MATERIAL SAFETY DATA SHEET

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1 Product and Vendor identification

Product Name (Technical according to ND)	**Granular ammonium nitrate** (granular ammonium nitrate), grades A, B
Chemical (IUHFC)	**Ammonium nitrate**
Trade Name	**Ammonium nitrate of grade A, B**
Application	It is used in agriculture as a fertilizer (grade B) and in industry (grade A)

Vendor details:

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1.1 Full official name of the organisation	«Navoiyazot» Joint Stock Company
1.2 Postal address, telephone number, including for emergency consultations, time limits	210105, Uzbekistan, Navoi city Fax: (436) 223-75-80, (99879) 223-75-80, (436) 229-22-04, (436) 229-22-90, (436) 229-20-54 e-mail: office@navoiyazot.uz
1.3 Information on international certification for production activities.	ISO 9001:2015 QMSCERT № 250717-6 ISO 50001:2018 QMSCERT № 250717-7 ISO 14001:2015 QMSCERT № 291217-4 ISO 45001:2018 QMSCERT № 291217-5
1.4 Full official name of the organisation	Marketing, Sales and Procurement Director - Z.P. Jumaev
2 Hazard identification	
2.1 Hazard characteristics:	Ammonium nitrate is a low-hazard substance. It is an oxidizing agent capable of supporting combustion, fire hazard. In case of contamination of ammonium nitrate with organic materials or in case of a strong fire, decomposition of ammonium nitrate may turn into an explosion. Under the action of strong blows it can also explode. During storage and transportation, ammonium nitrate should be protected from heating, exposure to flame or sparks by any foreign impurities
3 Composition (information about components)	
3.1 Technical name	**Granulated ammonium nitrate** (granulated ammonium nitrate) Grade A - for industry. Grade B - for agriculture. Grade B ammonium nitrate may be used for industrial purposes
3.2 Chemical formula	NH_4NO_3

4.1 Human exposure 4.1.1 General characteristics	In the production of ammonium nitrate, there is contact with harmful substances dangerous to the human body, such as ammonia, liquid and vaporous nitric acid, nitrogen oxides, ammonium nitrate melt, steam and hot condensate. In addition, the finished product is a potentially explosive and flammable substance. Some of the listed substances (ammonia, acid vapors, nitrogen oxides) are toxic, others are capable of forming explosive mixtures (gaseous ammonia mixed with air), have a strong burning effect (saltpeter melt).
4.1.2 Routes of intake:	When getting on the skin and mucous membrane of the eyes. It can also penetrate through the respiratory organs, the gastrointestinal tract.
Observed symptoms: - by skin exposure	It has an irritating effect on the skin. Severe itching appears, redness around the follicles, lichen redness on the back of the brushes and forearm. Getting into small wounds and cracks causes burning pain in them
4.2. In case of inhalation poisoning (if inhaled):	Take the victim to fresh air, free from shy clothes, see a doctor. Rinse your mouth with water, rinse the stomach with warm water with soda and activated charcoal. If necessary, consult a doctor
- In contact with skin	Dry the affected area with tissue, then rinse abundantly with running water.
-In contact with eyes.	Rinse with running water. If necessary, consult a doctor.
First aid measures	Medical kit.
Availability of first aid facilities:	Food soda, activated charcoal
5 Fire safety measures and facilities	
5.1 General characteristics of fire hazard	Ammonium nitrate (AC) refers to non-combustible products. Only nitrous oxide formed during the thermal decomposition of the salt supports combustion. It explodes under the influence of a detonator, as well as when heated in a closed space. The mixture of AC with crushed charcoal with strong heating is capable of self-ignition. Some easily oxidized metals (e.g., zinc powder, nickel, copper, lead) in contact with wet ammonium nitrate under low heat can also cause its self-ignition. Self-ignition of mixtures of AC with superphosphate is possible. When a container with ammonium nitrate fires, nitrogen oxides and nitric acid vapors can be released. It is possible that the NPP will catch fire in cars that are not sufficiently cleaned from previously transported goods (colchedane, coal).
5.2 Fire risk indicators:	Spontaneous ignition temperature - 350 wasps, the lower concentration limit of distribution of a flame - 175 g/m3. Temperature of decomposition of ammonium nitrate - (185÷285) of wasps
5.3 Hazards caused by combustion products or thermal design:	At a heating temperature of up to 210 ° C, ammonium nitrate decomposes into nitrogen oxides and water vapor, while oxygen and ammonia are released during the interaction of nitrogen oxides and nitrate, which can lead to a fire or explosion. Ammonia - causes plentiful lacrimation, suffocation, coughing attacks, dizziness, stomach pain, vomiting. Nitrogen oxides - irritate the respiratory tract, can lead to pulmonary edema, damage to the cornea of the eye
5.4 Recommended fire extinguishing agents:	Extinguish with a large amount of water
5.5 Prohibited means of extinguishing a fire:	No data available

5.6 Personal protective equipment for firefighting (PPE for firefighters and personnel)	For chemical exploration and work manager – remote control unit-3 (for 20 minutes). For emergency crews - an insulating protective suit KIH-5 complete with an insulating gas mask IP-4M. In case of fire-a fire-resistant suit complete with a self-rescuer SPI-20, in the absence of the specified, a protective general-military suit L-1 or L-2 complete with an industrial gas mask with a pillbox cartridge.
5.7 Specifics for extinguishing a fire	In the event of a fire in the warehouse or in the car, the fire brigade should be called immediately and at the same time take measures to prevent it. The main remedy is water in abundant quantities. Not only the fire source, but also the stacks or burts of saltpeter located nearby should be watered abundantly with water to prevent heating and the threat of decomposition of saltpeter. In case of a fire, the gates and windows of the warehouse should be opened, which contributes to air circulation and the removal of released gases. In order to avoid poisoning with nitrogen oxides, personnel during extinguishing should be on the windward side and wearing gas masks of the grade "B" or A2B2E2K2COSXR3. All those who are not involved in extinguishing the fire must be removed
6 Measures to prevent emergencies	
6.1 General recommendations	Sealing of production equipment. General exchange and local ventilation. Providing air control of the working area. Electrical equipment and artificial lighting must be made in an explosion-proof design. The production processes are equipped with modern monitoring and automatic control devices. The equipment must be grounded. Passageways, driveways, entrances to buildings, stairwells, access to fire extinguishing means should not be cluttered.
6.2 Measures to prevent emergencies.	Fire prevention should be achieved by excluding the formation of a combustible medium or by excluding the formation of ignition sources in the combustible medium.
6.2.1 Recommendations for: Fire and explosion safety	The fire safety of the facility must be ensured by fire prevention and fire protection systems, which must be kept in good condition. Facilities should have fire safety systems aimed at preventing fires, including secondary manifestations at the required level. General exchange and local ventilation (supply and exhaust) must be provided. Conduct regular monitoring of the state of the air environment, compliance with the norms of the technological regime, compliance with the requirements of safety and fire safety instructions.
6.2.2 Ensuring staff safety	It is allowed to store ammonium nitrate in containers of the consignor (consignee), in bags in a packaged form, fastened with a polyethylene shrink film, as well as in bags in an unpackaged form in open areas for one month after production, provided that direct sunlight and precipitation are excluded. Short-term (up to 15 days) storage of unpacked ammonium nitrate is allowed in indoor, clean, dry storage rooms at a temperature not exceeding 30 ° C and air humidity not exceeding 50 %. Ammonium nitrate is stored in bags in closed warehouses of plant products. Storage and transportation together with ammonium nitrate (in one room, wagon, machine) of other materials and products is prohibited. Do not allow product placers when laying bags in stacks or when loading into wagons.

	Temperature of ammonium nitrate before her packing has to be no more than 50 wasps. At shipment by an embankment temperature of ammonium nitrate has to be no more than 45 wasps. Before loading the saltpeter, the cars must be carefully cleaned from the remnants of any previous cargoes, and the placer must be carefully removed from the floor of the car. Prevent violation of the fire regime (smoking, fire work). The warranty shelf life of ammonium nitrate in accordance with the requirements of GOST 2-2013 is 6 months from the day of manufacture.
6.2.3 Ensuring the safety of staff	Ventilation of rooms, compliance with the norms of technological mode, use of PPE, compliance with the requirements of safety instructions and fire safety.
6.2.4 Protecting the environment	Sealing of technological equipment, transport containers, compliance with the norms of technological mode in the production of the product.
6.3. Measures to eliminate emergencies. 6.3.1 Actions required	Isolate the danger zone within a radius of 200 meters. Remove unauthorized personnel to a safe area. Wear protective equipment when entering the danger zone. Do not smoke. Eliminate sources of fire and sparks. Keep to a neutral position. Keep clear of low areas. Give first aid to casualties. Send people out of the affected area for medical examination.
6.3.2 Methods of neutralisation -in case of leakage:	Collect, bag, transfer to dissolving unit of substandard ammonium nitrate for further processing into product.
7 Handling and Retention Rules	
7.1 Safety measures and means of protection when working with the substance	General and local ventilation is provided. All work must be carried out using PPE. Maintain regular monitoring of the air environment. It is prohibited to introduce floor sweepings, contaminated saltpeter into the production cycle without prior analysis for oil and mechanical impurities. It is forbidden to smoke in warehouses, to install open-type lighting fixtures, to carry out fire
7.2 Conditions and periods of safe storage	It is prohibited to store and transport ammonium nitrate together with other products. Ammonium nitrate is stored in covered, dry, clean warehouses protecting the product from moisture.
7.2.1 Substances (materials) incompatible during storage)	Guaranteed shelf life of ammonium nitrate is 6 months from the date of manufacture.
7.2.2 Materials recommended for packings	Ammonium nitrate is packed in moisture-resistant polypropylene bags made of polypropylene fabric and sewn with an inner polyethylene liner. It is allowed to use other moisture-resistant polymeric bags that meet the requirements of these standards and international regulations for transportation of dangerous goods. Necks of open polyethylene bags must be sealed, and those made of polypropylene fabric must be machine-sealed or have a bag design with a valve. Weight of a bag with ammonium nitrate according to GOST 2-2013 with changes №1 must be (50±0,5) kg.
8 User safety rules and measures	
8.1 Work area parameters subject to mandatory control (MPC)	MAC of ammonium nitrate 10 mg/m3, Hazard Class 3 according to GOST 12.1.007-76
8.2 Measures to ensure the content of harmful substances in permissible concentrations	Sealing of production equipment and pipelines, operation of supply and exhaust ventilation. Control over the condition of the air environment.
8.3 Personnel protection measures and equipment	When working with ammonium nitrate, the personnel must have the necessary protective equipment with them. Observe precautionary

	measures. Avoid direct contact with the product. Have periodic medical examinations.
8.3.1 General recommendation	Filtering industrial gas mask with boxes of "DOT", "KD", "M" or A2B2E2K2COSXP3, A2K2. Respirator type "Lepestok", "U-2K", half mask "Super Wind". Insulating gas masks, type "ПШИ-1", "ПШИ-2" when carrying out gas-hazardous works.
8.3.2 Respiratory protection	Cotton suit, leather boots or boots.
8.3.3 Protective clothing	Rubber protective glasses of closed type
8.3.4 Eye protection	Rubber-friction gloves, rubber gloves
9 Physical and chemical properties	
9.1 Physical condition (aggregate state, color, smell)	Granular product is white with yellowish tint. Contains at least 34.4% nitrogen.
9.2 Parameters characterising the main properties of the substance (primarily hazardous)	Melting point - 169.6 ° C At temperatures in the range (110-165) ° C, endo-thermal dissociation of nitrate into ammonia and nitric acid occurs. In the range of temperatures (200 - 270) wasps the weak exothermic reaction of decomposition of saltpeter to dioxide of nitrogen (NO2) and water (H2O) proceeds. Ammonium nitrate is soluble in water. It is highly soluble in ethyl and methyl alcohols, acetone, liquid ammonia. Density - (1.69-1.725) kg/cm3.
10 Stability and chemical activity	
10.1 Stability	It is relatively insensitive to shocks.
10.2 Conditions causing a hazardous reaction	Ammonium nitrate is capable of exploding when heated in a closed space, when thermal decomposition products are not able to be removed freely, as well as when heated under the influence of detonators.
10.3 Substances likely to cause a hazardous reaction	The tendency of ammonium nitrate to thermal decomposition increases significantly when it is heated in the presence of nitrogen, hydrochloric and sulfuric acids, some organic substances (oil, paraffin and many powdered metals (zinc, nickel, copper, lead, magnesium). The presence of impurities of oil, cadmium or charcoal particles, chlorides in the saltpeter solutions significantly reduces the decomposition temperature of the saltpeter
10.4 Possibility of a dangerous exothermic reaction	In a closed space, when ammonium nitrate is heated, along with nitrous oxide and water, ammonia, nitric acid, nitrogen dioxide, and nitric oxide are released in a gaseous state, which explode at temperatures (260-269) oC. The temperature of saltpeter can increase during storage due to the course of slow reactions in significant masses of the product stored in bulk. It is also dangerous to heat it in a tightly packed state. The temperature of ammonium nitrate sent for storage should not exceed 50 ° C. When shipping in bulk, the temperature of ammonium nitrate should be no more than 45 ° C. Warehouses should be well ventilated, the use of heaters for heating is not allowed. Combustible substances and their mixtures must be stored at a distance of at least 10 meters from the warehouse building. Saltpeter should not be in contact with substances that give an alkaline reaction (cement, lime, calcium cyanamide) or an acid reaction (superphosphates, acids), as well as chlorates, chlorites.
10.5 Expiry date under fulfilled conditions	The warranty shelf life of ammonium nitrate is 6 months from the date of manufacture.
11 Toxicity	

11.1 Assessment of the degree of hazard (toxicity) of exposure to the body	In terms of the degree of exposure to the body according to GOST 12.1.007 ammonia nitrate by toxicity belongs to the 3rd hazard class.
11.2 Information on the health hazards of exposure to direct contact with the substance, as well as the consequences of these effects (irritant effect on the upper respiratory tract, eyes, skin).	When exposed to the skin, ammonium nitrate has an irritating effect. Severe itching appears, redness around the follicles, lichen redness of the skin and redness of it on the back of the brushes and forearm. Getting into small wounds and cracks causes burning pain in them. With prolonged heating, nitrate decomposes into ammonia and nitric acid. Ammonia causes cough attacks, lacrimation. Nitrogen oxides - irritate the upper respiratory tract.
12 Impact on the environment	
12.1 Assessment of possible environmental impacts.	The main type of hazardous impact on the environment is pollution of the atmospheric air of populated areas as a result of emissions, discharges, storage violations, emergencies.
12.2 Most important environmental impact	Physiologically acidic fertilizer is intended as a mineral fertilizer for all types of crops. The nitrate form of fertilizer is easily mobile in the soil. Ammonium ions in the composition of ammonium nitrate are more quickly consumed by plants, and the acidic residue is accumulated and not absorbed by the soil and is in the soil solution. When it evaporates, it migrates to the ground surface, causing plant leaf burns. Long-term application of ammonium nitrate as fertilizer acidifies the soil and leads to lower yields.
12.2.1 Hygienic standards:	MPC of nitrate in the atmospheric air of settlements (average daily) - 0.3 mg/m3, (the 4th class of danger). MPC of ammonium ion (by nitrogen) in water bodies of household and cultural and domestic water use - 1,5 mg/dm3, (the 4th class of hazard), nitrates (by NO3-) - 45 mg/dm3, (the 3rd class of hazard). MPC for ammonium ion in waters of fish industry water bodies is 0,5 mg/dm3, (Hazard Class 4), nitrate-ions - 40,0 mg/dm3. MPC of nitrate (by ammonium-ion NH4-) for sea water bodies is 0.5 mg/dm3. MPC for nitrates in soil - 130.0 mg/kg MPC of the working area - 10 mg/m3.
12.2.2 Toxicity	Ammonium nitrate has cumulative properties of a functional nature, does not cause allergies (index 5). It has an irritating effect on the skin and mucous membrane. The nitrate form of fertilizer in the soil is easily mobile, being washed out by water, leads to contamination of reservoirs.
13 Waste management and storage	
13.1 Safety requirements for waste management	When handling waste of ammonium nitrate, use PPE
13.2 Waste neutralization or disposal methods	The waste water is neutralized with a solution of caustic soda and sent to the sludge accumulator
14 Transportation rules	
14.1 Shipping name	Ammonium nitrate of grade A, B
14.2 Transport marking (handling marks) and information inscriptions	Transport marking-according to GOST 14192-77 with the application of maculation signs "Keep from sunlight" and "Keep from moisture"
14.3 Classification of dangerous goods	According to the classification of dangerous goods, ammonium nitrate belongs to Class 5, division 5.1, according to GOST 19433.3-2010 classification code 5113, has the UN serial number 1942
14.4 Type of vehicles	The ammonium nitrate packed in bags is transported by all types of

	transport, except air, in covered vehicles in accordance with the rules of cargo transportation that apply to this type of transport
14.5 Safety requirements for transportation	Transportation of ammonium nitrate is carried out separately from other materials and substances The cargo must be protected from atmospheric precipitation. In case of damage to the container during loading, the scattered ammonium nitrate should be carefully removed

References

15.1.Permanent technological regulations for the production of ammonium nitrate.
15.2 GOST 2- 2013, with amendment 1 "Ammonium nitrate".
15.3 Safe levels of harmful substances in the environment. Severodonetsk, 1990.

16 Additional information

16.1 Emergency cards for dangerous goods transported by railroads of CIS, Latvian Republic, Lithuanian Republic, Estonian Republic, Moscow, "Transport", 2000.
16.2 GOST 30333-2007 Safety data sheet for chemical products.

Head of Technology, Innovation and Localization Department — H.R. Yoriev

Head of the Department of Environmental Protection and RUNR — N.Yu. Salomova

AGREED:

First Deputy Chairman of the Management Board — O. Zh. Mavlonov

Head of PID — A.B. Mirzaev

Head of the Department of Ecology, Health and Safety — O.H. Mekhmedinov

Translator Rustamova M.