4. Suitable fire control devices such as hoses and appropriate portable fire extinguishers (AN is an oxidizer and not all fire extinguishers are appropriate) shall be provided throughout the warehouse and loading areas. Water supplies and fire hydrants commensurate with stored quantity should be available.
5. Store AN fertilizer in separate buildings or separated by approved fire walls from organic, combustible or reactive materials, such as grains, wood or other organic materials, urea and urea compounds, flammable liquids or gases, corrosive acids, chlorates, chromates, nitrites, permanganates or finely divided metals or sulfur.
6. AN fertilizer should NOT be stored in the same building with explosives or blasting agents.
7. Prohibit smoking in AN storage areas.

## OSHA Hazard Communication Standards

1. Community Emergency Planning
   - OSHA Hazard Communication Standards require submission of information regarding chemical hazards to their State or Tribal Emergency Response Commission, Local Emergency Planning Commission and local fire departments.
   - Information provided is to include Safety Data Sheets and a Hazardous Chemical Inventory form.
   - Visits to the facility by local fire departments are recommended.
2. Emergency Response Planning Should Include:
   - Coordination with local first responders.
   - Joint training with first responders if possible.
   - Employee training.
   - Community outreach.
   - Analysis of what may be at risk in a serious accident and appropriate planning.
   - Signs that clearly mark high hazard areas, safe areas, emergency contact numbers, firefighting equipment and other essential areas during an emergency response.
   - A site and area evacuation plan.

## This document is only a general guideline. For further information:

- Much of this information can be found in Chemical Advisory: Safe Storage, Handling, and Management of Ammonium Nitrate (www.epa.gov/osweroe1/ docs/chem/AN_advisory.pdf).
- OSHA regulations for storage of AN (Standard 1910.109, 1910.1200 and 1910.119 can be found at www.osha.gov or Google Search), required emergency response plans, emergency response training, and all OSHA hazardous communication standards.
- The National Fire Protection Association (NFPA) has developed a code for storage of AN. Code 490, which is being rewritten, (available at www.nfpa.org/catalog) applies to the storage of AN, which includes storage in containers, storage in bulk, contaminants and fire protection.
- Pertains to information available as of January 1, 2014. Continue to monitor these sites for further updates.
- Additional information on this topic can be found at www.responsibleag.org.

YARA

## Knowledge grows

safe BY CHOICE

At Yara, we are convinced that all accidents and injuries are preventable. “Safe by Choice” is Yara’s global safety initiative for associates and contractors to assist us all in identifying risks and changing behaviors and situations that may present potential hazards.

Safety is a shared asset that benefits everyone and it cannot be achieved alone – it requires teamwork. Yara’s associates work closely together to build a safe environment for all, both in and out of the workplace. Yara also encourages our customers to embrace a culture of safety and therefore has produced this informational brochure on the safe handling of one of our products.

**For more information please contact your local dealer.**

May 2015

Scan for Product and Safety Information for Fertilizers

www.yara.us

YARA

Knowledge grows

# SAFE HANDLING AND STORAGE

## AMMONIUM NITRATE

This document is intended to provide users of Agricultural Grade Ammonium Nitrate (AN) with a summary and some guidance in their use and handling of this product. It is not an exhaustive list of legal guidelines and regulations on the topic, therefore we encourage you to read and understand all of the regulations to which you must adhere when storing and handling AN. Much of the information contained here, along with additional information, can be found in Chemical Advisory: Safe Storage, Handling, and Management of Ammonium Nitrate (www.epa.gov/osweroe1/docs/chem/AN_advisory.pdf). Additionally, safety data sheets and product information sheets for all Yara products can be found on www.yara.us.

## QUICK FACTS

1. AN is a strong oxidizer as it supports and accelerates the combustion of organic (and some inorganic) material, increasing the fire hazard and complicating firefighting.
2. AN may detonate when exposed to strong shock or when subjected to high temperatures and confinement.
3. AN will self-compress/self-confine under some conditions, becoming much more likely to detonate.
4. AN is more susceptible to detonation if it's exposed to contaminants or stored improperly.
5. During a fire in a facility where AN is present, the AN may become molten and, therefore, more sensitive than solid AN.
6. AN will not continue to decompose after a fire has been extinguished.

## CHECKLIST

### Contaminants

1. AN mixed with oil or other sensitizing contaminants may detonate when exposed to fire or shock.
2. Organic materials (e.g. packing materials, seed, grain, sugar, sawdust and petroleum fuels) will increase the likelihood of detonation and will make it more energetic.
3. Other sensitizing materials include chlorides and some metals, such as aluminum powder, magnesium powder, chromium, copper, cobalt and nickel.

### Proper storage

1. OSHA regulations for storage of AN (Standard 1910.109, 1910.1200 and 1910.119 can be found at www.osha.gov or Google Search), require emergency response plans, emergency response training, and compliance with all OSHA hazardous communication standards.
2. The National Fire Protection Association (NFPA) has developed a code for storage of AN. Code 490 is being rewritten (available at www.nfpa.org/catalog) and applies to the storage of AN, including storage in containers, storage in bulk, contaminants and fire protection.
3. Avoid heating AN in a confined space and do not store AN near sources of heat such as steam pipes, radiators, hot ducts, light bulbs, etc.)
4. Ensure AN is not exposed to strong shock waves from explosives.

### Building Design

1. Store only in one-story buildings and buildings with no basements, unless the basement is open on one side.
2. Use fire resistant walls within 50 feet of combustible building components or materials.
3. Flooring in storage and handling areas should be constructed of noncombustible material or protected from impregnation by AN.
4. Close off any open drains, traps, tunnels, pits or pockets into which molten AN can flow and be confined in the event of fire.
5. Buildings should be kept dry and free of water seepage through roofs, walls, floors, and open doors and windows. Storing urea or calcium nitrate in proximity to AN will tend to increase moisture in the warehouse.
6. Without exposing the product to excess humidity, the building should have adequate ventilation or be constructed to self-ventilate in the event of a fire to avoid pressurization.
7. Do not place AN into storage when the temperature of the product exceeds 130 degrees F (54.4 degrees C).

### Storage in Bags, Drums or Other Containers

1. Piles of filled bags, drums and other containers should be no less than 36 inches below the roof or supporting beams.
2. Filled bags should be stored no less than 30 inches from walls and partitions.
3. Piles of filled bags, drums, and other containers should not exceed a height of 20 feet, width of 20 feet and length of 50 feet, unless the building is of noncombustible construction or protected by automatic sprinklers.
4. Maintain aisles at least 3 feet wide between piles.

### Storage in Bulk

1. Bins for storing bulk AN should be kept clean and free of materials which could contaminate the material. Bins should not be constructed of galvanized iron, copper, lead or zinc unless suitably protected by epoxy tar or chlorinated rubbers to prevent corrosion of the metal and contamination of the AN. Aluminum or wooden bins should be protected against impregnation by AN.
2. Piles or bins must be adequately sized and managed to minimize caking. Height or depth of piles shall be limited by pressure-setting tendency of the product, but in no case should a pile be higher than 36 inches below roof or supporting beams.
3. Do not use dynamite, explosives or blasting agents to break up or loosen caked AN.
4. Protect piles of AN from absorbing moisture from humid air by covering them with water-impermeable sheeting.
5. Do not store AN with organic chemicals, acids, or other corrosive materials, materials that may require blasting during processing or handling, compressed flammable gases, flammable or combustible materials or other contaminating substances. AN stores should be separated from incompatible substances by using separate buildings, one-hour fire resistant walls, or a minimum separation of 30 feet.

### Product Stewardship

1. Following these storage practices is also our recommendation for all nitrate products, including CAN 27 and AN-based NPK fertilizers, as well as calcium nitrate and potassium nitrate.
2. Additional product stewardship information is available through ResponsibleAG, an industry led stewardship initiative designed to help fertilizer storage and handling facilities achieve and maintain federal regulatory compliance.

### Fire Protection

1. AN storage areas should be equipped with adequate fire protection, or have an automatic fire detection and alarm system if the areas are not continuously occupied. This is especially important when the facility in question is close to public areas.
2. Facilities should NOT store more than 2,500 tons of bagged AN without an automatic sprinkler system.
3. An automatic sprinkler system, if installed, should be provided in accordance with NFPA13, Standard for the Installation of Sprinkler Systems (available at www.nfpa.org/catalog).