

AMMONIUM NITRATE

Technical Information



Nevada Industrial Grade



Product Description

DYNO NOBEL AMMONIUM NITRATE prills are industrial grade and specifically designed to be used as a solid oxidizer ingredient for explosive compositions such as ANFO, WR ANFO, Heavy ANFO emulsion and watergels. They are small-sized, low-moisture content, non-setting, porous spheres (prills) which are a lower density than agricultural grade ammonium nitrate used for fertilizer. The particle density of the prills is such that, when liquid fuel is properly applied to and mixed with them, the prills absorb the fuel uniformly which enhances reactivity. AMMONIUM NITRATE prills are infinitely soluble in water and does not precipitate with any common chemical.

Application Recommendations

- Low density AMMONIUM NITRATE is used extensively in the mining industry and is intentionally made very porous to allow for the rapid uptake of liquid fuel oil. The prill is coated with a paraffin which makes the AMMONIUM NITRATE difficult to dissolve and use for other applications. Consult your Dyno Nobel representative for additional details.
- AMMONIUM NITRATE will decompose into ammonia and nitric acid fume at 350°F.
- **ALWAYS** wash vessels containing AMMONIUM NITRATE thoroughly before attempting repairs requiring welding.
- **ALWAYS** check with the bulk emulsion explosive or matrix manufacturer to ensure compatibility before using ANFO containing Dyno Nobel prilled AMMONIUM

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NBM-03-06-01-06

Properties

MSDS
#1020

Ammonium Nitrate, % by weight typical	99.8
Moisture, % by weight	≤0.1
Bulk Density, typical, pneumatic g/cc lbs/cuft	.75 to .80 47 to 50
Packed Density ^b , lbs/cuft, pneumatic	50 to 53
Phase Stabilizing Agent ppm by weight	500 to 700
Anti-Caking Agent ppm by weight	600 to 850
Total Organic ppm by weight maximum	1,550
Oil Absorption % by weight minimum	> 7.0
Friability % by weight typical	< 25
Crush Index, pounds minimum	1.5
pH, one Molar solution	4.5 to 5.5

Typical Size Distribution

U.S. Standard Mesh	+8	+10	+12	+14	+16	+20	Fines
Average % Retained	8	29	38	22	2	0.75	0.25

+20 and smaller less than 2% total

Hazardous Shipping Description

- AMMONIUM NITRATE is placarded as an oxidizer that is transported under hazard classification 5.1.
- The shipment will be marked with international transportation number UN 2067 or UN 1942 which may be incorporated into the placard.
- Consult MSDS #1020 for more specific and comprehensive information about chemical hazards.



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Application Recommendations (continued)

NITRATE in Heavy ANFO or repumpable emulsion/ ANFO blends.

- **ALWAYS** keep doors, hatches and lids closed when not in use. Inspect all tanks and bins regularly for cracks and leaks.
- Industrial grade prilled ammonium nitrate is susceptible to breakage from moisture, humidity, heat, temperature cycling, pressure and pneumatic or mechanical handling. Fines can result producing possible caking or lumping as well as decreased product flow characteristics / increased bulk density.
- **ALWAYS** design storage and process facilities to minimize repeated pneumatic and mechanical handling. Whenever possible, choose mechanical rather than pneumatic methods to off-load or otherwise transfer ammonium nitrate prills.
- **ALWAYS** use an air transfer pressure of 7–8 psig to maintain prill quality where bulk deliveries are transferred to storage by pneumatic conveyance.
- **NEVER** exceed 8-10 psig air pressure.
- **ALWAYS** use equipment especially designed to blend and load ANFO, Heavy ANFO or repumpable emulsion / ANFO blends.
- **ALWAYS** calibrate bulk delivery equipment to ensure quality.
- **ALWAYS** purge all hoses, piping, augers and especially bins or tanks that have integral augers before discontinuing loading or mixing. AMMONIUM NITRATE prill left in process equipment can make start up difficult and even cause damage.
- **ALWAYS** consider air vibrators for bins, bulk trucks and railcars to assist with the flow of material.

Transportation, Storage and Handling

- DYNO NOBEL AMMONIUM NITRATE is available in bulk by railcar or truck.
- Oxidizers must be transported, stored, handled and used in conformity with all applicable federal, state, provincial and local laws and regulations.
- For recommended good practices in transporting, storing, handling and using this product, see the Safety Library Publications of the Institute of Makers of Explosives and/or consult the many publications that address transportation, storage and handling of ammonium nitrate.

- **The Fertilizer Institute:** AMMONIUM NITRATE Packaging, Handling, Transportation, Storage and Use.
- **Bureau of Mines:** I 28.23:6773 Explosive Hazards of Ammonium Nitrate Under Fire Exposure.
- **International Fertilizer Industry Association:** Handbook for the Safe Storage of AMMONIUM NITRATE Based Fertilizers.
- **Institute of Makers of Explosives:** Recommendations for the Transportation of Explosives, Division 1.5 & AMMONIUM NITRATE Emulsions, Division 5.1 Bulk Packaging.
- Unauthorized access to industrial grade AMMONIUM NITRATE must be denied at each step during transportation and storage.
- **ALWAYS** rotate inventory by using the oldest product first.
- **ALWAYS** choose bins and tanks that are designed to keep the weight of the bulk material from compacting into transfer augers that are located directly beneath them.
- **ALWAYS** empty and clean bulk tanks and bins routinely to prevent product build-up on walls.
- **ALWAYS** minimize inventory during warm weather and high humidity conditions. Packaged product may harden with temperature cycling; bulk material may cake, lump or break down (fines).
- **ALWAYS** keep prilled ammonium nitrate dry. Choose transportation, processing and storage containers or equipment without openings through which water or moisture can enter.

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