JSS " MAXAM-CHIRCHIQ»

PASSPORT

SAFETY OF THE SUBSTANCE (MATERIAL)

AMMONIUM NITRATE

GOST 2-2013

The passport is valid for 5 years.

Chirchik

SAFETY DATA SHEET FOR THE SUBSTANCE (MATERIAL)

AGREED First Deputy of the chairman of the board - Production Director		APPROVED Chairman of the Board JSS "MAXAM – CHIRCHIQ" Chilling Saidakhmedov H.A.		
"05" OS Uzakov	R.T. _2021	" <u>06</u> 7"	02	_ 2021
Name (Technical according to ND)	Granular ammo		les A, B	
Химическое (IUHFC)	Ammonium n	itrate		
Trade name	Ammonium nit	rate of grade A, B		
Synonym	Ammoniac sa	ltpeter		
	ν "	(GOST, O 'z DSt	, Ts , ISO, e	tc.)
GOST 2-2013 "Ammonium	n nitrate. Technic	al specifications"		
Main code of an enterprise (OKP)	Commodity not foreign econo cod	mic activity	Series, No	o.and POHV register.date
2 1 8 1 1 1	3 1 0 2 3	0 9 0 0 0		
HAZARD	STATEMENT:	MPC r.z mg/m ³ 10	hazard class	s 3
Brief (verbal): Non-flammab is moderately dangerous. Detailed: in 16 proposed sect			t on the humar	body, the substance
MAIN HAZARDOUS COMPONENTS MPC r.z mg/m3 Hazard class Ammonium nitrate 10 3				
APPLICANT Joint Stock Society «MAXAM-CHIRCHIQ» Chirchik (full name) (city)				
Applicant type: Manufacturer	strike out what is not	exporter, importer needed)		
Main code of an enterprise, organization 0 0 2 0 3 0 6 8				e number: 715-15-75

Fax: 716-57-49

Safety Data Sheet

Ammonium nitrate GOST 2-2013	LIDC ((1 525,000 254	-
Animolium muate GOS1 2-2013	UDC 661.525:006.354	Page 1
		out of 10

1. Identification of the chemical product and information about the manufacturer or supplier

1.1 Technical name	Granulated ammonium nitrate
	(granular ammonium nitrate)
	Grade A-for industry,
	Grade B-for agriculture
1.2. Chemical formula	NH ₄ N0 ₃
1.3 Full official name of the organization	Joint-stock company "MAXAM-CHIRCHIQ"
1.4 Postal address	Address: 111708, Republic of Uzbekistan, Tashkent region, Chirchik, Tashkentskaya str., 2
1.5 Phone number, including for	Phone numbers: (+9987071) 6-40-79
emergency calls consultations,	Fax: (+9987071) 6-57-49, 5-15-75
restrictions on time	Email: <u>info@maxam~chirchig.uz</u>
1.6 Responsible for supplying products to the market	Commercial Director

2. Hazard identification

2.1 MPC working area (maximum permissible concentration)	10 mg/m ³ , hazard class 3
2.2 Degree of product hazard in overall	Ammonium nitrate is a low-hazard substance. It is an oxidizing agent capable of sustaining combustion, it is flammable. In case of contamination of ammonium nitrate with organic materials or in case of a strong fire, the decomposition of ammonium nitrate can turn into an explosion. Under the influence of strong blows, it can also explode. During storage and transportation, ammonium nitrate should be protected from heat, flame or sparks: from ignition by any foreign impurities

3. Composition (information on ingredients)

3.1 Composition 3.1.1 General characteristics:	Non-flammable, fire-explosive substance. An oxidizer capable of supporting combustion. Contact with flammable substances that give an alkaline reaction is not allowed. When heated in a confined space, it decomposes. Ammonium nitrate is capable of detonation
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Product name	OKP code	
grade A		
grade B		
top grade	21 8111 0220	
first grade	21 8111 0230	
second grade	21 8111 0240	

	1	Norm	for the branc	l
	grade A		grade B	
		Higher	The first grade	Second grade
1 Appearance	White o		olored granul	es without
2 Total wt. share of nitrate and ammonium nitrogen in terms of - for NH 4 NO 3, in dry matter, %, not less than				
- for nitrogen in dry matter, %, not less than	98 unrated	unrated	unrated	unrated
3 Mass. proportion of water, %, not more than: hygroscopic - with sulfate and sulfate-		34.4	34.4	34.0
phosphate additives - with additions of calcium and	0.2	0.2	0.2	0.3
magnesium nitrates - with sulfate and sulfate-	0.3	0.3	0.3	0.3
phosphate additives - with additions of calcium and	0.5	0.5	0.5	0.5
magnesium nitrates	0.6	0.6	0.6	0.6
4 pH of an aqueous solution with a mass fraction of 10 %, not less than		575- W		
- with the addition of calcium and magnesium nitrates	5.0	5.0	5.0	5.0
 with sulfate-phosphate additive with sulfate additive 	4.5 4.0	4.5 4.0	4.5 4.0	4.5 4.0
5 Mass fraction of substances insoluble in 10% nitric acid solution,	Fig. 1			
%, no more	0.2	unrated	unrated	unrated
6 Granulometric composition: - mass fraction of granules from 1 to 3 mm in size, %, at least				
mass fraction of granules with	93	unrated	unrated	unrated
a size of 1 to 4 mm,%, at least including granules from 2 to 4	unrated unrated	95	95	95
nm in size, %, not less than mass fraction of granules less han 1 mm in size, %,	four	80	80	unrated
no more mass fraction of granules	0	3	3	four
arger than 6 mm, %		0	0	0
Static strength of granules, APa (kgf/cm²), t least:		16.3	14.2	10.2
or in terms of a granule, N kgf), not less than	5(0.5)	-	7(0.7)	10.2 5(0.5)
with sulfate and sulfate- hosphate additives	-	10(1.0)	-	-
with additions of calcium and nagnesium nitrates	-	8(0.8)	-	_
Friability, %, not less	100	100	100	100

4. First aid measures

4.1 Human exposure

4.1.1 General characteristics:

In the production of ammonium nitrate, there is contact with harmful substances that are dangerous to the human body, such as: ammonia, liquid and vaporous nitric acid, nitrogen oxides, ammonium nitrate melt, water vapor and hot condensate. In addition, the finished product is potentially explosive and flammable.

Some of the listed substances (ammonia, acid fumes, nitrogen oxides) are toxic, others are capable of forming explosive mixtures (gaseous ammonia mixed with air), have a strong burning effect (ammonium nitrate melt).

In case of contact with the skin and mucous membranes of the eyes. Can penetrate through the respiratory system, gastrointestinal tract.

It has an irritating effect on the skin. There is severe itching, redness around the follicles, lichen-like reddening of the skin and redness on the back of the hands and forearm. Getting into small wounds and cracks, it causes burning pain in them.

4.1.3 Observed symptoms:

- on skin contact

4.1.2 Routes of entry into the

4. 2. First aid measures. case of poisoning by inhalation (by inhalation);

- in case of poisoning by inhalation (when swallowed);

- in case of contact with the skin;

- in case of contact with eyes.

4.3. First aid.

body:

4. 4. Contraindications.

Take the victim to fresh air, free from tight clothing, consult a doctor.

Rinse your mouth with water, rinse your stomach with warm water and soda and activated charcoal. Seek medical attention if necessary.

Wipe the affected area dry with a cloth, then rinse with plenty of running water.

Rinse with running water. Seek medical attention if necessary.

- baking soda, activated charcoal.

No information available.

5. Measures and means to ensure fire and explosion safety

5.1. General characteristics of fire and explosion hazard.

Ammonium nitrate is a moderately hazardous substance. It is an oxidizing agent and is flammable. At a temperature of 210 °C and interaction with sulfur, sulfur pyrite, acids, superphosphate, bleach, powder metals (especially with zinc), it decomposes with the release of toxic nitrogen and oxygen oxides. The released oxygen can cause ignition of combustible materials (bags) and, as a result, a fire. In case of contamination of ammonium nitrate with organic materials or in case of a strong fire, the decomposition of ammonium nitrate can turn into an explosion.

5. 2. Indicators fires and explosion hazards

- Melting point 169.6 ° C, - Boiling point 235÷302 °C,

- Decomposition temperature 185÷285 °C.

5.3. Hazard from products of combustion or thermal degradation

With prolonged heating, ammonium nitrate gradually decomposes into ammonia and nitric acid. Ammonia - causes profuse lacrimation, coughing fits, dizziness, stomach pain, vomiting, urinary retention. Nitrogen oxides - irritates the respiratory tract, affects the alveolar tissue, which leads to pulmonary edema.

5.4. Recommended products extinguishing a fire

A fire caused by the decomposition of ammonium nitrate should be extinguished with plenty of water.

No.

5.5 Prohibited extinguishing media .

For chem. reconnaissance and work manager - PDU-3 (during 20 min.) For emergency teams - insulating protective suit KIH - 5 complete with insulating gas mask IP- 4M or breathing apparatus ASV-2.

5.6. Personal protective equipment for fire fighting (PPE for firefighters and personnel).

In case of fire - fire-retardant suit complete with self -rescuer SPI-20. Oil and petrol resistant gloves, special shoes according to normative and technical documents.

5. 7. Specifics when extinguishing a fire.

In case of fire in a warehouse or wagon, the fire brigade should be called immediately and at the same time measures should be taken to extinguish it. The main remedy is water in copious amounts. Not only the source of the fire (decomposition), but also nearby stacks or piles of ammonium nitrate should be watered abundantly, regardless of damage to the product, just to prevent heating and the threat of decomposition of ammonium nitrate. In the event of a fire, the doors and windows of the warehouse should be opened, which promotes air circulation and the removal of escaping gases. In order to avoid poisoning with nitrogen oxides, personnel during extinguishing should be on the windward side, and wear gas masks of the DOT M-600 brand of the "B2E2K2SO₂₀ SX" brand. All people not involved in extinguishing the fire must be removed.

6. Measures to prevent and eliminate accidents and emergencies and their consequences

6.1 Measures to prevent emergencies.

6.1.1 General recommendations:

-Sealing production equipment;

- places most emitting volatile substances should be equipped with general and local ventilation;
- use of equipment in anti-corrosion, antistatic performance;
- smoke only in designated areas;

- ensuring air control of the working area;

- electrical equipment and artificial lighting must be explosion-proof;

- production processes are mechanized, production is equipped with modern measuring and automatic control devices; the equipment must be grounded; -passages, driveways, entrances to buildings, stairwells and access to fire extinguishing equipment should not be cluttered.

Recommendations for: 6.1.2 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. Objects must have fire safety systems aimed at preventing people from being exposed to fire hazards, including secondary manifestations at the required level. Fire prevention must be achieved by preventing the formation of a combustible atmosphere and/or preventing the formation of (or introduction into) a combustible environment of sources of ignition.

6.1.3. Handling and storage.

There is no warehouse for bulk storage of ammonium nitrate. There is an unloading and loading area where the finished product in bags is stored in the volume of the daily norm.

Guaranteed shelf life - 6 months from the date of manufacture.

6.1.4. Ensuring the safety of personnel.

Room ventilation, compliance with requirements and standards technological regime, the use of PPE.

6.1.5. Environmental protection.

Sealing of technological equipment and shipping containers, installation of ventilation exhausts in places of possible dust emissions of the product.

6.1.6. Transportation.

By agreement with the consumer, ammonium nitrate packed in bags with conveyor belts is fed to stacking machines and placed in equipped box cars.

6.2. The need and grade of isolation.

Sealing of technological equipment and transport containers.

6.3. Neutralization, recycling and disposal of waste.

Comply with fire safety measures.

Wash water after washing equipment and communications with a concentration of not more than 10 mg/dm3 should be sent for treatment to the Neutralization and Wastewater Treatment Shop.

Solid production waste, according to

Magnesia sludge ACC n/b 45 t/year, ammonium nitrate no more than 279 t/year are disposed of in a special collection.

6.4. Measures to eliminate emergencies.

Necessary actions:

6.4.1. Of a general nature:

To isolate the danger zone within a radius of 200 m. To remove strangers to a safe area. To enter the danger zone in protective equipment. To observe fire safety measures. Do not smoke! To eliminate sources of fire and sparks. To stick to the neutral side. To avoid low places. To provide first aid to the injured. To send people from the lesion for a medical examination.

6.4.2 Methods of neutralization - in case of placer:

To collect and hand over for recycling. There is a re-dissolution unit for substandard ammonium nitrate, with subsequent processing into a product.

7. Rules for the storage and handling of chemical products loading and unloading operations

7.1. Safety measures and means of protection when working with a substance (material).

All production facilities must be equipped with supply and exhaust ventilation.

All works must be carried out in compliance with personal protective measures, using PPE. Conduct regular monitoring of the state of the air environment.

It is forbidden to store and transport ammonium nitrate together with other chemical products. Smoking, installation of open-grade lighting fittings, hot work, and storage of used bags are prohibited in warehouses.

7.2. Conditions and terms of safe storage.

Ammonium nitrate is stored in closed, dry and clean warehouses that protect the product from humidity.

The temperature of ammonium nitrate may increase during storage due to the occurrence of slow reactions in large masses of product stored in bulk. It is also dangerous to heat it in a densely packed state.

The temperature of ammonium nitrate sent for storage should not exceed 50 °C. Warehouses must be equipped with exhaust ventilation, the use of heaters for heating is not allowed. Combustible substances and their mixtures must be stored at least 10 m from the warehouse building.

7.2.1. Substances (materials) incompatible during storage:

Ammonium nitrate should not be in contact with substances that give an alkaline reaction (cement, lime, calcium cyanamide, tomasslag) or an acid reaction (superphosphates, acids), as well as chlorates, chlorites.

Storage of ammonium nitrate is carried out separately from other materials and substances.

7.2.2. Materials recommended for containers

Ammonium nitrate is packed in a transport container (wet-strength bags) that meets the requirements of GOST 26319-84:

- welded polyethylene bags according to GOST 17811-78;
- polypropylene fabric bags sewn with an inner polyethylene liner according to GOST 30090-93;
- wet-strength polymer bags that meet the requirements of standards and international regulations for the transport of dangerous goods;
- in soft specialized containers for bulk products of the MKR grade

according to regulatory or technical documents.

8. Hazardous exposure controls and personal protective equipment

8.1. Work area parameters subject to mandatory control (MAC).

 $MAC = 10 \text{ mg/m}^3$, 3^{rd} hazard class according to GOST 12.1.007-76.

8.2. Measures to ensure the content of harmful substances in permissible concentrations.

Warehouses of ammonium nitrate must be equipped with ventilation and smoke exhaust shafts in accordance with the requirements of Building Codes and Rules. Heating of warehouses for storage of ammonium nitrate must be air, the use of heaters (with pipelines) is not allowed.

Sealing of production equipment, operation of supply and exhaust ventilation.

Control over the state of the air environment is carried out by departmental laboratories according to a plan agreed with the organization of sanitary supervision.

8.3. Measures and means of personnel protection.8.3.1. General recommendations.

Personnel while working with ammonium nitrate must have the necessary protective equipment. Observe precautions. Avoid direct contact with the product. Use PPE, undergo periodic medical examinations.

8.3.2. Respiratory protection.

- The filtering industrial gas mask of the DOT M 600 grade;
- "U-2k" grade respirators or cotton-gauze bandage;
- insulating gas masks of PSh-1, PSh-2 grade, while working in confined spaces.
- 8.3.3. Protective clothing (material, grade).
- Cotton suit, leather shoes or boots.
- 8.3.4. Eye protection.
- Safety goggles of "G" grade (GOST 12.4.001-80; 12.4.153-85).
- 8.3.5. Hand protection.
- Rubber-Knitted gloves.

9. Physicochemical characteristics

9.1. Physical characteristics (aggregate state, color, smell).

A crystalline substance (pure product) containing 35% nitrogen, 60% oxygen, and 5% hydrogen. The technical product is white in color with a yellowish tinge, contains at least 34.2% nitrogen, odorless.

9.2. Parameters characterizing the main properties of a substance (material), primarily hazardous.

Melting point, °C -169,6

At a temperature of 110-165 °C, a gradual endothermic dissociation of saltpeter into ammonia and nitric acid occurs.

In the range of 200-270 °C, a weak exothermic reaction of saltpeter decomposition into NO2 and H2O proceeds.

LDAN is soluble in water. Well soluble in ethyl and methyl alcohol, acetone, liquid ammonia.

Bulk density, g/cm3: 0.65÷0.75.

LDAN is an oxidizer and a fire hazard.

At a temperature of 210 °C and interaction with sulfur, sulfuric pyrite, acids, superphosphate, bleach, powdered metals (especially zinc) decomposes with the release of toxic oxides of nitrogen and oxygen. The oxygen released can cause combustible materials to catch fire.

10. Stability and reactivity

10.1 Stability.

10.2. Conditions causing a dangerous reaction.

10.3. Substances, contact with which may cause a dangerous reaction.

10.4 Hazardous decomposition products.

10.5. Possibility of dangerous exothermic (releasing heat) reaction.

Ammonium nitrate is an oxidizing agent and is flammable. Refers to non-combustible products. Supports combustion of nitrous oxide, formed during the thermal decomposition of salt.

When heated in a confined space, when the products of thermal decomposition cannot be freely removed, ammonium nitrate can explode under the influence of strong shocks.

The tendency of ammonium nitrate to decompose increases significantly when it is heated in the presence of nitric, hydrochloric and sulfuric acids, some organic substances (oils, paraffin) and many powdered metals (zinc, nickel, copper, lead, magnesium). The presence in the evaporated solutions of impurities of oil, cadmium or particles of charcoal, chlorides significantly lowers the decomposition temperature of ammonium nitrate.

In closed vessels, when ammonium nitrate is heated, along with nitrous oxide and water, gases NH3, HNO3, NO2 and NO are formed, which explode at a temperature of (260÷269) °C. The composition of the gas phase formed during the thermal decomposition of ammonium nitrate depends on its humidity content.

- If dry ammonium nitrate is heated at 220 °C, then the gas phase will contain:

 $N_20 - 71,2 \%$, $0_2 - 2,5 \%$ and 26,3 % other gases.

- If wet ammonium nitrate is heated at the same temperature, the composition of the gas phase will change dramatically: $N_20-45\%$, $O_2-6\div I2\%$, $NH_3-10\%$, NO-13% u $20\div 26\% N_2$.

In the presence of calcium and magnesium nitrates, lime dust, tricalcium phosphate and carbamide, the thermal decomposition of ammonium nitrate is significantly reduced.

Thermal decomposition of ammonium nitrate mainly occurs with the release of heat.

The temperature of ammonium nitrate may increase during storage due to the occurrence of slow reactions in large masses of product stored in bulk. It is also dangerous to heat it in a densely packed state.

The temperature of ammonium nitrate sent for storage should not exceed 50 °C. Warehouses must be equipped with exhaust ventilation, the use of heaters for heating is not allowed. Combustible substances and their mixtures must be stored at least 10 m from the warehouse building. Ammonium nitrate should not be in contact with substances that give an alkaline reaction (cement, lime, calcium cyanamide, tomasslag) or an acid reaction (superphosphates, acids), as well as chlorates, chlorites.

11. Information on toxicity

11.1 Assessment of the degree of danger (toxicity) of the impact on the body.

11.2. Information about the effects hazardous to health in direct contact with the substance, as well as the consequences of these effects (irritant effect on the upper respiratory tract, eyes, skin).

According to GOST 12.1.007-76, ammonium nitrate, according to the degree of impact on the human body, belongs to the 3rd hazard class.

Upon contact with the skin, ammonium nitrate has an irritating effect on the skin. There is severe itching, redness around the follicles, lichen-like reddening of the skin and redness on the back of the hands and forearm. Getting into small wounds and cracks, it causes burning pain in them. With prolonged heating, ammonium nitrate gradually decomposes into ammonia and nitric acid.

Ammonia - causes profuse lacrimation, coughing fits, dizziness, stomach pain, vomiting, urinary retention.

Nitrogen oxides - irritates the respiratory tract, affects the alveolar tissue, which leads to pulmonary edema.

11.3 Indicators of acute toxicity, doses (concentrations) with minimal toxic effects

Ammonium nitrate is classified as a moderately hazardous substance in terms of toxicity. The threshold of acute intragastric action is determined at the level of 140 mg/kg. The threshold for acute inhalation exposure is set at 150 mg/m3.

The threshold of chronic inhalation action was determined at the level of 43.1 mg/m3, the zone of chronic action was 4.5 (III class).

12. Information on the impact on the environment

12.1. Assessment of possible environmental impacts.

The main grade of hazardous impact on the environment is atmospheric air pollution in populated areas as a result of leaks, emissions, discharges, violations of storage rules, and emergencies. Physiologically acidic fertilizer is intended as a mineral fertilizer for all grades of crops.

12.2. The most important characteristics of the impact on environment.

Ammonium nitrate is an oxidizing agent, flammable, explosive, highly soluble in water. The nitrate form of fertilizer is easily mobile in the soil. Ammonium nitrate is allowed for use under industrial crops, it is not advisable to use it in agricultural production for melons and vegetables. Ammonium ions (NH3) in the composition of ammonium nitrate are more quickly consumed by plants, and the acidic residue NH3 accumulates and is not absorbed by the soil and is in the soil solution. When it evaporates, it migrates to the surface of the earth. Causes burns on plant leaves. With prolonged application of ammonium nitrate as a fertilizer, the soil is acidified and leads to a decrease in yield. It is not recommended for long-term use on acidic, especially low-buffer sandy soils.

12.2.1. Hygienic standards.

Acceptable daily dose (ADD) - 5.0 mg / person. h; MPC in the water of reservoirs - for nitrates -45,0 mg/dm³, - for nitrates -3,0 mg/dm³;

MPC for nitrates in soil - 130,0 mg/kg; MPC of the working area - 10 mg/m³; Sanitary protection zone - 100 m.

The total specific alpha activity of radionuclides (uranium-2388, thorium-232 and their decay products) in raw materials for the production of fertilizers and ameliorants is not more than 10 kBq/kg

13. Recommendations for the disposal of waste (residues)

13.1. Safety requirements for waste management.

Rooms where work with acid is carried out must be equipped with supply and exhaust ventilation. Use PPE (Personal Protective Equipment) while handling waste.

13.2. Методы нейтрализации или захоронения отходов.

Solid waste from the production or use of ammonium nitrate after cleaning of equipment and communications unsuitable for use for the intended purpose of the product should be sent for technological processing.

14. Information on transportation

14.1. Shipping name.

Ammonium nitrate of A, B grade

14.2. Transport marking (manipulation marks and information labels).

Transport marking in accordance with GOST 14192-96 with the application of handling signs "Protect from sunlight" and "Protect from humidity" and in accordance with the rules of transportation of dangerous goods in the appropriate form of transport.

14.3. Classification of dangerous goods.

According to the classification of dangerous goods, ammonium nitrate belongs to: class 5.1, category 511 according to GOST 19433.1-2010 classification code group 5113, UN number 1942 (ammonium nitrate); is a water pollutant, as it is highly soluble in water.

14.4. Grade of vehicles.

Ammonium nitrate, in accordance with the rules for the carriage of goods, is transported by all modes of transport, except for air, in covered vehicles.

14.5. Requirements for safety during 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, spilled ammonium nitrate should be immediately carefully removed.

15. Information about international and national legislation.

15.1. Laws of the Republic of	Law of the Republic of Uzbekistan "On Protection of Consumer
Uzbekistan.	Rights" dated 26.04.1996
	Law "On the Protection of Atmospheric Air" dated 27.12.1996
	Law "On State Sanitary Supervision" dated 03.07.1992
	Law "On Standardization" dated December 28, 1993
	Law "On Metrology" dated December 28, 1993
	Law "On Nature Protection" dated 09.12.1992
	Law "On Waste" dated 05.04.2002
	Law of the Republic of Uzbekistan No. 57 "On industrial safety of
	hazardous production facilities" dated 29.09.2006
15.2. Documents regulating the	Permanent technological regulations for the production of ammonium
requirements for the protection of	nitrate
humans and the environment.	GOST 2-2013 "Ammonium nitrate. Specifications".
	Sanitary rules and norms-0193-06 clauses 5.3.7

16. Additional Information. List of sources of information.

- 1. GOST 2-2013 "Ammonium nitrate. Specifications".
- 2. Chemical encyclopedia.
- 3. Harmful substances in industry. Handbook edited by Lazareva 1977
- 4. Atroshchenko V.I., Kargin S.I. "Technology of nitrogen fertilizers".
- 5. Unified Tariff-Statistical Nomenclature of Goods GOST.
- 6. GOST 12.1.004-91 "System of labor safety standards. Fire safety. General requirements".
- 7. Fire and explosion hazard of substances and materials and means of extinguishing them GOST 12.1.044-2018.
- 8. Safety rules and procedures for the elimination of emergency situations with dangerous goods during their transportation by rail.
- 9. M.A. Miniovich "Production of ammonium nitrate".
- 10. V.M. Olevsky "Technology of ammonium nitrate".
- 11. K.F. Bostanjoglo, B.D. Rossi "Ammonium nitrate substances".

«AGREED»

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