

# OUR TECHNOLOGIES

- base of your efficiency



Technologies and  
reagents for the industrial  
water treatment

catalogue

 **TRABEPC**  
химия профессионалов

[www.travers.su](http://www.travers.su)  
[www.prom-voda.ru](http://www.prom-voda.ru)

## 10 reasons to choose TRAVERS

1

Quality reagents of the domestic production.

2

Production and realisation meeting the expectations of customers. Thorough quality control at the all of the production stages.

3

Flexible price policy. Availability of production at the warehouses. Delivery to the every point of Russia, CIS countries, abroad.

4

Wide assortment of the chemical production for different branches of the national economy.

5

Possibility of creation of the chemical production for the specific needs of Customer.



6

Own R&D centre. Permanent enhancement of the reagents' receipts.

7

Full complex of works for the maintenance of production.

8

Internal, in absentia consultations of specialists.

9

TRAVERS keeps you in touch! Information at [www.travers.su](http://www.travers.su), [www.prom-voda.ru](http://www.prom-voda.ru) is permanently updating.

10

We are ready for dialogue and open for cooperation!

## Catalogue

Technologies and reagents for the industrial water treatment  
"TRAVERS"

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# Technologies and reagents TRAVERS for the industrial water treatment

*TRAVERS – trademark of author chemical production of wide spectre of use in the industry and human services.*

Production is situated in the Moscow region (Staraya Kupavna), science centre and trade company – in Moscow. Nowadays TRAVERS produces about 300 names of reagents with the volume over 3500 tons a year.

Production is certified to meet the requirements of GOST ISO 9001-2011. Quality control is carried out at the all stages of production.

## We offer you the catalogue of reagents TRAVERS for the industrial water treatment.

One of the major directions of activity of the company - production of chemicals and introduction of technologies of water treatment for industrial needs in various enterprises.

Reagents for industrial water treatment are patented, produced by under the registered trademark AMINAT™.

## Reagents AMINAT™ are used to solve the following tasks:

- stabilization and anti-corrosion treatment of water in systems of heating and hot water, in the circulating cooling systems and air conditioning;
- correction of water-chemical regimes of heating systems, steam boilers of low and average pressure;
- corrosion prevention of steam condensate ducts;
- prevention of precipitation in reverse osmosis plants;
- chemical cleaning of membrane elements from pollution;
- regeneration of ion-exchange resins, working in conditions of high iron content;
- washing on the go of drum and once-through steam boilers;
- chemical cleaning of heat engineering and heat-exchange equipment;
- fight against biological contamination.

Product line TRAVERS for industrial water treatment (AMINAT™) is constantly updated at the expense of developing its own research centre, including, for specific production tasks of the clients. Specialists of TRAVERS select the optimal technology for a specific production needs.

***Working with TRAVERS, you get the best solutions for processes of water treatment!***

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# 1 Stabilisation of water treatment for different water systems

The technology of stabilizing water treatment reagents Aminat™ is that in make-up water system is introduced inhibitor process of scaling and corrosion. Dose and brand input inhibitor depend on the composition of the treated water and of the type of system.

## 1.1 Stabilization treatment of feed water for heating systems and hot water supply

*The use of reagents Aminat™ for stabilization processing of feed water heating systems and hot water - effective alternative to standard treatment for these systems by water softening methods Na- or H-cationing.*

*The use of reagents Aminat™ to process make-up of water heating systems and hot water supply systems will allow:*

- to prevent the formation of deposits of mineral salts at high scale-making ability of water, providing the operation of the equipment without damage due to deposits of scum and sludge even at full or partial shutdown of plants with which reduces the stiffness and (or) alkalinity of water;*
- to prevent the accumulation of iron compounds in water and the formation of iron oxide deposits, as well as to reduce the damage of the equipment and pipelines against internal corrosion.*

*Reagents Aminat™ also contribute to cleaning available in the system of older deposits.*

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# AMINAT™ A

### Field of application

Aminat™ A is designed to inhibit the formation of insoluble deposits of salts of rigidity on the surfaces of heat-exchange equipment.

Used for processing incremental and make-up water in water circulation cooling systems and closed systems of heat supply.

### Product feature

- Colorless or slightly coloured liquid is a water solution mixture of sodium salts of methyliminodimethylphosphonic and nitrilotrimethylphosphonic acids.
- Regulated by the organic components and content of inorganic impurities.
- Value of pH – limited by 5,5-6,5.
- Density at 22±5°C – limited by 1,25-1,30 g/cm<sup>3</sup>.
- Not combustible, fire and explosion safe.
- Chemically low hazardous (4th degree of danger in GOST 12.1.007).
- Thickens at temperatures below -10°C, without losing its consumer properties.

### Recommendations on application

Reagent consumption is 5 to 25 g per cubic metre of treated water depending on its chemical composition.

The reagent is dosed proportionally to the consumption of make-up water.

### Feature

Replaces water treatment methods of ion exchange in the process of water treatment for energoobjects of low and medium pressure. Prevents formation of scale at water temperature below 130°C.

### Storage and warranty period

Aminat™ A should be stored in closed ventilated warehouses.

Guaranteed shelf life - 12 months from date of manufacture.

## AMINAT™ Kv

### Field of application

Aminat™ Kv designed for inhibition of corrosion processes and sediment of mineral salts in pipelines and heat-exchange equipment of systems of hot water supply and heat supply with an open water separation.

### Product feature

- Colorless or slightly coloured liquid is a water solution mixture of sodium salts of methyliminodimethylphosphonic and nitrilotrimethylphosphonic acids.
- Regulated by the organic components and content of inorganic impurities.
- Value of pH – limited by 6,0-7,0.
- Density at 22±5°C – limited by 1,2-1,3 g/cm<sup>3</sup>.
- Not combustible, fire and explosion safe.
- Chemically low hazardous (4th degree of danger in GOST 12.1.007).
- Thickens at temperatures below -10°C, without losing its consumer properties.

### Recommendations on application

Aminat™ Kv is used as an inhibitor of sediments of mineral salts in the open heat supply systems and the systems of hot and cold water at concentrations of 1-5 grams per cubic meter of water makeup.

### Feature

Replaces water treatment methods of ion exchange in the process of water treatment for boilers. Provides practically full scale prevention when the water temperature at boiler outlet to 120°C, from the boiler to 130°C.

### Storage and warranty period

Aminat™ Kv should be stored in closed ventilated warehouses.

Guaranteed shelf life - 12 months from date of manufacture.

*Allowed for hot water systems!*



## Zinc complex 1-hydroxyethylidenediphosphonic acid aqueous solution, pure

### Field of application

Inhibitor of corrosion and scale formation in heat exchange equipment of heating systems, systems of the centralized hot water supply.

### Product feature

- Colorless liquid without smell.
- It is an aqueous solution of zinc complex 1-hydroxyethylidenediphosphonic acid
- Density at  $22\pm 5^{\circ}\text{C}$  – limited by 1,25-1,32 g/cm<sup>3</sup>.
- Value of pH of 10%-solution – limited by 6,5-7,5.
- Not combustible, fire and explosion safe.
- Belongs to moderately dangerous substances (3rd degree of danger in GOST 12.1.007).
- Frozen product after thawing does not recover its properties.

### Reagent consumption

As a inhibitor - from 10 to 20 grams per cubic metre of treated water depending on its chemical composition.

As a corrosion inhibitor - from 5 to 15 grams per cubic metre of treated water.

### Recommendations on application

The reagent is dosed proportionally to the consumption of make-up water.

### Feature

Replaces water treatment methods of ion exchange in the process of water treatment for power facilities of medium and low pressure.

### Storage and warranty period

The preparation should be stored in closed ventilated warehouses.

Guaranteed shelf life - 6 months from date of manufacture.

## AMINAT™ OD

### Field of application

Aminat™ OD is designed for inhibition of the process of scale in heat supply systems, and also systems of centralized hot water supply.

### Product feature

- Colorless or light yellow liquid is a water solution of salt phosphonic acid, regulated on the composition and content of impurities.
- Density at 22±5°C – about 1,2 g/cm<sup>3</sup>.
- Value of pH – limited to 2-5.
- Not combustible, fire and explosion safe.
- Chemically low hazardous (4th degree of danger in GOST 12.1.007).
- Working solutions of reagent are not corrosion active.
- Freezing point -4°C.
- The frozen product after thawing restores its properties.

### Recommended doses

Reagent consumption not more than 25 g per cubic metre of treated water.

### Recommendations on application

The reagent is dosed proportionally to the consumption of make-up water.

### Feature

Prevents formation of scale at water heating up to 130°C.

### Storage and warranty period

Aminat™ OD should be stored in closed ventilated warehouses.

Guaranteed shelf life - 12 months from date of manufacture.

## 1.2 Stabilization treatment of feed water of water circulating cooling systems

*The technology of stabilizing water treatment by reagents Aminat™ is that nutrient water circulating water cooling system is introduced phosphonate-inhibitor dose and mark which depend on the composition of the treated water and of the technological parameters of the processing system. The use of reagents Aminat™ for processing of feed water circulating water cooling systems will significantly increase the degree of concentration of salts in the circulation system, to reduce the amount of recharge and purge of circulation system.*

### AMINAT™ Ak

#### Field of application

Aminat™ Ak prevents formation on the surface of heat exchange of sparingly soluble salts of hardness at high alkalinity incremental and circulating water in open and combined water circulation systems.

#### Product feature

- Yellow transparent liquid, is an acidic solution of organophosphorus compounds.
- Density at 22±5°C about 1,1 g/cm<sup>3</sup>.
- Ratio of acidity is not less than 5,0.
- Not combustible, fire and explosion safe.
- Chemically moderately dangerous (3rd degree of danger in GOST 12.1.007).
- Freezing point -4°C.
- Has corrosion activity in relation to construction materials made of black steel and aluminium.
- The frozen product after thawing restores its properties.

#### Recommended doses

Reagent consumption from 50 to 150 g per cubic metre of treated water depending on its chemical composition.

#### Recommendations on application

Dosing is made with the help of automatic devices. The equipment must be made of corrosion-resistant materials.

#### Feature

The efficiency of the reagent from the combined action by the partial ("soft") acidification and inhibition processes of scale formation.

#### Storage and warranty period

Aminat Ak should be stored in closed ventilated warehouses.

Guaranteed shelf life - 12 months from date of manufacture.

## AMINAT™ Ao

### Field of application

Aminat™ Ao is designed for inhibition of the process of scaling and corrosion in water circulation cycles of cooling systems.

### Product feature

- Colorless or slightly coloured liquid is a water solution mixture of salts of phosphonic acid with the addition of dispersing agents.
- Density at 22±5°C about 1,2 g/cm<sup>3</sup>.
- Value of pH of 10%-solution – limited to 6-7.
- Not combustible, fire and explosion safe.
- Chemically low hazardous (4th degree of danger in GOST 12.1.007).
- Thickens at temperature not below -10°C, without losing its consumer properties.

### Recommended doses

Reagent consumption from 15 to 40 g per cubic metre of treated water. Dosage depends on the coefficient of evaporation of water, water quality and pollution system.

### Recommendations on application

The reagent is dosed continuously proportional to the consumption of added water. Control reagent dosing is maintaining a system of concentration at the level of about 5 g/l at ion PO<sub>4</sub><sup>3-</sup>.

### Feature

Processing of added water inhibitor Aminat™ Ao allows the system to work in non-scum mode at higher evaporation coefficient with a simultaneous decrease in the rate of corrosion of materials of pipelines to less than 0,1 mm per year.

### Storage and warranty period

Aminat™ Ao should be stored in closed ventilated warehouses.

Guaranteed shelf life – 12 months from date of manufacture.

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# AMINAT™ OD

## Field of application

Aminat™ OD is designed for inhibition of sediments of mineral salts in the heat-exchange equipments of circulating cooling.

## Product feature

- Colorless or light yellow liquid is a water solution of salts of phosphonic acid, regulated on the composition and content of impurities.
- Density of reagent at 22±5°C – about 1,2 g/cm<sup>3</sup>.
- Value of pH – limited to 2-5.
- Not combustible, fire and explosion safe.
- Chemically low hazardous (4th degree of danger in GOST 12.1.007).
- Working solutions of reagent are not corrosion active.
- Preparation freezing point -4°C.
- The frozen product after thawing restores its properties.

## Recommended doses

Reagent consumption not more than 25 g per cubic metre of treated water.

## Recommendations on application

The reagent is dosed proportionally to the consumption of make-up water.

## Feature

Replaces water treatment methods of ion exchange in the process of water treatment for boilers.  
Prevents formation of scale by heating water in the pot outlet – up to 120°C, from boiler – up to 130°C.

## Storage and warranty period

Aminat™ OD should be stored in closed ventilated warehouses.

Guaranteed shelf life – 12 months from date of manufacture.



## 2 Correctional treatment of water in systems with water-heating equipment

Correctional treatment of feed and water network allows you to effectively restrict or completely prevent corrosion processes. Main factors influencing the course of corrosion processes on the surfaces of equipment of heating systems is the pH value of the water and the content of corrosive gases - oxygen and carbon dioxide. Deaeration of make-up water provides the decline of these indicators to the standardized values. In cases of violation of the regime of work of the deaerator or when the installation is not provided, to reduce the concentration of aggressive gases to the standardized values method allows dosing of chemicals. The diversity of the composition of the treated water and schemes of water treatment requires the application of complex reagents.



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*All reagents of brand Aminat™ KO are compatible and can be dosed from one tank of working solutions.*

## AMINAT™ KO-2

### Field of application

Reagent Aminat™ KO-2 is designed to eliminate oxygen corrosion in closed heat supply systems and cooling. Reagent links dissolved oxygen and the way promoted the formation of a protective film.

### Product feature

Is a water-based solution of catalysed sodium bisulphite.

- Liquid of light-pink colour with a specific smell.
- Density 1,25-1,27 g/cm<sup>3</sup>.
- Value of pH – limited to 3,5-5,0.
- By the impact on the body belongs to low hazardous substances (4th degree of danger in GOST 12.1.007).
- Fire and explosion safe.
- Frozen reagent after thawing and stirring restores its properties.

### Recommended dose and dosing control

The required dose of the reagent is established depending on the concentrations of dissolved oxygen (8 mg of reagent for 1 mg of O<sub>2</sub>) and can vary from 5 to 100 mg/dm<sup>3</sup>. Dosing is controlled by maintaining a surplus of sulphite-ions in the network and circulating water at the level of 2-3 mg/dm<sup>3</sup>.

### Recommendations on application

Aminat™ KO-2 may be injected into the pipeline extension or make-up water, eliminating the interaction of the treated water with oxygen (in cumulative or feed tanks). Reagent recommended dose diluted with multiplicity dilution of 4-10 times.

### Feature

Optimal effect of deoxygenation achieved in the conditions of temperature of the treated water is above 70°C.

### Storage and warranty period

Aminat™ KO-2 should be stored in closed ventilated warehouses.

Guaranteed shelf life – not much than 12 months from date of manufacture.

## AMINAT™ KO-2N

### Field of application

Aminat™ KO-2N is designed to eliminate oxygen corrosion in closed heating and closed cooling circuit.

Reagent links dissolved oxygen and promotes formation of protective film.

### Product feature

Is a water-based solution of catalysed sodium bisulphite.

- Liquid of light-pink colour with a specific smell.
- Density 1,09-1,12 g/cm<sup>3</sup>.
- Value of pH – limited to 10,0-11,0.
- By the impact on the body belongs to low hazardous substances (4th degree of danger in GOST 12.1.007).
- Fire and explosion safe.
- Frozen reagent after thawing and stirring restores its properties.

### Recommended dose and dosing control

The required dose of the reagent is established depending on the concentrations of dissolved oxygen (8 mg of reagent for 1 mg of O<sub>2</sub>) and can vary from 5 to 200 mg/dm<sup>3</sup>. Dosing is controlled by maintaining a surplus of sulphite-ions in the network and circulating water at the level of 2-3 mg/dm<sup>3</sup>.

### Recommendations on application

Reagent may be injected into the pipeline extension or make-up water, excluding interaction of processed water from atmospheric air (cumulative or nutritional tanks). Reagent recommended dose diluted with multiplicity dilution of 2-5 times.

### Feature

Optimal effect of deoxygenation achieved in the conditions of temperature of the treated water is above 70°C.

### Storage and warranty period

Aminat™ KO-2N should be stored in closed ventilated warehouses.

Guaranteed shelf life – not much than 12 months from date of manufacture.

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# AMINAT™ KO-5

## Field of application

Aminat™ KO-5 is designed to prevent carbon dioxide corrosion in closed heat supply systems and cooling due to adjust pH. It is also recommended for bucking of heat-exchange equipment during pre-launch and operational leaching.

## Product feature

Is an aqueous alkaline solution with the addition of inorganic complex-maker.

- Colourless liquid.
- Density 1,2-1,25 g/cm<sup>3</sup>.
- Value of pH – limited to 11,5-12,0.
- By the impact on the body belongs to moderately hazardous substances (3th degree of danger in GOST 12.1.007).
- Fire and explosion safe.
- Frozen reagent after thawing and stirring restores its properties.

## Recommended dose and dosing control

The required dose of the reagent for the correction water treatment is 5 to 200 mg/dm<sup>3</sup> based on the values of alkalinity and pH of the treated water and the necessary pH of the treated water.

Control of dosing is carried out on the pH of the treated water.

## Recommendations on application

Reagent may be injected into the pipeline extension or make-up and closed water circulation systems. Reagent recommended dose diluted with multiplicity dilution of 5-10 times.

When carrying be water-heating equipment is introduced in concentrated form in the quantity necessary to create in the circuit of 0,5-1%.

## Feature

In case of adjustment of pH simultaneously with the sulphition of make-up water insertion point reagent should be after entering sulphites.

## Storage and warranty period

Aminat™ KO-5 should be stored in closed ventilated warehouses.

Guaranteed shelf life – not much than 12 months from date of manufacture.

## 3 Correctional water-chemical regimes of steam boilers

The reliability of steam boilers is ensured by the maintenance of optimal water-chemical mode, which can be realized by way of a metering-in treated water related reagents. The corrective maintenance of water-chemical mode of steam boilers allows to prevent or partially restrict the processes of scale formation and corrosion on heat transfer surfaces.





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# AMINAT™ KO-2

## Field of application

Aminat™ KO-2 is designed for binding of oxygen in the water steam boilers of low and average pressure.

## Product feature

Is a water-xased solution of catalysed sodium bisulphite.

- Liquid of light-pink colour with a specific smell.
- Density 1,25-1,27 g/cm<sup>3</sup>.
- Value of pH – limited to 3,5-5,0.
- By the impact on the body belongs to low hazardous substances (4th degree of danger in GOST 12.1.007).
- Fire and explosion safe.

## Recommended dose and dosing control

The required dose of the reagent is established depending on the concentrations of dissolved oxygen (8 mg reagent 1 mg O<sub>2</sub>) and can vary from 5 to 100 mg/dm<sup>3</sup>. Dosing is controlled by maintaining a surplus of sulphite-ions in the boiler water level 10-30 mg/dm<sup>3</sup>.

## Recommendations on application

The reagent can be entered in the feedwater pipeline (after the deaerator or the feed tank).

Reagent recommended dose diluted with multiplicity dilution 4-10 times.

## Feature

Temperature limit for the use of reagent is 250°C.

## Storage and warranty period

Aminat™ KO-2 should be stored in closed ventilated warehouses.

Guaranteed shelf life – not much than 12 months from date of manufacture.

## AMINAT™ VO-1 and VO-2

### Field of application

Reagents Aminat™ VO-1 and VO-2 are designed for binding of residual oxygen in the water steam boilers of medium and high settings to eliminate oxygen corrosion of condensate-feedwater system.

### Products feature

Are aqueous solutions of carbohydrazide.

- Transparent colorless liquids.
- Density – 1,02 (1,04) g/cm<sup>3</sup>.
- Value of pH – limited to 8,5-9,0.
- By the impact on the body belongs to moderately hazardous substances (3th degree of danger in GOST 12.1.007).
- Fire and explosion safe.
- Frozen reagent after thawing and stirring restores its properties.

### Recommended dose and dosing control

The required dose of the reagent is established depending on the concentration of residual oxygen and content of oxides of iron and copper in the water and can be in the range of 0,5-3 mg/dm<sup>3</sup>.

Dosing is controlled by maintaining excess of the reagent in the water before the boiler.

The amount of the excess should be maintained within level:

- for VO-1 20-60 mcg/dm<sup>3</sup>;
- for VO-2 20-60 mcg/dm<sup>3</sup>.

### Recommendations on application

Reagents are dosed in feed water steam boilers (after deaerator).

Reagents recommended dose diluted with multiplicity of dilution of 5-10 times.

### Feature

Dosing of reagents limits the formation of iron oxide deposits and corrosion of copper containing alloys. Used as an alternative to the hydrazine hydrate.

### Storage and warranty period

Aminat™ VO-1 and VO-2 should be stored in closed ventilated warehouses.

Guaranteed shelf life – not much than 12 months from date of manufacture.

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# AMINAT™ KO-3

### Field of application

Aminat™ KO-3 is intended for prevention of scale formation and limitations of corrosion on heat-exchange surfaces of steam boilers.

### Product feature

Aminat KO-3 is a water solution of sodium salts of polyphosphoric acids and sulfites with catalytic additives.

- Colorless or light yellow liquid.
- Density 1,1-1,15 g/cm<sup>3</sup>.
- Value of pH – limited to 7,5-9,5.
- By the impact on the body belongs to moderately hazardous substances (3th degree of danger in GOST 12.1.007).
- Fire and explosion safe.
- Frozen reagent after thawing and stirring restores its properties.

### Recommended dose and dosing control

Dose of reagent depends on the quality of feed water and residual blowdown of a boiler, may vibrate to be in the range from 10 to 50 mg/dm<sup>3</sup>. Dosing is controlled by maintaining of excess of phosphate ions in the boiler water level of 5-15 mg/dm<sup>3</sup>.

### Recommendations on application

Reagent can be entered in the feedwater pipeline (after deaerator) or directly in the boiler drum. Reagent recommended dose diluted with multiplicity dilution 3-10 times.

### Feature

Contains a component for binding of residual oxygen in the water after the deaerator.

### Storage and warranty period

Aminat™ KO-3 should be stored in closed ventilated warehouses.

Guaranteed shelf life – not much than 12 months from date of manufacture.

## AMINAT™ KO-3p

### Field of application

Aminat™ KO-3p is intended for prevention of scale formation and limitations of corrosion on heat-exchange surfaces once-through steam boilers and coiled steam generator. Provides sludgeless mode of drum steam boilers. Reagent effective in a wide range of operating parameters of the equipment.

### Product feature

Aminat™ KO-3p is an alkaline solution of salts of polycarboxylic acids.

- Colorless or light yellow liquid.
- Density 1,1-1,15 g/cm<sup>3</sup>.
- Value of pH – limited to 8,0-9,0.
- By the impact on the body belongs to low hazardous substances (4th degree of danger in GOST 12.1.007).
- Fire and explosion safe.
- Frozen reagent after thawing and stirring restores its properties.

### Recommended dose and dosing control

Dose of reagent depends on the quality of feed water and can vary from 10 to 50 mg/dm<sup>3</sup>. Dosing is controlled by maintaining excess of the reagent in the boiler water at the level of 2-5 mg/dm<sup>3</sup>.

### Recommendations on application

The reagent should be entered in the feedwater pipeline on the absorption of the pump. Reagent recommended dose diluted with multiplicity dilution 3-10 times.

### Feature

Provides non-scum operation of boilers due to the transfer of cations hardness and iron compounds in the dissolved condition, leads to the formation of the metal surface dense protective film.

Application Aminat™ KO-3p improves the quality of feed water and saturated steam.

### Storage and warranty period

Aminat™ KO-3p should be stored in closed ventilated warehouses.

Guaranteed shelf life – not much than 12 months from date of manufacture.

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# AMINAT™ KO-4

### Field of application

Aminat™ KO-4 is intended for prevention of scale formation and limitations of corrosion on heat-exchange surfaces of steam boilers.

### Product feature

Aminat™ KO-4 is an aqueous solution of potassium salts of polyphosphoric acids.

- Liquid is colourless or light yellow color.
- Density 1,05-1,1 g/cm<sup>3</sup>.
- Value of pH – above 10,5.
- By the impact on the body belongs to low hazardous substances (4th degree of danger in GOST 12.1.007).
- Fire and explosion safe.
- Frozen reagent after thawing and stirring restores its properties.

### Recommended dose and dosing control

Dose of reagent depends on the quality of feed water and residual blowdown of a boiler, may vibrate to be in the range from 10 to 50 mg/dm<sup>3</sup>. Dosing is controlled by maintaining excess phosphate ions in the boiler water level of 5-15 mg/dm<sup>3</sup>.

### Recommendations on application

Reagent can be entered in the feedwater pipeline (after deaerator) or directly in the boiler drum. Reagent recommended dose diluted with multiplicity dilution 3-5 times.

### Feature

Reagent is recommended in the case of a boiler feed water with low alkalinity.

### Storage and warranty period

Aminat™ KO-4 should be stored in closed ventilated warehouses.

Guaranteed shelf life – not much than 12 months from date of manufacture.



## AMINAT™ KO-5

### Field of application

Aminat™ KO-5 is designed to adjust pH feed water for steam boilers. It is also recommended for bucking of heat-exchange equipment during pre-launch and operational leaching.

### Product feature

Reagent is an aqueous alkaline solution with the addition of inorganic complex-maker.

- Colorless liquid.
- Density 1,2-1,25 g/cm<sup>3</sup>.
- Value of pH – limited to 11,5-12,0.
- By the impact on the body belongs to moderately hazardous substances (3rd degree of danger in GOST 12.1.007).
- Fire and explosion safe.
- Frozen reagent after tmawing and stirring restores its properties.

### Recommended dose and dosing control

The required dose of reagent to adjust the values of feed water depends on the alkalinity and pH of the water and the necessary pH of the water. The dose can vary from 10 to 100 mg/dm<sup>3</sup>.

Control of dosing is carried out according to the pH value of the water.

### Recommendations on application

Reagent can be entered in the extension or feed water. Reagent recommended dose diluted with multiplicity dilution 5-10 times.

When carrying out of bucking for drum boilers reagent is introduced in a concentrated form.

### Storage and warranty period

Aminat™ KO-5 should be stored in closed ventilated warehouses.

Guaranteed shelf life – not much than 12 months from date of manufacture.

## 4 Protection of steam condensate tract from corrosion

One of the main reasons for the processes of corrosion in the steam condensate tract is carbon dioxide generated as a result of hydrolysis and decomposition of carbonate and bicarbonate alkalinity in boiler water. To neutralize carbon dioxide and increase the pH of steam and condensate developed compositions of reagents on the basis of three neutralizing amines in different ratios, which provide reagents, evenly to prevent corrosion of surfaces around the steam condensate tract.

Reagents may be used in a wide range of parameters of steam boilers.



## AMINAT™ PK-1

### Field of application

Aminat™ PK-1 is designed to prevent carbon dioxide corrosion steam condensate tract steam boilers of low and average pressure. The reagent will neutralize aggressive carbon dioxide effects and increases the pH of steam condensate to 8,5-9,5.

Aminat™ PK-1 is permitted for use in food industry without direct contact with the products of food purposes.

### Product feature

Is an aqueous solution of the organic neutralizing amines.

- Liquid from colorless to yellow color.
- Density 0,95-1,0 g/cm<sup>3</sup>.
- Value of pH – not much than 11,5.
- By the impact on the body belongs to moderately hazardous substances (3rd degree of danger in GOST 12.1.007).
- Flammable, fire and explosion safe.
- Frozen reagent after thawing and stirring restores its properties.

### Recommended dose and dosing control

Dose depends on the reagent feed water alkalinity, degree of deaeration and operating parameters of the steam boiler. Depending on the required degree of increasing pH condensate, the dose is calculated from the condition from 0,5 to 1,0 mg/dm<sup>3</sup> active part of reagent 1 mg/dm<sup>3</sup> of carbon dioxide coming to steam.

Control of dosing may be on the pH value of condensate and content of amines in the coolant.

### Recommendations on application

Reagent may be injected into the pipeline extension and feed water (after deaerator), directly into the boiler and steam condensate tract.

Aminat™ PK-1 is well compatible with other reagents used for the treatment of boiler water.

### Feature

Lower temperature limit of application (temperature boiler water) is 130°C.

### Storage and warranty period

Aminat™ PK-1 should be stored in closed ventilated warehouses at temperature not above 30°C, away from sources of heat and combustible materials, avoiding direct sunlight.

Guaranteed shelf life – not much than 12 months from date of manufacture.

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# AMINAT™ PK-2

## Field of application

Aminat™ PK-2 is designed to prevent carbon dioxide corrosion of pipelines and equipment steam condensate tract steam boilers of medium and high pressure. The reagent will neutralize aggressive carbon dioxide effects and increases the pH of steam condensate to 8,5-9,5.

## Product feature

Is an aqueous solution of the organic neutralizing amines.

- Liquid from colorless to yellow color.
- Density 0,95-1,0 g/cm<sup>3</sup>.
- Value of pH – not much than 11,5.
- By the impact on the body belongs to moderately hazardous substances (3rd degree of danger in GOST 12.1.007).
- Flammable, fire and explosion safe.
- Frozen reagent after thawing and stirring restores its properties.

## Recommended dose and dosing control

Dose of reagent depends on the quality of feed water and the operating parameters of the steam boiler. Depending on the required degree of increasing pH condensate and steam dose is calculated from the condition from 0,5 to 1,0 mg/dm<sup>3</sup> active part of reagent 1 mg/dm<sup>3</sup> of carbon dioxide coming to steam. Control of dosing may be on the pH value of condensate and content amines in the coolant.

## Recommendations on application

Reagent may be injected into the pipeline of demineralized water and feed water (after deaerator), directly to the boiler, as well as in condensate circuit. Reagent is recommended to dose in diluted form.

## Feature

Lower temperature limit of application (temperature boiler water) is 130°C.

## Storage and warranty period

Aminat™ PK-2 should be stored in closed ventilated warehouses at temperature not above 30°C, away from sources of heat and combustible materials, avoiding direct sunlight.

Guaranteed shelf life – not much than 12 months from date of manufacture.

## AMINAT™ PK-3

### Field of application

Aminat™ PK-3 is designed to prevent carbon dioxide corrosion steam condensate tract steam boilers of medium and high pressure. The reagent will neutralize aggressive carbon dioxide effects and increases the pH of steam condensate to 8,5-9,5.

### Product feature

Aminat™ PK-3 is an aqueous solution of the organic neutralizing amines.

- Liquid from colorless to yellow color.
- Density 0,95-0,98 g/cm<sup>3</sup>.
- Value of pH – not much than 11,5.
- By the impact on the body belongs to moderately hazardous substances (3rd degree of danger in GOST 12.1.007).
- Flammable, fire and explosion safe.
- Frozen reagent after thawing and stirring restores its properties.

### Recommended dose and dosing control

Dose of reagent depends on the quality of feed water and the operating parameters of the steam boiler. Depending on the required degree of increasing pH condensate and steam dose is calculated from the condition from 0,5 to 1,0 mg/dm<sup>3</sup> of active part of reagent for 1 mg/dm<sup>3</sup> of carbon dioxide transported to steam.

Control of dosing may be on the pH value of condensate and content of amines in the coolant.

### Recommendations on application

Reagent may be injected into the pipeline of demineralized water and feed water (after deaerator), directly to the boiler, as well as in condensate circuit.

Reagent recommended dose in diluted form.

### Feature

Lower temperature limit of application (temperature of boiler water) is 130°C.

### Storage and warranty period

Aminat™ PK-3 should be stored in closed ventilated warehouses at temperature not above 30°C, away from sources of heat and combustible materials, avoiding direct sunlight.

Guaranteed shelf life – not much than 12 months from date of manufacture.

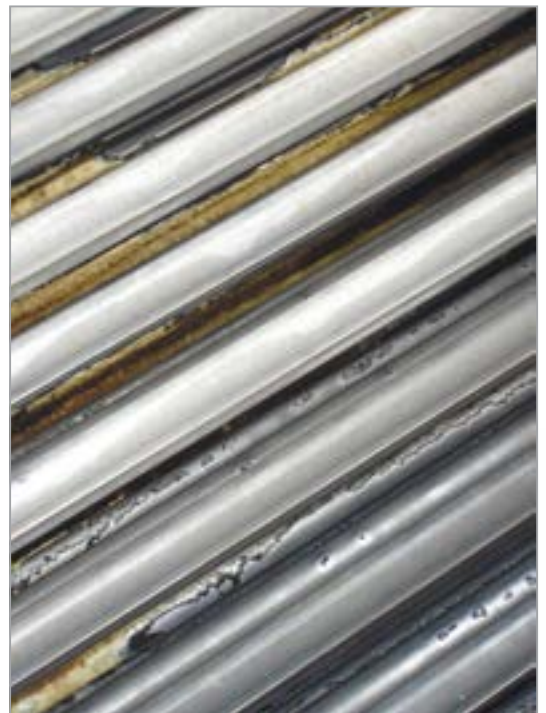


# 5 Reagents for chemical cleaning of heat-exchange equipment

There were created a wide range of reagents for chemical cleaning of surfaces of various structural materials (carbon steel, copper and copper alloys).

The reagents provide almost complete dissolution of deposits at the rate of corrosion of metal in 10-20 times less than when using mineral acids and compositions on their basis.

Selection of effective chemical cleaning of heat-exchange equipment depends on a number of factors: structural material, the nature of the deposits of scale, corrosion damage to the surface of the terrain, the geometry of structures, etc.



## 5.1 Reagents for chemical cleaning of heat-exchange equipment without stopping the laundered equipment

### AMINAT™ DM-50A

#### Field of application

Aminat™ DM-50A is designed for chemical cleaning "on the fly" heat transfer surfaces of the drum steam boilers from calcium deposits and deposits of oxides of various metals (iron, copper, zinc etc). The reagent is recommended for steam boilers in a wide range of operating parameters of the equipment.

#### Product feature

Aminat™ DM-50A is an alkaline solution of salts of polycarboxylic acids.

- Colorless transparent liquid.
- Density 1,1-1,15 g/cm<sup>3</sup>.
- Value of pH – limited to 7,5-8,5.
- By the impact on the body belongs to moderately hazardous substances (3rd degree of danger in GOST 12.1.007).
- Fire and explosion safe.
- Frozen reagent after thawing and stirring restores its properties.

#### Recommended dose and dosing control

Reagent consumption and the frequency of cleaning "on the fly" depends on the degree of contamination of surfaces. Dose of reagent may range from 10 to 100 mg/dm<sup>3</sup>.

The clearance is controlled by the content of the reagent and iron compounds in the boiler water. The duration of washing, depending on the amount of sediment can be 2-4 weeks.

#### Recommendations on application

Reagent should enter in feed water diluted with multiplicity dilution 3-10 times. Before cleaning "on the fly" it is necessary to stop phosphating of boiler water.

In the course of clearing it is necessary to increase the time and the number of periodic steam boiler blowdown.

#### Feature

Provides non-scum operation of boilers due to the transfer of cations hardness and iron compounds in the dissolved condition, leads to the formation of the metal surface of dense protective film.

#### Storage and warranty period

Aminat™ DM-50A should be stored in closed ventilated warehouses.

Guaranteed shelf life – not much than 12 months from date of manufacture.

## 5.2 Reagents for chemical cleaning of heat-exchange equipment

### AMINAT™ D

#### Field of application

Is used for cleaning the surfaces of heat-exchange equipment from carbonate deposits.

#### Product feature

Is an aqueous solution of mixture of organophosphorus complex-makers and inorganic acids in combination with surface-active substances and inhibitors of acid corrosion.

- Liquid of yellow-brown color.
- Density is about 1,2 g/m<sup>3</sup>.
- Ratio of acidity is about 4.
- Inflammable, fire and explosion safe, corrosion hazardous.
- By the impact on the body belongs to moderately hazardous substances (3rd degree of danger in GOST 12.1.007).
- Freezing point is not more than -8°C. Frozen reagent after thawing and stirring restores its properties.

#### Recommendations on application

When using to be diluted with water at a ratio determined by the composition and density of the sediment (from 2 to 10 times).

The average dose of reagent is 2-3 kg per kg of sediment.

Washing equipment is carried out with the circulation of the cleaning solution at room temperature. At the end of the washing system to be rinsed with water to a neutral pH value.

#### Feature

Is used for cleaning equipment made of carbon steel. Not apply to equipment from non-ferrous metals.

#### Storage and warranty period

Aminat™ D should be stored in closed ventilated warehouses.

Guaranteed shelf life – not much than 12 months from date of manufacture.

## AMINAT™ D(K)

### Field of application

Reagent is used for treatment of copper and copper-bearing surfaces (brass) of carbonate deposits.

### Product feature

Is an aqueous solution of mixture of organophosphorus complex-makers and inorganic acids in combination with surface-active substances and inhibitors of acid corrosion.

- Liquid of yellow-brown color.
- Density is about 1,1 g/m<sup>3</sup>.
- Ratio of acidity is about 4.
- Inflammable, fire and explosion safe, corrosion hazardous.
- By the impact on the body belongs to moderately hazardous substances (3rd degree of danger in GOST 12.1.007).
- Freezing point is not more than -8°C. Frozen reagent after thawing and stirring restores its properties.

### Recommendations on application

When using to be diluted with water at a ratio determined by the composition and density of the sediment (from 2 to 10 times).

The average dose of reagent is 2-3 kg per kg of sediment.

Washing equipment is carried out with the circulation of the cleaning solution at room temperature.

After cleaning the system it is enough to wash with water to a neutral pH value.

### Feature

Additionally with reagent inhibitor of acid corrosion of copper and copper-bearing alloys is delivered.

The amount of inhibitor calculated on the full amount of reagent.

When using a reagent in parts dose inhibitor should accordingly be divided. Inhibitor is introduced into the working solution of the preparation immediately before washing.

The inhibitor is a must!

### Storage and warranty period

Aminat™ D(K) should be stored in closed ventilated warehouses.

Guaranteed shelf life – not much than 12 months from date of manufacture.

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# AMINAT™ D(R)

## Field of application

Suitable for cleaning metal surfaces of heat-exchange equipment from carbonate deposits.

## Product feature

Is an aqueous solution of mixture of organophosphorus complex-makers and inorganic acids in combination with surface-active substances and inhibitors of acid corrosion.

- Liquid of yellow-brown color.
- Density is about 1,2 g/m<sup>3</sup>.
- Ratio of acidity is about 8.
- Inflammable, fire and explosion safe, corrosion hazardous.
- Bi the impact on the body belongs to moderately hazardous substances (3rd degree of danger in GOST 12.1.007).
- Freezing point is not more than -8°C. Frozen reagent after thawing and stirring restores its properties.

## Recommendations on application

When using is to be diluted with water at a ratio determined by the composition and density of the sediment (from 2 to 10 times).

The average dose of reagent is 2-4 kg per kg of sediment.

Washing of equipment is carried out with the circulation of the cleaning solution at room temperature.

At the end of the washing system is to be rinsed with water to a neutral pH value.

## Feature

Is used for cleaning of equipment made of carbon steel.

Has high capacity in relation to carbonate pollution and provides high speed of cleaning.

Not apply to equipment from non-ferrous metals.

## Storage and warranty period

Aminat™ D(R) should be stored in closed ventilated warehouses.

Guaranteed shelf life – not much than 12 months from date of manufacture.



## AMINAT™ D-56

### Field of application

Reagent is intended for cleaning the surfaces of heat-exchange equipment and systems of hot water from the iron oxide deposits.

### Product feature

Is an aqueous solution of a mixture of organic and inorganic acids with inhibitors of acid corrosion.

- Liquid colourless or yellow-brown color.
- Density is about 1,2 g/m<sup>3</sup>.
- Ratio of acidity is not much than 4,5.
- Inflammable, fire and explosion safe, corrosion hazardous.
- By the impact on the body belongs to moderately hazardous substances (3rd degree of danger in GOST 12.1.007).
- Freezing point is not more than -7°C. Frozen reagent after thawing and stirring restores its properties.

### Recommendations on application

When using is to be diluted with water at a ratio determined by the composition and density of the sediment (from 3 to 5 times).

The average dose of reagent is 5-6 kg per kg of sediment.

Washing of equipment is carried out with the circulation of the cleaning solution.

At the end of the washing system is to be rinsed with water to a neutral pH value.

### Feature

Is used for cleaning equipment from carbon and stainless steel, copper and copper containing alloys (brass), aluminium and its alloys.

The most effective use of reagent is at elevated temperatures of 50-70°C.

### Storage and warranty period

Aminat™ D-56 should be stored in closed ventilated warehouses.

Guaranteed shelf life – not much than 12 months from date of manufacture.

## AMINAT™ D-30

### Field of application

Reagent is intended for cleaning the surfaces of heat-exchange equipment and heating systems from iron oxide deposits.

### Product feature

Is an aqueous solution of a mixture of organic and inorganic acids with inhibitor of acid corrosion.

- Colorless or yellowish liquid.
- Density is about 1,2 g/m<sup>3</sup>.
- Ratio of acidity is about 5.
- Inflammable, fire and explosion safe, corrosion hazardous.
- By the impact on the body belongs to moderately hazardous substances (3rd degree of danger in GOST 12.1.007).

### Recommendations on application

When using is to be diluted with water at a ratio determined by the composition and density of the sediment (from 2 up to 4 times).

The average dose of reagent is about 3 kg per kg of sediment.

Washing of equipment is carried out with the circulation of the cleaning solution.

At the end of the washing system is to be rinsed with water to a neutral pH value.

### Feature

Is used for cleaning of equipment made of carbon steel.

The most effective use of reagent is at elevated temperatures 60-80°C.

### Storage and warranty period

Aminat™ D-30 should be stored in closed ventilated warehouses.

Guaranteed shelf life – not much than 12 months from date of manufacture.

## 6 Reagents for maintenance of reverse osmosis plants

The experience of native and foreign plants of water desalination by reverse osmosis method shows that operational pollution of membranes is the most important factor affecting the cost and reliability of membrane technologies.

When reducing of the efficiency of the equipment of more than 10% it is recommended to wash membrane elements, as a rule, consistently acidic and alkaline solutions. For washing of membrane elements developed compositions, the components of which complement or enhance the properties of each other.

Selection of effective chemical treatment of surfaces of membrane elements depends on the nature of the sediments (carbonates, phosphates, hydroxides of iron, nickel, copper; organic, biological, silicon pollution etc).



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# AMINAT™ K

## Field of application

Aminat™ K of special treatment. Designed for inhibition of sediments of mineral salts in the membrane (reverse osmosis) the water treatment plants at the stage of water treatment in the food (including alcoholic beverage) industry.

## Product feature

Is a water solution of sodium salts of methyliminodimethylphosphonic and nitrile-trimethylphosphonic acid reagent is regulated by the content of organic components and inorganic impurities.

- Colorless or greenish liquid.
- Density of reagent at  $22\pm 5^{\circ}\text{C}$  is within 1,20-1,30 g/cm<sup>3</sup>.
- Value of pH – within 5-7.
- Inflammable, fire and explosion safe.
- Belongs to low hazardous substances (4 degree of danger in GOST 12.1.007).
- Reagent does not penetrate through the membranes.
- Reagent thickens at the temperature not more than  $-10^{\circ}\text{C}$ , without losing its consumer properties.
- Frozen product after thawing restores its properties.

## Recommended doses

Effective dose of reagent is from 2 to 10 ml per cubic metre of treated water depending on its quality and degree of conversion of apparatus.

## Recommendations on application

Dosage adjustment is made by the automatic metering device that provides homogeneous mixing of the preparation with the supply of water and even feed of inhibitor in the filtration area. If necessary (for convenience of dosing) reagent is to be diluted with purified water (permeate).

## Feature

The application of reagent allows to exclude preparation of water through ion exchange. It provides an extension of service life of roll membrane of any type, due to a significant reduction of the rate of deposition of insoluble salts of rigidity of the surface membranes. The use of reagent allows to increase the interval between washes in 2-4 times.

## Storage and warranty period

Aminat™ K should be stored in closed ventilated warehouses.

Guaranteed shelf life – 12 months from date of manufacture

## AMINAT™ OD-1

### Field of application

Designed for inhibition of the process of salt deposition in the membrane (reverse osmosis) devices, water treatment at the stage of water treatment in the food (including alcoholic beverage) industry. Recommended for soft water with increased content of sulphates.

### Product feature

Is an aqueous solution of salts 1-hydroxyethylidenediphosphonic acid (HEDP), regulated on the composition and content of impurities.

- Colorless liquid.
- Density of reagent at 22±5°C is about 1,15 g/cm<sup>3</sup>.
- The pH value of the preparation is established in agreement with the customer.
- Inflammable, fire and explosion safe.
- Reagent does not penetrate through the membranes.
- Chemically moderately hazardous (3rd degree of danger in GOST 12.1.007).
- Freezing point of preparation is -4°C.
- Frozen product after thawing restores its properties.

### Recommended doses

Reagent consumption is not more than 15 ml per 1 m<sup>3</sup> of treated water depending on its quality and degree of conversion of apparatus.

### Recommendations on application

Reagent is dosed proportionally to the make-up water consumption.

### Feature

Provides an extension of service life of roll membrane of any type due to the substantial decrease of deposition on the surface membranes of salts of calcium and magnesium.

The use of reagent allows to increase the interval between washes in 2-4 times

### Storage and warranty period

Aminat™ OD-1 should be stored in closed ventilated warehouses.

Guaranteed shelf life – 12 months from date of manufacture.



## **AMINAT™ DM-14**

### **Field of application**

Recommended for washing of any of the reverse osmosis water purification systems, used especially in the food industry.

Suitable for membranes of any type.

### **Product feature**

Is an aqueous solution of mixture of inorganic and organic acids.

- Colorless transparent liquid.
- Easily mixed with water, contains no surfactants.
- Density of reagent is 1,06-1,10 g/cm<sup>3</sup>.
- Reagent does not penetrate through the membranes.
- Inflammable, fire and explosion safe.
- Chemically moderately hazardous (3rd degree of danger in GOST 12.1.007).
- Freezing point of preparation is about -4°C.
- Frozen product after thawing restores its properties.

### **Recommended doses**

Dose of reagent is 20 ml per 1 liter of working solution.

### **Recommendations on application**

To prepare the working solution reagent is to be diluted with permeate. pH of working solution is about 2,2; optimum temperature range of 30-45°C.

Control of the process of washing is carried out by measuring the pH of the washing solution. Washing is held when the pH of the washing solution takes a constant value. When using the reagent is recommended to make the final washing of system by alkaline composition.

### **Feature**

Acidic detergent composition for washing deposits of inorganic salts (carbonates and sulfates) from the surface of membrane elements.

### **Storage and warranty period**

Aminat™ DM-14 should be stored in closed ventilated warehouses.

Guaranteed shelf life – 12 months from date of manufacture.

## **AMINAT™ DM-56**

### **Field of application**

Suitable for membranes of any type recommended to flush any reverse osmosis water purification systems, used especially in the food industry.

### **Product feature**

Is an aqueous solution of mixture of inorganic and organic acids.

- Colorless transparent liquid
- Density of reagent is about 1,15 g/cm<sup>3</sup>.
- Easily mixed with water.
- Reagent does not penetrate through the membranes.
- Inflammable, fire and explosion safe.
- Chemically low hazardous (4 degree of danger in GOST 12.1.007).
- Freezing point of preparation is about -4°C.
- Frozen product after thawing restores its properties.

### **Recommended doses**

Reagent consumption 40 ml per liter of working solution.

### **Recommendations on application**

To prepare the working solution reagent is to be diluted with permeate. pH of working solution is about 2,2; optimum temperature range of 30-45°C. Control of the process of washing is carried out by measuring the pH of the washing solution. Washing is held when the pH of the washing solution takes a constant value. When using the reagent is recommended to make the final washing of system by alkaline composition.

### **Features**

Acidic detergent composition for washing inorganic salts and iron-containing sediments from the surface of membrane elements.

### **Storage and warranty period**

Aminat™ DM-56 should be stored in closed ventilated warehouses.

Guaranteed shelf life – 12 months from date of manufacture.

## **AMINAT™ DM-50**

### **Field of application**

Suitable for membranes of any type recommended to flush any reverse osmosis water purification systems, used especially in the food industry.

### **Product feature**

Is an aqueous solution of a mixture of organic complex-makers.

- Colorless transparent liquid.
- Density of reagent is 1,1 g/cm<sup>3</sup>.
- Does not contain surfactants.
- Easily mixed with water.
- Reagent does not penetrate through the membranes.
- Inflammable, fire and explosion safe.
- Corrosionally not active.
- Chemically moderately hazardous (3 degree of danger in GOST 12.1.007).
- Freezing point of preparation is about -5°C.
- Frozen product after thawing restores its properties.

### **Recommended doses**

Reagent consumption 50 ml per liter of working solution.

### **Recommendations on application**

To prepare the working solution reagent is to be diluted with permeate. pH of working solution is about 10; the optimum temperature range of 30-45°C.

Control of the process of washing is carried out by measuring the pH of the washing solution. Washing is held when the pH of the washing solution takes a constant value. When using the reagent is recommended to make the final washing of system by alkaline composition.

### **Feature**

Alkaline detergent composition for cleaning silicon, biological and organic impurities from the surface of the membrane elements.

### **Storage and warranty period**

Aminat™ DM-50 should be stored in closed ventilated warehouses.

Guaranteed shelf life – 12 months from date of manufacture.

## **AMINAT™ DM-50B**

### **Field of application**

Suitable for membranes of any type. Recommended for washing of all types of reverse osmosis water purification systems, used especially in the food industry.

### **Product feature**

Is a caustic mixture of organic complexing agents and quaternary ammonium compounds.

- Colorless transparent liquid.
- Density of reagent is about 1,1 g/cm<sup>3</sup>.
- Easily mixed with water.
- Reagent does not penetrate through the membranes.
- Inflammable, fire and explosion safe.
- Corrosionally not active.
- Chemically moderately hazardous (3rd degree of danger in GOST 12.1.007).
- Freezing point of preparation is not much than -5°C.
- Frozen product after thawing restores its properties.

### **Recommended doses**

Reagent consumption 50 ml per liter of working solution.

### **Recommendations on application**

To prepare the working solution reagent is to be diluted with permeate. pH of working solution is about 9,5-10; the optimum temperature range of 30-45°C.

Control of the process of washing is carried out by measuring the pH of the washing solution. Washing is held when the pH of the washing solution takes a constant value.

### **Feature**

Alkaline detergent composition for washing organic impurities from the surface of the membrane elements. Has a bacteriostatic effect.

### **Storage and warranty period**

Aminat™ DM-50B should be stored in closed ventilated warehouses.

Guaranteed shelf life – 12 months from date of manufacture.

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# AMINAT™ DM-70

## Field of application

Suitable for membranes of any type recommended to flush any reverse osmosis water purification systems, used especially in the food industry.

## Product feature

Is an aqueous solution of mixture of inorganic complex-makers.

- Colorless transparent liquid.
- Density of reagent is about 1,1 g/cm<sup>3</sup>.
- Does not contain surfactants.
- Easily mixed with water.
- Reagent does not penetrate through the membranes.
- Inflammable, fire and explosion safe.
- Corrosionally not active.
- Chemically moderately hazardous (3rd degree of danger in GOST 12.1.007).
- Freezing point of preparation is not much than -5°C.
- Frozen product after thawing restores its properties.

## Recommended doses

Reagent consumption 10 ml per liter of working solution.

## Recommendations on applications

To prepare the working solution reagent is to be diluted with permeate. pH of working solution is about 10; the optimum temperature range of 30-45°C.

Control of the process of washing is carried out by measuring the pH of the washing solution. Washing is held when the pH of the washing solution takes a constant value. When using the reagent is recommended to make the final washing of system by alkaline composition.

## Feature

Alkaline detergent composition for washing organic impurities from the surface of the membrane elements.

## Storage and warranty period

Aminat™ DM-70 should be stored in closed ventilated warehouses.

Guaranteed shelf life – 12 months from date of manufacture.



## AMINAT™ DM-70B

### Field of application

Suitable for membranes of any type recommended to flush any reverse osmosis water purification systems, used especially in the food industry.

### Product feature

Is an aqueous solution of mixture of inorganic complex-makers.

- Colorless transparent liquid.
- Does not contain surfactants.
- Reagent density is about 1,1 g/cm<sup>3</sup>.
- Easily mixed with water.
- Reagent does not penetrate through the membranes.
- Inflammable, fire and explosion safe.
- Corrosionally not active.
- Chemically moderately hazardous (3rd degree of danger in GOST 12.1.007).
- Freezing point of preparation is not much than -5°C.
- Frozen product after thawing restores its properties.

### Recommended doses

Reagent consumption 5-10 ml per liter of working solution.

### Recommendations on applications

To prepare the working solution reagent is to be diluted with permeate. pH of working solution is about 10; the optimum temperature range of 30-45°C.

Control of the process of washing is carried out by measuring the pH of the washing solution. Washing is held when the pH of the washing solution takes a constant value. When using the reagent is recommended to make the final washing of system by alkaline composition.

### Feature

Alkaline detergent composition for cleaning of organic pollutants and bioobraztsami with the surface of the membrane elements. Has a bacteriostatic effect.

### Storage and warranty period

Aminat™ DM-70B should be stored in closed ventilated warehouses.

Guaranteed shelf life – 12 months from date of manufacture.

## **AMINAT™ DM-K**

### **Field of application**

Designed for long-term preservation of membrane elements. Is used to reduce biological activity feed water. Suitable for membranes of any type. Recommended for treatment of all types of reverse osmosis water purification systems, used especially in the food industry. Apply for dechlorination of feed water reverse osmosis units.

### **Product feature**

Is an aqueous solution of sodium metabisulfite.

- Colorless transparent liquid.
- Does not contain surfactants.
- Reagent density is about 1,25 g/cm<sup>3</sup>.
- pH of reagent is about 4.
- Easily mixed with water.
- Reagent does not penetrate through the membranes.
- Inflammable, fire and explosion safe.
- Corrosionally not active.
- Chemically low hazardous (4 degree of danger in GOST 12.1.007).
- Freezing point of preparation is not much than -5°C.
- Frozen product after thawing restores its properties.

### **Recommended doses**

Reagent consumption for the conservation of membranes is 30-35 g / l of permeate.

Dose reagent for inhibition of biological activity 1.5-2 ml per litre of feed water.

When dechlorination to restore 1 mg of chlorine required 15 mg of reagent.

### **Recommendations on application**

For preservation of membrane elements are filled with a solution of reagent.

For inhibition of biological activity of the substance is applied daily for 40-60 minutes.

### **Features**

Exhaust reagent solution may be disposed of in household waste water, preliminary having diluted with water up to 50 times.

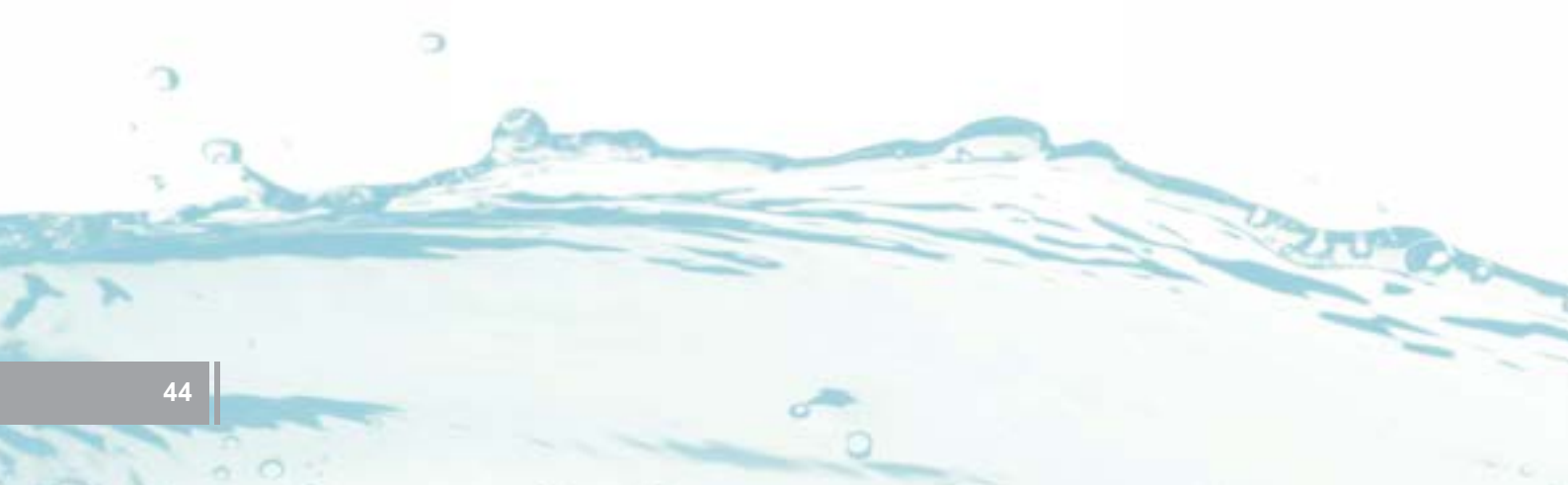
### **Storage and warranty period**

Aminat™ DM-K should be stored in closed ventilated warehouses.

Guaranteed shelf life – 12 months from date of manufacture.

## 7 | Reagents for bactericidal cleaning

Systematic application of preparations of this group allows to prevent a biological outgrowths in water solutions.



## AMINAT™ BK

### Field of application

Prevents the development of fouling in aqueous solutions. Has activity against gram-positive and gram-negative bacteria.

Used as a disinfectant by washing additive storage tanks and other equipment in the food industry.

Used to remove microbial film with surfaces.

### Product feature

Is an aqueous solution of quaternary ammonium salts.

– Colorless or faintly colored liquid.

– Density of reagent is about 1,0 g/cm<sup>3</sup>.

– Value of pH of 10%-solution – about 7.

– Inflammable, fire and explosion safe.

– Refers to moderately hazardous substances (3rd degree of danger in GOST 12.1.007).

– Frozen product after thawing recovers its properties.

### Recommended dose

Average effective concentration of reagent for water reverse systems depending on level of biopollution makes 20 g/m<sup>3</sup>.

Effective concentration of reagent for continuous dispensing in feedwater of installations the return osmosis – 1 g/m<sup>3</sup>.

### Feature

It has a fairly high foaming.

Aminat™ BK is well combined with reagents for stabilization and correction processing acid water, such as with other reagents Aminat™.

### Storage and warranty period

Aminat™ BK should be stored in covered ventilated warehouses.

Guaranteed shelf life – 12 months from date of manufacture.

## AMINAT™ BP

### Field of application

Reagent is intended for fight against biooutgrowths in systems of technical water supply the enterprises, in water reverse cycles of cooling systems of the equipment. It is applied to processing of accumulative capacities, including ponds of regulators.

### Product feature

Represents water solution of biocidal components.

- Colourless or with a yellowish shade liquid.
- Density of reagent is about 1,02-1,04 c/cm<sup>3</sup>.
- Value of pH – within 5-8.
- Inflammable, fire and explosion safe.
- Refers to moderately hazardous substances (3rd degree of danger in GOST 12.1.007).

### Recommended doses

Consumption of reagent: from 1 to 10 g/m<sup>3</sup> depending on level of biopollution. The average effective concentration makes 5 g/m<sup>3</sup>.

### Recommendations on application

Reagent apply at a temperature no more than 90°C.

At application together with other reagents preliminary dilution of reagent at 10-20 times is necessary.

For disinfecting of the natural water used in systems of technical water supply the recommended minimum dose makes 5 mg/l, at contact time not less than 1 hour.

Residual concentration of means after disinfecting in the closed systems of the technical water supply has to be not less, and in open systems no more than 0,5 mg/l (on active to substance).

When disinfecting reverse water in cooling systems of the equipment of amount of entered reagent can change depending on quality of make-up water and characteristics most systems, but thus the residual quantity of a preparation in water has to be not less than 0,1 mg/l (on to active agent) that will ensure epidemic safety of water and will prevent a bio-outgrowth.

### Feature

Prevents development of biological outgrowth.

Shows high efficiency in relation to the widest range of microorganisms, actual for systems of reverse water supply (in particular, such components of biocenoses as bacteria, seaweed, fungi and other).

Possesses the prolonged action, high chemical stability, lack of corrosion activity in relation to materials of pipelines and the equipment. Keeps high efficiency in the wide range of temperatures and values pH.

### Storage and warranty period

Aminat™ BP should be stored in covered ventilated warehouse.

Guaranteed shelf life – 12 months from date of manufacture.





## Reagent for increase of efficiency of regeneration the cation-exchange of materials

### AMINAT™ DS

*Regular use of Aminat™ DS at regeneration sodium - cationic filters leads to increase in a filter run, reduces the period of washing of a material and reduces a consumption of water on own needs.*

#### Field of application

Aminat™ DS is recommended to for use during regeneration sodium - cationic filters. Reagent restores exchange capacity cationic exchanger due to removal of compounds of iron from a surface cationic exchanger.

#### Product feature

Represents water solution of mix of salts of organic complexing agent (phosphonic acids).

- Liquid from colorless to light yellow color.
- Density is 1,12-1,20 g/cm<sup>3</sup>.
- By the impact on the body belongs to moderately hazardous substances (3rd degree of danger in GOST 12.1.007).
- Fire and explosion safe.
- Frozen reagent after thawing and stirring restores its properties.

#### Recommended dose and dosing control

Aminat™ DS is added by directly in regeneration solution during 4-5 cycles of regeneration.

Consumption of reagent when preprocessing pitch – 15-20 ml on 1 m<sup>3</sup> of regeneration solution.

In the subsequent 3-4 regenerations the consumption of reagent can be reduced to 5-10 ml by 1 m<sup>3</sup> of solution of salt.

After receiving stable increase in duration of a filter run reagent isn't added.

After noticeable reduction of a filter run addition of reagent is carried out on the described above to the scheme.

#### Recommendations on application

Reagent can be entered or into measuring tanks of ready regeneration solution with an expense on 1 regeneration, or in tanks of strong solution at the rate of increases in its quantity at number regenerations.

For increase of efficiency of effect of reagent during primary addition it is recommended to increase time of contact of solution of salt with pitch till 12 hours.

#### Feature

Due to small amounts of added reagent, for its best hashing it is necessary to dilute previously.

#### Storage and warranty period

Aminat™ DS should be stored in covered ventilated warehouses.

Guaranteed shelf life – not much than 12 months from date of manufacture.

# 9 | Water quality control

## Reagent sets

Are completed with analytical techniques and necessary for carrying out the analysis by reactants in a form convenient for use.

Set number	Names of indicators	Definition method	Range of defined concentrations	Number of definitions
1	iron	photocolorimetric	0,1-2,0 g/l	500
7*	iron	photocolorimetric	0,05-2,0 g/l in assay	500
8	iron	titration	from 5,0 mg/l	100
2	dissolved oxygen	titration	0,1-20 mg-eq./l	1000
3*	dissolved oxygen	photocolorimetric	0-100 mcg/l	400
5	rigidity	titration	0,05-20 mg-eq./l	1000
9**	rigidity	titration	0,5-20 mg-eq./l	200
9/1**	rigidity	titration	0,01-0,5 mg-eq./l	200
6*	phosphates and phosphonates	photocolorimetric	10-50 mcg in assay	500
10	sulfates	titration	0,5-200 mg/dm <sup>3</sup>	100
16	aluminum	photocolorimetric	0,04-0,56 mg/l	500
17*	turbidity	nephelometric	preparation of scales	6 scales
18	copper	photocolorimetric	0,02-0,5 mg/l	500
19	calcium, magnesium	titration	0,5-20 mg-eq./l	200
20	nitrates	photocolorimetric	from 0,1 mcg/dm <sup>3</sup>	500
22**	alkalinity	titration	0,1-20 mg-eq./l	200
23	sulfites	titration	0,5-50 mg/l	500
24*	zinc	visual-colorimetric	5-50 mcg/l	200
25	manganese	photocolorimetric	0,01-1,0 mg/dm <sup>3</sup>	200
26	nitrites	photocolorimetric	from 0,03 mg/dm <sup>3</sup>	500
28	ammonia, ammonium	photocolorimetric	from 0,05 mg/dm <sup>3</sup>	500

\* - probably visual definition

\*\* - completed with ready solutions

## Rapid tests for determination of water quality

Rapid tests allow quick evaluation of the significance of the most frequently controlled water quality parameters (rigidity, acidity, iron, etc). Sets equipped with everything necessary for analysis and easy to use.

Set number	Parameter name	Range of defined concentrations	Number of definitions
11	rigidity	1-20 mg-eq./l	100
12	iron	0,3-6 mg/l	100
13*	phosphates and phosphonates	0,5-10 mg/l	50
15	alkalinity	0,5-20 mg-eq./l	100
21	active chlorine	from 0,2 mg/l	100

\*-to determine phosphonates it is required sample preparation (oxidation heated by electric tile)

Sets of reagents and/or rapid tests are recommended for reducing the complexity and time, and to simplify control of water quality. Costs of analysis of water (including production waters of energy facilities), respectively, will decrease.

The reagent sets are equipped by analytical methods and necessary for the analysis of reagents in a useable form, easy to use.



# 10 | Equipment

For the proportional and precise dosing of chemicals (inhibitors, reagents for the correctional water treatment etc) TRAVERS offers automatic stations of proportional dosing.

Set of station includes:

- proportional metering pump productivity from 1 l/h with piping;
- wing water meter with pulse output and a set of mountings;
- level sensor;
- vessel for the reagent 60-1000 l.

**The dosing stations are recommended for the following processes:**

- dosing of antiscaling agents (stabilization treatment of water) for heat supply systems and water cooling systems;
- dosing of reagents for correction of water-chemical regimes of steam and hot-water boilers;
- deoxygenation;
- correction of pH;
- prevention of scale formation (phosphating);
- prevention of corrosion in the steam condensate ducts of steam boilers;
- dosing of biocides to prevent the biological fouling.

Specialists of TRAVERS will select equipment based on your needs!

*Specialists of TRAVERS will select equipment based on your needs!*

# 11 | Contacts, location map

## Office address

**107076, Moscow, 1st Bukhvostova st., 12/11, bld. 53, floor 10.**

Please note that the entrance is on the street Krasnobogatyrskaya!

Reference points: common entrance with the shop "Electrotovary", also near the shop "Vse na svete".

The office is located on the territory of NIIDAR. On a pass there is an access system, you must carry your passport.

Internal telephone on the checkpoint (without the code, the call is free) you can dial one of the company numbers to inform the employee about arrival. You will be met and hold to the office.

**Tel.: 223-61-01/02/08**

## By metro

Preobrazhenskaya square metro station, last carriage from the center, move to the right, exit to the city the stairs on the right.

Go ahead 50 m to the checkpoint.



## Finished products warehouse

Self-delivery of products is carried out from a warehouse, located on the address:

**142450, Moscow region, Noginskiy district, Staraya Kupavna, Dorozhnaya st., 7.**

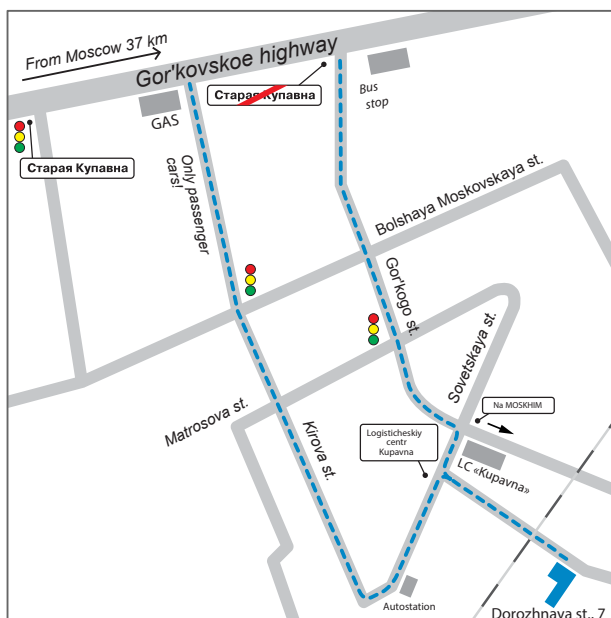
## By car

37 km from MKAD on Gor'kovskoe highway, turn to the left after the sign «Konets naselenogo punkta «Staraya Kupavna»».

Then 2 km to crossroad with the sign «Na Moskhim», turn to the right to Sovetskaya st. After 200 m – turn to the left to Dorozhnaya st. (sign – «Logisticheskiy centr «Kupavna»»).

Drive across the rails of factory railway, turn to the right, after 30 m on the left platform and entry into the territory of a warehouse of finished products (through a barrier).

**Tel./fax: (495) 702-96-68**





# 12 | Our partners

*Constant consumers of TRAVERS are more than 1000 enterprises of various branches of industry and municipal sector: generation companies, power plants, industrial enterprises, management companies utilities, engineering companies.*

Constant partners of TRAVERSE are OJSC "Surgutneftegas", "LUKOIL-Nizhegorodavto-Orgsintez", JSC "Ryazan refinery", JSC "Neftegorsky gas processing plant", OJSC "MOEK", JSC Donenergo" - "Thermal networks", OJSC "Chemical plant im. L. J. Karpov", JSC "Evraz ZSMK", "Kazzinc", JSC "Pokrovski Rudnik", JSC "Novosibkhimfarm", MUP "Volgograd communal services", LLC "HIC Kolomna district", Federal state unitary enterprise SC "Stavropol'krajvodokanal" – Budennovskiy "Mezhrayvodokanal", GUP SK "Krayteploenergo", CJSC "Multon", JSC "Gold meadows", OAO "Syktyvkar distillery company", JSC "Barnaul brewery", PO "Undorovskiy factory of mineral water "Volzhanka", JSC "Brewing company Baltika", JSC "Tatspirtprom", OJSC TGC-9 Perm branch, JSC TGC-9 Sverdlovsk branch, Pervouralsk CHPP, OJSC Yenisei TGK (TGK-13), JSC "Volga TGC", OJSC "Slavneft-YANOS", JSC "Kamenskaya BKF", CJSC "MC "Hotel Management", CJSC "Ligget-Dukat", OJSC "Moscow heat network", LLC "Rus-Import-Komplekt", Federal state unitary enterprise "NIFKHI im. L. J. Karpov", JSC "Borovichi refractories plant" and many others.

TRAVERS cooperates with various engineering companies, which successfully introduce reagents brand AMINAT™ at the industrial enterprises.






# Reagents AMINAT™ and technologies TRAVERS for water treatment

## We offer effective solutions for:

- Hot water systems and systems with open water separation;
- Apparatuses of reverse osmosis and nanofiltration;
- Water circulating cycles (WCC) and cooling systems;
- Steam boilers of various parameters;
- Systems with water-heating equipment;
- Heating systems;
- Systems with cation-exchange materials;
- Systems that require washing/cleaning from scale and corrosion.


**Specialists of TRAVERS carry out the selection of optimal reagents and technologies on the basis of specific needs of the Customer.**

 To place an order, receive consultation of a manager, and also on questions of technological support, please contact:  
Tel./fax: (495) 223-61-89, 223-61-07

Laboratory  
Tel./fax: (495) 983-58-88, add. 13, 14

For constant clients  
The availability of products in stock, to learn about the availability of orders in the sales department:  
Tel./fax: (495) 223-61-06

 Write to us: 107076, Moscow, PO box 42  
E-mail: [voda@travers.su](mailto:voda@travers.su)

 The most current product information of **TRAVERS** is placed on our sites:

[www.prom-voda.ru](http://www.prom-voda.ru)  
[www.travers.su](http://www.travers.su)



## We invite to cooperation!

Products of TRAVERS are sold through official trading company LLC "OTK".



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Laboratory

Tel./fax: (495) 983-58-88, доб. 13, 14

For constant clients

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Tel./fax: (495) 223-61-06



Write to us: 107076, Moscow, PO box 42  
E-mail: [voda@travers.su](mailto:voda@travers.su)



The most current product information of **TRAVERS** is placed on our sites:

[www.prom-voda.ru](http://www.prom-voda.ru)  
[www.travers.su](http://www.travers.su)

