

GEFTER, V.A.; ZORIKHINA, V.I.

Epidemiological investigations of ascariasis using immunological and other methods. Med. paras. i paraz. bol. 28 no. 4: 394-400 J1-Ag (MIRA 12:12) '59.

1. Iz sektora eksperimental'noy parasitologii Instituta malyarii, meditsinskoy parasitologii i gel'mintologii Ministerstva zdavookhraneniya SSSR (dir. instituta - prof. V.P. Pod'yapol'skaya) i sanitarno-epidemiologicheskoy stantsii Moskovsko-Okruzhnoy zheleznoy dorogi (nachal'nik stantsii I.I. Mogilevskiy).
(ASCARIASIS epidemiology)

GEFTER, V.A.

Use of an electric dust collector for the helminthological investigation of dust from household objects. Lab.delo 6 no.3: 53-56 My-Je '60. (MIRA 13:7)

1. Sanitarno-epidemiologicheskaya stantsiya Moskovskoy okrugnoy shelesnoy dorogi (nachal'nik I.I. Mogilevskiy).
(DUST COLLECTORS) (WORMS, INTESTINAL AND PARASITIC--RESEARCH)

GEFTER, V.A.

New Soviet preparation nitrosorbid in the treatment of patients
with stenocardia. Terap.arkh. 32 no.10:76-79 '60. (MIRA 14:1)

1. Iz kafedry fakul'tetskoy terapii (zav. - prof. A.I. Gefter)
Gor'kovskogo meditsinskogo instituta.
(ANGINA PECTORIS) (MOTOR DRUGS)

GEFTER, V.A., stud.

Value of dynamic ballistocardiography in the treatment of certain heart diseases. Kaz.med. zhur. no.1:71-72 Ja-F'61.
(MIRA 16:11)

1. Kafedra fakul'tetskoy terapii (nauchnyy rukovoditel' raboty-kand.med.nauk A.P.Matusova) Gor'kovskogo meditsinskogo instituta im. S.M.Kirova.

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GETTER, V.A. (Moskva)

Methodology of teaching epidemiology in a medical school. Fel'd.
i akush. 27 no.3:47-49 Mr '62. (MIRA 15:4)

(EPIDEMIOLOGY--STUDY AND TEACHING)

GEFTER, V.A.; SHIGINA, Ye.A.

Improvement of the method of sanitary helminthological
examination of soils. Med. parazit. i parazit. bol. 31 no.6:
742-744 N-D 162. (MIRA 17:11)

1. Iz parazitologicheskogo otdeleniya sanitarno-epidemi-
ologicheskoy stantsii Moskovsko-okruzhnogo otdeleniya Moskov-
skoy zheleznoy dorogi (nuchal'nik I.I. Mogilevskiy).

GEFTER, V.A.

Effect of nitrosorbid on the cardiovascular system in coronary insufficiency. Terap. arkh. 35 no.2:22-30'63. (MIRA 16:10)

1. Iz kafedry propedevtiki vnutrennikh bolezney (zav. - prof. K.G.Nikul'in) i kafedry fakul'tetskoy terapii (zav. - prof. A.I.Gefter) Gor'kovskogo meditsinskogo instituta imeni S.M. Kirova.

(CORONARY HEART DISEASE) (ANGINA PECTORIS)
(CARDIOVASCULAR AGENTS)

ГОДИН, В.А.

Helminth preparations for educational purposes. 1958.
Diel. paraz. i paraz. bol. 33 no. 2: 11-15. Sp. 162
(MIRA 1958)

1. Kafedra meditsinskoy parazitologii (prof. - 1958) -
prof. N.N. SSSR prof. Sh. S. Meditsinskij Institut na
Institute usovershenstvovaniya vrachey, Leningrad.

GEFTER, V.A.; NEMIROVSKAYA, O.I.

Gongylonemiasis in man. Med. paraz. i paraz. bol. 34 no.2:158-
163 Mr.-Ap '65. (MIRA 18:11)

1. Kafedra meditsinskoy parazitologii Tsentral'nogo instituta
usovershenstvovaniya vrachey, Moskva, i Klinicheskaya labora-
toriya khozyaystvenno-raschetnoy polikliniki Voronezha.

BARG, Ya.A., inzh.; GEFTER, V.I., inzh.; KRIVOSHEYEVA, S.G., inzh.

Design of diaphragm drives for electrical apparatus. Vest.
elektroprom. 32 no.8:69-71 Ag '61. (MIRA 14:8)
(Electric driving) (Pneumatic driving)

TIMOSHENKO, I.M.; GEFTER, V.I.; KRASHENITSA, A.A.

Type PFK-8301 cam reverser. Elek.i tepl.tiaga 6 no.1:30-31 Ja
'62. (MIRA 15:1)

1. Khar'kovskiy zavod "Elektrot'yazhmash".
(Diesel locomotives--Design and construction)

GETTER, Y.E.L.

~~Methyl- and ethyl-2-hydroxyethylphosphonic acids. E.I.~~
~~U.S.S.R. 101,654, Dec. 31, 1955. The acids are~~
~~obtained by the action of MeOH or EtOH on ethylene chloro-~~
~~phosphite and sepa. of the reaction products by usual~~
~~means.~~
M. H. S. S.

2

PM

GETTER, Y. L.

Here Vinyl phosphoric acid esters [?] P. L. Getter and M. I. Melnichuk, U.S.S.R. 164,285, Nov. 22, 1962. The same vinyl esters of phosphoric acids are also made to react with AcCl in the presence of a strong base, e.g., NEt_3 .

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GEFTER, YE I.

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

Abst Journal: Referat Zhur - Khimiya, No 19, 1956, 61599

Author: Gefter, Ye. L.

Institution: None

Title: Unsaturated Esters of the Acids of Phosphorus

Original

Periodicals: Uspekhi khimii, 1956, 25, No 2, 162-189

Abstract: A review. Bibliography, 134 titles.

Card 1/1

GEYTER, Ya. L.

Preparation of certain alkyl- β -oxyethylphosphoric acids.
Zhur.ob.khim. 26 no.5:1440-1442 My '56. (MIRA 9:9)

1.Nauchno-issledovatel'skiy institut plasticheskikh mass,
Moskva.

(Phosphoric acid)

Getten, E. L.

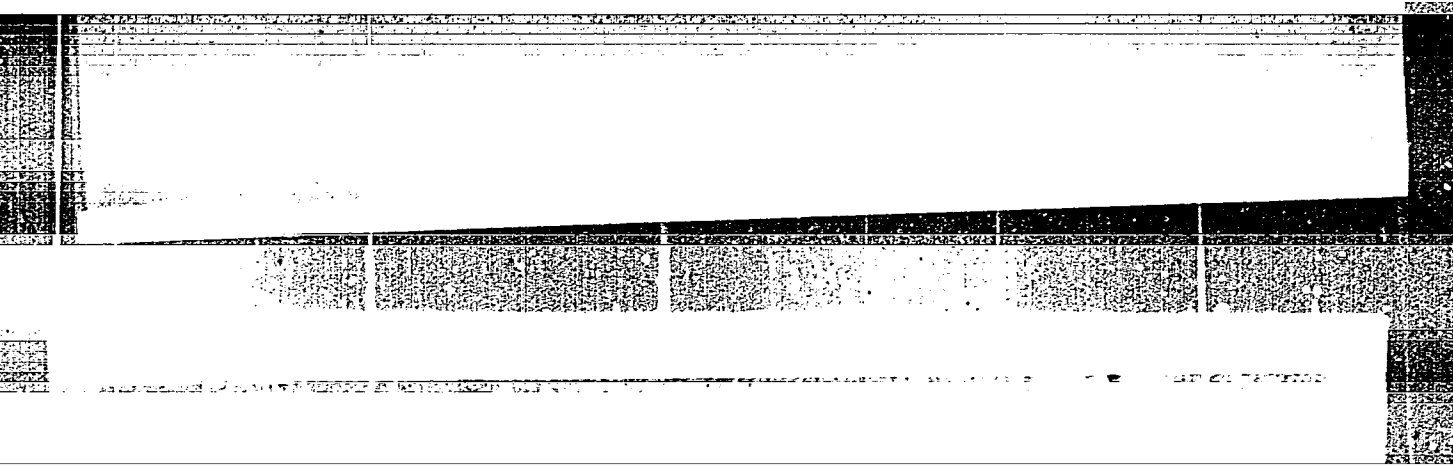
7
Phenyldichlorophosphine, E. L. Getten, U.S.S.R. 107, 266, Aug. 25, 1957. C_6H_5 is made to react with PCl_2 in the presence of $AlCl_3$. At the completion of the reaction excess PCl_2 is driven off, $AlCl_3$ fixed with pyridine, and $PhPCl_2$ distd. M. Hoeh

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GEFTER, Ye L.

"APPROVED FOR RELEASE: 08/23/2000

CIA-RDP86-00513R000514610006-8



APPROVED FOR RELEASE: 08/23/2000

CIA-RDP86-00513R000514610006-8"

20-114-3-25/60

AUTHORS: Geft'er. Ye. L., Kabachnik, M. I., Corresponding Member of the AN USSR

TITLE: The Production and Investigation of Some Vinyl Ethers of the Acids of Phosphorus (Sintez i issledovaniye vinilovykh efirov kislot fosfora)

PERIODICAL: Doklady Akademii Nauk SSSR, 1957, Vol. 114, Nr 3, pp. 541-544 (USSR)

ABSTRACT: The not substituted vinyl ethers which recently became known were for the first time synthesized by the dehydrochlorination of corresponding β -chloroethylic ethers. Somewhat later this was carried out by the interaction between acids of the trivalent phosphorus and chloroacetaldehyde according to Perkow. In the present paper a new method of synthesizing vinyl ethers of phosphorus acids is described which is based on the interaction between the chloranhydrides of these acids and acetaldehyde and triethylamine. In this case the authors proceeded from the following assumptions: - Kabachnik and Shepeleva, when studying the reaction of the chloranhydrides of the acids of the trivalent phosphorus, came to the conclusion that this

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20-114 3-25/60

The Production and Investigation of Some Vinyl Ethers of the Acids of Phosphorus

reaction is the first stage of the formation of the α -chlor-alkyl ethers of corresponding acids. At higher temperatures the latter are subjected to further modifications. The formation of the products connecting aldehyde to phosphorhalogenide was confirmed by Fayzullin and Trifonov by means of physico-chemical methods of analysis. The authors stated that the addition of a strong organic base to the aldehyde-halogenide-system of the phosphorus will lead the reaction in the direction of vinyl ethers of the acids of phosphorus, a fact which was confirmed by experiment. Furthermore, the structure of some of these vinyl-ethers was proved by the saponification of some of them in corresponding acids of phosphorus and by their re-etherification with acetic acid. This led to the formation of vinyl acetate. By means of the here described method the authors substituted a series of new vinyl ethers by phosphite, and furthermore they synthesized a series of phosphorus acid and finally trivinylphosphate. The yields from this reaction are relatively small, i.e. not more than 30 - 35 % of theory. The polymerization capacity is characteristic of the obtained vinyl ethers. From the data of table 2 it can be concluded that relatively low-molecular substances

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The Production and Investigation of Some Vinyl Ethers of the Acids of
Phosphorus ^{20-114-3-25/60}

of linear construction that is of ethers with only one double binding are formed. The ethers with 2 and 3 double bindings can be polymerized much more quickly. On this occasion spatially net-like polymers are formed which are insoluble in organic solvents. There are 2 tables and 10 references, 7 of which are Slavic.

ASSOCIATION: Scientific Research Institute for Plastic Substances and Institute for Elementary-Organic Compounds of the AN USSR (Nauchno-issledovatel'skiy institut plasticheskikh mass i Institut elementoorganicheskikh soyedineniy Akademii nauk SSSR)

SUBMITTED: February 7, 1957

Card 3/3

GETTER, Ye.L.

Synthesis and properties of diaryl esters of vinylphosphinic acid.
Khim. nauka i prom. 3 no.4:544 '58. (MIRA 11:10)
(Vinyl alcohol) (Phosphinic acid)

SOV/63-3-6-27/43

AUTHORS: Gefter, Ye.L., Pashkov, A.B., Lyustgarten, Ye.I.

TITLE: Investigations in the Field of Obtaining New Types of Phosphorus-Containing Cation-Exchange Resins (Issledovaniya v oblasti polucheniya novykh tipov fosforsoberzhashchikh kationo-obmennyykh smol)

PERIODICAL: Khimicheskaya nauka i promyshlennost'. 1958, Vol III, Nr 6, p 825, (USSR)

ABSTRACT: A method is described for obtaining a new type of cation-exchanging phosphorus-containing resins on the basis of di- β, β' -chloroethyl ester of the vinylphosphoric acid and divinylbenzene. There are 8 references, 3 of which are Soviet, 3 English, 1 German and 1 French.

ASSOCIATION: Nauchno-issledovatel'skiy institut plasticheskikh mass (Scientific Research Institute of Plastics)

SUBMITTED: April 16, 1958

Card 1/1

32-24-6-11/44

AUTHOR:

Gefter, Ye.L.

TITLE:

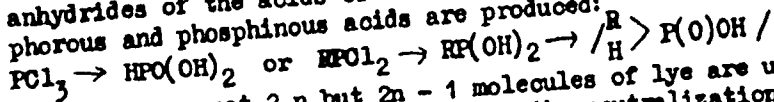
A Method of Analyzing Some Chloroanhydrides of Phosphoric Acid
(Metod analiza nekotorykh khlorangidridov kislot fosfora)

PERIODICAL:

Zavodskaya Laboratoriya, 1958, Vol. 24, Nr 6, pp. 691-691 (USSR)

ABSTRACT:

The chloroanhydrides of phosphoric acid are usually analyzed by conversion into sodium- or silver chlorides followed by the determination of chlorine. As, however, chlorine is mostly mobile in such chloroanhydrides, it is much more easily and more quickly determined by neutralization of the anhydride with lye and by re-titration. Determination takes 5-10 minutes and is easy because titration is sharp. From the analysis and the formulae for calculation it may be seen that by the neutralization of the chloroanhydrides of the acids of trivalent phosphorus, salts of phosphorous and phosphinous acids are produced:



in which case not 2 n but 2n - 1 molecules of lye are used per n atoms of chlorine in the course of the neutralization of the chloroanhydrides, which fact must be taken into account in final

Card 1/2

A Method of Analyzing Some Chloroanhydrides of Phosphoric
Acid

32-24-6-11/44

calculation. A table shows the analysis results obtained. There
is 1 table, and 1 reference, 1 of which is Soviet.

ASSOCIATION: Nauchno-issledovatel'skiy i proyektnyy institut plasticheskikh
mass (Scientific Research and Planning Institute for Plastics)

1. Chloroanhydrides--Analysis 2. Phosphoric acids--Chemical
properties 3. Chlorine--Determination

Card 2/2

GEFTER, Ye. L.

77-2-47/64

AUTHOR: Gefter, Ye. L.TITLE: Some Esters of γ -Chlorocrotyl alcohol (Nekotoryye slozhnyye efiry γ -khlorkrotilovogo spirta).

PERIODICAL: Zhurnal Obshchey Khimii, 1958, Vol. 28, Nr 2, pp. 495-497 (USSR).

ABSTRACT: The esters of the γ -chlorocrotyl alcohol, unknown with the exception of their acetates, became the basis of the present paper which investigates the influence of the γ -chlorocrotyl group on some properties of esters. The corresponding esters were obtained from the reaction with adipic-, sebacic-, thiopropionic acid and phthalic anhydride (in presence of p-toluene sulfonic acid) (table). The slowness in reaction and the bad yields of the phthalic anhydride are explained by the electronegativity of the γ -chlorocrotyl group. All mentioned esters can be distilled over in vacuum without polymerization to dryness, inspite of the presence of double bonds and high boiling points. The data on the boiling point, the flash point, and the specific volume resistance of the esters obtained and of certain n-butylesters of the corresponding dibasic acids are compared. Hence it appears that by the substitution of every butyl residue in the esters of dibasic acids with a γ -chlorocrotyl residue an increase of the boiling temperature by 10-15° (at 2-2,5 mm) and a reduction of the flash point by 10-20°

Card 1/2

Some Esters of γ -Chlorocrotyl alcohol.

79-2-47/64

as well as a great reduction of the specific volume resistance is effected. The flash point was determined according to Brenken, the specific volume resistance according to GOST 6581-53. There are 2 tables, and 4 Slavic references.

ASSOCIATION: Scientific Research Institute for Plastics (Nauchno-issledovatel'skiy institut plasticheskikh mass).

SUBMITTED: January 24, 1957.

AVAILABLE: Library of Congress.

Card 2/2

79-28-5-52/69

AUTHOR: Gefter, Ye. L.

TITLE: Improved Methods for the Synthesis of Phenyl-dichlorophosphine and of Dichloroanhydride of Phenylphosphinic Acid (Uluchshennyye metody sinteza fenildikhlorofosfina i dikhlorangidrida fenilfosfinovoy kisloty)

PERIODICAL: Zhurnal Obshchey Khimii, 1958, Vol. 28, Nr 5, pp. 1338-1340 (USSR)

ABSTRACT: Phenyl-dichlorophosphine and dichloroanhydride of phenylphosphinic acid are the most important intermediate products in the synthesis of different classes of organic organophosphorus compounds. The advantages for the synthesis of chlorine anhydrides have, however, various disadvantages. Phenyl-dichlorophosphine can be synthesized in different ways (ref 1). Two of the proposed methods are of practical importance: 1.- The conversion of benzene with phosphor-trichloride in the gas phase, which can, however, not be applied well because of the danger of inflammation and because of the great apparatus necessary for it. 2.- the simple conversion of benzene with phosphorus trichloride in the presence of aluminum chloride (refs 1,2),

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Improved Methods for the Synthesis of Phenyl-dichloro- 79-28-1-52/69
phosphine and of Dichloroanhydride of Phenylphosphinic
acid

which again is very practical because it necessitates the
dangerous operation of combing the catalyst as a catalyst
before the reaction of phenyl-dichlorophosphine. The best
yields in phenyl-dichlorophosphine amounting in this method
amounted to 78% (ref 2). The synthesis of dichloroanhydride
of phenylphosphinic acid can be realized by the oxidation
of the phenyl-dichlorophosphine with oxygen (very dangerous),
by chlorine and phosphor-pentoxide, by partial hydrolysis of
phenyl-tetrachlorophosphine, or by a treatment with sulfur
dioxide, and finally, by conversion of phenylphosphinic acid
with phosphor-pentachloride (ref 1). After the investigation on
of the most convenient mentioned synthesis methods **for the**
two chloroanhydrides, the authors found that the phenyl-
chlorophosphine can be obtained in a simple and harmless
way in better yields compared with those mentioned in
references. This method consists also in the conversion of
benzene with phosphorus trichloride in the presence of
aluminum chloride (at a mol ratio of 1:3:1); the catalyst
must, however, be bound to pyridine after the reaction had

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Improved Methods for the Synthesis of Phenylchloro- 79-28-5-52/69
phosphine and of Dichloroanhydride of Phenylphosphinic
Acid

been carried out, and the phenylchlorophosphine must be directly redistilled from the reaction flask in vacuum (yield 90 %) (ref 3). By the action of chlorine on the phenylchlorophosphine the phenyltetrachlorophosphine was obtained; in the conversion with sulfur dioxide the latter yielded the dichloroanhydride of phenylphosphinic acid (yield 90 %) (see the general scheme for the synthesis of the two chloroanhydrides). There are 3 references, 1 of which is Soviet.

ASSOCIATION: Nauchno-issledovatel'skiy institut plasticheskikh mass
(Scientific Research Institute for Plastics)

SUBMITTED: September 6, 1957

Card 3/3

SOV/72-28-7-40/64

AUTHOR: Geftter, Ye. L.

TITLE: Improved Method of the Synthesis of the Di- β, β' -Chloro-Ethyl Ester of β -Chloro-Ethyl Phosphinic Acid (Uluchshennyy metod sinteza di- β, β' -khloretilovogo estera β -khloretilfosfinovoy kisloty)

PERIODICAL: Zhurnal obshchey khimii, 1959, Vol. 28, Nr 7, pp. 1908-1909 (USSR)

ABSTRACT: Following the Arbuzov isomerization of tri- β, β', β'' -chloro-ethyl phosphite M. I. Kabachnik and P. A. Rossiyskaya obtained the β, β' -chloro-ethyl ester of the β -chloro-ethyl phosphinic acid (Ref 1). This reaction is, however, dangerous as at 150-160° it has almost an explosion character, because of the existing overheating. Up to 150° this reaction takes place slowly (in a yield of 40%). Besides the monomolecular mechanism also a step-like mechanism takes place which causes the formation of a great amount of an undistillable syrup (Ref 2). The author succeeded in removing the danger of explosion by the isomerization of the above mentioned phosphite, with vivid stirring in the presence of inert solvents

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SOV/79-28-7-10y64

Improved Method of the Synthesis of the Di- β,β' -Chloro-Ethyl Ester of β -Chloro-Ethyl Phosphinic Acid

(xylene, cumene) and at suited temperatures (maximum $150-160^{\circ}$). This way the overheating is avoided, the monomolecular course of reaction is secured and the yield of di- β,β' -chloro-ethyl ester of the above mentioned acid is increased (63-67 %). This harmless method makes accessible the dichloroanhydride of the β -chloro-ethyl phosphinic acid (Ref 2) and of the derivatives of β -chloro-ethyl phosphinic acid (Ref 3), as well as of vinyl-phosphinic acid (Refs 4, 3) in any quantities, which hitherto has been impossible. The results obtained in some typical experiments concerning this isomerization may be seen from the table. There are 1 table and 6 references, 4 of which are Soviet.

ASSOCIATION: Nauchno-issledovatel'skiy institut plasticheskikh mass
(Scientific Research Institute of Plastics)

SUBMITTED: June 11, 1957

1. Phosphinic acid esters--Synthesis
2. Phosphinic acid esters--Isomerism
3. Phosphinic acid esters--Chemical reactions
4. Chemical reactions--Hazards

Card 2/2

GEFFER, Ye.L.

Synthesis of di- β, β' -chloroethyl ester of vinylphosphinic acid.
Zhur.ob.khim. 28 no.9:2500-2502 S '58. (MIRA 11:11)

1. Nauchno-issledovatel'skiy institut plastmass.
(Phosphinic acid)

GEFTER, Yevgeniy Leonidovich; KABACHNIK, M.I., akademik, otv.red.;
KORSHAK, V.V., otv.red.; LOSKUTOVA, I.P., red.izd-va;
KUZ'MIN, I.V., tekhn.red.

[Organophosphorus monomers and polymers] Fosfororganicheskie
monomery i polimery. Moskva, Izd-vo Akad.nauk SSSR, 1960.
287 p. (MIRA 13:3)

1. Chlen-korrespondent AN SSSR (for Korshak).
(Phosphorus organic compounds)

S/191/60/000/004/010/015
B016/B058

AUTHORS: Gefter, Ye. L., Moshkin, P. A.
TITLE: Simple Laboratory Method for the Synthesis of Di- β, β' -ethyl Chloride Ester of Vinyl Phosphinic Acid
PERIODICAL: *Plasticheskiye massy*, 1960, No. 4, pp. 54-55

TEXT: The authors report on the continuation of studies concerning the synthesis of di- β, β' -ethyl chloride ester of vinyl phosphinic acid (M. I. Kabachnik, Ref. 3; M. I. Kabachnik and P. A. Rossiyskaya, Ref. 5), which was improved by Ye. L. Gefter (Ref. 4). They carried out the reaction in a single reaction vessel, without isolating intermediate products. Thus, they simplified all stages of the reaction. They proved that a non-distilled phosphorus trichloride may be used in the first stage. The admixtures of HCl and phosphorus oxychloride contained in it give compounds with ethylene oxide, which are separated later (ethylene chlorohydrin and tri- β, β', β'' -chloroethyl phosphate). The second stage, viz., the thermal isomerization of tri- β, β', β'' -chloroethyl phosphite, was improved by using commercial dichloro benzene (isomer mixture with little para-isomer) as

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Simple Laboratory Method for the Synthesis
of Di- β,β' -ethyl Chloride Ester of Vinyl
Phosphinic Acid

S/191/60/000/004/010/015
B016/B058

solvent. The lower boiling point of dichloro benzene compared with other solvents (Ref. 6) permits quicker isomerization than previously. In the third stage, viz., the hydrochlorination of the di- β,β' -chloroethyl ester of β -chloroethyl phosphinic acid, the authors recommend potassium or sodium acetates (German chemists, Refs. 7,8, simultaneously conducted similar studies independently from the authors). Consequently, the non-distilled isomerization product of tri- β,β',β'' -chloroethyl phosphite could be dehydrochlorinated. The amount of NaCl remaining after dehydrochlorination was filtered off. Acetic acid and dichloro benzene were distilled from the filtrate in vacuo. The residue neutralized with sodium hydroxide was distilled in vacuo, and 50-55% of the theoretical yield related to PCl_3 was obtained as final product. A yield of only 45-49% is obtained if each individual intermediate product is isolated, the process getting more complicated, too. Polycondensation occurs besides isomerization. A considerable amount of resin is thus formed. Dichloro ethane is also separated. L. S. Ludentsova participated in the experiments. There are 8 references: 4 Soviet, 2 US, 2 German. ✓

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S/191/60/000/005/014/020
B004/B064

AUTHOR: Gefter, Ye. L.

TITLE: Phosphorus-containing Compounds, an Important Raw Material
in the Plastics Industry

PERIODICAL: *Plasticheskiye massy*, 1960, No. 5, pp. 47-55

TEXT: This is an abstract of a report held at the Second Conference on Chemistry and Application of Organophosphorus Compounds at Kazan' in November, 1959. It gives a survey of publications on phosphorus chemistry, especially the chemistry of organophosphorus compounds. The author deals with the following subjects: 1) Organophosphorus monomers: chlorides of organophosphorus acids; diamides of phosphinic acids, esters of phosphinic acids, phosphorus chloro nitrile; 2) low-molecular phosphorus compounds; esters of phosphinic acid, esters of phosphoric acid, tertiary phosphines; 3) phosphorus-containing polymers: a) carbo-chained polymers; polymers and copolymers of unsaturated esters and amides; phosphorus-containing, high-molecular compounds (reaction of starch, polyvinyl-, polyallyl alcohol with phosphorus oxychloride, phosphoric acid chlorides, or urea phosphate;

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Phosphorus-containing Compounds, an Important Raw Material in the Plastics Industry

S/191/60/000/005/014/020
B004/B064

introduction of phosphorus by means of phosphorus trichloride into aromatic polymers); b) heterochained polymers: phosphorus-containing polyesters and polyamides, polyphosphorus chloro nitrile, and its derivatives. Polymers on the basis of unsaturated tertiary phosphinic oxides of the $\text{CH}_2\text{-CHP(O)R}^1\text{R}^2$ type, and application of the procedures developed for the production of block, grafted, and stereoregular polymers to organophosphorus compounds are considered to be promising. The use of phosphorus-containing compounds in other branches of national economy (anticorrosives, extracting agents, glassmaking lubricant additives) is mentioned. A. Ye. Arbuzov, M. I. Kabachnik, L. Z. Soborovskiy, A. Ya. Yakubovich, P. A. Rossiyskaya, Yu. M. Zinov'yev, M. A. Englin, and Ye. S. Shepeleva are mentioned. There are 137 references: 42 Soviet, 58 US, 1 Australian, 12 British, 3 Canadian, 5 French, 16 German, 2 Japanese, 1 Polish, 1 Swedish, and 1 Swiss.

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S/191/60/000/011/003/016
B013/B054

15.8109

AUTHORS: Li, P. Z., Mikhaylova, Z. V., Sedov, L. N. Kaganova, Ye. L.,
Gefer, Ye. L.

TITLE: Laminated Plastics on Glass Fiber Basis. Report 13. A New
Binder on the Basis of Unsaturated Polyester Resins With
Addition of an Organophosphorus Compound

PERIODICAL: Plasticheskiye massy, 1960, No. 11, pp. 9 - 10

TEXT: The authors studied the possibility of producing incombustible resins with the use of dichloro-diethyl ester of vinyl phosphinic acid (DE). Dichloro-diethyl ester was synthesized by Ye. L. Gefer. Experiments with the use of DE with usual resins gave no satisfactory results. Its use with chlorine-containing polyester resins is much more promising. The effect of organophosphorus admixtures on the properties of chlorine-containing resin is shown in Table 1. Hence, it appears that with addition of small DE amounts the properties of resin remain practically unchanged except for the gelation rate. Some physicommechanical properties of glass-reinforced

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Laminated Plastics on Glass Fiber Basis.
Report 13. A New Binder on the Basis of
Unsaturated Polyester Resins With Addition
of an Organophosphorus Compound

S/191/60/000/011/003/016
B013/B054

plastics from chlorine-containing polyester resin, with and without DE addition, are given in Table 2. The refractoriness of samples of glass-reinforced plastics was tested by exposing the sample to an open flame for a definite time, and - after removal of the flame - determining the duration of independent burning and glowing of the sample, as well as the loss of weight (Table 3). Combustibility of glass-reinforced plastics was little reduced by the addition of DE to the general-purpose resin of the type ПН-1 (PN-1). On the other hand, an introduction of small DE amounts into chlorine-containing resin, which is only slowly extinguished after removal of the flame, warrants the production of hardly combustible glass-reinforced plastics. There are 1 figure, 3 tables, and 3 references: 1 Soviet, 1 US, and 1 British.

Card 2/2

83253

S/063/60/005/004/003/003
A003/A001

5.3630

AUTHOR:

Gefter, Ye.L.

TITLE:

The Derivatives of Phenyl- β -Chloroethyl- and Phenylvinylphosphinic Acids η

PERIODICAL:

Zhurnal vsesoyuznogo khimicheskogo obshchestva im. D.I. Mendeleeva,
1960, Vol. 5, No. 4, p. 479

TEXT:

Phosphorus-organic compounds with two or three C-P bonds in the molecule have been studied only little thus far, therefore the preparation of derivatives of phenyl- β -chloroethyl- and phenylvinylphosphinic acids was investigated. The synthesis was based on the phenomenon discovered by M.I. Kabachnik and P.A. Rossiyskaya (Ref 3) that β -chloroethyl esters of the phosphorous acid and the substituted phosphorous acid can undergo regrouping during heating without addition of halide-containing compounds. The initial product was phenyldichlorophosphine. Its interaction with ethylene oxide yielded the di- β, β' -chloroethyl ester of the phenylphosphinous acid (m.p. 138-140°C at 2-3 mm Hg, n_D^{20} 1.5420, d_4^{20} 1.2620, $C_{10}H_{13}O_2PCl_2$, yield 94%). Heating the di- β, β' -chloroethyl ester of phenylphosphinous acid in decalin for 5 hours at 180-200°C produces its isomer, viz., the β -chloroethylester of the phenyl- β -chloroethylphosphinic acid, m.p. (with decomposition) 165-170°C

Card 1/2

83253

S/063/60/005/004/003/003
A003/A001

The Derivatives of Phenyl- β - Chloroethyl- and Phenylvinylphosphinic Acids

at 2 mm residual pressure, $C_{10}H_{13}O_2PCl_2$. Treatment with phosphorus pentachloride yielded acid chloride of phenyl- β - chloroethylphosphinous acid, m. p. 150-153°C at 2 mm; n_D^{20} 1.5642, d_4^{20} 1.3409, $C_8H_9OPCl_2$, yield 74.5%. The interaction of this acid chloride with various alcohols produced the esters of phenyl- β -chloroethylphosphinous acid cited in Table 1. These esters were treated with alcohol alkali or triethylamine. This treatment yielded the esters of the phenylvinylphosphinous acid cited in Table 2. There are 2 tables and 4 Soviet references. X

ASSOCIATION: Nauchno-issledovatel'skiy institut plastmass (Scientific Research Institute of Plastics)

SUBMITTED: March 28, 1960

Card 2/2

MASTRIUKOVA, T.A.; GEFTER, Ye.L.; KAGAN, Yu.S.; PAYKIN, D.M.; SHABANOVA,
M.P.; CAMPER, N.M.; YEFIMOVA, L.F.; KABACHNIK, M.I.

Phosphoroorganic insecticides. 3-Chlorobutenyl-2-phosphates and
thiophosphates. Zhur. ob. khim. 30 no.9:2813-2816 S '60.
(MIRA 13:9)

1. Institut elementoorganicheskikh soedineniy Akademii nauk SSSR.
(Insecticides)

S/191/61/000/001/013/015
B101/B205AUTHORS: Gefter, Ye. L., Kabachnik, M. I.TITLE: Synthesis of β -chloroethyl phosphinic acid dichloridePERIODICAL: *Plasticheskiye massy*, no. 1, 1961, 63-65

TEXT: The conventional methods of synthesizing β -chloroethyl phosphinic acid dichloride - starting material for the synthesis of chlorides and esters of vinyl phosphinic acid - have the following disadvantages:

a) Treatment of di- β, β' -chloroethyl ester of β -chloroethyl phosphinic acid or of the isomerization products of tri- β, β', β'' -chloroethyl phosphite (commercial chloroethyl phosphinic acid) with PCl_5 at $150-160^\circ\text{C}$ requires

the application of pressure to warrant a yield of 70%. b) Interaction of PCl_3 , $\text{C}_2\text{H}_4\text{Cl}_2$, and AlCl_3 , and subsequent hydrolysis is a very complicated procedure. c) Reaction of PCl_3 with C_2H_4 and O_2 gives only low yields. ✓

For this reason, the authors examined the possibility of obtaining sufficiently large yields of β -chloroethyl phosphinic acid dichloride

Card 1/3

S/191/61/000/001/013/015
B101/B205Synthesis of β -chloroethyl...

without applying pressure. Two ways of this synthesis were studied:
1) Direct conversion of the di- β, β' -chloroethyl ester of β -chloroethyl phosphinic acid into the acid, and subsequent treatment with reagents leading to the formation of the acid chloride; 2) direct conversion of the β, β' -chloroethyl ester of β -chloroethyl phosphinic acid (CEPA) into the acid chloride without synthesizing the free acid. Concerning 1) the following is noted: Pure or commercial di- β, β' -chloroethyl ester of CEPA may be converted into CEPA by reaction with anhydrous HCl at 140-160°C if atmospheric moisture is excluded:

$$\text{ClC}_2\text{H}_4\text{PO}(\text{OC}_2\text{H}_4\text{Cl})_2 + 2\text{HCl} \rightarrow \text{ClC}_2\text{H}_4\text{PO}(\text{OH})_2 + 2\text{Cl}_2\text{C}_2\text{H}_4$$

Treatment of this acid with thionyl chloride, phosgene, PCl_3 , or SiCl_4 failed. Treatment with SOCl_2 in the presence of catalytic quantities of pyridine gave only a small yield of the acid dichloride. Treatment with PCl_5 or $\text{PCl}_3 + \text{Cl}_2$, however, gave the dichloride of CEPA in yields of up to 80%. The second synthesis was brought about by interaction of PCl_5 with the initial ester at 140-150°C, in the presence of small amounts of metallic chlorides

Card 2/3

Synthesis of β -chloroethyl...

S/191/61/000/001/013/015
B101/B205

(FeCl_3 , CuCl_2 , or AlCl_3) as catalysts; reaction with SiCl_4 , COCl_2 , PCl_3 , or SOCl_2 , however, failed. Exclusion of atmospheric moisture and stepwise addition of PCl_5 are needed to obtain a yield of 80%. When using tri- β, β', β'' -ethyl phosphite, the yield varied from 65 to 70%. The synthesis failed when using $\text{PCl}_3 + \text{Cl}_2$ because of the formation of yellow phosphorus. L. S. Ludentsova assisted in the experiments. There are 9 references: 6 Soviet-bloc and 2 non-Soviet-bloc.

✓

Card 3/3

89918

S/191/61/000/002/005/012
B118/B203

15.8114

AUTHORS: Rubtsova, I. K., Gefer, Ye. L., Yuldashev, A., Moshkin, P.A.

TITLE: Synthesis of some hardening phosphorus-containing polyesters by polycondensation

PERIODICAL: Plasticheskiye massy, no. 2, 1961, 22 - 24

TEXT: Phosphorus-containing polyesters with otherwise good properties also show essential negative features (low melting points, inability of hardening), which circumstance induced the authors to develop a method of synthesizing phosphorus-containing hardening polyesters. For this purpose, they synthesized various normal phosphorus-containing polyesters with an unsaturated bond in the side chain which could subsequently be hardened by reaction of their double bonds. They proceeded from vinyl phosphinic acid dichloride and bivalent phenols, as well as from dichlorohydrin of pentaerythrite. Vinyl phosphinic acid dichloride was synthesized in the following way: 1) by catalytic dehydrochlorination of β -chloro-ethyl phosphinic acid dichloride; 2) by reaction of triethyl-

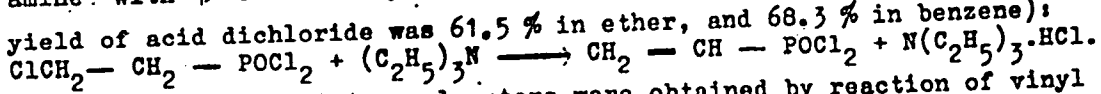
Card 1/3

89918

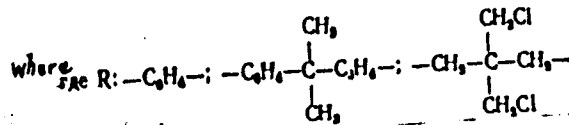
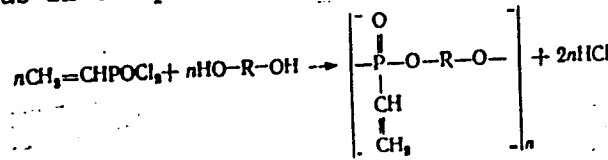
S/191/61/000/002/005/012
B118/B203

Synthesis of some hardening

amine with β -chloro-ethyl phosphinic acid dichloride in a solvent (the yield of acid dichloride was 61.5 % in ether, and 68.3 % in benzene):



The phosphorus-containing polyesters were obtained by reaction of vinyl phosphinic acid dichloride with various dihydroxy compounds on heating in an inert gas in the presence of metallic tin:



Hitherto unknown, light-yellow, solid, comparatively low-melting poly-

Card 2/3

39918

S/191/61/000/002/005/012
B118/B203

Synthesis of some hardening

esters soluble in many organic solvents were produced. Their content of double bonds determined according to Kaufmann varied between 70 and 80 % of the theory. The polyesters synthesized hardened in the presence of the following polymerization initiators: benzoyl peroxide, hydroperoxide of cumene with admixed cobalt naphthenate, and the very active dinitrile of azo-bis-isobutyric acid (both as accelerators). M.I. Kabachnik and T. Ya. Medved' are mentioned. There are 6 references: 5 Soviet-bloc and 1 non-Soviet-bloc.

X

Card 3/3

20484

S/191/61/000/003/002/015

B124/B203

15.8114

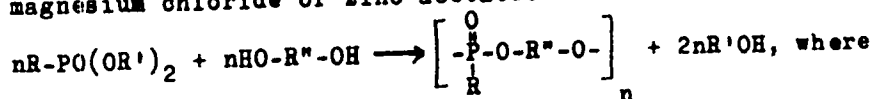
2209

AUTHORS: Rubtsova, I. K., Gefer, Ye. L., Yuldashev, A., Moshkin, P.A.

TITLE: Production of hardenable phosphorus-containing polyesters through polyesterification

PERIODICAL: *Plasticheskiye massy*, no. 3, 1961, 13-14

TEXT: A previous publication (Ref. 1: *Plast.massy*, no. 2 (1961)) described the production of some hardenable phosphorus-containing polyesters through polycondensation. The authors studied the possibility of obtaining hardenable organophosphorus polyester resins through polyesterification of diphenyl- and diethyl ester of vinyl phosphonic acid with the aid of some dihydroxyl compounds. The reaction was conducted in an inert gas atmosphere with heating up to 250°C in the presence of magnesium chloride or zinc acetate. The reaction proceeds as follows:



Card 1/3


20484





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

B124/B203

Production of hardenable...

R : CH₂=CH-

R' : C₂H₅-; -

R'' : -; -; -C(CH₃)₂--

--O-(CH₂)₄-O--; -C₂H₄- . The resulting polyesters were incom-
 bustible (the test was made in the flame of an alcohol burner), their
 melting point lay between 75 and 100°C, they were soluble in dimethyl
 formamide, cyclohexanone, dioxane, unsoluble in alcohols (methyl, ethyl,
 butyl alcohol), chloroform, and benzene. The double bonds in the poly-
 esters synthesized were determined according to Kaufmann; their content
 was between 70 and 80% of the theoretical amount. The reaction was
 accompanied by violent decomposition in the interaction of diethyl ester
 of vinyl phosphonic acid with some dihydroxyl compounds, as well as in
 that of diphenyl ester of vinyl phosphonic acid with ethylene glycol. The
 characteristics of the initial substances (diethyl ester of vinyl

Card 2/3

20484

S/191/61/000/003/002/015

B124/B203

Production of hardenable...

phosphonic acid, diphenyl ester of vinyl phosphonic acid, 1,4-di-(p-hydroxyphenoxy)-butane) are given, and the polyesterification of diphenyl ester of vinyl phosphonic acid with hydroquinone, diphenylol propane, resorcin, 1,4-di-(p-hydroxyphenoxy)-butane, as well as of diethyl ester of vinyl phosphonic acid with hydroquinone and ethylene glycol is described. The authors thank V. I. Lutkova and B. B. Berezina for producing 1,4-di-(p-hydroxyphenoxy)-butane. There are 4 references: 3 Soviet-bloc and 1 non-Soviet-bloc. The reference to the English-language publication reads as follows: H. W. Coover, M. A. McCall, US Patent 2,682,522; C.A.;48, 11112 (1954).

Card 3/3

S.3600

2209

21144
S/191/61/000/004/007/009
B110/B208

AUTHORS: Gefter, Ye. L., Moshkin, P. A., Pertsev, L. D.

TITLE: Synthesis of hydroxy-methyl phosphonic acid

PERIODICAL: Plasticheskiye massy, no. 4, 1961, 62-63

TEXT: Hydroxy-methyl phosphonic acid (HMPA) is a specific hardening catalyst for methylol polyamide, foam polyurethane, furylic and other resins to which heat- and water-resistant are quickly imparted even by small quantities. This reaction, applied for the first time by H. J. Page, is not suitable for the preparation of large quantities, as the exothermic reaction cannot be controlled. A method devised by the first-mentioned author for a danger-free polymerization of tri- β, β', β'' -chloro-ethyl phosphite proved to be inadequate, as only one-third of the addition of formaldehyde was utilized. The hydrolysis of the chloro-methyl phosphonic acid chloride in two steps, described by M. I. Kabachnik and Ye. S. Shepeleva (Ref. 6: *Izv. AN. SSSR, OKhN*, 185 (1951)), partially takes place under pressure. The authors have now hydrolyzed PCl_3 already

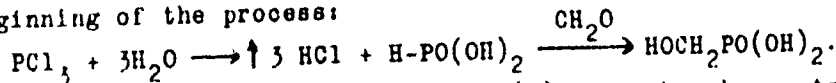
Card 1/3

X

S/191/61/000/004/007/009
B110/B208

Synthesis of hydroxy-methyl phosphonic acid

at the beginning of the process:



This reaction may be performed in one step (I) from phosphorus trichloride and formaldehyde, or in two steps (II) with separation of the intermediate (phosphorous acid). In the case of (II) 137.5 g of PCl_3 was added to 150 ml of H_2O while stirring, with temperature rising to 50-55°C.

After evaporating the hydrochloric acid, the residue solidified and gave the yellowish-white crystal mass of phosphorous acid melting at 71-72°C. Equivalent quantities of H_3PO_3 and paraform were then heated in sealed

ampuls for several hours. The resulting thick yellowish liquid (CH_5O_4P ; 90 % yield) crystallized slowly. The crystals had a P-content of 27.9 % and melted at 82-83°C. The condensation of H_3PO_3 with 40 % formalin

solution proceeded in a similar way. Working under pressure (a) or the reflux condenser (b) gave: yields: (a) = 85 %; (b) = 80 %; P-content: (a) = 27.5 %; (b) = 27.53 %. In the one-step process (I), phosphorus

Card 2/3

21144

Synthesis of hydroxy-methyl phosphonic acid

S/191/61/000/004/007/009
B110/B208

trichloride was gradually added to 38 % formalin. After boiling for several hours under the reflux condenser, OMPA was obtained in a yield of 78 %. On reaction with excess formalin the yield was 81 %. N. I. Bondar' is mentioned as a co-worker. There are 7 references: 6 Soviet-bloc and 1 non-Soviet-bloc.

X

Card 3/3

5.3620

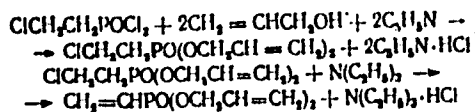
²⁸⁹⁹⁰
S/191/61/000/011/007/008
B110/B147

AUTHOR: Gefter, Ye. L.

TITLE: Diallyl ester of vinyl phosphinic acid

PERIODICAL: Plasticheskiye massy, no. 11, 1961, 38

TEXT: The author synthesized diallyl ester of vinyl phosphinic acid. This substance was prepared by interaction of dichloro anhydride of β -chloro-ethyl phosphinic acid with allyl alcohol in the presence of pyridine subsequent dehydrochlorination of the resulting diallyl ester of β -chloro-ethyl phosphinic acid:



116 g of dry allyl alcohol, 158 g of pyridine, and 300 ml of benzene were filled in a four-necked flask with dropping funnel and reflux condenser

Card 1/3

Diallyl ester of vinyl phosphinic acid

28990

S/191/61/000/011/007/008
B110/B147

with calcium chloride tubes, stirrer, and thermometer. To this mixture, 181.5 g of dichloro anhydride of β -chloro-ethyl phosphonic acid was added under thorough stirring and external cooling, at a reaction temperature of 0-10°C. The reaction mixture was stirred for 30 min at 50°C. The hydrochloric pyridine was filtered off, rinsed with benzene, the solvent was distilled from the filtrate, and the residue distilled in vacuo. 136 g (61 % of the theoretical amount) of diallyl ester of β -chloro-ethyl phosphonic acid, a colorless transparent liquid soluble in alcohol, ether, benzene, and toluene, with a boiling point of 123°C (1-2 mm Hg); $n_D^{20} = 1.4622$; $d_4^{20} = 1.4544$ was obtained. Found, %: P = 13.65; Cl = 15.6; $C_8H_{14}O_3PCl$. Calculated, %: P = 13.79; Cl = 15.78. The mixture of 108 g of diallyl ester of β -chloro-ethyl phosphonic acid, 50 g of triethylamine, and 150 ml of benzene was mixed and heated for 3 hr at 50-60°C. The precipitating hydrochloric triethylamine was filtered off and rinsed with benzene. The solvent was distilled from the filtrate. The residue was distilled in vacuo in the presence of 0.5 % of phenyl- β -naphthylamine polymerization inhibitor. 60 g (66.5 % of the theoretical amount) of

Card 2/3

Diallyl ester of vinyl phosphinic acid

28990
S/191/61/000/011/007/008
3110/3147

diallyl ester of vinyl phosphinic acid, a colorless transparent liquid of ether odor soluble in alcohol, ether, benzene, and toluene, was obtained. Boiling temperature: 86-88°C (1 mm Hg); $n_D^{20} = 1.4555$; $d_4^{20} = 1.1222$. Found, %: P = 16.27. $C_8H_{13}O_3P$. Calculated, %: P = 16.46. The author thanks L. S. Ludentsova for help with the experiments. There are 8 Soviet references. [Abstractor's note: Essentially complete translation.]

X

Card 3/3

21085

S/079/61/031/003/009/013
B119/B207

15.8.14

AUTHOR: Gefter, Ye. L.

TITLE: Reaction of aryl dichloro phosphines with cyclic oxides. I.
Reaction of phenyl dichloro phosphine with ethylene oxide

PERIODICAL: Zhurnal obshchey khimii, v. 31, no. 3, 1961, 949-952

TEXT: M. I. Kabachnik and P. A. Rossiyskaya showed that, when reacting ethylene oxide with the acid halides of phosphorous acid and the substituted phosphorous acid, the β -chloro ethyl esters of these acids are easily obtained, which, when heated without addition of halogen-containing compounds, may undergo a regrouping according to Arbuzov (Ref. 3; Izv. AN SSSR, OKhN (1946)). In principle, the author used this convenient and promising method of synthesizing the hitherto unknown derivatives of some alkyl- and alkenyl-aryl phosphinic acids when studying the reaction of some aryl dichloro phosphines with cyclic oxides. Shortly before this study was finished, G. Kamay and V. S. Tsivunin (Ref. 5; DAN SSSR, 128, 543, (1959)) published a similar study of an aliphatic series, i. e., the reaction of ethyl dichlorophosphine with ethylene oxide. The reaction of phenyl dichloro phosphine with ethy-

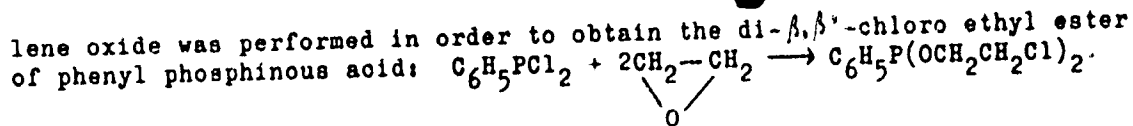
Card 1/4

21085

S/079/61/031/003/009/013
B1/B207

✓

Reaction of ...



The first experiments showed that this reaction proceeds very vigorously and, therefore, an isomerization of the unstable ester was to be expected. An inert solvent was used to avoid an explosive reaction and resinification. Analysis revealed that the product obtained corresponded to the product of addition of two molecules of ethylene oxide to phenyl dichloro phosphine, i. e., the di-β,β'-chloro ethyl ester of phenyl phosphinous acid (I). Its reactions with cuprous chloride and sulfur indicated the presence of a trivalent phosphorus. Vacuum distillation yields only a small amount of pure product boiling in a narrow range since, when larger quantities are heated for a longer period, the initial product polymerizes in considerable quantities to the β-chloro ethyl ester of phenyl β-chloro ethyl phosphinic acid. Compound (I) adds oxygen and sulfur readily and, accordingly, passes over into the di-β,β'-chloro ethyl ester of phenyl phosphinic acid (II) and phenyl thiophosphinic acid (III); its structure was confirmed by conversion of the phenyl dichloro phosphine into the phenyl phosphinic acid chloride,

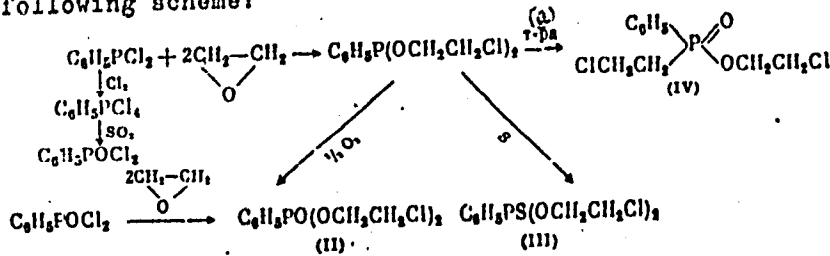
Card 2/4

21085

S/079/61/031/003/009/013
B118/B207

Reaction of ...

followed by addition of ethylene oxide. Thermal isomerization of compound (I), which is highly exothermic at 160-200°C, yields the β-chloro ethyl ester of phenyl-β-chloro ethyl phosphinic acid (IV). To avoid explosion, isomerization was carried out in Decalin. Thus, compound (I) should be stored in an inert gas and isomerization carried out in an inert gas medium so as to avoid the formation of compound (II). The reactions studied are illustrated by the following scheme:



(a) = heating). I. A. Rogacheva took part in experiments. There are 9 references: 7 Soviet-bloc and 2 non-Soviet-bloc. The 2 references to English-language publications read as follows: R. W. Upson, J. Am. Chem. Soc., 75,

Card 3/4

Reaction of ...

²¹⁰⁸⁵
S/079/61/031/003/009/013
B118/B207

1763, (1953); G. M. Kosolapoff, Organophosphorus compounds. N. Y. (1950).

ASSOCIATION: Nauchno-issledovatel'skiy institut plasticheskikh mass. Moskva.
(Moscow Scientific Research Institute of Plastics)

SUBMITTED: April 5, 1960

Card 4/4

21086

S/079/61/031/003/010/013
B: 13/B207

15,8114

AUTHOR: Geffer, Ye. L.TITLE: Reaction of aryl dichloro phosphines with cyclic oxides. II.
Derivatives of phenyl- β -chloro ethyl phosphinic acid

PERIODICAL: Zhurnal obshchey khimii, v. 31, no. 3, 1961. 952-955

TEXT: The author continued his study on the synthesis of the di- β, β' -chloro ethyl ester of phenyl phosphinic acid (I) and its thermal isomerization to the β -chloro ethyl ester of phenyl- β -chloro ethyl phosphinic acid (II); he showed that the action of PCl_5 upon this ester is accompanied by a slight splitting of the ester bond in (II), under the formation of phenyl- β -chloro ethyl phosphinic acid chloride (III). If the ester (I) is isomerized in an inert gas with admixed air or simply in air, the isomerization product (the acid chloride) shows an inconstant boiling point, so that a pure compound (III) can be obtained only with great difficulty. The treatment of "untreated" acid chloride with dry HCl and subsequent vacuum distillation proved to be a simple and effective method of obtaining a pure product. The formation of impurities in compound (III) is explained by the simultaneous isomeriza-

Card 1/4

X

21086

S/079/6*/03*/003/010/013
B7C/B207

X

Reaction of aryl ...

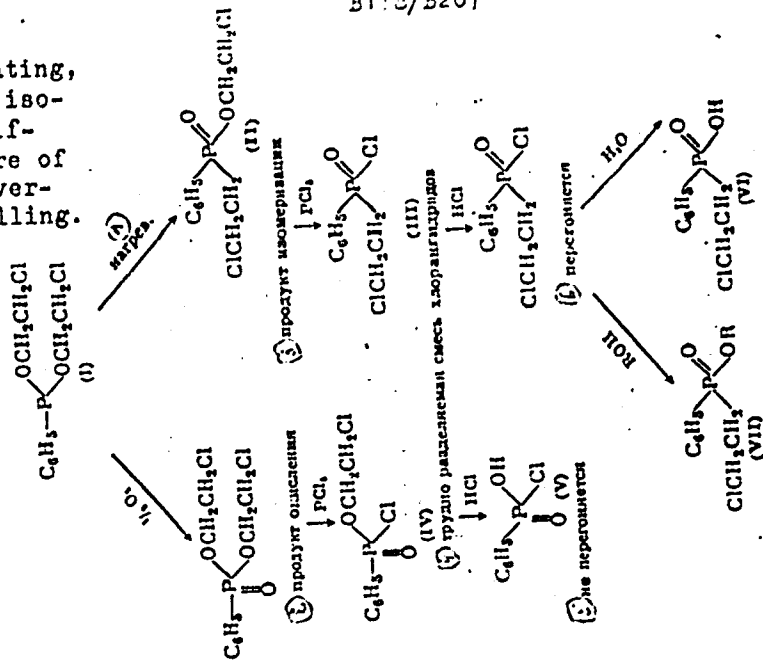
tions and oxidation of the di- β,β -chloro ethyl ester of phenyl phosphinic acid and the further formation of a difficultly separable mixture from the products of these two reactions. The method of purifying compound (III) bases on the fact that at 100-160°C dry HCl splits the C-O-P bond rather easily without affecting the C-P bond. Compound (III) remains unchanged, whereas the added acid chloride (IV) is converted into acid chloride (V) which cannot be distilled in vacuo. From the resulting mixture (III) and (IV), compound (III) is distilled off in pure state. When treated with water, it yields phenyl- β -chloro ethyl phosphinic acid (VI), and using alcohols, it gives the esters of phenyl- β -chloro ethyl phosphinic acid (VII) (Table). The reactions are illustrated by the following scheme:

Card 2/4

S/079/61/031/003/010/013
B112/B207

Reaction of aryl ...

Legend to Scheme: 1) Heating, 2) oxidation product, 3) isomerization product, 4) difficultly separable mixture of acid chlorides, 5) not overdistilling, 6) overdistilling.



Card 3/4

21086
S/079/61/031/003/010/013
B118/B207

Reaction of aryl ...

I. A. Rogacheva and L. S. Ludentsova took part in experiments. There are 1 table and 2 Soviet-bloc references.

ASSOCIATION: Nauchno-issledovatel'skiy institut plasticheskikh mass. Moskva (Moscow Scientific Research Institute of Plastics)

SUBMITTED: April 5, 1960

№№ п. п.	Эфир	Температура кипения (давление в мм)	n _D ²⁰	d ₄ ²⁰	Вмюд (в %)	% P	
						най-дено (1)	вчтно-лено (2)
1	Метилловый (1) ...	140-142° (2)	1.5355	1.2201	72.2	14.02	14.17
2	Этиловый (1) ...	130° (1)	1.5239	1.1898	70.5	13.02	13.3
3	Пропиловый (1) ...	148-150 (1.5-2)	1.5180	1.1680	43.2	12.4	12.56
4	п.-Бутиловый (10) ...	154-156 (2)	1.5128	1.1200	69.5	11.8	11.84
5	Аллиловый (1) ...	142 (1)	1.5336	1.1895	75	12.53	12.56
6	Фениловый (11) ...	185-188 (2.5)	1.5711	"	54.5	10.9	11.04

Legend to Table: 1) no., 2) ester, 3) boiling point, (pressure in mm), 4) yield, 5) found, 6) calculated, 7) methyl-, 8) ethyl-, 9) propyl-, 10) n-butyl-, 11) allyl-, 12) phenyl-.

Card 4/4

15.8114

21087
S/079/61/031/003/011/013
B118/B207

AUTHORS: Gefter, Ye. L. and Rogacheva, I. A.

TITLE: Reaction of aryl dichloro phosphines with cyclic oxides.
III. Derivatives of phenyl-vinyl phosphinic acid

PERIODICAL: Zhurnal obshchey khimii, v. 31, no. 3, 1961, 955-958

TEXT: Taking account of the papers by M. I. Kabachnik on the synthesis and applicability of vinyl phosphinates (Ref. 2: Izv. AN SSSR, OKhN, 1947, 233), as well as by G. Kamay and V. S. Tsiyunin on the synthesis of ethyl-vinyl phosphinates (Ref. 3: DAN SSSR, 128: 543, (1959)), the authors synthesized some hitherto unknown phenyl-vinyl phosphinates, proceeding from the previously described (Refs. 4, 5: ZhOKh 31, 949 (1961); ZhOKh 31, 952 (1961)) phenyl- β -chloro ethyl phosphinates (I) and the phenyl-vinyl phosphinic acid chloride. When treated with alcoholic alkali lye or triethyl amine in equimolecular ratio, the esters (I) split off HCl and were converted into the respective phenyl-vinyl phosphinates (II), the constants of which are given in a table. β -chloro ethyl ester no. 3 could only be obtained from triethyl amine. In the reaction of PCl_5 with phenyl-vinyl phosphinates, the

Card 1/4

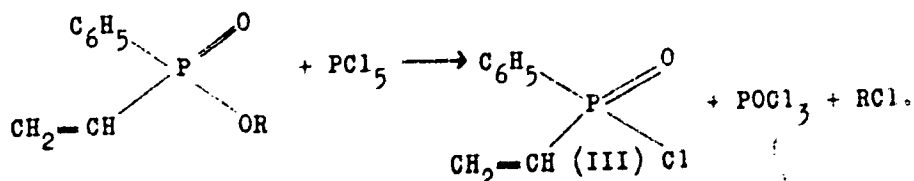
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21087

S/079/61/031/003/011/013
B110/B207

Reaction of aryl ...

ester bond was easily split under the formation of phenyl-vinyl phosphinic acid chloride (III):

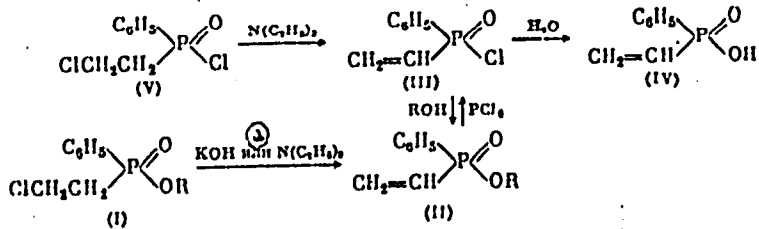


Compound (III) was also obtained by reaction of phenyl-β-chloro ethyl phosphinic acid chloride (V) with triethyl amine. Chlorine is more mobile in compound (III) than in the acid chloride (V), and hydrolyzes rather quickly in the air. The hydrolysis of compound (III) yields phenyl-vinyl phosphinic acid (IV) and, when it is treated with alcohol, the ester of this acid is obtained. Thus, it was shown that the esters (II) may be obtained in two ways: from the esters of phenyl-β-chloro ethyl phosphinic acid and from the phenyl-vinyl phosphinic acid chloride. The reactions are illustrated by the following scheme:

Card 2/4

S/079/61/031/003/011/013
B118/B207

Reaction of aryl ...



(a) = or). There are 1 table and 7 Soviet-bloc references.

ASSOCIATION: Nauchno-issledovatel'skiy institut plasticheskikh mass, Moskva
(Moscow Scientific Research Institute of Plastics).

SUBMITTED: April 26, 1960

Card 3/4

27907
S/079/61/031/010/007/010
D243/D304

5 3630

AUTHOR: Gefter, Ye. L.

TITLE: Some asymmetric derivatives of alkylphosphoric acid

PERIODICAL: Zhurnal obshchey khimii, v. 31, no. 10. 1961,
3316-3319

TEXT: Previously unknown derivatives of methyl-, chloromethyl- and chlorethylphosphoric acids are studied. The chloranhydrido-esters were synthesized by the equimolecular reaction of dichloroanhydrides of the corresponding phosphoric acids and phenol, with subsequent fractionation: these products, on reacting with hydroxyl-containing aromatic compounds, ethanol and ethylene oxide, gave asymmetric esters of methyl, chlormethyl and β -chloroethylphosphoric acids. 1) The chloranhydridophenyl ester of methylphosphoric acid: A mixture of 133 g of acid chloranhydride and 94 g of phenol was stirred and heated at 120° for two hours and then at 140° for 2 hours. After vacuum distillation and fractionation a colorless, transparent liquid was obtained, soluble

Card 1/3

27907

S/079/61/031/010/007/010
D243/D304

Some asymmetric derivatives ...

in benzole, toluene and esters, which reacted with water and alcohol with evolution of heat and hydrogen chloride. The esters of chlormethyl- and -chlorethylphosphoric acids were similiary prepared from dichloranhydrides of the corresponding acids and phenol. 2) Phenyl- β -chlorethyl ester of methylphosphoric acid: Dry ethylene oxide was passed through a mixture of chloranhydride (78 g) and aluminum chloride (0.5 g) until the exothermic reaction ceased. Temperature: 10 - 20°. The catalyst was filtered off and the filtrate vacuum distilled. Properties: a colorless transparent liquid, soluble in alcohol, ester, benzole, toluene and insoluble in water. All other esters had the same properties. 3) The phenylethylester of chlormethylphosphoric acid: 60 g of chloranhydroester was slowly mixed with 25 g of dry alcohol at 0°. After removing excess alcohol and hydrogen chloride the mixture was neutralized with sodium hydroxide solution and vacuum distilled. The phenylethylester of β -chlorethylphosphoric acid was similarly obtained from the chloranhydridoester and ethanol. Phenyl-o-cresyl ester of methylphosphoric acid was prepared by mixing the chloranhydridoester (19 g) and o-cresyl (12 g) at 170° until hydrogen

Card 2/3

Some asymmetric derivatives ...

2790?
S/079/61/031/010/007/010
D243/D304

chloride evolution ceased, with subsequent vacuum distillation.
4) Reaction of the chloranhydridophenyl ester of methylphosphoric acid and the methyl ester of salicylic acid: The reagents were mixed at room temperature in the presence of 8 g pyridine and 30 ml benzole. The whole was heated to 30-35° for 1 hour, filtered, washed with benzole and vacuum distilled twice. There are 1 table and 4 references: 3 Soviet-bloc and 1 non-Soviet-bloc. The reference to the English-language publication reads as follows: G.M. Kosolapoff, Organophosphorous Compounds. N.Y. (1950).

ASSOCIATION: Nauchno-issledovatel'skiy institut plasticheskikh mass (Scientific Research Institute of Polymers)

SUBMITTED: October 31, 1960

Card 3/3

X

000001/000/01/010/0
1220/1305

5 3630

AUTHORS: Sokolovskiy, M. A., Zavlina, P. M., Geftar, Ye. I.
and Moshkin, P. A.

TITLE: Full esters of vinylphosphinic acid with different
functional groups

PERIODICAL: Zhurnal obshchey khimii, v. 31, no. 11, 1961, 3652-3654

TEXT: The authors studied the reaction of di(β -chloroethyl) vinyl-
phosphinate (I) with ethanolamine and ω -aminoenanthic acid and prepared
two previously unsuspected compounds: bis(N- β -oxyethyl- β -aminoethyl)

vinylphosphinate -- $\text{CH}_2=\overset{\text{O}}{\text{C}}\text{P}(\text{OCH}_2\text{CH}_2\text{NHCH}_2\text{CH}_2\text{OH})_2$ (II); and bis(N- ω -

carboxyl-hexyl- β -aminoethyl) vinylphosphinate --
 $\text{CH}_2=\overset{\text{O}}{\text{C}}\text{P}(\text{OCH}_2\text{CH}_2\text{NH}(\text{CH}_2)_6\text{COOH})_2$ (III). The full esters are of interest

since they contain functional groups capable of condensation processes---

Card 1/2

20189

S/079/61/031/011/010/015
D228/D305

Full esters of...

secondary amines and hydroxyl groups, or secondary amines and carboxyl groups. Previous work by Ye. L. Gefter (Ref. 3: Zh. obshch. khimii, 28, 2500, 1958) and Ye. L. Gefter and P. A. Moshkin (Ref. 4: Plastmassy, no. 4, 54, 1960) showed that I may serve as the original material for synthesis of II and III. II was prepared by stirring a mixture of I and ethanolamine in a flask fitted with a reflux condenser, thermometer, and dropping funnel for about 2 hr. at 40 - 45°; the reaction was carried to completion by heating for a further hour on a water-bath at 80°. The full ester was obtained from the dihydrochloride by removing the alcohol and NaCl formed during its treatment with Na alcoholate. The procedure for the synthesis of III from I, aq. alcohol, and aminoanthic acid is similar, apart from the fact that the mixture is heated for 4 hr. to obtain the dihydrochloride. There are 5 Soviet references.

SUBMITTED: December 6, 1960

Card 2/2

GEFTER, YE. L.

43

PHASE I BOOK EXPLOITATION

SOV/6034

Konferentsiya po khimii i primeneniyu fosfororganicheskikh soyedineniy. 2d, Kazan', 1959.

Khimiya i primeneniye fosfororganicheskikh soyedineniy; trudy (Chemistry and Use of Organophosphorus Compounds; Conference Transactions) Moscow, Izd-vo AN SSSR, 1962. 630 p. Errata slip inserted. 2800 copies printed.

Sponsoring Agency: Akademiya nauk SSSR. Kazanskiy filial.

Resp. Ed.: A. Ye. Arbuzov, Academician; Ed. of Publishing House: L. S. Povarov; Tech. Ed.: S. G. Tikhomirova.

PURPOSE: This collection of conference transactions is intended for chemists, process engineers, physiologists, pharmacists, physicians, veterinarians, and agricultural scientists.

COVERAGE: The transactions include the full texts of most of the scientific papers presented at the Second Conference on the Chemistry and Use of

Card 1/14

43

Chemistry and the Use of Organophosphorus (Cont.)

SOV/6034

Organophosphorus Compounds held at Kazan' from 2 Nov through 1 Dec 1959. The material is divided into three sections: Chemistry, containing 67 articles; Physiological Activity of Organophosphorus Compounds, containing 26 articles; and Plant Protection, containing 12 articles. The reports reflect the strong interest of Soviet scientists in the chemistry and application of organophosphorus compounds. References accompany individual reports. Short summaries of some of the listed reports have been made and are given below.

TABLE OF CONTENTS: (Abridged):

Introduction (Academician A. Ye. Arbuzov) 3

TRANSACTIONS OF THE CHEMISTRY SECTION

Gefter, Ye. L. [NI plastmass (Scientific Research Institute of Plastics, Moscow). Some Prospects for the Industrial Use of Organophosphorus Compounds 46

Card 2/4

SOV/6034

Chemistry and the Use of Organophosphorus (Cont.)

Andreyeva, M. A., I. A. Gribova, M. I. Kabachnik, G. S. Kolesnikov,
V. V. Korshak, T. Ya. Medved', Yu. M. Polikarpov, Ye. F. Rodionova,
and L. S. Fedorova [Institute of Organoelemental Compounds]. Some 263
Methods of Synthesis of New Organophosphorus Monomers and Polymers
This study attempts to develop new methods of synthesis of organo-
phosphorus monomers and polymers for obtaining high-molecular
weight proof materials. The authors synthesized vinyl compounds of
trivalent phosphorus and studied their properties, as well as those
of polymers obtained.

Moshkin, P. A., Ye. L. Geffer, and I. K. Rubtsova [Scientific Research
Institute of Plastics]. Study of the Synthesis and Uses of Some Organo- 279
phosphorus Compounds in the Plastics Industry
Industrial methods for the preparation of esters of phosphoric acid
and for testing qualities of these acids as plasticizers have been de-
veloped, along with methods for obtaining phosphorus-containing
monomers for use in polymerization, copolymerization, and poly-
condensation reactions. Polyesters based on dichlorides of

Card 6/14

15 8150

33264
S/191/62/000/002/004/008
B127/B110

AUTHORS: Gefter, Ye. L., Yuldashev, A.

TITLE: Di- β, β' -chloro-ethyl ester of vinyl phosphinic acid as a basis for the production of hardening polyesters containing phosphorus

PERIODICAL: Plasticheskiye massy, no. 2, 1962, 49-51

TEXT: The authors made various experiments to obtain polyesters from one initial substance only: di- β, β' -chloro-ethyl ester of vinyl phosphinic acid (I). Acid (I) was heated to 210-240°C in a nitrogen stream. Dichloro ethane escaped, and yellow, viscous polyesters of linear structure, soluble in low alcohols, formed. Further heating or hardening at 80-100°C with azodiisobutyric acid (A) as initiator yielded a polyester of steric structure. Ester (I) was obtained by isomerizing tri- β, β', β'' -chloro-ethyl phosphite with potassium or sodium acetates. The indigo-blue isomerization residue with A was heated to 250°C, and the same polyester of steric structure which had been obtained from (I) formed. Then, the crude mixture forming during the synthesis of (I) by A was subjected to polycondensation,

Card 1/2

33284

S/191/62/000/002/004/008

B127/B110

Di- β, β' -chloro-ethyl ester of...

and the polyester was obtained again. The yellow, liquid polyester was obtained from (1) by 30 hr heating at 100°C with an initiator. It was then kept at 215°C for 5 hrs to yield the hard, steric polyester. The solid polyesters obtained were heat-resistant at 270-300°C. No satisfactory result was obtained when heating di- β, β' -chloro-ethyl ester of β -chloro-ethyl phosphinic acid to 205-215°C since the acid number was too high due to acid pyrolysis caused by HCl. There are 12 references: 11 Soviet and 1 non-Soviet.

X

Card 2/2

S/074/62/031/003/001/002
B117/B101

AUTHORS: Gefter, Ye. L., and Kabachnik, M. I.

TITLE: Organophosphorus compounds derived from cyclic oxides

PERIODICAL: Uspekhi khimii, v. 31, no. 3, 1962, 285-321

TEXT: This is a survey of the progress achieved in the chemistry of organophosphorus compounds. It deals with research work in which reactions of cyclic oxides with some phosphoric compounds, properties, conversions, and possibilities of application of resulting reaction products were studied. Summarizing, it is stated that the addition of phosphoric compounds to α -oxides provides a simple, easy and cheap method for the synthesis of various organophosphorus compounds. Thus compounds containing β -alkyl halide- and hydroxyl groups, α - and β -unsaturated radicals at the phosphorus atom, and active epoxy- and ethylenimine rings, can be prepared quite easily and with high yields. A large number of such organophosphorus compounds are being used in national economy. Probably, their field of application will further increase since there are still wide possibilities of synthesizing new compounds. Mention is made of:

Card 1/2

Organophosphorus compounds...

S/074/62/031/003/001/002
B117/B101

P. A. Rosslyskaya, A. N. Pudovik, B. Ye. Ivanov, V. K. Khayrulin,
A. N. Ledneva, V. S. Abramov, A. K. Yefimova, G. Kamay, V. S. Tsivunin,
N. I. Shuykin, I. F. Bel'skiy, Ye. V. Kuznetsov, R. K. Valetdinov,
T. Ya. Medved', L. Z. Soborovskiy, Yu. M. Zinov'yev, I. K. Rubtsova,
A. Yuldashev, P. A. Moshkin, G. S. Kolesnikov, V. V. Korshak,
F. Ya. Perveyev, K. Rikther, B. A. Arbuzov, Baluyeva. There are
250 references: 87 Soviet and 163 non-Soviet. The four most recent
references to English-language publications read as follows:
G. Schrader, US pat. 2927122; C. A., 54, 15245 (1960); G. H. Birum,
US pat. 2931755; C. A., 54, 15245 (1960); W. C. Howell, US pat. 2892691;
W. A. Reeves, J. D. Guthrie, G. L. Drake, US pat. 2906592.

ASSOCIATION: NII Plastmass Goskhimkomiteta (NII of Plastics of
Goskhimkomitet). In-t elementoorganicheskikh soyedineniy
AN SSSR (Institute of Elemental Organic Compounds AS USSR)

Card 2/2

APPROVED FOR RELEASE: 08/23/2000

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CIA-RDP86-00513R000514610006-8
S/20470/002/004/019/019
E075/E438

11-4260
5.3630

Gefter, Ye.L., Moshkin, P.A.,
Kabachnik, M.I., Medved', T.Ya.

AUTHORS:

PERIODICAL: Neftekhimiya, v.2, no.4, 1962, 639-651
TITLE: Phosphororganic monomers. Review paper

TEXT: The area of phosphororganic monomers reviewed is that of
β-chlorethyl and vinyl derivatives of phosphorous which is thought
to have a large potential for the production of high melting,
non-inflammable polymers. An important monomer in this area is
dichloroanhydride of vinylphosphorous acid obtainable in four steps
from ethylene oxide and PCl₃. The first reaction
3C₂H₄O + PCl₃ → P(OCH₂-CH₂-Cl)₃ (I) gives a product, which is of
value in itself (fuel additive, plasticizer) and which can be
isomerized to give ClCH₂CH₂P(OCH₂CH₂Cl)₂ (II) as discovered by

M.I.Kabachnik. The isomerization of (I) is more or less
difficult depending on the groups attached to P. For example,
it proceeds easily at room temperature for (R₂N)₂POC₂H₄Cl, but
long heating at 160 to 170°C is necessary for the isomerization
Card 1/3

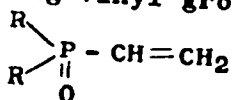
Phosphororganic monomers

S/204/62/002/004/019/019
E075/E436

of (I). Treatment of (II) with PCl_5 gives $ClCH_2CH_2\overset{\overset{P}{||}}{O}Cl_2$

which can be used for the synthesis of amides and esters of β -chloroethylphosphorous acids. Removal of water from (II) with alcoholic alkalis, or heating over $BaCl_2$, gives $CH_2=CH-\overset{\overset{P}{||}}{O}Cl_2$ (III)

which can be polymerized to give high melting (up to $300^\circ C$) polymers. By reacting (III) with P_2S_5 , the oxygen in the molecule is replaced by S. The amines do not react with (III) as expected by combining with the Cl atoms, but form amides of amino-ethyl-phosphorous acid. Work is proceeding currently on the preparation of phosphine oxides containing vinyl group. It is expected that compounds of this type



not containing ester linkages would show high chemical and thermal stability. These compounds can be now produced using methods which exclude the application of the Grignard reaction, which was
Card 2/3

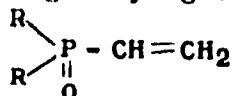
Phosphororganic monomers

S/204/62/002/004/019/019
E075/E436

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not containing ester linkages would show high chemical and thermal stability. These compounds can be now produced using methods which exclude the application of the Grignard reaction, which was
Card 2/3

GEFTER, Ye.L.; KABACHNIK, M.I.

Organophosphorus compounds obtained on the basis of cyclic oxides.
Usp.khim. 31 no.3:285-321 Mr '62. (MIRA 15:3)

1. Nauchno-issledovatel'skiy institut plastmass Goskhimkomiteta
i Institut elementoorganicheskikh soyedineniy AN SSSR.
(Phosphorus organic compounds)

GEFTER, Ye.L.; ROGACHEVA, I.A.

Interaction of aryldichlorophosphines with cyclic oxides. Part 4:
Derivatives of phenylphosphinic acid. Zhur.ob.khim. 32 no.3:
964-967 Mr '62. (MIRA 15:3)

1. Nauchno-issledovatel'skiy institut plasticheskikh mass.
(Phosphinic acid)

S/079/62/032/010/007/008
D214/D307

AUTHOR: Gefter, Ye.L.

TITLE: The synthesis of chlorophenyldichlorophosphine

PERIODICAL: Zhurnal obshchey khimii, v. 32, no. 10, 1962,
3401 - 3403

TEXT: The purpose of this work was to improve the yield in the synthesis of chlorophenyldichlorophosphine (I) and to determine what isomers are present in the product. An 80 % yield of I was achieved by the action of PCl_3 on chlorobenzene in the presence of $AlCl_3$.

Experimental details are given. The examination of I by ir spectroscopy in two regions ($700 - 900\text{ cm}^{-1}$ and $1650 - 2000\text{ cm}^{-1}$) has shown that I consists mainly of the para-isomer with small quantities of the meta-isomer, but contains only traces of the ortho-isomer. The meta-isomer may have been formed by the primary substitution reaction or by subsequent isomerization. There are 2 figures. ✓

ASSOCIATION: Nauchno-issledovatel'skiy institut plasticheskikh mass
Card 1/2

The synthesis of ...

S/079/62/032/010/007/008
D214/D307

(Scientific Research Institute of Plastics)

SUBMITTED: October 27, 1961

Card 2/2

S/079/62/032/012/003/008
D424/D307

AUTHORS: Gefter, Ye.L. and Rogacheva, I.A.

TITLE: Reaction of arylphosphonous dichlorides with cyclic oxides. V. Reaction of chlorophenylphosphonous dichloride with ethylene oxide

PERIODICAL: Zhurnal obshchey khimii, v. 32, no. 12, 1962, 3962-3965

TEXT: The reaction with a chlorophenylphosphonous dichloride consisting mainly of the *p*-isomer with a small amount of *m*-isomer proceeds readily to give di- β -chloroethyl chlorophenylphosphinate (II). This ester could not be distilled even at 1-2 mm Hg without isomerization with evolution of heat to give β -chloroethyl chlorophenyl- β -chloroethylphosphinate (III). (III) was obtained in pure form from the crude isomerization product by converting it with PCl_5 into the corresponding acid chloride, purifying this by distillation, and treating it with ethylene oxide. Even pure (III) decomposed on heating with the evolution of dichloroethane (this re-
Card 1/2

3/079/62/032/012/003/008
0424/0307

Reaction of arylphosphonous ...

action will be examined in a subsequent communication). Treatment of the chlorophenyl- β -chloroethylphosphinic chloride obtained from (III) with triethylamine gave chlorophenylvinylphosphinic chloride. The addition of sulfur to (II) gave di- β -chloroethyl chlorophenylphosphonothioate. All the exothermic reactions described liberate less heat than the corresponding reactions of the unsubstituted phenyl compounds described previously. ✓

ASSOCIATION: Nauchno-issledovatel'skiy institut plasticheskikh mass (Scientific Research Institute of Plastics)

SUBMITTED: December 27, 1961

Card 2/2

YULDASHEV, A.; GEFTER, Ye.L.; MOSHKIN, P.A.

Synthesis of phosphorus-containing polyesters with free hydroxyl
groups. Plast.massy no.7:60-62 '62. (MIRA 15:7)
(Esters)
(Phosphorus compounds)

MOSHKIN, P.A., GEFTER, YE.L., RUBTSOVA, I.K.

Research in the field of the synthesis and use of certain organophosphorus compounds in the plastics industry.

Khimiya i Primeneniye Fosfororganicheskikh Soyedineniy (Chemistry and application of organophosphorus compounds) A. YE. ARBUZOV, Ed.
Publ. by Kazan Affil. Acad. Sci. USSR, Moscow 1962, 632 pp.

Collection of complete papers presented at the 1959 Kazan Conference on Chemistry of Organophosphorus Compounds.

GEFTER, YE.L.

"Some prospects of the use of organophosphorus compounds in industry."

Khimiya i Primeneniye Fosfororganicheskikh Soyedineniy (Chemistry and application of organophosphorus compounds) A. YE. GEFTER, Ed.
Publ. by Kazan Affil. Acad. Sci. USSR, Moscow 1962, 132 pp.

Collection of complete papers presented at the 1962 Kazan Conference on Chemistry of Organophosphorus Compounds.

GETTER, Ye. L.

AID Nr. 980-16 31 May

FIRE-RESISTANT DERIVATIVES OF CELLULOSE (USSR)

Rogovin, Z. A., Wu Mei-yen, M. A. Tyuganova, T. Ya. Zharova, and Ye. L. Getter. *Vysokomolekulyarnyye soyedineniya*, v. 5, no. 4, Apr 1963, 506-511. S/190/63/005/004/005/020

The influence of the structure of organophosphorus acids on the fire resistance of cellulose partially esterified by these acids has been studied at the Moscow Textile Institute. The experiments were conducted with cellulose esters of methyl-, ethyl-, or phenylphosphonic acids or phenyl dihydrogen phosphate with various degrees of esterification. These esters were synthesized for the first time by treating cellulose fabric with 4% solutions of the acid dichloride in absolute pyridine for 1 hr. The phosphorus content was

Card 1/2

AID Nr. 980-16 31 May

FIRE-RESISTANT DERIVATIVES (Cont'd)

8/190/63/005/004/005/020

controlled by varying the reaction temperature from 20 to 130°C. The fire resistance was evaluated from the weight loss after combustion and by the method of A. Wilson, O. J. Reeves, and M. Millan. It was shown that the fire resistance of cellulose derivatives 1) increases with an increase of the degree of esterification, 2) drops with an increase of the size of the alkyl radical, 3) is higher for the phosphonic (C-P bond) than for the phosphoric (C-O-P bond) acid derivatives, and 4) drops when an alkyl radical is replaced by an aryl radical. Highly fire-resistant cellulose fabrics were prepared by reacting the cellulose molecule with comparatively small amounts of methyl- or ethylphosphonic acids which correspond to a P-content of the ester of 2.08 and 4.09, respectively. [BAO]

Card 2/2

MEDVED', T.YA., KABACHNIK, M.I., MOSHKIN, P.A., VARSHAVSKIY, S.L.
KOFMAN, L.P., GEFTER, YE.L., TKACHENKO, G.V., DANILEVICH, A.A.

Industrial method of synthesis of di-B, Dichloro-ethyl of vinyl-
phosphinic acid from ethylene oxide and phosphorus trichloride.

Report submitted for the 12th Conference on high molecular weight compounds
devoted to monomers, Baku, 3-7 April 62.

S/081/63/000/004/045/051
B160/B186

AUTHORS: Moshkin, P. A., Gefter, Ye. L., Rubtsova, I. K.

TITLE: Studies in the sphere of synthesis and application of certain organo-phosphorus compounds in the plastics industry

PERIODICAL: Referativnyy zhurnal. Khimiya, no. 4, 1963, 606 - 607, abstract 4T54 (In collection: Khimiya i primeneniya fosfororgan. soyedineniy. M., AN SSSR, 1962, 279 - 284)

TEXT: The results are given of studies in the sphere of application of organo-phosphorus compounds in the plastics industry. The following plasticizers were synthesized and tested on nitrocellulose, polymethyl methacrylate and polyvinyl chloride: ArOP(O)(OR)_2 phosphoric acid esters, where R is 2-ethyl hexyl or radicals of mixtures of $\text{C}_7\text{-C}_9$ alcohols and Ar is phenyl, o- and n-chlorophenyl or β -naphthyl; $(\text{ArO})_2\text{P(O)OR}$, where R is 2-ethyl hexyl and Ar is phenyl and β -naphthyl; $(\text{ArO})_2(\text{O})\text{P(O)OP(OAr)}_2$, where R is the residue of diatomic alcohols (ethylene and diethylene glycols, butane and hexane diols) and Ar is phenyl; oxymethyl phosphinic
Card 1/2

35
36
Studies in the sphere of ...

S/081/63/000/004/045/051
B160/B186

40
45
acid $\text{HOCH}_2\text{PO}(\text{OH})_2$ was synthesized and tested as a hardening catalyst for methylol polyamide, organo-silicon foam polyurethane and furyl resins. A method was developed for obtaining monomers containing phosphorus (diallyl phenyl phosphinates, vinyl esters of phosphoric acids); methods for polymerization and polycondensation of the monomers obtained were also developed. Polyesters of substituted phosphoric acids were synthesized and the properties of the resins obtained studied with respect to the composition of the initial substances. [Abstractor's note: Complete translation]

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60
Card 2/2

GEFTER, Ye. I., ROGACHEVA, I. A.

Interaction of aryldichlorophosphines with cyclic oxides.
Part 5: Reaction of chlorophenyldichlorophosphine with
ethylene oxide. Zhur. ob. khim. 32 no.12:3962-3965 D '62.
(MIRA 16:1)

1. Nauchno-issledovatel'skiy institut plastichekikh mass.

(Phosphine) (Ethylene oxide)