECTS ON HUMANS	Exposure can cause headache, stomach pains, vomiting and diarrhea. Produces methemoglobin which reduces oxygen supply in the circulating blood. Although predominantly affecting infants, nitrate induced methemoglobinemia has also been documented in adults.		
SPECIAL REMARKS ON OTHER EFFECTS ON HUMANS	No additional remark.		

Section XII. Ecological Information

ECOTOXICITY	Non-persistent. Non-cumulative when applied using normal agricultural practices. Low toxicity for humans or animals under normal conditions of use. May be harmful to livestock and wildlife if ingested. Clean up all spilled material, especially where bulk fertilizer loading of equipment occurs to prevent animal exposure. Aquatic/Marine Toxicity: Will release ammonium ions. Ammonia is a toxic hazard to fish. Avoid spills or release to watercourses. Will disperse with current. Release to watercourses may cause effects down stream from the point of release. U.S. D.O.T.: This material NOT listed as a Marine pollutant.		
BOD and COD	Not available.		
PRODUCTS OF DEGRADATION	Not applicable.		
TOXICITY OF THE PRODUCTS OF DEGRADATION	The product itself and its products of degradation are not harmful under normal conditions of use. Avoid spills or releases to watercourses.		
SPECIAL REMARKS ON THE PRODUCTS OF DEGRADATION	Product will promote algae growth which may degrade water quality and taste. Notify downstream water users. Nitrate in potable drinking water should be maintained below 10mg/L. Will dissolve and disperse in water.		

Section XIII. Disposal Considerations**WASTE DISPOSAL OR RECYCLING**

Recycle to process, if possible. Recover and place material in a suitable container for intended use or disposal. Ensure disposal complies with government requirements and local regulations.

Section XIV. Transport Information**DOT / TDG CLASSIFICATION**

DOT/TDG CLASS 5.1: Oxidizing substance.

PIN and Shipping Name

Proper shipping name: Ammonium nitrate
PIN #: UN1942

SPECIAL PROVISIONS FOR TRANSPORT

U.S. DOT: A1, A29, 188, IP3

DOT (U.S.A.) (Pictograms)**National Fire Protection Association (U.S.A)**

Hazards presented under acute emergency conditions only:

Health



Fire Hazard

Reactivity

Specific Hazard

NOTICE TO READER

The buyer assumes all risk in connection with the use of this material. The buyer assumes all responsibility for ensuring this material is used in a safe manner in compliance with applicable environmental, health and safety laws, policies and guidelines. Apache Nitrogen Products, Inc. assumes no responsibility or liability for the information supplied on this sheet, including any damages or injury caused thereby. Apache Nitrogen Products, Inc. does not warrant the fitness of this material for any particular use and assumes no responsibility for injury or damage caused directly or indirectly by or related to the use of the material. The information contained in this sheet is developed from what Apache Nitrogen Products, Inc. believes to be accurate and reliable sources, and is based on the opinions and facts available on the date of preparation.