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20. Жўрабоев Ф., Зокиров С.С., Эргашев О., Хошимов Ф., Зокиров С., Умаров А. Алифатик аминоспиртларининг ингибиторлик хусусиятлари. Замонавий инновация: ацетилен бирикмалар кимёси ва кимёвий технологияси. Нефткимё. Катализ. Халқаро конференция материаллари. Тошкент, 2018 й., 160 б.

SOLUBILITY OF COMPONENTS IN THE SYSTEM NaClO_3 $\text{CO}(\text{NH}_2)_2$ - $\text{NH}(\text{C}_2\text{H}_4\text{OH})_2$ - H_2O

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Abstract:

Solubility of components in NaClO_3 $\text{CO}(\text{NH}_2)_2$ - $\text{NH}(\text{C}_2\text{H}_4\text{OH})_2$ - H_2O from total freezing temperature (-67.4°C) to 40.0°C has been studied. A polyhermic solubility diagram has been constructed on which the areas of crystallization of ice, carbamide, sodium monocarbamidochlorate, and diethanolamine have been delimited. The system relates to a simple eutonic type.

Keywords: components, polyhermic, diagram, ice, carbamide, crystallization, sodium, monocarbamidochlorate, diethanolamine, temperature.

Introduction. The search and development of lowtoxic, highly effective and mild defoliant that do not adversely affect the yield of cotton, the technological performance of cotton fiber is an urgent problem in cotton growing.

Cotton growing is one of the most important branches of agriculture in Uzbekistan. In case of chemical impact on cotton in order to remove leaves, highly effective defoliant are needed, providing more than 80% fall of cotton leaves in one treatment at low consumption rates, acting "softly" on plants, and therefore not negatively affecting seed oil content, yield, quality cotton fiber and do not clog it [1, 2]. Meanwhile, the sodium chlorate produced in the republic and used as a cotton defoliant does not fully meet the modern requirements of cotton growing [3, 4]. The "rigidity" of its effect on plants requires the creation of new effective, mild defoliant for plants.

In this regard, special attention is paid to the production of highly effective, low-toxic and physiologically active defoliant. The existing chlorate-based defoliant do not meet modern requirements for defoliant. It is known that the defoliating effect of chlorates is always to some extent accompanied by a desiccation effect [5, 6].

When explaining the growth activity of ethanolamines, it should be taken into account that in the presence of carbon dioxide and oxygen, ethanolamines can form glycerol, glycol, oxalic, formic, naphthc, and acetic acids, which belong to the group of growth substances [7–8]

For successful defoliation of cotton, preparations are needed that provide a high degree of leaf fall and bolls opening. One of the possible ways to solve this important

problem is to obtain and use for defoliation chlorate-containing defoliants together with compounds containing $-\text{CH}_2-\text{CH}_2-$ ethylene group. These compounds include ethanolamines and their derivatives. They, penetrating into plants, increase the level of ethylene in the plant body. This contributes to the acceleration of defoliation and the full ripening and opening of cotton bolls [9-10].

Objects and methods of research. For the physicochemical substantiation of the process of obtaining an effective defoliant, the solubility and interaction of components in the $\text{NaClO}_3 \cdot \text{CO}(\text{NH}_2)_2 \cdot \text{NH}(\text{C}_2\text{H}_4\text{OH})_2 \cdot \text{H}_2\text{O}$ system was studied in a wide temperature and concentration range by the visual-polythermal method [11].

Sodium monocarbamidochlorate synthesized by introducing sodium chlorate into pilaf at a molar ratio of 1:1 was taken as the initial components. Diethanolamine used grade "h", further purified by distillation under vacuum.

Results and discussion. The $\text{NaClO}_3 \cdot \text{CO}(\text{NH}_2)_2 \cdot \text{NH}(\text{C}_2\text{H}_4\text{OH})_2 \cdot \text{H}_2\text{O}$ system was studied by us using eight internal cuts, from the temperature of complete freezing -67.4°C to 20.0°C . Of these, sections I-IV were drawn from the side of $\text{NaClO}_3 \cdot \text{CO}(\text{NH}_2)_2 \cdot \text{H}_2\text{O}$ to the top of $\text{NH}(\text{C}_2\text{H}_4\text{OH})_2$, sections V-VIII were studied from the side of $\text{NH}(\text{C}_2\text{H}_4\text{OH})_2 \cdot \text{H}_2\text{O}$ to the top of $\text{NaClO}_3 \cdot \text{CO}(\text{NH}_2)_2$.

The binary system $\text{NH}(\text{C}_2\text{H}_4\text{OH})_2 \cdot \text{H}_2\text{O}$ was considered by a number of authors [12-23]. The results obtained by us are in good agreement with the literature. The solubility of sodium monocarbamidochlorate in water was studied by us earlier. According to the results obtained, the crystallization branches of ice, carbamide and sodium monocarbamide chlorate were revealed on its diagram. The eutectic point of the system corresponds to 57.0% $\text{NaClO}_3 \cdot \text{CO}(\text{NH}_2)_2$ and 43.0% H_2O at -28.2°C .

Based on the results of the study of binary systems and internal sections, a polythermal solubility diagram of the ternary system was constructed. On the phase diagram of this system, the fields of crystallization of ice, carbamide, sodium monocarbamide chlorate, and diethanolamine are demarcated (Fig 1.).

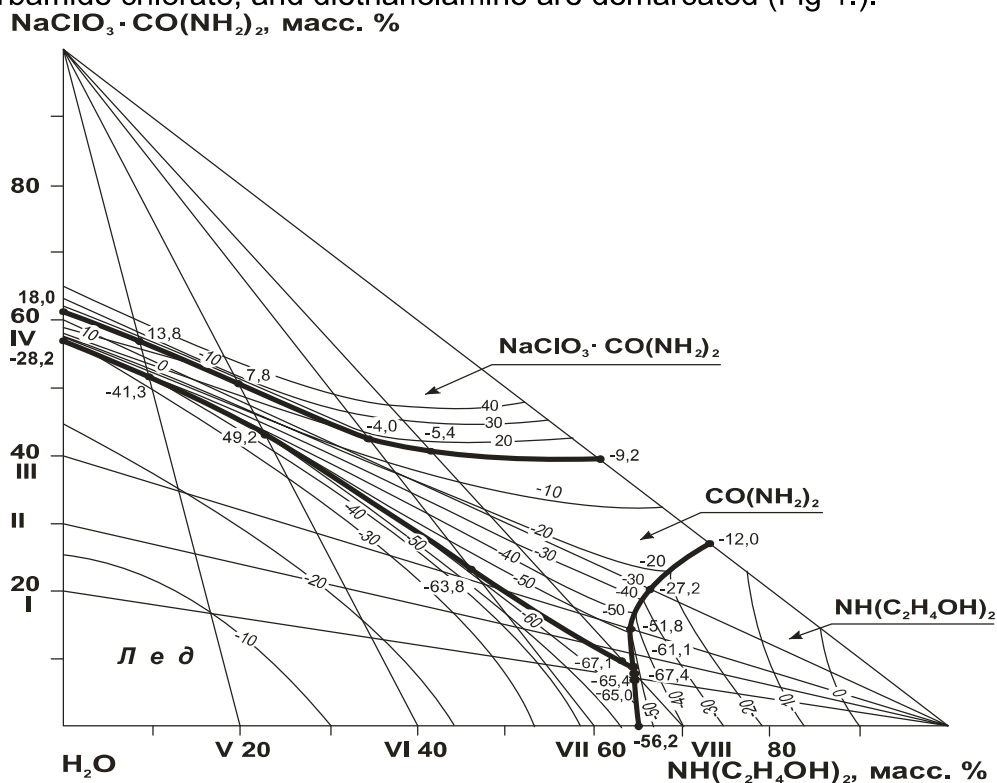


Fig 1. Solubility diagram of system $\text{NaClO}_3 \cdot \text{CO}(\text{NH}_2)_2 \cdot \text{NH}(\text{C}_2\text{H}_4\text{OH})_2 \cdot \text{H}_2\text{O}$

These fields converge at the triple nodal point of the system, for which the chemical composition of the equilibrium solution and the corresponding crystallization temperature are determined (Table).

Table 1

Double and triple point systems $\text{NaClO}_3 \cdot \text{CO}(\text{NH}_2)_2 - \text{NH}(\text{C}_2\text{H}_4\text{OH})_2 - \text{H}_2\text{O}$

Liquid phase composition, %			Crystallization temperature, °C	Solid phase
$\text{NaClO}_3 \cdot \text{CO}(\text{NH}_2)_2$	$\text{NH}(\text{C}_2\text{H}_4\text{OH})_2$	H_2O		
61,4	-	38,6	18,0	$\text{NaClO}_3 \cdot \text{CO}(\text{NH}_2)_2 + \text{CO}(\text{NH}_2)_2$
57,0	8,8	34,2	13,8	-/-
50,9	20,0	29,1	7,8	-/-
42,6	35,0	22,4	-4,0	-/-
41,0	41,8	17,2	-5,4	-/-
39,8	60,2	-	-9,2	-/-
57,0	-	43,0	-28,2	Ice + $\text{CO}(\text{NH}_2)_2$
51,8	9,9	38,3	-41,3	-/-
43,0	23,0	34,0	-49,2	-/-
23,4	46,0	30,6	-63,8	-/-
9,8	63,0	27,2	-67,1	-/-
8,8	64,5	26,7	-67,4	Ice + $\text{CO}(\text{NH}_2)_2 + \text{NH}(\text{C}_2\text{H}_4\text{OH})_2$
7,8	64,5	27,7	-65,4	Ice + $\text{NH}(\text{C}_2\text{H}_4\text{OH})_2$
7,4	64,5	28,1	-65,0	-/-
-	65,0	35,0	-56,2	-/-
11,0	64,3	24,7	-61,1	$\text{CO}(\text{NH}_2)_2 + \text{NH}(\text{C}_2\text{H}_4\text{OH})_2$
14,5	64,0	21,5	-51,8	-/-
20,2	66,2	13,6	-27,2	-/-
27,0	73,0	-	-12,0	-/-

The polythermal diagram plots the solubility isotherms of the components every 10°C. To refine the nodal triple points, the projections of the polythermal solubility curves onto the corresponding lateral water sides of the concentration triangle were constructed.

It can be seen from the given data that in the system under study there is no formation of new chemical compounds based on the initial components. The system belongs to the simple eutonic type. In this system, a salting-out effect of diethanolamine on the $\text{NaClO}_3 \cdot \text{CO}(\text{NH}_2)_2$ salt is observed, which increases with increasing temperature and increasing the concentration of components in the system.

Conclusions. The results of the studied system indicate the possibility of obtaining a new effective, ethylene-containing defoliant based on the initial components, where there is a minimal salting-out effect of the components on each other and the components retain their individuality in the form of defoliating and nutritional activity.

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TECHNOLOGICAL BASIS OF ACTIVATED CARBON PRODUCTION PROCESS THROUGH PROCESSING OF PLUM SEED WASTE

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Abstract:

Objective. The article describes the technological properties of the process of obtaining an import-substituting adsorbent with high adsorption properties from local raw materials - plum kernel waste, obtained through processing. It is assumed that these adsorbents are intended for the treatment of wastewater from industrial enterprises.

Methods. Research methods were carried out on the basis of samples, methods and normative indicators of GOST, presented in the literature.

Results. According to the results, activated carbon with steam at 800 °C showed its efficiency with high adsorption properties.

Conclusion. In conclusion, it can be said that after thermal pyrolysis and steam treatment, the release of O₂ and Si elements in the grains causes an increase in the number of carbon and high adsorption properties of the obtained activated carbon.

Keywords: adsorption, desorption, adsorbate, isotherm, plum kernel waste, pyrolysis, steam activation, tar, ash content, moisture, benzene.

Introduction. The problems of large industry of our republic require the search for effective ways to solve them. In tons of waste from the agriculture and food

CONTENTS

PRIMARY PROCESSING OF COTTON, TEXTILE AND LIGHT INDUSTRY

N.Khalikova, S.Pulatova	
A research of consumer opinions in forming the important factors of fur garments.....	3
N.Khalikova, S.Pulatova	
Literary analysis new technologies of women's outer clothing from carakul....	9
Sh.Korabayev, H.Bobojanov, S.Matismailov, K.Akhmedov	
Study of aerodynamic characteristics of cotton fiber in separator of pneumo-mechanical spinning machine.....	14
Sh.Korabayev	
Research of the movement of fibers in the confusion between the air channel and the rotor in a pneumo-mechanical spinning machine.....	18
M.Mirsadikov, M.Mukimov, K.Kholikov, N.Karimov, Sh.Mamadjanov	
Analysis of technological parameters and physic-mechanical properties of interlock knitted fabric knitted from cotton-nitron yarn.....	23
M.Mirsadikov, M.Mukimov, K.Kholikov, N.Karimov	
Study of technological parameters and physical-mechanical properties of rib fabric knitted from spinning cotton-nitron yarn.....	32
N.Karimov	
Analytical calculation of the deformation state of the saw gin saw teeth bending under the action of a load.....	38
Z.Ahmedova, A.Khojiyev	
Analysis of headwear and beret in fashion.....	42
N.Khusanova, A.Khojiyev	
Creation of a new model of women's coat.....	51
M.Abdukarimova, R.Nuridinova, Sh.Mahsudov	
Method of designing special clothing based on approval of contamination assessment methodology.....	59
Sh.Isayev, M.Mamadaliyev, I.Muhsinov, M.Inamova, S.Egamov	
Practical and theoretical analysis of the results obtained in the process of cleaning cotton from impurities.....	67
GROWING, STORAGE, PROCESSING AND AGRICULTURAL PRODUCTS AND FOOD TECHNOLOGIES	
D.Saribaeva, O.Mallaboyev	
Scientific basis for the production technology of fruit lozenges (marshmallow)	74
R.Mohamed, K.Serkaev, D.Ramazonova, M.Samadiy	
Development of technology to incorporate dehydrated murunga leaf powder in paneer cheese.....	79
B.Adashev, D.Salikhanova, D.Ruzmetova, A.Abdurahimov, D.Sagdullaeva	
Indicators of blending of refined vegetable oils.....	87
O.Ergashev, A.Egamberdiev	
Choosing acceptable parameters for experiment on new energy-saving vacuum sublimation drying equipment.....	92

A.Eshonto'rayev, D.Sagdullayeva, D.Salihanova	
Determining the effectiveness of soaking almond kernels before processing..	97
CHEMICAL TECHNOLOGIES	
Sh.Kiyomov, A.Djalilov, R.Zayniyeva	
Adhesion of a thermoreactive epoxy waterful emulsion film former on metal..	102
A.Djalilov, Sh.Kiyomov	
Synthesis of a non-isocyanate urethane oligomer based on phthalic anhydride.....	107
T.Abdulxaev	
Water vapor adsorption isotherm on zeolite AgZSM-5.....	114
F.Juraboev, B.Tursunov, M.Togaeva	
Study of the catalytic synthesis of o-vinyl ether based on monoethanolamine and acetylene.....	120
S.Mardanov, Sh.Khamdamova	
Solubility of components in the system NaClO ₃ CO(NH ₂) ₂ -NH(C ₂ H ₄ OH) ₂ - H ₂ O.....	124
D.Salikhanova, Z.Usmonova, M.Mamadjonova	
Technological basis of activated carbon production process through processing of plum seed waste.....	128
N.Alieva	
Analysis of the effect of adhesive substances on paper strength.....	134
Sh.Rahimjanova, A.Hudayberdiev	
Optimization of heating of mixtures of oil and gas condensate by hot flows of fractions in tubular heat exchangers.....	138
M.Mehmonkhanov, R.Paygamov, H.Bahronov, A.Abdikamalova, I.Eshmetov	
Binding materials for creating coal granules and their colloid-chemical characteristics.....	146
A.Khurmamatov, S.Boyturayev	
Analysis of oil dust released during processing of metal surfaces under laboratory conditions.....	152
M.Kalilayev, Sh.Bukhorov, A.Abdikamalova, I.Eshmetov, M.Khalilov.	
Study of foam formation in polymer solutions depending on the content and nature of surfactants.....	159
MECHANICS AND ENGINEERING	
Sh.Pozilov, O.Ishnazarov, R.Sultonov	
Frequency adjustment of well pumping equipment.....	167
H.Kadyrov	
Control of vibration parameters on the tank wall of oil power transformers in operation.....	179
S.Khudayberganov, A.Abdurakhmanov, U.Khusenov, A.Yusupov	
Methodology for assessing the level of train safety.....	185
Sh.Abdazimov, N.Muminjanova	
Use of integrated technologies in vocational education.....	189
M.Uzbekov, O.Bozarov, E.Begmatov, M.Begmatova	
Analytical analysis of the optimal dimensions and energy parameters of the impeller of a nozzle hydraulic turbine.....	196
B.Boynazarov, F.Nasretdinova, M.Uzbekov	

Analysis of solar energy devices.....	205
D.Mukhtarov, R.Rakhimov	
Determining comparative efficiency in composite film solar dryers.....	213
P.Matkarimov, D.Juraev, S.Usmonkhujayev	
Stress-strain state of soil dams under the action of static loads.....	221
A.Khayrullaev	
Microcontroller-based remote monitoring of overhead power lines.....	228
A.Mamaxonov, I.Xikmatillayev	
Design of a resource-efficient chain drive structure for the device drive that distributes the seed in the bunker to the linters.....	237
A.Yusufov	
Analysis of existing methods and approaches to the assessment of residual resources of traction rolling stock.....	243
A.Djuraev, F.Turaev	
Determination of the friction force between the composite feeding cylinder and the fiber rove.....	249
A.Kuziev	
Forecasting the prospective volume of cargo transportation for the development of the transport network.....	253
N.Pirmatov, A.Panoev	
Control of static and dynamic modes of asynchronous motor of fodder grinding devices.....	260
ADVANCED PEDAGOGICAL TECHNOLOGIES IN EDUCATION	
K.Ismanova	
Systematic analysis of the state of control of the technological processes of underground leaching.....	267
K.Shokuchkorov, Y.Ruzmetov	
Analysis in solidworks software of the strengths generated in the underground part of the wagons as a result of the impact of force on the entire wheels of wagons.....	273
A.Yuldashev	
The processes of gradual modernization of the state administration system in uzbekistan over the years of independence.....	278
ECONOMICAL SCIENCES	
O.Khudayberdiev	
Fourth industrial revolution in the textile and garment manufacturing.....	287
N.Umarova	
Methodology for assesment of external factors affecting the financial security of building materials industry enterprises.....	293