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Sodium Monocorbomidlychlorate - Ammonium Salt of Citric Acid - Study of Solubility of Components in Water System

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ABSTRACT: A method for synthesizing monocarbamite compounds of sodium chlorate has been developed. Its composition and physical and chemical properties were analyzed.A diagram of the solubility of this salt was drawn up and justified. For the physico-chemical justification of the process of obtaining an effective complex defoliant based on sodium monocarbamidoxlate and 2-substituted citric acid, the temperature and concentration range in the$NaClO_{3*}CO (NH_2)_2$-$C_6H_{14}O_7N_2$-H_2O system was studied.

KEYWORD: Defoliation, sesame, urea, solution, molar solution, sodium chloride, polyetermic, citric acid, isotherm.

I. INTRODUCTION

The life expectancy of cotton leaves and their natural decline are closely linked to the maturation of the crop [1-2].
Selection of the dates related to scientifically grounded methods and methods of processing, cotton variety, weather conditions, defoliant penetration and distribution are physiological.
The effectiveness of the chemicals used for defoliation depends on many factors; The main ones are cotton diversity, biological maturity and defoliation readiness, plant growth strength, ambient temperature, soil and environmental humidity [3-4].

Accurate information on biological characteristics of cultivated varieties, genetic origin of the variety, common habit of the bush, anatomical properties of the leaves and the degree of natural foliage is important for pre-harvest chemical defoliation of cotton .These parameters increase the susceptibility of certain varieties to defoliants, and depend on the optimal, effective hectare consumption rate of the defoliant and its biological activity [5].

A.M.According to Prugalov, special attention should be paid to the type of cotton in defining the conditions for cotton defoliation as well as drug use rates. The more mature the different varieties, the earlier the developmental phases, the earlier the ripening occurs, and the natural aging and depletion of the leaves [6].

II. SIGNIFICANCE OF THE SYSTEM

$NaClO_3$ • CO $(NH_2)_2$, synthesized by introducing sodium chloride in a molar solution at a ratio of 1: 1 to urea solution, was used. After cooling the homogeneous solution of the components was removed, the crystals of the $NaClO_3$ • CO $(NH_2)_2$ compound were isolated. We studied the $NaClO_3$•CO $(NH_2)_2$ - H_2O system at a temperature range of -33,0 to 100 ° C degrees from complete freezing.(Figure 1).

Its polyetermic diagram is characterized by the presence of three crystallization networks: ice, CO $(NH_2)_2$and $NaClO_3$, and CO $(NH_2)_2$ intersecting in two pairs. The first of these is the crystallization of ice and CO $(NH_2)_2$ and 61.0% $NaClO_3$ with CO $(NH_2)_2$and 39.0% H_2O at a temperature of -33.0 ° C.The second adjacent point is crystallization with CO $(NH_2)_2$and $NaClO_3$ • CO $(NH_2)_2$2, 67.5% $NaClO_3$ concentration at 37.2 ° C • CO $(NH_2)_2$, 32.5% H_2OThis is true.
The binary system $C_6H_{14}O_7N_2$-H_2O was studied by us at a temperature range of -11.0 to 70 ° C. Its polymer solution diagram is characterized by the presence of ice crystalline branches $C_6H_{14}O_7N_2 \cdot H_2O$ and $C_6H_{14}O_7N_2$intersecting at two pairs of joint solid phase .The first pair of points corresponds to ice and $C_6H_{14}O_7N_2 \cdot H_2O$ at a temperature of -11.0 ° C

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and a concentration of 46.97% $C_6H_{14}O_7N_2$and 53.03%H_2O .The second double point corresponds to $C_6H_{14}O_7N_2 \cdot H_2O$ and $C_6H_{14}O_7N_2$ at 33ºC and 56.38% and 43.62% H_2O concentrations of $C_6H_{14}O_7N_2$.

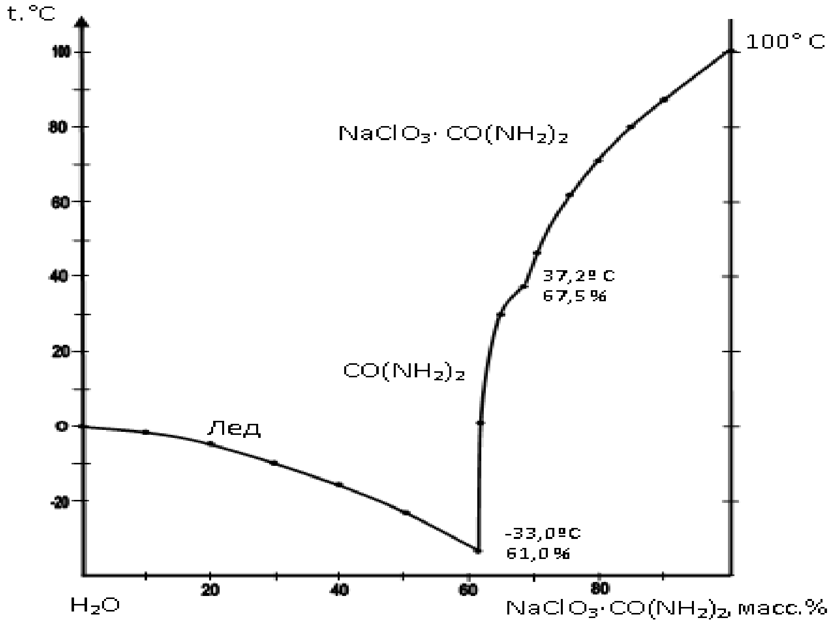

Figure 1.$NaClO_3$ • $CO(NH_2)_2$- H_2O solubility diagram

III. METHODOLOGY

Part of the experience: For the physico-chemical justification of the process of obtaining an effective complex defoliant based on sodium monocarbamidoxlate and 2-substituted citric acid, a wide temperature and concentration range was investigated in the $NaClO_3 * CO(NH_2)_2$-$C_6H_{14}O_7N_2$-H_2O system (Figure 2).

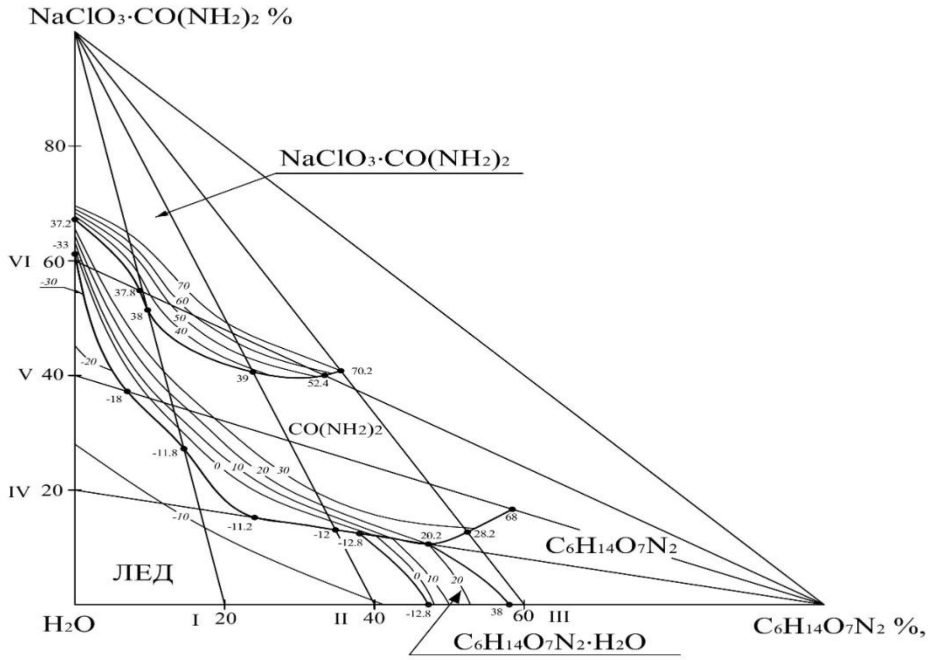

Figure 2.$NaClO_3$ • Solubility Diagram of. $NaClO_3$•$CO(NH_2)_2$-$C_6H_{14}O_7N_2$-H_2O

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IV. EXPERIMENTAL RESUTS

The solubility polyester of the $NaClO_3$•$CO(NH_2)_2$-$C_6H_{14}O_7N_2$-H_2O system was visualized using a visual polymer method using six internals. On the basis of binary systems and interior polymetry, polymer solubility diagrams of the above system were created at temperatures from -33.0 to 70 ° C. The soluble polyethylene diagram shows the crystallization areas of ice,$CO(NH_2)_2$, $NaClO_3$•$CO(NH_2)_2$-$C_6H_{14}O_7N_2$-H_2O, $C_6H_{14}O_7N_2$,According to the data presented, the system belongs to a normal euttonic species.

The fields shown are joined at two-triple invariant points of the system (Table 3.2).The polymer diagram of the system state shows isotherms dissolving at -10 ° C at 10 ° C;0;10;20;30;40;50;60;70 ° C

Table 1.Secondary and tertiary points of $NaClO_3$•$CO(NH_2)_2$-$C_6H_{14}O_7N_2$-H_2O

Fluid Phase Structure,%			Temperature, °C	Solid phase
$NaClO_3 \cdot CO(NH_2)_2$	$C_6H_{14}O_7N_2$	H_2O		
61,2	-	38,8	-33,0	Ice + $CO(NH_2)_2$
59,6	0,8	39,6	-31,2	Ice + $CO(NH_2)_2$
37,4	7,2	55,4	-16,0	Ice + $CO(NH_2)_2$
27,2	14,6	58,2	-11,8	Ice + $CO(NH_2)_2$
15,2	24,9	59,9	-11,2	Ice + $CO(NH_2)_2$
13,0	35,0	52,0	-12,0	Ice + $CO(NH_2)_2$
12,4	38,0	49,6	-12,8	Ice + $CO(NH_2)_2$ + $C_6H_{14}O_7N_2 \cdot H_2O$
-	47,2	52,8	-11,0	Ice + $C_6H_{14}O_7N_2 \cdot H_2O$
-	58,2	41,8	38,0	$C_6H_{14}O_7N_2 \cdot H_2O$ + $C_6H_{14}O_7N_2$
11,0	47,2	41,8	20,2	$CO(NH_2)_2$ + $C_6H_{14}O_7N_2 \cdot H_2O$ + $C_6H_{14}O_7N_2$
13,0	52,4	34,6	28,2	$CO(NH_2)_2$ + $C_6H_{14}O_7N_2$
16,6	58,2	25,2	68,0	$CO(NH_2)_2$ + $C_6H_{14}O_7N_2$
67,2	-	32,8	37,2	$NaClO_3 \cdot CO(NH_2)_2$ + $CO(NH_2)_2$
55,0	8,2	36,8	37,8	$NaClO_3 \cdot CO(NH_2)_2$ + $CO(NH_2)_2$
51,6	9,8	38,6	38,0	$NaClO_3 \cdot CO(NH_2)_2$ + $CO(NH_2)_2$
40,6	23,8	35,6	39,0	$NaClO_3 \cdot CO(NH_2)_2$ + $CO(NH_2)_2$
40,0	33,4	26,6	52,4	$NaClO_3 \cdot CO(NH_2)_2$ + $CO(NH_2)_2$
40,8	35,6	23,6	70,2	$NaClO_3 \cdot CO(NH_2)_2$ + $CO(NH_2)_2$

V. CONCLUSION AND FUTURE WORK

Today, thanks to the global population growth, the demand for agricultural products is growing. Therefore, one of the main tasks of the chemical industry and agriculture is to meet the population's demand for food and clothing. Chemicals - mineral fertilizers, plant stimulants, pesticides, and defoliants also play a major role in increasing crop yields.

Qualitative defoliation at timely rates allows for a good harvest of cotton, contributing to the growth of the first harvest and the overall yield.In addition, there will be an opportunity to start early fall planting activities next year, that is, providing a good foundation for next year's harvest.

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