

18,3100

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SOV/136-59-10-9/18

AUTHORS: Shokol, A.A., Iakhomova, A.D. and Kozin, L.F.

TITLE: Production of High Purity Metallic Thallium by the Amalgamation Method

PERIODICAL: Tsvetnyye metally, 1959, Nr 10, pp 52-57 (USSR)

ABSTRACT: The object of the investigation described in the present paper was to explore the possibilities of using the amalgamation method for the preparation of high purity thallium. The amalgam process, when used for extracting thallium from solutions obtained by decomposition of thallium concentrates, makes it possible to simplify the existing technique, while the high purity of the metal is ensured by the application of anodic oxidation of the obtained amalgams. In the experiments carried out by the present authors, a 2% Cd amalgam was obtained by cementation of a solution resultant from leaching and industrial hydrated concentrate containing (g/l): 1.0 Tl, 0.6 As and 50 H<sub>2</sub>SO<sub>4</sub>. The recovery of thallium in the amalgam amounted to 90%, decreasing to 70% when the process was repeated. The thallium content in the amalgam obtained after double cementation did not exceed 2%. No satisfactory results were obtained when the acidity of the

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cemented solution was reduced to 5 g/l of free sulphuric acid; high proportion of arsenic, iron and other impurities present in the solution resulted in rapid conversion of mercury to slag. This showed that cadmium amalgam can be used for cementation of thallium from purified solutions only. Better results were obtained when solutions, resultant from decomposition of bichromate concentrate, were used. In cementation of thallium with cadmium amalgams from solutions obtained by decomposition of a solution of pure thallium bichromate, recovery of 95 to 97% can be attained, the degree of utilization of cadmium being 80%. The results of experiments in which the effect of the acidity of the solution on cementation of thallium with a 5% Cd amalgam was studied (volume of the solution - 100 ml; duration of the treatment - 6 hr) are reproduced in Table 1 under the following headings: Tl, Cd and  $H_2SO_4$  content (g/l) in the starting solution; quantity (g and %) of Tl, transferred into the amalgam; quantity (g) of Cd (a) spent on thallium and (b) gone into the solution; useful consumption (%) of cadmium;

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application of the amalgam (first time, second time, etc). It will be seen that, on average, 95% thallium was extracted in the amalgam; when the free  $H_2SO_4$  content in the solution was reduced from 13.1 to 3.9 g/l, the degree of utilization of cadmium increased from 57 to 93%. In the experiments in which the amalgam was re-used five times, the thallium content in the amalgam reached 7%, the degree of utilization of cadmium amounting to 85%. In the next series of experiments, decomposition of the obtained amalgam (containing 2% Tl, 0.5% Cd) with solutions of various oxidizing agents, was studied; in each experiment 2 ml of the amalgam was treated with 10 ml of the solution and the results are reproduced in Table 2 under the following headings: the oxidizing agent (5%  $Hg_2(NO_3)_2$ , 0.1 mol  $Fe_2(SO_4)_3$ , ditto, 0.1 mol  $FeCl_3$ , ditto); duration of the treatment, minutes; quantity (g) of Tl and Cd found in the solution after cementation; the potential, E, (v) of the amalgam (after cementation) referred to normal hydrogen electrode. (In the experiment marked with an asterisk, the amalgam was converted into

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paste.) All the investigated substances, with the exception of ferric chloride, secured full decomposition of the amalgam; for practical reasons, it is expedient to use for this purpose the iron sulphate solution. The anodic oxidation of the amalgam was carried out in an electrolyte containing 60 g/l  $\text{NH}_4\text{OH}$  and 90 g/l  $\text{NH}_4\text{Cl}$ , pure mercury being used as the cathode. The results of the electrolysis of 56.25 g of a 5% thallium amalgam are reproduced in Table 3 under the following headings: duration of the treatment, minutes; voltage, v; current density, amp/dm<sup>2</sup>; the anode potential, E, (v) in respect to normal hydrogen electrode. The change of the anode potential with time was gradual; the electrolysis was terminated when a white deposit (thallium chloride) appeared on the anode surface. The products of electrolysis contained: thallium amalgam (anode) - 4.975% Tl (corresponding to 99.5% of the thallium content) and 0.025% Cd; cadmium amalgam (cathode) - 0.45% Cd and 0.011% Tl; electrolyte - less than 0.001% Tl and 0.025% Cd. Thus, it was shown that practically all

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cadmium can be extracted from thallium amalgam by electrolysis in an ammonia-chloride electrolyte. The flow sheet of the process used in the large-scale experiments on the extraction of thallium from bichromate concentrate is reproduced in Fig 1. The bichromate concentrate was obtained from the solution after decomposition of 5.7 kg of industrial hydrated cake. From the resultant solution, containing 8 g/l Tl and 4 g/l H<sub>2</sub>SO<sub>4</sub>, thallium was extracted by room temperature cementation with a 5% Cd amalgam; 1 kg of the amalgam (re-used five times) was used for 10.5 l of the solution. The typical results obtained are reproduced in Table 4 under the following headings: application of the amalgam (first, second time etc); duration (hr) of the cementation; proportion of Tl (% of the initial content) remaining in the solution after cementation. The obtained amalgam contained 8.44% Tl, 2.6% Cd, lead, tin, bismuth, copper and other impurities. For the preparation of high purity metal it is advisable to use a more concentrated amalgam. If electrolysis is used for this purpose and if

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an electrolyte is employed in which the potential of cadmium is more negative, a cadmium-free amalgam will be obtained; the more positive metallic impurities will remain in the "primary" amalgam. Curves plotted in Fig 2 illustrate the relationship between potential of the cadmium and thallium amalgams and the metal content (at -%) in the electrolytes for the following cases:  
1 - cadmium amalgam in an electrolyte containing 2 mol  $\text{NH}_4\text{OH}$  and 1 mol  $(\text{NH}_4)_2\text{SO}_4$ ; 2 - cadmium amalgam in an electrolyte containing 0.5 mol  $\text{NH}_4\text{OH}$  and 1 mol  $(\text{NH}_4)_2\text{SO}_4$ ; 3 - thallium amalgam in an electrolyte containing 0.5 mol  $\text{NH}_4\text{OH}$  and 1 mol  $(\text{NH}_4)_2\text{SO}_4$ . It will be seen that increasing concentration of ammonia in the electrolyte, the potential of the cadmium amalgam is shifted towards the more positive values. Fig 3 shows the polarization curves of anodic decomposition of:  
1 - an amalgam containing 7 at-% thallium in an electrolyte containing 0.5 mol  $\text{NH}_4\text{OH}$ , 1 mol  $(\text{NH}_4)_2\text{SO}_4$  and 0.01 mol  $\text{Tl}_2\text{SO}_4$ ; 2 - an amalgam containing 5 at-% cadmium in an electrolyte containing 0.5 mol  $\text{NH}_4\text{OH}$ ,

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1 mol  $(\text{NH}_4)_2\text{SO}_4$ , and 0.01 mol  $\text{CdSO}_4$ ; 3 - an amalgam containing 5 at-% cadmium in an electrolyte containing 2 mol  $\text{NH}_4\text{OH}$ , 1 mol  $(\text{NH}_4)_2\text{SO}_4$ , and 0.01 mol  $\text{CdSO}_4$ . These curves show that dissolution of cadmium takes place mainly in the initial stages of the process; in the electrolyte containing 2 mol  $\text{NH}_4\text{OH}$ , the polarization curve of the anodic decomposition of the cadmium amalgam is shifted towards the more negative values of the potential. Fig 4 shows the polarization curves of cathodic deposition for the following cases: 1 - thallium on mercury from an electrolyte containing 0.5 mol  $\text{NH}_4\text{OH}$ , 1 mol  $(\text{NH}_4)_2\text{SO}_4$ , and 0.1 mol  $\text{Tl}_2\text{SO}_4$ ; 2 - thallium on amalgam containing 7 at-% thallium from an electrolyte of the same composition; 3 - thallium on amalgam containing 40 at-% thallium from the same electrolyte; 4 - cadmium on amalgam containing 40 at-% thallium from an electrolyte containing 0.5 mol  $\text{NH}_4\text{OH}$ , 1 mol  $(\text{NH}_4)_2\text{SO}_4$ , and 0.1 mol  $\text{CdSO}_4$ ; 5 - cadmium on mercury from an electrolyte containing 2 mol  $\text{NH}_4\text{OH}$ , 1 mol  $(\text{NH}_4)_2\text{SO}_4$ , and 0.1 mol  $\text{CdSO}_4$ ; 6 - cadmium on amalgam containing 40 at-% thallium from the same electrolyte. It will be

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seen that in the case of the electrolyte containing 0.5 mol  $\text{NH}_4\text{OH}$ , the shift of the cadmium potential in relation to thallium is not sufficiently large; the current density permissible in this electrolyte (stirred at the rate of 60 rev/min) decreased from 1.2 to 0.5 amp/dm<sup>2</sup> as the thallium concentration in the amalgam increased; when an electrolyte containing 2 mol  $\text{NH}_4\text{OH}$  is used, the shift of the potential is larger, which makes it possible to use higher current density (1.2 amp/dm<sup>2</sup>). The diluted thallium amalgam was concentrated by electrolysis in which mercury cathode and ammonia-sulphate electrolyte (0.5 mol  $\text{NH}_4\text{OH}$ , 1 mol  $(\text{NH}_4)_2\text{SO}_4$ ) were used; the resultant amalgam contained 32.8% thallium, 5.6% cadmium and other impurities, the thallium content in the electrolyte being 0.27 g/l. The results of the potential measurements carried out during this operation are given in Table 5 under the following headings: quantity of electricity, amp-hr; cathode and anode potentials (v) relative to normal hydrogen electrode.

Card 8/10 The impurities were removed from the concentrated amalgam



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by anodic polarization in an electrolyte consisting of 0.1 mol trilon B in 1.0 N solution of NaOH, at the current density of 0.5 amp/dm<sup>2</sup>. The bulk of the impurities was removed at room temperature until thallium ions appeared in the electrolyte; the process was then continued for 3 to 4 hr at 60 to 70°C, the electrolyte being stirred at the rate of 200 rev/min; the quantity of thallium passing into the solution during this operation amounted to 10 to 20 g/l. The purified amalgam was then subjected to anodic dissolution carried out under the following conditions: cathode - platinum; electrolyte - 40 to 70 g/l TlClO<sub>4</sub>, 60 to 120 g/l NaClO<sub>4</sub>, 1% N<sub>2</sub>H<sub>4</sub>·H<sub>2</sub>SO<sub>4</sub>, 0.04 to 0.1% sodium salt of carboxymethyl-cellulose; pH equal 2 - 3; speed of stirrer - 60 rev/min. The most dense deposits were obtained at the cathode current density of 0.3 to 0.6 amp/dm<sup>2</sup>. To reduce the quantity of mercury in the cathodic deposit, hydroxylamine was added to the electrolyte to reduce the dissolved oxygen which, by oxidizing mercury, promotes its transfer into the electrolyte. The process was carried

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S/073/62/028/006/002/002  
D202/D307

AUTHORS: Shokol, A.A. and Kozin, L.F.

TITLE: The purification of gallium, indium and thallium from admixtures of mercury, cadmium and zinc by high temperature distillation in vacuum

PERIODICAL: Ukrainskiy khimicheskiy zhurnal, v. 28, no. 6, 1962, 699-702

TEXT: The authors purified 10-12 g samples of Ga, In and Tl or their alloys from the above admixtures, by heating the metals in a quartz tube, at a pressure of 1 mm Hg, over a period of 4 hrs, at temperatures ranging from 500 to 1200°C. It was found that when the distillations were carried out at 1000 - 1200°C no Hg, Cd or Zn could be detected in the original metals, either colorimetrically or spectroscopically, the mercury being practically eliminated by a treatment at 800°C. The success of this method is ascribed to the great differences in the partial pressures of the metals concerned. There are 1 figure and 2 tables.

Card 1/2

The purification of gallium, ...

S/073/62/028/006/002/002  
D202/D307

ASSOCIATION: Institut obshchey i neorganicheskoy khimii AN USSR  
(The Institute of General and Inorganic Chemistry,  
AS UkrSSR)

SUBMITTED: May 15, 1961

Card 2/2

S/073/62/028/009/001/011  
AG57/A126

AUTHORS: Shokol, A. A., Andrusenko, L. P.

TITLE: Investigation of the conditions of germanium precipitation with magnesium and iron

PERIODICAL: Ukrainskiy khimicheskiy zhurnal, v. 28, no. 9, 1962, 1009 - 1013

TEXT: Optimal conditions (concentration of Ge, pH, and the consumption factor of precipitants) for the precipitation of germanium by magnesium and/or iron were studied at the Institut obshchey i neorganicheskoy khimii AN USSR (Institute of General and Inorganic Chemistry AS UkrSSR). The precipitated Ge was filtered off and in the filtrate the non-precipitated Ge was colorimetrically determined with phenylfluoron. The following results were obtained: The maximum precipitation (98.4%) of Ge by a magnesia mixture at a concentration of 138.5 mg Ge/l occurs at pH = 12.0. In the absence of ammonium salts the maximum is lower (89.2 - 91.8%) and lies at pH 9.6 - 11.6. Varying the ratio Mg : Ge from 0.1 to 50, an almost complete (99.8%) precipitation of Ge was achieved at a pH of about 10 and a 15fold excess of Mg. A surplus of sodium hydroxyde does

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Investigation of the conditions of...

S/073/62/028/009/001/011  
A057/A126

not affect these precipitations, because apparently magnesium orthogermanate is formed and no adsorption of Ge on magnesium hydroxyde occurs. Experiments with germanium precipitation by iron hydroxyde (as collector) at a pH of about 8, by varying the Fe/Ge ratio (0.1 - 50) showed a complete precipitation of Ge (1.25 mg Ge/100 ml) in the presence of a 25fold excess of iron. In this case a surplus of sodium hydroxyde showed a negative effect upon the Ge precipitation, apparently due to adsorption processes. Germanium precipitation by magnesium in the presence of iron hydroxyde (1.25 mg Ge + 6.25 mg Mg in 100 ml solution) at a pH of about 8 showed a 99.9% precipitation of Ge, if at a 5fold Mg excess a 10 - 15fold excess of iron was present or a 100% precipitation of Ge if at a 15fold iron excess a 2fold excess of Mg was present. The pH should not drop below 8. Experiments at a constant ratio Mg : Ge = 5 : 1 showed that with an increasing amount of Ge the quantity of iron necessary for a complete precipitation of Ge decreases, but only at a concentration of more than 10 mg Ge/l a complete precipitation of Ge can be attained, because in diluted solutions Ge remains partly dissolved as magnesium orthogermanate. A complete precipitation, even at low Ge concentrations (0.1 mg/l) is effected at a ratio Ge : Fe = 1 : 25 (or more), or in the presence of a 2fold surplus of Mg at only a 10 - 15fold excess of iron at

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Investigation of the conditions of...

S/073/62/028/009/001/011  
A057/A126

pH > 8. There are 3 figures and 6 tables.

ASSOCIATION: Institut obshchey i neorganicheskoy khimii AN USSR (Institute of  
General and Inorganic Chemistry, AS UkrSSR)

SUBMITTED: July 21, 1961



Card 3/3

SHOKOL, V. A.

USSR/Organic Chemistry - Synthetic Organic Chemistry

E-2

Abs Jour : Referat Zhur - Khimiya, No 2, 1957, 4330

Author : Babichev, F.S., Shokol, V.A.

Title : Reaction of Beta-Aminoethylmercaptan with Anhydrides of Dibasic Acids

Orig Pub : Ukr. khim. zh., 1956, 22, No 2, 213-214

Abstract : Study of the reaction of beta-aminoethylmercaptan (I) with the anhydrides of dibasic acids. It is shown that I gives with succinic anhydride (II) N-(beta-mercaptoethyl)-succinimide (III), with glutaric the mono-beta-mercaptoethylamide of glutaric acid (IV), and with phthalic anhydride the N-(beta-mercaptoethyl)-phthalimide. The expected formation of (thiazolinyl-2-alkylcarboxylic acids (see RZhKhim, 1956, 68371) does not take place. 2 g I and 2.6 g II in 10 ml C<sub>6</sub>H<sub>6</sub> (in a sealed tube, 120-130°, 16 hours) give III, yield 65%, MP 50° (from alcohol). From III and 15% H<sub>2</sub>O<sub>2</sub> is obtained the

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Kiev State U. - 49 -

USSR/Organic Chemistry - Synthetic Organic Chemistry, E-2

Abst Journal: Referat Zhur - Khimiya, No 1, 1957, 942

Author: Babichev, F. S., and Shokol, V. A.

Institution: None

Title: Synthesis of 3-keto-1,4-thiazanes

Original Periodical: Ukr. khim. zh., 1956, Vol 22, No 2, 215-216

Abstract: A number of 3-keto-1,4-thiazanes of the type  $SCHRCONHCH_2CH_2$  (I) have been prepared. Dry toluene, one gram-atom Na, and 1.1 moles - aminoethylmercaptan (prepared by saturating alcoholic ethylamine with  $H_2S$  at 10-15°; yield 72.5%, mp 98°) are heated at ~100° until all the Na dissolves; one mole of the ester of the  $\alpha$ -brominated acid (II) is added dropwise with constant cooling, followed by heating for 2-2.5 hours at ~100°. The NaBr is separated and the toluene distilled off, leaving I. The amount of initial II, R, the yield of I in percent, and the mp in °C are given:  $CH_2BrCOOC_2H_5$ , H, 65.3, 89 (from alcohol or benzene) (a molecular compound is formed with  $AgNO_3$  in aqueous

Ca: Card 1/2



KIRSANOV, A.V.; SHOKOL, V.A.

Diesters of thioacylamidophosphoric acids. Zhur. ob. khim. 30  
no.9:3031-3037 S '60. (MIRA 13:9)

1. Institut organicheskoy khimii Akademii nauk Ukrainskoy SSR.  
(Phosphoric acid)

DERKACH, G.I.; SHOKOL, V.A.; KIRSANOV, A.V.

Diesters of acylamidophosphoric acids. Zhur.ob.khim. 30 no.10:  
3393-3397 0 '61. (MIRA 14:4)

1. Institut organicheskoy khimii Akademii nauk Ukrainskoy SSR.  
(Phosphoramidic acid)

89519

S/079/61/031/002/012/019  
B118/B208

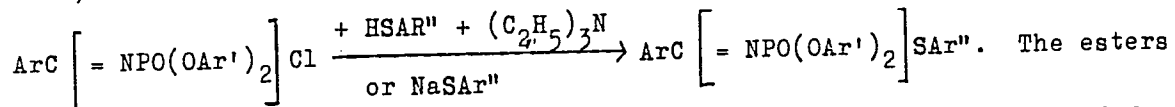
5-3630

AUTHORS: Kirsanov, A. V. and Shokol, V. A.

TITLE: Aryl esters of N-diaroxy-phosphinylimino-thiocarboxylic acids of the aromatic series

PERIODICAL: Zhurnal obshchey khimii, v. 31, no. 2, 1961, 582-593

TEXT: The diesters of thioacyl-phosphamic acids  $\text{ArC}(=\text{S})\text{NHPO}(\text{OR})_2$  synthesized by the authors in Ref. 1 are tautomeric with N-diaroxy-phosphinylimino-thiocarboxylic acids (I)  $\text{ArC}[\text{=NPO}(\text{OR})_2]\text{SH}$ . The aromatic esters of the latter were obtained by reacting the chlorides of N-diaroxy-phosphinylimino-carboxylic acids (Ref. 2) with sodium thiophenolates, or (with particular ease) with thiophenols in the presence of tertiary amines: X



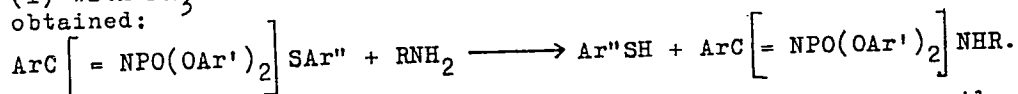
are insoluble in water, alkali lyes, and acids. p-Nitrophenyl esters of N-diaroxy-phosphinylimino-thiocarboxylic acids are gradually decomposed on

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B118/B208

Aryl esters of N-diaroxy- ...

heating (250-300°C) in high vacuum to give nitriles, and also considerably carbonized. As far as the chemical properties are concerned, the esters (I) much resemble the aryl esters of N-diaroxy-phosphinylimino-carboxylic acids (Ref. 3). Esters (I) are easily saponified with aqueous-alcoholic solutions of strong mineral acids, and with 90% acetic acid. When treating the esters (I) with NH<sub>3</sub> or amines, the corresponding amidines and thiophenols are obtained:



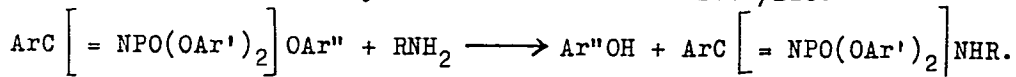
In alcoholic solutions, the esters (I) react with NH<sub>3</sub> very easily and with nearly quantitative yields. The reaction of the esters (I) with amines is much more difficult, and requires prolonged heating (up to 35 hr). To compare the properties of the esters (I) with the aryl esters of N-diaroxy-phosphinylimino-carboxylic acids (Ref. 3), the reaction of the latter with NH<sub>3</sub> and amines was studied. The aroxy group of these aromatic esters, which is combined with the carbon atom, was found to be also substituted by the amino group, on the action of NH<sub>3</sub> or amines, giving the corresponding amidines and phenols:

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B118/B208

Aryl esters of N-diaroxy- ...



Concentrated  $\text{HNO}_3$  hydrolyzes the esters (I) to diesters. When heating the esters (I) with dimethyl sulfate at  $100^\circ\text{C}$ , without solvent, no alkylation occurs at the sulfur atom; the initial product gradually changes to form nitriles, thiophenols, diesters of acyl-phosphamic acids, and other products of unknown structure. The sulfur in the esters (I) thus has not the properties of sulfide sulfur. There are 4 tables and 7 references: 5 Soviet-bloc and 1 non-Soviet-bloc.

ASSOCIATION: Institut organicheskoy khimii Akademii nauk Ukrainskoy SSR  
(Institute of Organic Chemistry of the Academy of Sciences  
Ukrainskaya SSR)

SUBMITTED: March 7, 1960

Card 3/3

DERKACH, G.I.; SHOKOL, V.A.; KIRSANOV, A.V.

N<sup>1</sup>-diaroxyposphinyl-N<sup>2</sup>(N<sup>3</sup>-arylthiocarbaminy) arenamidines  
[N<sup>1</sup>-aryl-N<sup>2</sup>(N<sup>3</sup>-diaroxyposphinyliminoaroyl) thiourea]. Zhur.  
ob.khim. 31 no.7:2275-2282 J1 '61. (MIRA 14:7)

1. Institut organicheskoy khimii AN Ukrainskoy SSR.  
(Urea) (Amidines)

DERKACH, G.I.; SHOKOL, V.A.; SAMARAY, L.I.; KIRSANOV, A.V.

New method of preparing trichlorophosphazoacyls. Zhur. ob. khim.  
32 no.1:159-160 Ja '62. (MIRA 15:2)

1. Institut organicheskoy khimii AN Ukrainskoy SSR.  
(Phosphazo compounds)

SHOKOL, V.A.; DENKACH, G.I.; KIRSANOV, A.V.

Phenyl-dichloro- and diphenylchlorophosphazo-dichloro-and  
trichloroacetyls and their derivatives. Zhur. ob. khim. 32 no.1:  
166-171 Ja '62. (MIRA 15:2)

1. Institut organicheskoy khimii AN Ukrainskoy SSR.  
(Phosphazo compounds)



DERKACH, G.I.; GUBNITSKAYA, Ye.S.; SHOKOL, V.A.; KIRSANOV, A.V.

Triaroxyphosphazocyls. Part 2. Zhur.ob.khim. 32 no.4:1201-  
1207 Ap '62. (MIRA 15:4)

1. Institut organicheskoy khimii AN Ukrainskoy SSR.  
(Phosphorus organic compounds) (Esters)

DERKACH, G.I.; GUBNITSKAYA, Ye.S.; SHOKOL, V.A.; KIRSANOV, A.V.

Phenyldichloro-, diphenylchloro-, and triphenylphosphazo acyls.  
Zhur.ob.khim. 32 no.6:1874-1878 Je '62. (MIRA 15:6)

1. Institut organicheskoy khimii Akademii nauk Ukrainskoy SSR.  
(Phosphazo compounds)

DERKACH, G.I.; SAMARAY, L.I.; SHOKOL, V.A.

Trichlorophosphazo acyls. Zhur.ob.khim. 32 no.6:2059 Je '62.  
(MIRA 15:6)

1. Institut organicheskoy khimii Akademii nauk Ukrainskoy SSR.  
(Phosphazo compounds)

DERKACH, G.I.; SHOKOL, V.A.; GUBNITSKAYA, Ye.S.

Aryldichlorophosphazoaclyls and their derivatives. Zhur.ob.  
khim. 33 no.2:553-557 F '63. (MIRA 16:2)

1. Institut organicheskoy khimii AN UkrSSR.  
(Phosphorus organic compounds)

DERKACH, G.I.; GUBNITSKAYA, Ye.S.; SAMARAY, L.I.; SHOKOL, V.A.

Diaroxychloro- and triaroxyphosphazoacyls. Zhur.ob.khim. 33  
no.2:557-562 F '63. (MIRA 16:2)  
(Phosphorus organic compounds)

SHOKOL, V.A.; DERKACH, G.I.; KISILENKO, A.A.

Ultraviolet and infrared spectra of diesters of acylthioamidophosphoric and acylamidophosphoric acids and their derivatives. Zhur. ob. khim. 33 no.8:2660-2667 Ag '63. (MIRA 16:11)

1. Institut organicheskoy khimii AN UkrSSR.

DERKACH, G.I.; GUBNITSKAYA, Ye.S.; SHOKOL, V.A.; KISILENKO, A.A.

Infrared spectra of trichlorophosphazoaclyls and their derivatives.  
Zhur.ob.khim. 34 no.1:82-88 Ja '64. (MIRA 17:3)

1. Institut organicheskoy khimii AN UkrSSR.

SHKOL, V.A.; FELOTOVA, L.I.; FHOLOVA, A.N.; KIRMANOV, A.V.

Higher dialkyl esters of arylsulfonamidophosphoric acids.  
Zhur. ob. khim. 35 no.3:534-544 Mr '65. (MIRA 18:4)

1. Institut organicheskoy khimii AN UkrSSR.



DERYACH, G.I.; GUBNITSKAYA, Ye.S.; SHOKOL, V.A.

Derivatives of acylamidoarylphosphonic acids. Zhur. ob. khim.  
35 no.6:1014-1018 Ja '65. (MIRA 18:6)

1. Institut organicheskoy khimii AN UkrSSR.

1987 11 14 11:00 AM

1987 11 14 11:00 AM (MIFA 12.8)

to: Institut Organicheskoy Khimii AN KazSSR.

L 28875-66 EWP(j)/EWT(m) RM

ACC NR: AP6018835

SOURCE CODE: UR/0079/65/035/003/0534/0544

AUTHOR: Shokol, V. A.; Fedotova, L. I.; Frolova, A. N.; Kirsanov, A. V. 31  
BORG: Institute of Organic Chemistry, AN UkrSSR (Institut organicheskoy khimii AN UkrSSR)TITLE: Higher dialkyl esters of arylsulfonamidophosphoric acids 7

SOURCE: Zhurnal obshchey khimii, v. 35, no. 3, 1965, 534-544

TOPIC TAGS: organic synthetic process, ester, phosphoric acid, organic sulfur compound, organic nitrogen compound, organic salt

ABSTRACT: Dialkyl esters of arylsulfonamidophosphoric acids with higher alkyl radicals were synthesized and investigated as complex formers and extraction reagents for various metals. Dialkyl esters of arylsulfonamidophosphoric acids, possessing the properties of monobasic acids, were synthesized by the action of trichlorophosphazosulfonylaryls on higher aliphatic alcohols or by the action of dichlorides of arylsulfonamidophosphoric acids on higher sodium alcoholates. The solubility of the sodium salts of higher alkyl esters of arylsulfonamidophosphoric acids in water decreases, while that in organic solvents increases with increasing molecular weight of the alkyls. Sodium salts of the higher dialkyl esters of arylsulfonamidophosphoric acids are

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UDC: 546.185:547.541.521.1

L 28875-66

ACC NR: AP6018835

0

extracted from aqueous solutions by organic solvents. Extraction takes place only from neutral or alkaline solutions. Under the action of sodium salts of higher dialkyl esters of arylsulfonamidophosphoric acids on metal chlorides, sulfates, or nitrates in aqueous solutions, aluminum, barium, beryllium, ferrous and ferric, cadmium, calcium, magnesium, manganese, copper, nickel, strontium, and chromium salts of higher dialkyl esters of arylsulfonamidophosphoric acids are produced; they are very sparingly soluble in water and readily soluble in organic solvents. In the synthesis of dialkyl esters of arylsulfonamidophosphoric acids from trichlorophosphazosulfonylaryls and higher alcohols, higher monoalkyl esters of the arylsulfonamidophosphoric acids  $(ArSO_2NHPO(OH)(OR))$  are formed and are isolated in the form of the disodium salts. Orig. art. has: 6 tables. [JPRS]

SUB CODE: 07 / SUBM DATE: 18Jan64 / ORIG REF: 002

Card 2/2 CC

L 29276-66 -EWP(j)/EWT(m)/T RM

ACC NR: AP6019322

SOURCE CODE: UR/0079/65/035/008/1468/1471

AUTHOR: Shokol, V. A.; Derkach, G. I.ORG: Institute of Organic Chemistry, AN UkrSSR (Institut organicheskoy khimii AN UkrSSR)TITLE: Dialkyl esters of acylamidophosphoric acids

SOURCE: Zhurnal obshchey khimii, v. 35, no. 8, 1965, 1468-1471

TOPIC TAGS: phosphate ester, organic synthetic process, alcohol

ABSTRACT: By interacting trichlorophosphazacyls or dichlorides of acylamidophosphoric acids with alcohols in benzene solutions in the presence of triethylamine, dialkyl esters of acylamidophosphoric acids  $RCONHPO(OAlk)_2$  (I) were prepared. The following new compounds of this type were synthesized by these methods:

I (R=CH<sub>2</sub>Cl, Alk=Me); I (R=CH<sub>2</sub>Cl, Alk=Et); I (R=CH<sub>2</sub>Cl, Alk = iso-Pr);  
I (R=CCl<sub>3</sub>, Alk=iso-Pr); I (R=Ph, Alk = iso-Pr); I (R=Ph, Alk = hexyl);  
I (R=Ph, Alk=heptyl); I (R=Ph, Alk = octyl); I (R=Ph, Alk =nonyl);  
I (R=Ph, Alk=decyl); I (R=p-ClC<sub>6</sub>H<sub>4</sub>, Alk = hexyl); I (R=p-ClC<sub>6</sub>H<sub>4</sub>,  
Alk = heptyl); I (R = p-ClC<sub>6</sub>H<sub>4</sub>, Alk = octyl); I (R=p-ClC<sub>6</sub>H<sub>4</sub>,

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UDC: 546.325:547.26'118

L 29276-66

ACC NR: AP6019322

Alk = nonyl); I (R = p-ClC<sub>6</sub>H<sub>4</sub>, Alk = decyl). The esters with Alk = Me, Et, iso-Pr were crystalline solids, those with Alk = hexyl to decyl colorless, thick liquids that could not be distilled in vacuo without decomposition. Compounds I were dimeric in benzene solutions (cf. M. M. Kabachnik et al, Izv. AN SSSR, OKhN 1589, 1952). The authors thank A. V. Kirsanov for his help and advice. Orig. art. has: 1 figure, 3 formulas, and 1 table. [JPRS]

SUB CODE: 07 / SUBM DATE: 25Mar63 / ORIG REF: 005

Card 2/2 CC

L 05180-67 EWI(m)/EWP(j) RM

ACC NR: AP7000744

SOURCE CODE: UR/0079/66/036/005/0930/0937

SHOKOL, V. A., MOLYAVKO, L. I., DERKACH, G. I., Institute of Organic Chemistry,  
Academy of Sciences Ukrainian SSR

Reaction of Compounds of Trivalent Phosphorus with N-Chloramides of  
Acids. I. Interaction of Phosphites and Triphenylphosphine with N-Chloro-N-  
alkylsulfamides" 30  
B

Moscow, Zhurnal Obshchey Khimii, Vol 36, No 5, 1966, pp 930-937

Abstract: In the reaction of N-chloro-N-methylarylsulfamides with trialkyl-  
or alkyl diaryl phosphites, there is an Arbuzov rearrangement, forming diesters  
of N-alkylamidophosphoric acids. The diesters are colorless viscous liquids  
or low-melting crystalline substances, which yield N-alkylarylsulfamides when  
boiled with aqueous alcohol solutions of hydrochloric acid. Triphenylphosphine,  
reacting with N-chloro-N-methylarylsulfamides, gives N-methylarylsulfonylamido-  
triphenylphosphonium chlorides. They are all readily hydrolyzed by atmospheric  
moisture or under the action of water or alcohol, yielding complex compounds  
of triphenylphosphine oxide with N-methylarylsulfamides  $ArSO_2N(CH_3)H \dots OP(C_6H_5)_3$ .  
When the phosphonium salts are heated to 90-120°, they split off an alkyl halide,  
yielding triphenylphosphazosulfonylaryls. The infrared spectra of the compounds  
obtained are discussed. Orig. art. has: 1 figure and 4 tables. [JPRS: 37,023]

TOPIC TAGS: organic amide, organic sulfur compound, organic phosphorus compound

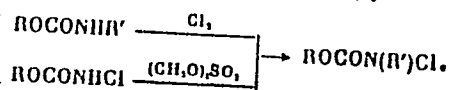
SUB CODE: 07 / SUBM DATE: 19Apr65 / ORIG REF: 011 / OTH REF: 005

Card 1/1 vmb

UDC: 547.583.2  
0923 1974

ACC NR: AP6028901

of N-chlorourethanes with dimethyl sulfate:



Composition and properties of the diesters are given in the table.  
Orig. art. has: 1 table. [W.A. 50]



ACC NR: AP6028901

Table 1. Diastere of N-alkylphosphonocarbamic acids  $ROCON(R')PO(OR'')_2$

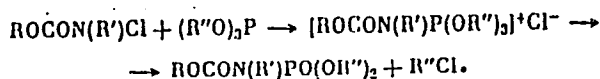
R	R'	R''	Yield (in %)	bp (p in mm)	n <sub>D</sub> <sup>20</sup>	n <sub>D</sub> <sup>25</sup>	NR <sub>p</sub>		Y <sub>found</sub> % P	Formula	Calc'd % P
							Found	Calc'd			
CH <sub>3</sub>	CH <sub>3</sub>	CH <sub>3</sub>	60	83-84 (1.5)	1.2774	1.4366	40.40	40.71	16.02	C <sub>3</sub> H <sub>11</sub> NO <sub>3</sub> P	15.71
CH <sub>3</sub>	CH <sub>3</sub>	C <sub>2</sub> H <sub>5</sub>	64	87-88 (1.5)	1.1860	1.4319	50.08	49.95	13.95	C <sub>7</sub> H <sub>19</sub> NO <sub>3</sub> P	13.76
CH <sub>3</sub>	CH <sub>3</sub>	iso-C <sub>3</sub> H <sub>7</sub>	82	75-76 (0.4)	1.1060	1.4299	50.17	50.18	12.31	C <sub>6</sub> H <sub>19</sub> NO <sub>3</sub> P	12.24
CH <sub>3</sub>	C <sub>2</sub> H <sub>5</sub>	C <sub>2</sub> H <sub>5</sub>	55	94-95 (0.4)	1.1348	1.4333	54.81	54.57	13.19	C <sub>7</sub> H <sub>19</sub> NO <sub>3</sub> P	12.95
CH <sub>3</sub>	C <sub>2</sub> H <sub>5</sub>	iso-C <sub>3</sub> H <sub>7</sub>	50	90-91 (0.3)	1.0730	1.4285	64.12	63.80	11.63	C <sub>10</sub> H <sub>22</sub> NO <sub>3</sub> P	11.59
C <sub>2</sub> H <sub>5</sub>	CH <sub>3</sub>	CH <sub>3</sub>	50	71-72 (0.4)	1.2160	1.4343	45.27	45.33	14.33	C <sub>5</sub> H <sub>13</sub> NO <sub>3</sub> P	14.01
C <sub>2</sub> H <sub>5</sub>	CH <sub>3</sub>	C <sub>2</sub> H <sub>5</sub>	63	83-84 (0.5)	1.1310	1.4301	54.63	54.57	13.23	C <sub>7</sub> H <sub>19</sub> NO <sub>3</sub> P	12.95
C <sub>2</sub> H <sub>5</sub>	CH <sub>3</sub>	iso-C <sub>3</sub> H <sub>7</sub>	65	91-92 (0.7)	1.0770	1.4277	63.61	63.80	11.51	C <sub>10</sub> H <sub>22</sub> NO <sub>3</sub> P	11.59
iso-C <sub>3</sub> H <sub>7</sub>	CH <sub>3</sub>	CH <sub>3</sub>	57	114-115 (3)	1.1657	1.4309	49.99	49.95	13.68	C <sub>7</sub> H <sub>19</sub> NO <sub>3</sub> P	13.76
iso-C <sub>3</sub> H <sub>7</sub>	CH <sub>3</sub>	C <sub>2</sub> H <sub>5</sub>	50	98-99 (1.5)	1.1041	1.4202	59.14	59.18	12.42	C <sub>9</sub> H <sub>20</sub> NO <sub>3</sub> P	12.24
iso-C <sub>3</sub> H <sub>7</sub>	CH <sub>3</sub>	iso-C <sub>3</sub> H <sub>7</sub>	90	106-108 (1.5)	1.0520	1.4270	68.60	68.42	11.04	C <sub>11</sub> H <sub>23</sub> NO <sub>3</sub> P	11.01

SUB CODE: 07,06/SUBM DATE: 10Jul65/ ORIG REF: 008/ OTH REF: 004  
Card 3/3

ACC NR: AP6028901 SOURCE CODE: UR/0079/66/036/008/1442/1444

AUTHOR: Shokol, V. A.; Mikhaylyuchenko, N. K.; Derkach, G. I.ORG: Institute of Organic Chemistry, Academy of Sciences, UkrSSR  
(Institut organicheskoy khimii Akademii nauk UkrSSR)TITLE: Reactions of compounds of trivalent phosphorus with N-chloro-  
amides. II. Reactions of phosphites with N-chloro-N-alkylurethanes

SOURCE: Zhurnal obshchey khimii, v. 36, no. 8, 1966, 1442-1444

TOPIC TAGS: insecticide, alkylphosphonocarbamic acid ester, *organic*ABSTRACT: *phosphorus compound* N-chloro-N-alkylurethanes react with trialkyl phosphites to  
form the corresponding esters:

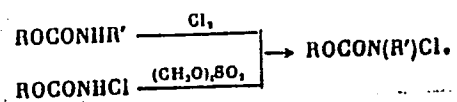
Without solvent the reaction is very vigorous, therefore, it is conducted in benzene solution with boiling. The diesters of N-alkylphosphonocarbamic acids are effective insecticides and at the same time they are harmless to humans and animals. The initial N-chloro-N-alkylurethans were obtained by chlorination of N-alkylurethanes or by methylation

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UDC: 547.495.1

ACC NR: AP6028901

of N-chlorourethanes with dimethyl sulfate:



Composition and properties of the diesters are given in the table.  
Orig. art. has: 1 table. [W.A. 50]

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ACC NR: AP6028901

Table 1. Diesters of N-alkylphosphonocarbamic acids  $ROCON(R')PO(OR'')_2$

R	R'	R''	Yield (in %)	bp (p in mm)	n <sub>D</sub> <sup>20</sup>	n <sub>D</sub> <sup>25</sup>	MR <sub>s</sub>		Found % P	Formula	Calc'd % P
							Found	Calc'd			
CH <sub>3</sub>	CH <sub>3</sub>	CH <sub>3</sub>	60	83-84 <sup>a</sup> (1.5)	1.2774	1.4366	40.40	40.71	18.02	C <sub>5</sub> H <sub>11</sub> NO <sub>3</sub> P	15.71
CH <sub>3</sub>	CH <sub>3</sub>	C <sub>2</sub> H <sub>5</sub>	84	87-88 (1.5)	1.1660	1.4319	50.08	49.93	13.95	C <sub>7</sub> H <sub>13</sub> NO <sub>3</sub> P	13.76
CH <sub>3</sub>	CH <sub>3</sub>	iso-C <sub>3</sub> H <sub>7</sub>	62	75-76 (0.4)	1.1050	1.4299	50.17	59.18	12.31	C <sub>9</sub> H <sub>19</sub> NO <sub>3</sub> P	12.24
CH <sub>3</sub>	C <sub>2</sub> H <sub>5</sub>	C <sub>2</sub> H <sub>5</sub>	55	94-95 (0.4)	1.1348	1.4333	54.81	54.57	13.19	C <sub>8</sub> H <sub>17</sub> NO <sub>3</sub> P	12.95
CH <sub>3</sub>	C <sub>2</sub> H <sub>5</sub>	iso-C <sub>3</sub> H <sub>7</sub>	50	90-91 (0.3)	1.0730	1.4285	64.12	63.80	11.63	C <sub>10</sub> H <sub>21</sub> NO <sub>3</sub> P	11.59
C <sub>2</sub> H <sub>5</sub>	CH <sub>3</sub>	CH <sub>3</sub>	50	71-72 (0.4)	1.2160	1.4343	45.27	45.33	14.33	C <sub>6</sub> H <sub>13</sub> NO <sub>3</sub> P	14.01
C <sub>2</sub> H <sub>5</sub>	CH <sub>3</sub>	C <sub>2</sub> H <sub>5</sub>	63	83-84 (0.5)	1.1310	1.4301	54.63	54.57	13.23	C <sub>8</sub> H <sub>17</sub> NO <sub>3</sub> P	12.95
C <sub>2</sub> H <sub>5</sub>	CH <sub>3</sub>	C <sub>2</sub> H <sub>5</sub>	85	91-92 (0.7)	1.0770	1.4277	63.81	63.80	11.51	C <sub>10</sub> H <sub>21</sub> NO <sub>3</sub> P	11.59
iso-C <sub>3</sub> H <sub>7</sub>	CH <sub>3</sub>	iso-C <sub>3</sub> H <sub>7</sub>	57	114-115 (3)	1.1657	1.4309	49.99	49.95	13.68	C <sub>7</sub> H <sub>15</sub> NO <sub>3</sub> P	13.76
iso-C <sub>3</sub> H <sub>7</sub>	CH <sub>3</sub>	CH <sub>3</sub>	56	98-99 (1.5)	1.1041	1.4292	59.14	59.18	12.42	C <sub>9</sub> H <sub>19</sub> NO <sub>3</sub> P	12.24
iso-C <sub>3</sub> H <sub>7</sub>	CH <sub>3</sub>	C <sub>2</sub> H <sub>5</sub>	90	106-108 (1.5)	1.0520	1.4270	68.66	68.42	11.04	C <sub>11</sub> H <sub>23</sub> NO <sub>3</sub> P	11.01

SUB CODE: 07,06 / SUBM DATE: 10Jul65 / ORIG REF: 008 / OTH REF: 004

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ACC NR: AP6031382

SOURCE CODE: UR/0079/66/036/009/1636/1639

AUTHOR: Shokol, V. A.; Golik, G. A.; Libman, B. Ya.; Derkach, G. I.

ORG: Institute of Organic Chemistry, Academy of Sciences, UkrSSR (Institut organicheskoy khimii Akademii nauk UkrSSR)

TITLE: Monoalkylamides of alkyl methylphosphonates

SOURCE: Zhurnal obshchey khimii, v. 36, no. 9, 1966, 1636-1639

TOPIC TAGS: insecticide, ~~monoalkylamine-alkyl-methyl-phosphinate~~, ORGANIC AMIDE, PHOSPHONATE, PHOSPHORIC ACID

ABSTRACT: In a search for new insecticides, a series of monoalkylamides of alkyl methylphosphonates was obtained by the reaction of methylphosphonic acid chloride with primary amines in the presence of triethylamine in an ether solution at room temperature:



Composition and properties of the amides are given in the table.

UDC: 547.26'118

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ACC NR: AP6031382 Table 1. Monoalkylsalides of alkyl methylphosphonates

$\text{CH}_3\text{P}(\text{O})(\text{OR})\text{NHR}'$

R	R'	yield, %	bp (p, mm)	$d_4^{20}$	$n_D^{20}$
CH <sub>3</sub>	CH <sub>3</sub>	a, 37	72—73° (0.02)	1.1288	1.4423
CH <sub>3</sub>	C <sub>2</sub> H <sub>5</sub>	a, 58	78—79 (0.02)	1.0779	1.4402
CH <sub>3</sub>	н <sub>2</sub> о-C <sub>3</sub> H <sub>7</sub>	a, 42	81—83 (0.03)	1.0402	1.4373
CH <sub>3</sub>	н-C <sub>4</sub> H <sub>9</sub>	a, 36	95—96 (0.1)	1.0192	1.4424
C <sub>2</sub> H <sub>5</sub>	CH <sub>3</sub>	б, 82 (69)	86—88 (0.5)	1.0835	1.4390
C <sub>2</sub> H <sub>5</sub>	C <sub>2</sub> H <sub>5</sub>	б, 72	91—93 (0.4)	1.0482	1.4372
C <sub>2</sub> H <sub>5</sub>	н <sub>2</sub> о-C <sub>3</sub> H <sub>7</sub>	б, 78 (62)	66—67 (0.03)	0.9995	1.4347
C <sub>2</sub> H <sub>5</sub>	н-C <sub>4</sub> H <sub>9</sub> **	с, 54 (11)	100—101 (0.1)	0.9971	1.4400
iso-C <sub>3</sub> H <sub>7</sub>	CH <sub>3</sub>	б, 81 (58)	73—75 (0.06)	1.0372	1.4350
iso-C <sub>3</sub> H <sub>7</sub>	C <sub>2</sub> H <sub>5</sub>	б, 79	69—71 (0.03)	1.0109	1.4338
iso-C <sub>3</sub> H <sub>7</sub>	н <sub>2</sub> о-C <sub>3</sub> H <sub>7</sub>	б, 63	85—87 (0.07)	0.9863	1.4318
iso-C <sub>3</sub> H <sub>7</sub>	н-C <sub>4</sub> H <sub>9</sub>	с, 54 (13)	138—139 (11)	0.9712	1.4376

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ACC NR: AP6031382

Table 1. (Cont.)

MR <sub>2</sub>		found, %	formula	calculated
found	calc.			
28.89	29.13	N 11.43	C <sub>3</sub> H <sub>10</sub> NO <sub>2</sub> P	N 11.38
33.54	33.65	CH <sub>3</sub> O 22.53	C <sub>4</sub> H <sub>12</sub> NO <sub>2</sub> P	CH <sub>3</sub> O 22.59
38.12	38.36	CH <sub>3</sub> O 20.65	C <sub>5</sub> H <sub>14</sub> NO <sub>2</sub> P	CH <sub>3</sub> O 20.53
42.92	42.98	CH <sub>3</sub> O 18.74	C <sub>6</sub> H <sub>10</sub> NO <sub>2</sub> P	CH <sub>3</sub> O 18.79
33.32	33.65	N 10.21	C <sub>4</sub> H <sub>12</sub> NO <sub>2</sub> P	N 10.22
37.92	38.36	N 9.22; P 20.53	C <sub>5</sub> H <sub>14</sub> NO <sub>2</sub> P	N 9.27; P 20.49
43.08	42.98	P 18.59	C <sub>8</sub> H <sub>16</sub> NO <sub>2</sub> P	P 18.75
47.39	47.60	N 7.58	C <sub>7</sub> H <sub>18</sub> NO <sub>2</sub> P	N 7.81
38.03	38.36	N 9.34	C <sub>5</sub> H <sub>14</sub> NO <sub>2</sub> P	N 9.27
42.53	42.98	N 8.43	C <sub>8</sub> H <sub>16</sub> NO <sub>2</sub> P	N 8.48
47.11	47.60	N 7.99; P 17.34	C <sub>7</sub> H <sub>18</sub> NO <sub>2</sub> P	N 8.01; P 17.28
52.13	52.22	N 7.28; P 16.04	C <sub>8</sub> H <sub>20</sub> NO <sub>2</sub> P	N 7.25; P 16.05

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5.3610

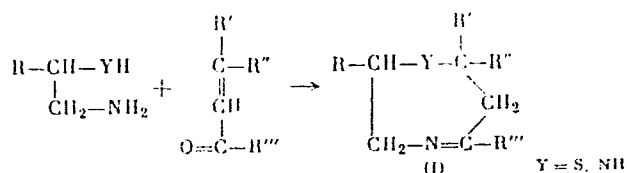
78303  
SOV/79-30-3-57/69

AUTHORS: Mushkalo, L. K., Shokol, Z. I.

TITLE: Condensation of Unsaturated Carbonyl Compounds and  $\beta$ -Haloketones With  $\beta$ -Aminoethylmercaptan and Ethylenediamine Derivatives. II

PERIODICAL: Zhurnal obshchey khimii, 1960, Vol 30, Nr 3, pp 1023-1028 (USSR)

ABSTRACT: New seven-membered heterocyclic bases were synthesized by the condensation of 1,2-aminothiols and 1,2-diamines with  $\alpha$ ,  $\beta$ -unsaturated ketones.

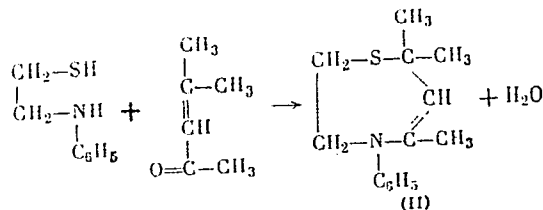


Card 1/4



CONDENSATION OF UNSATURATED CARBONYL  
 Compounds and  $\beta$ -Haloketones With  
 $\beta$ -Aminoethylmercaptan and Ethylenediamine  
 Derivatives. II

30V/79-30-3-57/69



The following new compounds were obtained: 2,5,7,7-tetra-  
 methyltetrahydrohepta-1,4-thiazine, obtained (41%) by  
 condensation of 2-mercaptopropylamine with mesityl oxide  
 on heating the reaction mixture on a water bath for 10-12  
 hr,  $d_4^{20}$  0.9837,  $n_D^{20}$  1.4970; 7-methyl-5,7-diethyltetrahy-  
 drohepta-1,4-thiazine, obtained (83%) by condensation of  
 $\beta$ -aminoethylmercaptan with 3-methylhepten-3-one-5, on  
 heating the reaction mixture in a sealed tube on a boiling  
 water bath, bp 89-90° (3 mm),  $d_4^{18}$  0.9870,  $n_D^{18}$  1.5008;

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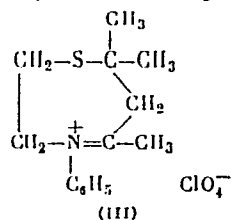
Condensation of Unsaturated Carbonyl  
Compounds and  $\beta$ -Haloketones With  
 $\beta$ -Aminoethylmercaptan and Ethylenediamine  
Derivatives. II

78303

SOV/79-30-3-57/69

5,7,7-trimethyl-4-phenyltetrahydrohepta-1,4-thiazine,  
obtained (91%) by condensation of  $\beta$ -phenylaminoethyl-  
mercaptan with mesityl oxide,  $d_4^{15}$  1.0720,  $n_D^{15}$  1.5601;

It is unstable and decomposes on distilling under  
vacuum. It was purified by conversion into the per-  
chlorate:



The base was obtained by treatment with aqueous KOH.  
7-Methyl-5,7-diethyltetrahydrohepta-1,4-diazine was  
obtained (60%) by condensation of ethylenediamine

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with 3-methylhepten-3-one-5, bp 93-95° (5 mm),

Condensation of Unsaturated Carbonyl  
Compounds and  $\beta$ -Haloketones With  
 $\beta$ -Aminoethylmercaptan and Ethylenediamine  
Derivatives. II

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SOV/79-30-3-57/69

$d_4^{20}$  0.9298,  $n_D^{20}$  1.4850. There are 3 references, 2  
German, 1 Soviet.

ASSOCIATION: Kiev State University (Kiyevskiy gosudarstvennyy  
universitet)

SUBMITTED: January 19, 1959

Card 4/4

MUSHEKALO, L.K.; SHOKOL, Z.I.

Cyanine dyes from seven-link heterocyclic systems. Part 3:  
Merocyanines and thiocyanines in the series of tetrahydrohepta-  
1,4-thiazine and tetrahydrohepta-1,4-diazine. Ukr.khim.zhur.  
27 no.3:372-379 '61. (MIRA 14:11)

1. Kiyevskiy gosudarstvennyy universitet imeni T.G.Shevchenko,  
kafedra organicheskoy khimii.  
(Merocyanines)  
(Cyanines)

SHANTS, E.I., TAICVA, B.M., KURGANSLAYA, T.E., SHOKOLOVA, T.M. AND  
YAKOVENKO, V.M.

SHOKOLOVA, T.M.

Kazakh State University named for S. M. KIROV, Alma-Ata.  
Microbiological investigation of Lake "Teresken". Introduction.  
SO: MIKROBIOLOGIA, Vol. 20, No. 6, Nov/Dec 51.

KAMINSKIY, B.I.; SHOKOMOLOV, I.

Perturbations in the system  $\xi$  Ursae Majoris. Uch.zap.Tadzh.un.  
18:44-51 '58. (MIRA 14:7)

1. Tadjhikskiy Gosudarstvennyy universitet imeni V.I.Lenina,  
Stalinabad.  
(Ursa Major) (Problem of three bodies) (Perturbation)

GEROL'SHAYA, I.S., kand. tekhn. nauk; SARYCHEVA, N.P., kand. tekhn. nauk;  
CHOKOREV, A.M., inzh.

Experimental washing and scavenging booth for locomotives.  
Transp. stroit. 14 no.9:30-32 S '64 (MIRA 18:1)

SHOKOREVA, L., kand.iskusstvovedcheskikh nauk

How to take care of your voice. Prof.-tekh. obr. 19 no.6:28-29  
Je '62. (MIRA 15:7)

(Voice--Care and hygiene)



SOV/92-58-1-17/22

AUTHOR:

Shokorov, B. I.

TITLE:

Automatic Float Control for Pumping Petroleum out of a Measuring Tank  
(Poplavkovyy avtomat otkachki nefti iz mernika)

PERIODICAL:

Neftyanik, 1958, Nr 1, pp. 26-27 (USSR)

ABSTRACT:

The author states that the existing automatic devices, designated AO-1 and AO-2, which are used for pumping petroleum out a gager tank have a number of defects. Therefore, the oilfields of the Tartar Republic prefer to use the mercury transducers developed by Stomat in for this purpose. However, these transducers are expensive, and that is why M. G. Mulyukov, operator of the Al'met'yevneft' (Petroleum Production Administration), suggested that an automatic float device with a mechanically operating transducer should be used for this purpose. The author shows this device in a sketch, explains how it works, and enumerates its different parts. This device can be easily built in an oilfield workshop and its cost will not exceed 110 rubles. It is estimated that the intro-

Card 1/2

SHOKOT'KO, L.P.

Processing of textile fabrics for the imparting of crease - and shrink-resistant properties. Leh.prom. no.3:20-23 Je - Ag '62. (MIRA 16:2)

1. Khersonskiy khlopchatobumazhnyy kombinat.  
(Textile finishing)

SHOKOT'KO, L.P.

Improving the wear resistance of viscose and blended fabrics.  
Leh. prom. no.2:30-31 Ap-Je'64 (MIRA 17:7)

VOLGZHANINOV, Yu.I. (Kiyev); SHOKET'KO, S.G. (Kiyev)

Using the photoelastic method in investigating the stressed state  
around elliptical holes in cylindrical shells. Prikl. mekh. 1  
no.8:63-67 '65. (MIRA 18:9)

1. Kiyevskiy gosudarstvennyy universitet.

LANTURH-LYASHCHENKO, A.I. (Kiyev); SHOKOT'KO, S.G. (Kiyev)

Investigating stressed state of a continuous wall girder. Prikl.mekh.  
1 no.7:127-131 '65. (MIRA 18:8)

1. Kiyevskiy avtomobil'no-dorozhnyy institut i Kiyevskiy gosudarstvennyy universitet.

S/145/62/000/001/006/010  
D262/D308

AUTHOR: Shokotov, N.K., Assistant

TITLE: Results of experimental investigations of the working process of a combined engine

PERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy. Mashinostroyeniye, no. 1, 1962, 75 - 94

TEXT: The combined engine used for the experiments consisted of the section of Diesel engine 16ChN24/27 (16ChN24/27), factory marking -70 (D-70), a turbine, and a supercharger. The following tests were made and the results recorded in graphical form and analyzed: a) Effect of the back pressure at the engine outlet on the efficiency of the combined plant, b) effect of the air excess coefficient  $\alpha$  on the plant efficiency for constant and variable supercharging pressures, c) effect of the air temperature at the engine inlet on the plant efficiency. General conclusions: Analysis of the effective efficiency of the plant by passing from the thermodynamic cycle to the actual one, taking into account the experimental data and all factors that distinguish these two cycles, allows: 1) To investiga-  
Card 1/2 ✓

Results of experimental investigations... S/145/62/000/001/006/010  
D262/D308

te the formation of the effective efficiency of the installations,  
2) to obtain comparative qualitative estimates of the influence of  
individual factors on the efficiency of the installation, 3) to esti-  
mate the methods of further improvements in fuel economy. There are  
16 figures.

ASSOCIATION: Khar'kovskiy politekhnicheskiy institut (Khar'kov  
Polytechnic Institute)

SUBMITTED: September 25, 1961

Card 2/2

SHOKOTOV, N.K., assistent

Results of experimental investigations of the performance of a  
four-stroke combined engine. Izv.vys.ucheb.zav.; mashinostr.  
no.1:75-94 '62. (MIRA 15:4)

1. Khar'kovskiy politekhnicheskii institut.  
(Diesel engines--Testing)



S/263/62/000/014/014/016  
1007/1207

AUTHOR: Shokotov, N. K.

TITLE: The influence of excess-air coefficient on the basic performance of a combined (diesel-gas turbine) unit

PERIODICAL: Referativnyy zhurnal, otdel'nyy vypusk. 42. Silovyye ustaniovk, no. 14, 1962, 61, abstract 42.14.383 (Tr. Khar'kovsk. in-ta inzh. zh.-d. transp, no. 43, 1961, 96-108)

TEXT: Proceeding from experimental data the author studies the dependence of the performance of a combined (diesel-gas turbine) unit on the value of the excess-air coefficient. The excess-air coefficient was found to affect the level and nature of variation of the combined unit; this variation leads to changes in the indicated efficiency of the diesel engine and in the share of excess work of the turbine in the total work of the combined unit. The exact nature of the relationship between a series of coefficients necessary for the computation and analysis of the indicated and actual performance of a combined power set for different values of the excess-air coefficient is established theoretically.

[Abstracter's note: Complete translation.]

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Card 1/1

SHOKOTOV, N.K., inzh.

Calculational and experimental determination of reserves for increasing the efficiency of the 16ChN24/27 diesel engine. Teplovoz.i sud.dvig. no.3:102-124 '62. (MIRA 16:2)  
(Diesel locomotives)

SHOKOTOV, N.K., inzh.

Coefficient of effective heat emission and relative losses in  
the cooling system using load characteristics. Teplovoz.i sud.  
dvig. no.3:31-43 '62. (MIRA 16:2)  
(Gas and oil engines) (Heat-Transmission)

S/273/63/000/001/006/013  
A052/A126

AUTHORS: Shokotov, N.K., Oleynik, V.I.

TITLE: Supercharge pressure selection as a reserve to raise the combined engine economy

PERIODICAL: Referativnyy zhurnal, otdel'nyy vypusk, 39. Dvigateli vnutrennego sgoraniya, no. 1, 1963, 17, abstract 1.39.103 (Tr. Khar'kovsk. in-ta inzh. zh.-d. transp., no. 50, 1961, 88 - 98).

TEXT: The problem of the effect of the excess air coefficient  $\alpha$  on the economy of a turbocharged diesel is considered for the case when  $\alpha$  changes as a result of the charge pressure. The investigations have established that the increase in the economy of a combined unit with the increase of  $\alpha$  results from an improved indicated process of the piston engine. ✓

[Abstracter's note: Complete translation]

Card 1/1

HO KCTOV, N.K., kand.tekhn.nauk; D'YACHENKO, V.G., inzh.

Superfluous operation of a turbine and effective efficiency of  
a composite system. Energomashinostroyeniye IC no.1:17-21 Ja  
'64. (MIRA 17:4)

KRYZHANOVSKAYA, I.A., kand. tekhn. nauk; MIRAK'YAN, V.M., inzh.; SHOKOTOVA, B.G.,  
inzh.; KHOLODNYY, A.G., inzh.

Hydration of clinker alkali minerals. Tsement 31 no.5:10-11 S-O '65.  
(MIRA 18:10)

1. Vsesoyuznyy institut po proyektirovaniyu i nauchno-issledovatel'-  
skim rabotam "Yuzhgiprotsement".

KRZHYZHANSKAYA, I.A.; GOLDSCHMIDT, E.M.; KRIULIN, V.N.; KUKOLEV, L.G.;  
NYVKIND, N.D.; SHOKOTOVA, B.G.

Properties of the dust of rotary kilns and ways of using it.  
Trudy Iuzhgiprotsementa no.4:40-54 1963.

(MIRA 17:11)

SYRKIN, Ya.M.; GOL'DSHMIDT, E.M.; SHOKOTOVA, B.G.; RYVKIND, N.D.

Properties of dust and ways of using it. TSement 27 no. 2:11-12  
Mr-Ap '61. (MIRA 14:5)  
(Cement plants) (Salvage (Waste, etc.))



SKLIVANOV, I.I., inzh.; BURGER, A.I., inzh.; IVANOV, A.I., inzh.,  
retsenzent; SHOKOV, A.I., inzh., retsenzent; TIMOFEYEV, V.S.,  
inzh., nauchnyy red.; LEKHITSIND, A.M., inzh., nauchnyy red.;  
KAPLAN, M.Ya., red.izd-va; PUL'KINA, Ye.A., tekhn.red.

[Building machinery] Stroitel'nye mashiny. Leningrad, Gos.  
izd-vo lit-ry po stroit., arkhitekt. i stroit.materialam, 1958.  
310 p. (MIRA 12:6)

(Building machinery)

84651

5.3300 only 2209, 1285

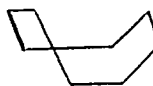
S/O20/60/133/005/032/034/XX  
B016/B060

AUTHORS: Kazanskiy, B. A., Academician, Shokova, E. A., Khromov, S. I.,  
Aleksanyan, V. T., and Sterin, Kh. Ye.

TITLE: Contact Conversions of Cyclooctane in the Presence of  
Platinized Coal

PERIODICAL: Doklady Akademii nauk SSSR, 1960, Vol. 133, No. 5,  
pp. 1090 - 1093

TEXT: The authors wanted to find out the behavior of polymethylenes of average ring size on platinized coal at lower temperatures than those applied by V. Prelog (Ref. 1). Moreover, they wanted to repeat the incomplete work of N. D. Zelinskiy and G. I. Freyman (Ref. 3). According to the latest notions, cyclooctane can principally exist in two most stable forms:



X

Card 1/3

84651

Contact Conversions of Cyclooctane in the  
Presence of Platinized Coal

S/O20/60/133/005/032/034/XX  
B016/B060

The amount of (II) in cyclooctane is probably very small. In the centrosymmetric form (I), the four equatorial hydrogen atoms are placed higher than the central ring plane, whereas other four of them are placed below this plane. When any pair of these atoms in 1,5-position separates, the transannular C-C bond may form and cis-bicyclo-(0,3,3)-octane-(cis-pentalane) may result. In this work, the authors examined the conversions of cyclooctane on platinized coal at 310° in the presence and in the absence of hydrogen. A quantitative conversion of cyclooctane took place in both cases. In the absence of hydrogen, cis-bicyclo-(0,3,3)-octane-(cis-pentalane) developed in an amount of about 51 wt% of the catalyzate. Appreciable amounts were also obtained of trans-1-methyl-2-ethyl cyclopentane (about 23%) and n-propyl cyclopentane (about 20%), as well as smaller amounts (about 6%) of 4-methyl heptane. Basing on the reaction products, the authors set up a scheme of this reaction. Apparently, the first stage is the formation of cis-pentalane which then undergoes hydrogenolysis under the action of the resulting hydrogen. Trans-1-methyl-2-ethyl cyclopentane and n-propyl cyclopentane thus result. 4-methyl-1-heptane is formed by the hydrogenolysis of the latter. The same substances were formed in the presence of hydrogen, but the quantitative proportion was different. This

Card 2/3

84651

S/020/60/133/005/032/034/XX  
B016/B060

Contact Conversions of Cyclooctane in the Presence of Platinized Coal

is explained by a more intense hydrogenolysis of the five-membered ring in the presence of hydrogen. At the same time, the hydrogenolysis of pentalane and n-propyl cyclopentane takes place more smoothly than that of 1-methyl-2-ethyl cyclopentane. The authors were not able to detect methyl cycloheptane in the reaction products (as conversely stated in Ref. 3). About 1 - 2% of aromatic hydrocarbons were obtained: toluene, ethyl benzene, and o-xylene. Tables 1 - 4 collect the results of distillation, the individual fractions together with their constants, and the quantitative proportions of the resulting substances. They were determined from the Raman spectra (monograph by G. S. Landsberg, B. A. Kazanskiy, and others, Ref. 9) of the fractions. A paper by A. L. Liberman and others (Ref. 10) is mentioned. There are 4 tables and 11 references: 6 Soviet, 3 US, 1 Swiss, and 1 French.

ASSOCIATION: Moskovskiy gosudarstvennyy universitet im. M. V. Lomonosova (Moscow State University imeni M. V. Lomonosov). Komissiya po spektroskopii Akademii nauk SSSR (Commission for Spectroscopy of the Academy of Sciences USSR)

SUBMITTED: May 11, 1960

Card 3/3

SHOKOVA, E.A.; KHROMOV, S.I.; STERIN, Kh.Ye.; KAZANSKIY, B.A.

Contact conversions of cyclooctane in the presence of an alumina-chromium oxide catalyst. Neftskhimiia 1 no.1:28-32 Ja-F '61.  
(MIRA 15:2)

1. Moskovskiy gosudarstvennyy universitet, kafedra khimiia nefi  
i komissiya po spektroskopii AN SSSR.  
(Cyclooctane) (Catalysts)

SHOKOVA, E.A.; KHROMOV, S.I.; KAZANSKIY, B.A.

Catalytic method for preparing cis-bicyclo-(0, 3, 3)-octane.  
Neftekhimia 1 no.3:353-355 My-Je '61. (MIRA 16:11)

1. Moskovskiy gosudarstvenny universitet imeni Lomonosova,  
kafedra khimii nefti.

S/020/61/136/005/019/032  
B103/B208

AUTHORS: Khromov, S. I., Shokova, E. A., Sterin, Kh. Ye., and  
B. A. Kazanskiy, Academician

TITLE: Contact conversions of cyclooctane in the presence of a  
nickel catalyst

PERIODICAL: Doklady Akademii nauk SSSR, v. 136, no. 5, 1961, 1112-1115

TEXT: The authors studied the conversions of cyclooctane on a catalyst consisting of 50% nickel on kieselguhr, a) at 250°C, and b) at 250°C in an intense hydrogen stream. In case a) ~ 61% of cyclooctane was converted, in case b) ~ 81%. The composition of the fractions obtained by distillation of the final catalyzates was studied by means of Raman spectra (methods described previously in Ref. 7). The authors concluded from the results that three processes take place at the rather mild temperatures applied: 1) hydrogenolysis of the 8-membered ring giving n-octane (in analogy to an identical process with substances with smaller rings, Refs. 2-5), which was detected for the first time by the

Card 1/6

Contact conversions of cyclooctane ...

S/020/61/136/005/019/032  
B103/B208

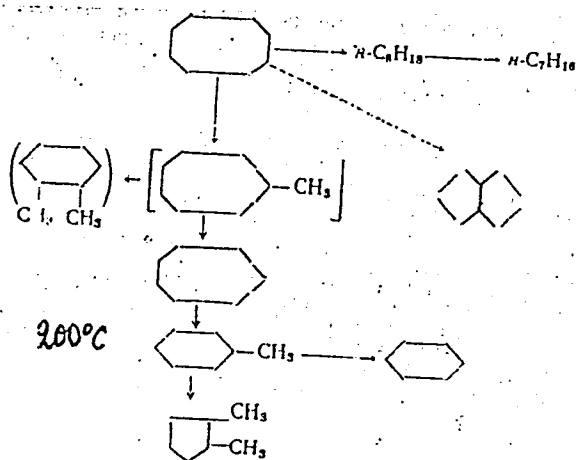
authors; 2) a transannular dehydrogenation which yields cis-pentalane, and 3) a stepwise isomerization of cyclooctane to compounds with 7-, 6-, and 5-membered rings. At 200°C, the following compounds were formed: n-heptane, cyclohexane, methyl cyclohexane, cyclopentane, and cis-1,2-dimethyl cyclopentane. The latter may be formed as a result of the afore-mentioned isomerization. About 46.5 wt% fall to the share of the unreacted cyclooctane. Very small quantities of cis-bicyclo-(0,3,3)-octane-(cis-pentalane) were also found. On the basis of these results the authors suggested the reaction scheme at 200°C.

Card 2/6



Contact conversions of cyclooctane ...

S/020/61/136/005/019/032  
B103/B208

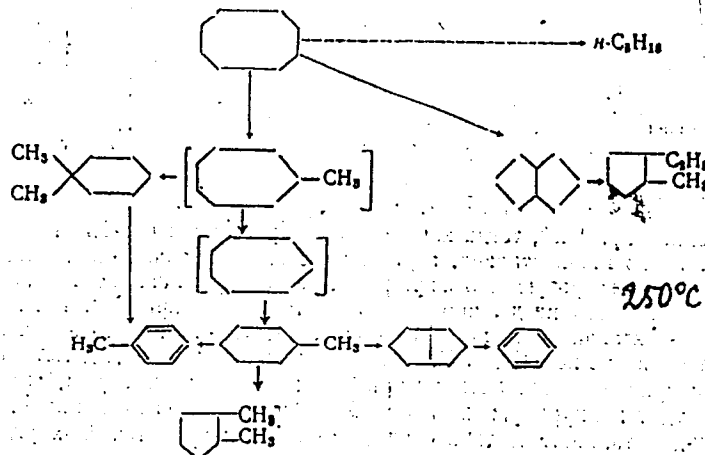


Card 3/6

S/020/61/136/005/019/032  
B103/B208

Contact conversions of cyclooctane ...

The catalyzate consisted at 250°C of ~ 8 wt% of cis-pentalane, ~ 11% toluene, and ~ 2% benzene (apart from the unreacted cyclooctane). Besides, the following compounds were obtained: methyl cyclohexane, cyclohexane, cis-1,2-dimethyl cyclopentane, and gem-dimethyl cyclohexane.



Card 4/6

Contact conversions of cyclooctane ...

S/020/61/136/005/019/032  
B103/B208

The reaction temperature was found to play an important part in the quantitative interrelation of the afore-mentioned three processes at 200 and 250°C. Marked hydrogenolysis of cyclooctane occurs only at 200°C, and practically ends at 250°C. The formation of pentalane, on the other hand, is characteristic mainly of 250°C. The ring isomerization which is accompanied by hydrocracking takes place both at 200 and 250°C, but is in addition complicated at 250°C by an aromatization of hexamethylene hydrocarbons. The authors assume that small quantities of cis-1,2-dimethyl cyclopentene are formed at 250°C owing to competitive processes: from methyl cyclohexane, the latter compound is formed on the one hand, benzene and toluene on the other hand, with the equilibrium being shifted toward the latter two. No aromatization occurs at 200°C. The transannular dehydrogenation of cyclooctane to cis-pentalane, and the isomerization of the hydrocarbons also take place on platinized carbon, but at a higher temperature (310°C, Refs. 6,7). The experiments of the authors showed that this does not apply to cyclooctane at 200-250°C. There are 4 tables and 8 references: 4 Soviet-bloc and 2 non-Soviet-bloc. ✓

Card 5/6

Contact conversions of cyclooctane ...

S/020/61/136/005/019/032  
B103/B208

ASSOCIATION: Moskovskiy gosudarstvennyy universitet im. M. V.  
Lomonosova (Moscow State University imeni M. V. Lomonosov)

SUBMITTED: November 11, 1960

Card 6/6

SHOKOVA, E. A.

Dissertation defended for the degree of Candidate of Chemical Sciences at the Institute of Hetrochemical Synthesis: in 1962:

"Catalytic Conversions of Hydrocarbon of Moderate Cycle Size in the Presence of Hydro-dehydrogenation Catalysts."

Vest. Akad. Nauk SSSR. No. 4, Moscow, 1963, pages 119-145

BALENGOVA, Ye.S.; KHROMOV, S.I.; SHOKOVA, E.A.; KUCHERYAVAYA, N.N.;  
STERIN, Kh.Ye.; KAZANSKIY, B.A.

Catalytic conversions of cycloheptane. Neftekhimiia 2 no.3:  
275-279 My-Je '62. (MIRA 15:8)

1. Moskovskiy gosudarstvennyy universitet imeni Lomonosova i  
Komissiya po spektroskopii AN SSSR.  
(Cycloheptane) (Catalysis)

SHKOVA, E.A.; KHROMOV, S.I.; BALENKOVA, Ye.S.; BOBROV, A.V.; STERIN,  
Kh.Ye.; KAZANSKIY, B.A.

Catalytic conversions of cyclononane and cyclodecane in the  
presence of nickel catalyst. Neftekhimii 2 no.3:280-287  
My-Je '62. (MIRA 15:8)

1. Moskovskiy gosudarstvennyy universitet imeni Lomonosova i  
Komissiya po spektroskopii AN SSSR.  
(Cyclononane) (Cyclodecane) (Nickel catalysts)

BIDENKO, V.P.; KOSOL, G.S.; SHKOVA, R.I.

Physiological changes in the leaves of some plants in relation to their acclimatization in desert. Izv. AN Kazakh. SSR. Ser. biol. nauk 2 no.3:37-47 My-Je '64. (MIRA 17:10)



SAR... ..  
... ..

SHOKUL A.A.

... ..  
... .. (MIRA 12410)

SHUKUMOV,AMED Khafanovich; METUKHOVA, I.T., red.

[Our innovators promote technical development; practice of the Dokshukino Acetone Plant] Nashi ratsionalizatory v bor'be za tekhnicheskii progress; iz opyta raboty Dokshukinskogo atsetonovogo zavoda. Mal'chik, Kabardino-Balkarskoe knizhnoe izd-vo, 1963. 9 p. (MIRA 17:10)

SHOKUN, V., kand.ekonom.nauk

Economical expenditure of wage funds is an important means for reducing  
production costs. Den.i kred. 19 no.6:49-52 Je '61. (MIRA 14:6)

1. Zamestitel' upravlyayushchego Ukrainskoy respublikanskoy kontoroy  
Gosbanka.

(Ukraine—Wages)

(Costs, Industrial)

SHOKUN, V.K.

Some problems of further consolidation of business accounting in coal mines. Ugol' Ukr. 4 no.2:38-41 F '60.  
(MIRA 13:6)

(Bonus systems) (Coal mines--Accounting)

SHOKUR, A.A.

Case of myeloma combined with thyrotoxicosis. Vrach. delo no.9:134-  
135 '61. (MIRA 14:12)

1. Gematologicheskoye otdeleniye (nauchnyy rukovoditel' - prof. B.S.  
Shklyar) klinicheskoy oblastnoy bol'nitsy imeni N.I.Pirogova, Vinnitsa.  
(MARROW--TUMORS) (THYROID GLAND--DISEASES)

SHOKUROV, A.P.; BADER, O.N.

Paleolithic site on the Belaya River. Vop. geol. vost. okr. Kus.  
platf. i Iuzh. Urala no. 5:139-144 '60. (MIRA 14:5)  
(Bashkiria—Stone age)

SHOKUROV, M.M., polkovnik tekhnicheskoy sluzhby

Require more from your rated specialists. Vest.pctivovo zd.obor.  
no.1:47-49 Ja '61. (MIRA 14:2)  
(Radio, Military)

SHOKUROV, S.

Deficiencies in planning results in nonpayments to the budget. Fin.SSSR  
38 no.2:73-76 F '64. (MIRA 17:2)

1. Zamestitel' zaveduyushchego Smolenskim promyshlennym oblastnym fi-  
nansovym otделom.



SHOL', E.

Connection between Muntz theorem and orthogonal expansions. Dokl.  
AN SSSR 109 no.5:910-912 Ag. 1956. (MLRA 9:10)

1. Predstavleno akademikom A.N. Kolmogorovym.  
(Functions, Orthogonal)

09 17 1971

Admission: none in the two-wheeled camel. Trudy Inst. Sticid.  
AN Kazakh. 1971. 4:174-175. 1971

(MIRA 17:00)

MUZGIN, S.S.; SHOL', O.A.

Investigating feeder cable equipment of self-propelled mining  
machines. Trudy Inst. gor. dela AN Kazakh, SSR 17:93-101 '65.  
(MIRA 18:9)

SHCL', O.A.

Ways of improving power supply to mine sections using self-propelled equipment. Trudy inst. gor. neda Ali Kazakh. SSR 17: 119-127 '65. (MIRA 18:9)