



# Ammonium Nitrate Solution

## Safety Data Sheet

Classified according to the UN-GHS as adopted in the US Hazard Communication Standard (HCS 2012), the Canada Hazardous Products Regulations (WHMIS 2015) and Mexico NOM-018-STPS-2015.

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## SECTION 1: IDENTIFICATION

### 1.1. Product Identifier

**Product Name:** Ammonium Nitrate Solution

**Formula:** NH<sub>4</sub>NO<sub>3</sub> in H<sub>2</sub>O

**Synonyms:** ANS, Ammonium Nitrate Liquor, Ammonium Nitrate Fertilizer, Ammonium Nitrate Liquid

**STCC:** 4918774

### 1.2. Intended Use of the Product

**Uses of the substance/mixture:** Fertilizer, Nitrous Oxide manufacturing, Industrial Chemicals manufacturing.

**Uses advised against:** Consumer use

### 1.3. Name, Address, and Telephone of the Responsible Party

#### Company

CF Industries

2375 Waterview Drive

Northbrook, Illinois, USA

847-405-2400

[www.cfindustries.com](http://www.cfindustries.com)

### 1.4. Emergency Telephone Number

**Emergency Number** : 800-424-9300

For Chemical Emergency, Spill, Leak, Fire, Exposure, or Accident, call CHEMTREC – Day or Night

## SECTION 2: HAZARDS IDENTIFICATION

### 2.1. Classification of the Substance or Mixture

#### Classification (GHS-US)

Ox. Liq. 3 H272

Eye Irrit. 2A H319

Full text of H-phrases: see Section 16

### 2.2. Label Elements

#### GHS-US Labeling

**Hazard Pictograms (GHS-US)** :



**Signal Word (GHS-US)** : Warning

**Hazard Statements (GHS-US)** : H272 - May intensify fire; oxidizer.

H319 - Causes serious eye irritation.

**Precautionary Statements (GHS-US)** : P210 - Keep away from extremely high temperatures, ignition sources, incompatible materials. No smoking.

P221 - Take any precaution to avoid mixing with combustible material, oxidizable materials, and incompatible materials.

P264 - Wash hands, forearms, and other exposed areas thoroughly after handling.

P280 - Wear protective gloves, protective clothing, and eye protection.

P305+P351+P338 - IF IN EYES: Rinse cautiously with water for several minutes.

Remove contact lenses, if present and easy to do. Continue rinsing.

P337+P313 - If eye irritation persists: Get medical advice/attention.

P370+P378 - In case of fire: Flood burning ammonium nitrate fertilizer with large volumes of low pressure water to extinguish.

P501 - Dispose of contents/container in accordance with local, regional, national, territorial, provincial, and international regulations.

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### 2.3. Other Hazards

Contact with combustible material will increase fire hazard. May undergo detonation if heated under confinement causing pressure buildup or if subjected to strong shocks. Solid ammonium nitrate when contaminated, sensitized, or during decomposition may become unstable and/or explosive. When ammonium nitrate is heated to decomposition, it may produce vapors which contain nitrogen oxides (NO<sub>x</sub>). See Section 10.2 for list of materials that may contaminate ammonium nitrate. Exposure may aggravate those with pre-existing eye, skin, or respiratory conditions. Overexposure 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.

### 2.4. Unknown Acute Toxicity (GHS-US)

No data available

## SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS

### 3.1. Substances

Not applicable

### 3.2. Mixture

Name	Product Identifier	% (w/w)	Classification (GHS-US)
Ammonium nitrate	(CAS No) 6484-52-2	50-85	Ox. Sol. 3, H272 Eye Irrit. 2A, H319
Water	(CAS No) 7732-18-5	15-50	Not classified

Full text of H-phrases: see Section 16

## SECTION 4: FIRST AID MEASURES

### 4.1. Description of First Aid Measures

**General:** Never give anything by mouth to an unconscious person. If you feel unwell, seek medical advice (show the label where possible).

**Inhalation:** When symptoms occur: go into open air and ventilate suspected area. Obtain medical attention if breathing difficulty persists.

**Skin Contact:** Remove contaminated clothing. Drench affected area with water for at least 15 minutes. Obtain medical attention if irritation develops or persists.

**Eye Contact:** Rinse cautiously with water for at least 15 minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Obtain medical attention.

**Ingestion:** Rinse mouth. Do NOT induce vomiting. Seek medical attention immediately.

### 4.2. Most Important Symptoms and Effects Both Acute and Delayed

**General:** Eye irritation.

**Inhalation:** May cause respiratory irritation.

**Skin Contact:** May cause skin irritation.

**Eye Contact:** Causes serious eye irritation. Symptoms may include: Redness, pain, swelling, itching, burning, tearing, and blurred vision.

**Ingestion:** 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 Symptoms:** Overexposure to this material may result in methemoglobinemia.

### 4.3. Indication of Any Immediate Medical Attention and Special Treatment Needed

If exposed or concerned, get medical advice and attention. Hot ammonium nitrate burns skin, allowing rapid absorption of ammonium nitrate through the skin and toxic effects can occur quite rapidly. Causes methemoglobinemia – emergency response should treat appropriately, such as by intravenous administration of methylene blue in addition to thermal burn treatment.

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## SECTION 5: FIRE-FIGHTING MEASURES

### 5.1. Extinguishing Media

**Suitable Extinguishing Media:** When responding to a fire where ammonium nitrate is stored, refer to Section 5.3. Water is the only satisfactory extinguishing material for fires involving ammonium nitrate. It is important that the mass be kept cool and the burning of combustible materials at ammonium nitrate storage sites be promptly extinguished in order to prevent the ammonium nitrate from itself becoming heated. Flood fires proximate to ammonium nitrate fertilizer with large volumes of low pressure water. Large flooding volumes of water can be directly applied to the ammonium nitrate either manually or by automatic sprinkler system to cool the pile and prevent decomposition. The available water supply for extinguishing fires which could potentially impact ammonium nitrate must be sufficient to provide an adequate volume of water over a minimum of 2 hours.

**Unsuitable Extinguishing Media:** Do not use salt water, carbon dioxide, dry chemicals or foam extinguishers. Never attempt to smother fire, such as by sealing off or closing a compartment or building's doors when fire occurs. Do not add steam.

### 5.2. Special Hazards Arising From the Substance or Mixture

**Fire Hazard:** Ammonium nitrate is an oxidizer and as such may increase the flammability and/or explosiveness of other substances.

**Explosion Hazard:** May undergo detonation if heated under confinement causing pressure buildup and/or if subjected to strong shocks. When sensitized or during decomposition, solid ammonium nitrate may become unstable and/or explosive. Contamination of ammonium nitrate with oil, diesel fuel, charcoal, sulfur, metal fines or other combustible substances could cause an explosion.

**Reactivity:** Contact with combustible material will increase fire hazard. Smothering ammonium nitrate that is decomposing or involved in a fire may cause an explosion.

### 5.3. Advice for Firefighters

**Precautionary Measures Fire:** When responding to a fire where ammonium nitrate is stored, it is critical for firefighters to approach the facility with an accurate and up-to-date *Pre-Incident Emergency Response Plan*. Pre-incident emergency response planning with the fire department and/or local emergency management officials should be developed for every ammonium nitrate storage facility and should include instructions on when to fight the fire and when to evacuate (see Firefighting Instructions). The *Pre-Incident Emergency Response Plan* should account for decomposition products, fire effluents, and potential for explosions. The *Pre-Incident Emergency Response Plan* should also account for emission of toxic gases from the fires, including those from decomposition, and plume travel depending on wind direction. The *Pre-Incident Emergency Response Plan* should be specific to the facility and community. See *NFPA 400: Hazardous Materials Code* (latest edition) for all the fire and life safety requirements applicable to handling, storage, and use of this material. Another resource to consider is the latest edition of the *EPA-OSHA-BATFE Joint Chemical Advisory: Safe Storage, Handling and Management of Solid Ammonium Nitrate Prills*.

**Firefighting Instructions:** Following the guidance of an up-to-date *Pre-Incident Emergency Response Plan*, firefighters should only attack fires at sites where ammonium nitrate is stored if they are confident the fire is not causing decomposition of the ammonium nitrate. Firefighters should only attack incipient stage fires in areas where ammonium nitrate is present or in vehicles transporting ammonium nitrate, in order to extinguish the fire and prevent it from spreading to the ammonium nitrate storage. Incipient stage fires at sites where ammonium nitrate is stored are the only fires that should be attacked by firefighters when human operators of fire extinguishers or fire hoses are required. Upon arrival at a site, firefighters should consider placing unmanned monitor nozzles that do not require human operators in the event the fire progresses past the incipient stage, thus requiring evacuation. During incipient stage fires, large flooding volumes of water should be applied as quickly as possible at low pressure. Normally ventilation and the application of water, including automatic sprinklers, can quickly desensitize and stabilize hot ammonium nitrate material.

For fires that have progressed beyond the incipient stage or where it is determined the ammonium nitrate has become involved in the fire, fire fighters, emergency responders, and facility personnel should withdraw to a distance of 1 mile (1.6 km) and allow the structure or vehicle to burn to completion.

If any of the following are observed, then evacuation is deemed necessary and fire-fighting personnel should immediately evacuate the area within 1 mile (1.6 km) (or as determined by the *Pre-Incident Emergency Response Plan*) in all directions:

- The fire is impacting the ammonium nitrate storage area
- Brown/orange smoke is detected indicating the presence of nitrogen dioxide which is a toxic byproduct of ammonium nitrate fire exposure and decomposition
- There is a rapid increase in the amount/intensity of smoke or fire in the area of the ammonium nitrate storage.

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**Protection During Firefighting:** Do not enter fire area without proper protective equipment, including respiratory protection. Positive pressure self-contained breathing apparatus (SCBA) should be used when there is a potential for inhalation of vapors and/or fumes.

Firefighters should always follow the *Pre-Incident Emergency Response Plan* and not fight an ammonium nitrate facility fire if the ammonium nitrate storage is engaged. Everyone, including firefighters, should be evacuated to a distance of 1 mile (1.6 km) or as defined in the *Pre-Incident Emergency Response Plan*. For fires that have engaged ammonium nitrate, response activities should focus on evacuation of the area.

**Hazardous Combustion Products:** Nitrogen oxides. Carbon oxides (CO, CO<sub>2</sub>). Ammonia. Nitric Acid. Highly toxic and corrosive gases are released.

**Other Information:** Firewater should be contained and prevented from leaving the site and entering streams, lakes, rivers or other waterbodies.

### Reference to Other Sections

Refer to Section 9 for flammability properties.

## SECTION 6: ACCIDENTAL RELEASE MEASURES

### 6.1. Personal Precautions, Protective Equipment and Emergency Procedures

**General Measures:** Handle in accordance with good industrial hygiene and safety practice. Do not get in eyes, on skin, or on clothing. Eliminate all ignition sources (no smoking, flares, sparks or flames in immediate area). Keep away from combustible material. Spill control for ammonium nitrate solids and liquids must prevent discharge or contamination of the ammonium nitrate material. Spilled material, if uncontaminated, can be salvaged by placing into a clean bag or bin for reuse.

#### 6.1.1. For Non-Emergency Personnel

**Protective Equipment:** Use appropriate personal protection equipment (PPE). Wear suitable protective clothing, gloves and eye or face protection.

**Emergency Procedures:** For large spills such as bulk trailer or bulk railcar breaches, contact appropriately trained personnel to assist with cleanup. Spilled material, if uncontaminated, can be salvaged by placing into a clean bag or bin for reuse. Avoid contact with skin and eyes. Non-fire and non-decomposition related incidents should focus on preventing further spillage, contamination, or exposure of personnel to ammonium nitrate. In the event of a fire or decomposition involving ammonium nitrate, refer to Section 5.

#### 6.1.2. For Emergency Personnel

**Protective Equipment:** Equip cleanup crew with proper protection. Use appropriate personal protection equipment (PPE).

**Emergency Procedures:** Upon arrival at the scene, the first responder is expected to recognize the presence of dangerous goods, protect oneself and the public, secure the area, and call for the assistance of appropriately trained personnel as soon as conditions permit. For a non-fire, non-decomposition related incident, such as a spill of ammonium nitrate or contamination by other materials, clean-up crews should wear appropriate personal protection equipment (PPE). Non-fire and non-decomposition related incidents should focus on preventing further spillage, contamination, or exposure of personnel to ammonium nitrate. In the event of a fire or decomposition involving ammonium nitrate, refer to Section 5.

### 6.2. Environmental Precautions

Prevent entry to sewers and public waters.

### 6.3. Methods and Material for Containment and Cleaning Up

**For Containment:** Collect spillage. Spilled ammonium nitrate fertilizer can be reused if kept dry and uncontaminated.

**Methods for Cleaning Up:** Clean up spills immediately and dispose of waste safely. Absorb and/or contain spill with inert material, then place in suitable container. Keep combustibles (wood, paper, oil, etc.) and incompatible materials away from spilled material. Spills that have become contaminated with organic matter or other combustible material may present a fire and explosion hazard. Such material should be shoveled into drums and dissolved in water to obtain at least 50% water solution. After cleaning, flush traces away with water.

### 6.4. Reference to Other Sections

See Section 5, Fire Fighting Measures. See Section 8, Exposure Controls and Personal Protection. See Section 13, Disposal Considerations.

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### SECTION 7: HANDLING AND STORAGE

#### 7.1. Precautions for Safe Handling

**Additional Hazards When Processed:** Keep away from open flames, hot surfaces and sources of ignition. When heated to melting and decomposition, ammonium nitrate emits nitrous oxide and water vapors and may explode if confined. Avoid dust production as ammonium nitrate is hygroscopic and dust will absorb water from the atmosphere and form caked material more easily than larger particles. Also, ammonium nitrate dust is more difficult to handle and when spilled can become contaminated. Any proposed use of this product in elevated-temperature processes should be thoroughly evaluated to assure that safe operating conditions are established and maintained. See *NFPA 400: Hazardous Materials Code* (latest edition) for all the fire and life-safety requirements applicable to handling, storage, and use of this material.

**Hygiene Measures:** Handle in accordance with good industrial hygiene and safety procedures. Wash hands and other exposed areas with mild soap and water before eating, drinking, or smoking and again when leaving work. Always wear appropriate personal protective equipment when handling oxidizers such as ammonium nitrate.

#### 7.2. Conditions for Safe Storage, Including Any Incompatibilities

**Technical Measures:** Ensure ammonium nitrate is stored in accordance with all applicable local, regional, national, provincial, and/or territorial regulations, including 29 CFR 1910.109(i) and *Chemical Advisory: Safe Storage, Handling, and Management of Ammonium Nitrate* (EPA 550-F-15-001 June 2015, or latest edition). Contact your local authority having jurisdiction to establish a *Pre-Incident Emergency Response Plan* and to determine any additional specific handling, storage and approval requirements. See *NFPA 400: Hazardous Materials Code* (latest edition) for all the fire and life safety requirements applicable to handling, storage, and use of this material.

**Storage Conditions:** Ammonium nitrate should be stored in separate buildings or storage areas separated from combustible materials by an approved fire barrier wall with a minimum fire resistance rating of 2 hours. The exterior wall of the exposed side of an ammonium nitrate storage building must not be within 50 feet (15.2 m) of a combustible building unless other risk mitigations are approved by the authority having jurisdiction.

Store in a well-ventilated area away from acute fire hazards and easily oxidizable materials. Avoid contamination. Do not store near dynamite, blasting caps or other explosives. Store away from combustible materials, extremely high temperatures, compressed flammable gases, pyrophoric materials, corrosive materials, flammable and combustible liquids, ignition sources, and incompatible and/or contaminating materials. Storage of internal combustion powered equipment such as trucks, fork trucks, tractors, and front end loaders must not be permitted in an ammonium nitrate storage building. Equipment used to reclaim ammonium nitrate from a storage building or bin must never be left unattended when the equipment is in the building. See *NFPA 400: Hazardous Materials Code* (latest edition) for additional guidance on separation distances for equipment from ammonium nitrate storage buildings.

**Incompatible Materials:** The following list is not comprehensive but represents materials identified from multiple resources such as NFPA 400 (most recent edition): Acids, Acetic Anhydride, Alkali Metals, Aluminum + Calcium Nitrate, Aluminum, Ammonium Chloride, Ammonium Dichromate, Ammonium Phosphate + Potassium, Animal fats, Antimony, Bagged or Baled combustibles (cotton, rags, paper, seeds), Barium Chloride, Bismuth, Bleaching powders or chemicals, Brass or Bronze, Burlap, Cadmium, Camphor, Caustic soda, Charcoals, Chlorides, Chromium, Coal, Coke, Cobalt, Copper Iron II Sulfide, Copper, Cork, Cyanoguanidine, Diesel fuel and oils, Finely divided or powdered metals, Fibers, Fish oils, Fish meal, Foam rubber, Hay, Hydrocarbon Oils, Iron, Lead, Lubricating oil, Magnesium, Manganese, Naphthalene, Nickel, Oakum, Oiled materials (clothing, paper, textiles), Organic Chemicals, Paint, Phosphorus, Potassium Chromate, Potassium Dichromate, Potassium Nitrate, Potassium Nitrite, Potassium Permanganate, Seed or vegetable oils of any type, Sawdust, Seeds, Sodium Chloride, Sodium Perchlorate, Straw, Sugar, Sulfide Ores, Sulfur, Tin, Titanium, Trinitroanisole, Wood Chips or shavings, and Zinc.

Note: While some other fertilizer materials such as Potassium Chloride (also known as potash) or other chloride based fertilizers are commonly blended with ammonium nitrate just prior to field application, these may create additional risk of sensitizing molten ammonium nitrate in the event of a fire.

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**Storage Area:** Storage construction should be of non-combustible materials and should be equipped with an automatic sprinkler system (see the latest edition of *NFPA 400: Hazardous Materials Code*). Ammonium nitrate storage buildings must be equipped with an approved fire detection system.

All flooring in ammonium nitrate storage buildings and handling areas must be free of open drains, traps, tunnels, pits, or pockets to prohibit the accumulation of flowing molten ammonium nitrate in the event of a fire. Flooring must be constructed of non-combustible materials such as concrete unless the facility floor has been protected from ammonium nitrate impregnation. Floors constructed of combustible materials should be identified as a risk during a *Pre-Incident Emergency Response Plan* review with the local authority having jurisdiction.

Storage should be designed for safe release of pressure by providing adequate ventilation, or the building should be of such construction that it will be self-ventilating in the event of a fire. See OSHA memo titled *Guidance on the Ammonium Nitrate Storage Requirements* in 29 CFR 1910.109(i) published December 3, 2014, by the US Department of Labor, *Chemical Advisory: Safe Storage, Handling, and Management of Ammonium Nitrate* (EPA 550-F-15-001 June 2015, or latest edition), or *NFPA 400: Hazardous Materials Code* (latest edition) A.11.2.3, for additional guidance on acceptable ventilation rate models.

### 7.3. Specific End Use(s)

Fertilizer, nitrous oxide manufacture and industrial chemicals.

## SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

### 8.1. Control Parameters

For substances listed in Section 3 that are not listed here, there are no established exposure limits from the manufacturer, supplier, importer, or the appropriate advisory agency including: ACGIH (TLV), NIOSH (REL), OSHA (PEL), Canadian provincial governments, or the Mexican government.

### 8.2. Exposure Controls

**Appropriate Engineering Controls:** Ensure all national/local regulations are observed. Ensure adequate ventilation, especially in confined areas. Gas detectors should be used when toxic gases may be released. Ensure that dust-handling systems (such as exhaust ducts, dust collectors, vessels, and processing equipment) are designed in a manner to prevent the escape of dust into the work area (i.e., there is no leakage from the equipment). Provide sufficient ventilation to keep ammonia vapors below the permissible exposure limit.

**Personal Protective Equipment:** Protective glasses or goggles. Gloves. If there is insufficient ventilation, wear respiratory protection. Full protective flameproof clothing.



**Materials for Protective Clothing:** Flame retardant antistatic protective clothing.

**Hand Protection:** Wear chemically resistant protective gloves.

**Eye Protection:** Chemical safety glasses or goggles.

**Skin and Body Protection:** Wear body protective covering. Rubber or other chemical resistant boots.

**Respiratory Protection:** If exposure limits are exceeded or irritation is experienced, approved respiratory protection should be worn.

**Environmental Exposure Controls:** Do not allow the product to be unintentionally released into the environment.

## SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

### 9.1. Information on Basic Physical and Chemical Properties

Physical State	: Liquid
Appearance	: Colorless to slightly opaque
Odor	: Slight ammonia odor (pungent)
Odor Threshold	: Not established
pH	: 4 - 6 (Depends on free nitric acid and free ammonia)
Evaporation Rate	: Not available
Freezing Point	: 168°F (75.5°C) (Starts to solidify or crystallize)
Boiling Point	: 266 °F (130 °C) (Water will start to separate out of solution)
Flash Point	: Not applicable
Auto-ignition Temperature	: Not applicable

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<b>Decomposition Temperature</b>	: (starts at) $\geq 338$ °F ( $\geq 170$ °C)
<b>Flammability (solid, gas)</b>	: Not flammable
<b>Lower Flammable Limit</b>	: Not flammable
<b>Upper Flammable Limit</b>	: Not flammable
<b>Vapor Pressure</b>	: Not available
<b>Relative Vapor Density at 20 °C</b>	: Not available
<b>Relative Density</b>	: 11.43 lb/gal @ 60 °F (16 °C)
<b>Specific Gravity</b>	: 1.37 @ 70°F (21°C)
<b>Solubility</b>	: Completely soluble in water
<b>Partition Coefficient: N-Octanol/Water</b>	: Not relevant as substance is inorganic
<b>Viscosity</b>	: Not available
<b>Explosion Data – Sensitivity to Mechanical Impact</b>	: Contaminated material may form shock sensitive compounds that may explode when dry.
<b>Molecular Weight</b>	: 80.05

## SECTION 10: STABILITY AND REACTIVITY

### 10.1. Reactivity

Ammonium nitrate is stable under normal conditions, but starts to dissociate and decompose at temperatures above 410°F (210°C). Upon decomposition, it emits nitrogen oxide (NO<sub>x</sub>) and water vapors and may explode if confined. Hazardous decomposition products can include ammonia, oxides of nitrogen, and nitric acid. If the product has been contaminated with another substance, the decomposition temperature and effects of the decomposition may be varied. See Incompatible Materials.

### 10.2. Chemical Stability

Ammonium nitrate is stable under normal conditions, but is an oxidizer and as such may increase the flammability and/or explosiveness of other substances. Ammonium nitrate fertilizer does not have the property of spontaneous combustion. As an oxidizer, ammonium nitrate can support combustion in the absence of atmospheric oxygen, such as poorly ventilated structures. Molten ammonium nitrate is a powerful oxidizer and during a fire is capable of (1) supporting ignition of certain combustible materials with which it comes into contact and (2) of reacting explosively with finely divided metal powders, especially under conditions of confinement. Ammonium nitrate can undergo self-sustaining decomposition when exposed to elevated temperatures, including exposure to fire. The rate of self-sustained decomposition can be increased by contamination. Contamination by carbon black, charcoal, finely divided metal powders, sulfur, or potassium chloride (also known as potash, which liberates chlorine as it decomposes) can catalyze the decomposition mechanism into a self-sustaining internal exothermic reaction that will spread within the ammonium nitrate pile creating a zone of decomposition. This reaction can continue and spread through the entire mass even after any actual fire is suppressed.

Note: While some other fertilizer materials such as Potassium Chloride (also known as potash) or other chloride based fertilizers are commonly blended with ammonium nitrate just prior to field application, these may create additional risk of sensitizing molten ammonium nitrate in the event of a fire.

### 10.3. Possibility of Hazardous Reactions

Hazardous polymerization will not occur. Can melt and decompose in a fire with the risk of explosion if contaminated, heated under confinement, or subjected to strong shock.

### 10.4. Conditions to Avoid

Extremely high temperatures. Heat. Sparks. Overheating. Open flame. Storage in or near combustible materials. Sources of ignition. Confinement. Incompatible materials.

### 10.5. Incompatible Materials

The following list is not comprehensive but represents materials identified from multiple resources such as NFPA 400 (most recent edition): Acids, Acetic Anhydride, Alkali Metals, Aluminum + Calcium Nitrate, Aluminum, Ammonium Chloride, Ammonium Dichromate, Ammonium Phosphate + Potassium, Animal fats, Antimony, Bagged or Baled combustibles (cotton, rags, paper, seeds), Barium Chloride, Bismuth, Bleaching powders or chemicals, Brass or Bronze, Burlap, Cadmium, Camphor, Caustic soda, Charcoals, Chlorides, Chromium, Coal, Coke, Cobalt, Copper Iron II Sulfide, Copper, Cork, Cyanoguanidine, Diesel fuel and oils, Finely divided or powdered metals, Fibers, Fish oils, Fish meal, Foam rubber, Hay, Hydrocarbon Oils, Iron, Lead, Lubricating oil, Magnesium, Manganese, Naphthalene, Nickel, Oakum, Oiled materials (clothing, paper, textiles), Organic Chemicals, Paint, Phosphorus, Potassium Chromate, Potassium Dichromate, Potassium

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Nitrate, Potassium Nitrite, Potassium Permanganate, Seed or vegetable oils of any type, Sawdust, Seeds, Sodium Chloride, Sodium Perchlorate, Straw, Sugar, Sulfide Ores, Sulfur, Tin, Titanium, Trinitroanisole, Wood Chips or shavings, and Zinc.

### 10.6. Hazardous Decomposition Products

Nitrogen oxides. Toxic vapors. Corrosive vapors. Ammonia. Carbon oxides (CO, CO<sub>2</sub>) Nitric acid.

## SECTION 11: TOXICOLOGICAL INFORMATION

### 11.1. Information on Toxicological Effects - Product

**Acute Toxicity:** Not classified

**LD50 and LC50 Data:** LD50 (rate) >5000 mg/kg bw/d by ingestion

**Skin Corrosion/Irritation:** Not classified

**pH:** 4 - 6 (Depends on free nitric acid and free ammonia)

**Serious Eye Damage/Irritation:** Causes serious eye irritation.

**pH:** 4 - 6 (Depends on free nitric acid and free ammonia)

**Respiratory or Skin Sensitization:** Not classified

**Germ Cell Mutagenicity:** Not classified

**Teratogenicity:** Not classified

**Carcinogenicity:** Not classified

**Specific Target Organ Toxicity (Repeated Exposure):** Not classified

**Reproductive Toxicity:** Not classified

**Specific Target Organ Toxicity (Single Exposure):** Not classified

**Aspiration Hazard:** Not classified

**Symptoms/Injuries After Inhalation:** May cause respiratory irritation.

**Symptoms/Injuries After Skin Contact:** May cause skin irritation.

**Symptoms/Injuries After Eye Contact:** Causes serious eye irritation. Symptoms may include: Redness, pain, swelling, itching, burning, tearing, and blurred vision.

**Symptoms/Injuries After Ingestion:** 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 Symptoms:** Overexposure to this material may result in methemoglobinemia.

### 11.2. Information on Toxicological Effects - Ingredient(s)

**LD50 and LC50 Data:**

Ammonium nitrate (6484-52-2)	
LD50 Oral Rat	> 5000 mg/kg
LC50 Inhalation Rat	> 88.8 mg/l/4h

## SECTION 12: ECOLOGICAL INFORMATION

### 12.1. Toxicity

**Ecology - General:** Can be toxic to aquatic life, and spills may cause algae blooms in static waters.

### 12.2. Persistence and Degradability

Ammonium Nitrate Solution	
Persistence and Degradability	Not established

### 12.3. Bioaccumulative Potential

Ammonium Nitrate Solution	
Bioaccumulative Potential	Not established.

Ammonium nitrate (6484-52-2)	
BCF Fish 1	No bioaccumulation expected
Log Pow	-3.1 (at 25 °C)

### 12.4. Mobility in Soil

Not available



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### 12.5. Other Adverse Effects

**Other Information:** Avoid release to the environment.

## SECTION 13: DISPOSAL CONSIDERATIONS

### 13.1. Waste treatment methods

**Sewage Disposal Recommendations:** Do not empty into drains; dispose of this material and its container in a safe way.

**Waste Disposal Recommendations:** Dispose of waste material in accordance with all local, regional, national, provincial, territorial and international regulations.

**Additional Information:** Clean up even minor leaks or spills if possible without unnecessary risk.

## SECTION 14: TRANSPORT INFORMATION

### 14.1. In Accordance with DOT

**Proper Shipping Name** : AMMONIUM NITRATE, LIQUID (hot concentrated solution)  
**Hazard Class** : 5.1  
**Identification Number** : UN2426  
**Label Codes** : 5.1  
**Packing Group** : N/A  
**ERG Number** : 140



### 14.2. In Accordance with IMDG

**Proper Shipping Name** : AMMONIUM NITRATE, LIQUID (hot concentrated solution)  
**Hazard Class** : 5.1  
**Identification Number** : UN2426  
**Label Codes** : 5.1  
**Packing Group** : N/A  
**EmS-No. (Fire)** : F-H  
**EmS-No. (Spillage)** : S-Q



### 14.3. In Accordance with IATA

**Proper Shipping Name** : AMMONIUM NITRATE, LIQUID (hot concentrated solution)  
**Hazard Class** : 5.1  
**Identification Number** : UN2426  
**Packing Group** : N/A  
**Label Codes** : 5.1  
**ERG Code (IATA)** : 5L



### 14.4. In Accordance with TDG

**Proper Shipping Name** : AMMONIUM NITRATE, LIQUID (hot concentrated solution)  
**Hazard Class** : 5.1  
**Identification Number** : UN2426  
**Packing Group** : N/A  
**ERP** : >1000 L  
**Label Codes** : 5.1



## SECTION 15: REGULATORY INFORMATION

### 15.1. US Federal Regulations

<b>Ammonium Nitrate Solution</b>	
<b>SARA Section 311/312 Hazard Classes</b>	Immediate (acute) health hazard Reactive hazard
<b>Ammonium nitrate (6484-52-2)</b>	
Listed on the United States TSCA (Toxic Substances Control Act) inventory	

### 15.2. US State Regulations

<b>Ammonium nitrate (6484-52-2)</b>
U.S. - California - Toxic Air Contaminant List (AB 1807, AB 2728)
U.S. - Delaware - Accidental Release Prevention Regulations - Sufficient Quantities
U.S. - Delaware - Pollutant Discharge Requirements - Reportable Quantities



# Ammonium Nitrate Solution

## Safety Data Sheet

Classified according to the UN-GHS as adopted in the US Hazard Communication Standard (HCS 2012), the Canada Hazardous Products Regulations (WHMIS 2015) and Mexico NOM-018-STPS-2015.

U.S. - Massachusetts - Oil & Hazardous Material List - Groundwater Reportable Concentration - Reporting Category 1  
U.S. - Massachusetts - Oil & Hazardous Material List - Groundwater Reportable Concentration - Reporting Category 2  
U.S. - Massachusetts - Oil & Hazardous Material List - Reportable Quantity  
U.S. - Massachusetts - Oil & Hazardous Material List - Soil Reportable Concentration - Reporting Category 1  
U.S. - Massachusetts - Oil & Hazardous Material List - Soil Reportable Concentration - Reporting Category 2  
RTK - U.S. - Massachusetts - Right To Know List  
RTK - U.S. - New Jersey - Right to Know Hazardous Substance List  
U.S. - New Jersey - Special Health Hazards Substances List  
RTK - U.S. - Pennsylvania - RTK (Right to Know) - Environmental Hazard List  
RTK - U.S. - Pennsylvania - RTK (Right to Know) List  
U.S. - Texas - Effects Screening Levels - Long Term  
U.S. - Texas - Effects Screening Levels - Short Term

### 15.3. Canadian Regulations

Ammonium Nitrate Solution	
WHMIS Classification	Class C - Oxidizing Material Class D Division 2 Subdivision B - Toxic material causing other toxic effects
	
Ammonium nitrate (6484-52-2)	
Listed on the Canadian DSL (Domestic Substances List)	
WHMIS Classification	Class C - Oxidizing Material Class D Division 2 Subdivision B - Toxic material causing other toxic effects

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

## SECTION 16: OTHER INFORMATION, INCLUDING DATE OF PREPARATION OR LAST REVISION

**Revision Date** : 4 June 2024  
**Revision Comments** : This version contains updates/revisions to the following sections:

- Updated company address

### GHS Full Text Phrases:

Eye Irrit. 2A	Serious eye damage/eye irritation Category 2A
Ox. Sol. 3	Oxidizing solids Category 3
H272	May intensify fire; oxidizer
H319	Causes serious eye irritation

### NFPA Rating

#### Health Hazard

: 2 - Intense or continued exposure could cause temporary incapacitation or possible residual injury unless prompt medical attention is given.

#### Fire Hazard

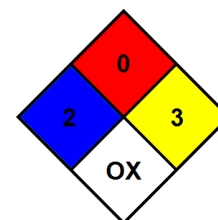
: 0 - Materials that will not burn.

#### Reactivity

: 3 - Capable of detonation or explosive reaction, but requires a strong initiating source or must be heated under confinement before initiation.

#### Specific Hazard

: OX - This denotes an oxidizer, a chemical which can greatly increase the rate of combustion/fire.



### HMIS III Rating

#### Health

: 2 - Moderate Hazard - Temporary or minor injury may occur

#### Flammability

: 0 - Minimal Hazard

#### Physical

: 3 - Serious Hazard

## Party Responsible for the Preparation of This Document

# Ammonium Nitrate Solution

## Safety Data Sheet

Classified according to the UN-GHS as adopted in the US Hazard Communication Standard (HCS 2012), the Canada Hazardous Products Regulations (WHMIS 2015) and Mexico NOM-018-STPS-2015.

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CF Industries, Corporate EHS Department, 847-405-2400

*This information is based on our current knowledge and is intended to describe the product for the purposes of health, safety and environmental requirements only. It should not therefore be construed as guaranteeing any specific property of the product.*

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North America GHS US 2012 & WHMIS 2