The decomposition of organic ... S/056/62/000/000/010/011
E194/E135

relationships between the yields of individual gases, for example acetylene, from the various organic liquids were very similar with the two kinds of discharge. Calculations similar to those made in the previous article were repeated, and again agreement with experiment was good. It was found that increasing the impulse duration from 10^{-6} to 10^{-3} seconds increases the yield of acetylene from unsaturated hydrocarbons by 5-6%, whilst the use of an a.c. arc described in the previous work raises it a further 3-5%. Decomposition of liquid hydrocarbons in an arc theoretically requires less energy to produce a given volume of acetylene than when pulses are used, and the yield is higher with an arc. The data obtained are valid only for the particular test conditions. There are 1 figure and 4 tables.

Card 2/2

PERSIN, S.M.

Methods for increasing the precision of coding devices by automatic elimination of coding errors. Trudy GGO no. 112: 14-32 '63.

Principles of functional conversion of information using piecewise linear approximation of functions. Ibid.:33-57

Functional coding converters using the principle of control of the pulse frequency. Ibid.:58-73 (MIRA 17:5)

PES.IN,. V. G.

Synthesis of piazthiole (2, 1, 3-benzothiadiazole) and its derivatives. A. M. Khaletskii and V. G. Pesin (Leningrad Chem,-Pharm. Inst.). Zhur, Obshchei Khim. (J. Gen. Chem.) 20, 1914-20(1950); of, Hinsberg, Ber, 22, 2895 (1889)—Heating 1 g. o-$C_6H_4(NH_2)_2$ and 7 ml. aq. $NaHSO_3$ (d. 1, 3; bisulfite content 32%, SO_2 content 20%)6 hrs. to 190-200° in a sealed tube gave in extn. with C_6H_6 and evapn. of the ext. 88% piazthiole(I), m. 42°. Heating 50 g. o-C_6H_4-$(NH_2)_2$ and 150 g. $SOCl_2$ in 2200 inl. dry MePh 14-15 hrs. gave on distn. 84% I, b. 206°, m. 44°. I dissolves in concd. mineral acids, but the salts are hydrolyzed on diln. and the base is extractable with C_6H_6; I, HCl is insol. in coned. HCl; I and Ph NH_2 form a yellow soln. I is stable to $HgCl_2$eve) at 250° and is unchanged by $K_2Cr_2O_4$, H_2SO_4, although weekly acid $KMnO_4$ slowly oxidizes it, gving unknown---------------- Heating I with Zu-AcOH yields H_2S and $C_6H_4(NH_2)_2$;---------Ac_2O have no action on I. Nitration of I (25 g.)----------H_2SO_4 at 0° with 15 ml, HNO_3 (d, 1, 4) and-------- --------followed by 0.5 hr. at 20° gave 90 3%-----------of I, in. 103°. Reduction of this by re--------A-OH gave 80%-----forming an easily hydrolyzable HCl-------- heating this with Zu-HCl gives H_2S and 1, 2, 5-C_6H_3-------heating the amino deriv. with - O_2NC_6H,COCl in gave the 4-nitro deriv., m. 226-7° (from EtOH); heating this 15 min. with 10% HI gave 4-nitro-1, 2-phenylenediamine, in 198° (from MePh), after neutralization by NH_4 OH-heating this (2 g.) with 4 g. $SOCl_2$ in dry MePh gave a product, m. 101-3° identical with I.

G. M. K.

PESIN, V. G.

USSR/Chemistry Synthesis

Card 1/1 Pub. 151 - 25/36

Authors : Khaletskiy, A. M., and Pesin, V. G.

Title : Synthesis of piazothiole (3,4-benz-1,2,5-thiodiazole) and its derivatives. Part 2.-

Periodical : Zhur. ob. khim. 24/1, 133-136, Jan 1954

Abstract : The synthesis of 2-nitro, and 2-aminopiazothioles, 4-nitrophenyl-1-sulfamide-piazothiole, 4-aminophenyl-1-sulfamide-piazothiole, 4-nitrophenyl-2-sulfamide-piazothiole and 4-aminophenyl-2-sulfamide-piazothiole is described. The displacement of the hydrogen of the benzene ring in position 1 by the nitro group, was observed during the nitration of the piazothiole. The fact that nitro- and aminopiazothioles can exist in the form of two different isomers was confirmed experimentally. Three references: 1-USA and 2-USSR (1928-1953).

Institution : The Chemical-Pharmaceutical Institute, Leningrad

Submitted : September 26, 1953

Pesin, V. G.

Chemistry of piazthiole (1,4-benzo,1,2,5-thiadiazole) [illegible]
[illegible]
[illegible] 130 [illegible] Engl.
translation).—See C.A. 50, 13895e B. M. R.

Pesin, V. G.

USSR/ Chemistry - Physical chemistry

Card 1/1 Pub. 22 - 23/43

Authors : Khaletskiy, A. M.; Pesin, V. G.; and Chzhao Chzhi-Chzhun

Title : Study of the chemistry of piaethiol (3,4-benz-1,2,5-thiodiazole)

Periodical : Dok. AN SSSR 106/1, 88-91, Jan 1, 1956

Abstract : A study of the chemical properties of piaethiol derivatives showed that the benzene ring in the heterocycle retains its aromatic nature. Chlorination, bromination and thiocyanation of 1- and 2-aminopiaethioles led to the formation of homologous mono- and di-chloro-bromo and thiocyanogen derivates. The properties of the thiourea derivatives obtained during the reaction of ammonium thiocyanate with hydrochloride-1 or 2-aminopiaetholes are described. The products of aminopiaethiol azotization in a sulfate medium are listed. Four references: 1 USSR, 1 Ital. and 2 Germ-USA (1889-1955). Table.

Institution : Leningrad Chemicopharmaceutical Institute

Presented by: Academician I. N. Nazarov, September 26, 1955

PESIN, V. G.

1

Chemistry of 2,1,3-thiadiazole. III. Reaction of aromatic *o*-diamines with thionyl chloride and thionylaniline. V. G. Pesin, A. M. Khaletskii and Chi-Chun Chao (Chem. Pharm. Inst., Leningrad. *Zhur. Obshchei Khim.* 27, 1570-6(1957); cf. *C.A.* 49 4644). Heating 1.5 g. 4-nitro-1,2-diaminobenzene in C_6H_6 with 5.3 g. PhNSO 3 hrs. on a steam bath gave 88.8% 5-nitrobenzo-2,1,3-*thiadiazole*, m. 12[illegible]° (C_6H_6); the yield was lower in MeOH or EtOH and slightly higher in MePh, but lower in xylene. The 4-nitro-*1,2-diaminobenzene* was prepd. in 58% yield (m. 193-5°) by addn. to the refluxing mixt. of 36 g. 2,4-dinitroaniline in 150 ml. MeOH with 30 g. NH_4Cl of 110 g. Na_2S over 1 hr. followed by heating 1 hr., sepn. of the red ppt. and heating with 200 ml. 4% HCl with subsequent sepn. of the unreacted starting material by filtration; addn. of NH_4OH to the filtrate gave the desired amine. Similarly, 23 g. *p*-toluylenediamine and 53 g. PhNSO in MePh gave 89% *5-methylbenzo-2,1,3-thiadiazole*, m. 34°, after steam distn. 4-Ethoxy-1,2-phenylenediamine gave 97% *5-ethoxybenzo-2,1,3-thiadiazole*, m. 76-7° (aq. EtOH), while 4-chloro-1,2-phenylenediamine gave 84.[illegible]% *5-chlorobenzo-2,1,3-thiadiazole*, m. 52.5°. Similarly was prepd. 80% *5-bromobenzo-2,1,3-thiadiazole*, m. 61°. Et 3,4-diaminobenzoate gave 95% *Et benzo-2,1,3-thiadiazole-5-carboxylate*, m. 67-8.5°. 3,4-Diaminobenzoic acid gave 85.6% *benzo-2,1,3-thiadiazole-5-carboxylic acid*, m. 220°. 3,4-Diaminobenzenesulfonic acid in $PhNH_2$ treated with PhNSO as above gave after 3 hrs. at 120° a substance, m. 220-3°, apparently *benzo-2,1,3-*

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Distr: 4E4j

PESIN, V.G; KHALETSKII, A.M; CHAO, CHI-CHUN

thiadiazole-5-sulfonic acid, probably as the PhNH$_2$ salt; this with BaCO$_3$ gave the Ba salt which with H$_2$SO$_4$ gave 88% *benzo-2,1,3-thiadiazole-5-sulfonic acid*, does not m. 300° (H$_2$O). 4,5-Diaminosalicylic acid similarly gave 85.8% *5-hydroxybenzo-2,1,3-thiadiazole-6-carboxylic acid*, m. 211.8° (EtOH). The reaction of *o*-diamines with SOCl$_2$ is slow but can be accelerated by addn. of Et$_3$N or pyridine, when yields of 85-90% of thiadiazoles are obtained. IV. Chlorination and bromination of benzo-2,1,3-thiadiazole. *Ibid.* 1575-81.—It is shown that the statement by Efros and Levit (*C.A.* 50, 783*i*) concerning the lack of reactivity of benzo-2,1,3-thiadiazole is incorrect. The substance is aromatic in character and does react under proper conditions. Thus, chlorination of benzo-2,1,3-thiadiazole in the presence of Fe shavings at 60° gave 4,7-dichloro deriv., m. 181-2.5°, after treatment of the crude product with 10% alc. KOH. Chilling the crude chlorination product in EtOH soln. gave up to 22% *tetrachlorotetrahydrobenzo-2,1,3-thiadiazole*, m. 123-4°, and its isomer, m. 83°. If the Fe catalyst is omitted, chlorination at 60° gave the same products as above. Nitration of 2,3-dichloronitrobenzene and reduction of the isomer mixt. gave isomeric diamino-2,3-dichlorobenzenes; these (4.6 g.) in C$_6$H$_6$ treated with 4.5 g. PhNSO and heated on a steam bath 0.5 hr. gave after washing with 4% HCl 28.8% *4,5-dichlorobenzo-2,1,3-thiadiazole*, m. 112-13°. Similarly, 4,5-dichloro-1,2-diaminobenzene gave 88.3% *5,6-dichlorobenzo-2,1,3-thiadiazole*, m. 112-13°.

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PESIN, V.G; KHALETSKII, A.M.; CHAO, CHI-CHUN

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1

Similarly, 4.6-dichloro 1,2-diaminobenzene gave 96% 5.7-dichlorobenzo-2,1,3-thiadiazole, m. 97-7.7°. Similarly was prepd. 4.7-dichlorobenzo-2,1,3-thiadiazole, m. 181-2.6°. Brominating 9 g. benzo-2,1,3-thiadiazole with 32 g. Br at 65-77° and refluxing 1 hr. gave 95.8% tetrabromotetrahydrobenzo-2,1,3-thiadiazole, m. 142°; this heated with aq. alc. KOH 1 hr. gave 80% 4.7-dibromobenzo-2,1,3-thiadiazole, m. 184-5°. Heating 3.6-dibromo-1,2-diaminobenzene with PhNSO in C_6H_6 gave the same substance, m. 184-5°. Thus, halogenation of the benzothiadiazole yields tetrahalotetrahydro deriv. which loses 2 moles HX on treatment with base and yields a dihalo-substituted thiadiazole. The substance, m. 67.5°, reported by H. and L. (*loc. cit.*) may be a dichlorodihydrobenzothiadiazole.

G. M. K.

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PESIN, V.G.; KHALETSKIY, A.M.

Chemistry of 2,1,3,-thiodiazole. Part 5: Nitration of some mono- and dihalogen derivatives of benz-2,1,3,-thiodiazole. Zhur. ob. khim. 27 no.9:2599-2604 S '57. (MIRA 11:3)

1. Leningradskiy khimiko-farmatsevticheskiy institut.
(Pyrrole) (Nitration)

PESIN, V.G.

PA - 3163

AUTHOR: KHALETSKIY, A.M., PESIN, V.G. and CHZHAO CHZHI-CHZHUN

TITLE: Inquiries into the Chemistry of Piazthiole (3,4 benz 1,2,5 thiodiazole).
(Issledovaniya v oblasti khimii piazotiola (3,4-benz-1,2,5-tiodiazola) Russian).

PERIODICAL: Doklady Akademii Nauk SSSR 1957, Vol 113, Nr 3, pp 627 - 630 (U.S.S.R.)

Received: 6 / 1957 Reviewed: 7 / 1957

ABSTRACT: Investigations showed that piazothiole (in contrast to the statements made by Efros and Levit (ZhOKh, 23, 1552 (1953); 25, 199 (1955)) very energetically associates chlorine as well as bromine while developing that. The reaction is realized in the melting as well as in the medium of organic solvents (chloroform dichlorine-ethane etc.) with or without catalyzers (iron filings). The products of the reaction are tetrachlorine- and tetrabromine-tetrahydrobenz-2,1,3-thiodiazoles which occur in form of a mixture of stereoisomers. On the strength of investigations it can be assumed that on the occasion of interaction between piazothiole and chlorine- and bromine an association of 4 halide-atoms takes place, on which occasion tetrahalide-tetrahydro-derivatives develop which, in the case of collaborating with an alcoholic solution of a base, split off two molecules of halide-hydrogen (HCl or HBr) under formation of dihalide derivatives.

Card 1/2

PA - 3,63

Inquiries into the Chemistry of piazthiole (3,4-benzo [illegible] thiodiazole).

None of the 4 synthetically obtained isomers correspond to that with the melting point at [illegible] described by Efros and Levit. It was found that also 5-methyl [illegible] and other piazothiole derivatives enter into interacting reaction with chlorine or bromine. It was shown that also [illegible] 2' naphth [illegible] 3 thiodiazole enter into such an interacting reaction. The experimental data obtained show that piazothiole (as well as [illegible] 2' naphth 2 [illegible] 3-thiodiazole) and its derivatives have properties, beside their aromaticness which are characteristic for unlimited compounds. A description of experiments follows. (3 citations from Slavic publications).

ASSOCIATION: Leningrad Chemical-Pharmaceutic Institute.
(Leningradskiy khimiko-farmatsevticheskiy institut).
PRESENTED BY: NAZAROV, I.N., Member of the Academy
SUBMITTED: 26 July 1956
AVAILABLE: Library of Congress

Card 2/2

PESIN, V.G.; SERGEYEV, V.A.; KHALETSKIY, A.M.

2,1,3-Thia- and selenadiazoles. Part 31: Halogenation of 2,1,3-benzothiadiazole and its halo-, mono-, and dimethyl derivatives. Zhur. ob. khim. 34 no.9:3028-3034 S '64. (MIRA 17:[illegible])

1. Leningradskiy khimiko-farmatsevticheskiy institut.

AUTHORS: Khaletskiy, A. M., Pesin, V. G., Chzhou Tsin' 20-114-4-36/63

TITLE: Investigations on the Chemistry of Piazothiol (Issledovaniye v oblasti khimii piaztiola) The Oxidation of 3,4-Benzo-1,2,5,-Thiodiazole and Its Derivatives (Okisleniye 3,4-benz-1,2,5-tiodiazola i yego proizvodnykh)

PERIODICAL: Doklady Akademii Nauk SSSR, 1957, Vol. 114, Nr 4, pp. 811--814 (USSR)

ABSTRACT: It has been reported earlier that pyazothiol and its derivatives, as well as 1',2'-naphthopyazothiol,are characterised by a certain unsaturatedness besides having aromatic properties. Thus it is not possible to realise, with regard to pyazothiol, some reactions characteristic for the ethylene compounds (addition of HCl, diene synthesis). It was found that the unsaturatedness of pyazothiol itself is diminished in its 1,4-dichloro derivative; The aromatic character of this latter compound is however increased. In this connection it was of interest further to investigate the unsaturated properties of pyazothiol. For this purpose the authors used oxidation. In the

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saturatedness than pyazothiol. It also reacts less energetically than pyazothiol. In the ozonization of pyazothiol, an ozonide with a melting of 60°C was obtained. After its decomposition a mixture of 2,1,3-thiodiazole-4,5-dicarbonic acid, 2,1,3-thiodiazole-4,5-dialdehyde, and glyoxal developed. The two latter substances were isolated as the corresponding semi-carbazones; besides that a small amount of ammonium sulfate formed. From the results of the oxidation of pyazothiol and some of its derivatives may be seen that it is of an unsaturated nature, as it had been found out previously from examples of haloidation. There are 4 references, 3 of which are Soviet.

ASSOCIATION: Leningrad Chemico-Pharmaceutical Institute (Leningradskiy khimiko-farmatsevticheskiy institut)

PRESENTED: March 12, 1957 by I. N. Nazarov, Member, Academy of Sciences, USSR

SUBMITTED: January 31, 1957

Card 3/3

[illegible]

PESIN, V. G.

AUTHORS: Pesin, V. G., Khaletskiy, A. M.

TITLE: Investigations in the Field of the Chemistry of [illegible] diazole (Issledovaniya v oblasti khimii 2,1,3-ti[illegible]diazola). VI. Chlorination and Bromination of 4- and 5-Aminobenz-2,1,3--Thiodiazoles (VI. Khlorirovaniye i bromirovaniye 4- i 5-aminobenz - 2,1,3 - tiodiazolov)

PERIODICAL: Zhurnal Obshchey Khimii, 1958, Vol. 28, Nr 1, pp. [illegible] (USSR)

ABSTRACT: The authors earlier showed that 4- and 5-aminobenz-2,1,3--thiodiazoles are easily acylated under conditions which are customary for aromatic amines. The present paper gives data which were obtained in the investigation of the chlorination and bromination-reaction of 4- and 5-aminobenz-2,1,3-thiodiazoles. It was shown that in the chlorination of 4-aminobenz--2,1,3-thiodiazole with dichloroamine 4-amino-5,7-dichlorobenz-2,1,3-thiodiazole with a good yield forms; in the bromination of the same product with bromine in acetic acid 4-amino-5,7-dibromobenz-2,1,3-thiodiazole with a good yield ([illegible]

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Investigation in the Field of the Chemistry of [illegible] ,3-[illegible] rination and Bromination of 4- and 5 Aminobenz-2,1,3-Thiodia[illegible]

and more) is obtained. It became evident that [illegible] ence of chlorine or bromine upon molten [illegible] diazole 4-amino-5,7-dich[illegible] and accordingly [illegible] bromobenz-2,1,3-thiodiazoles are produced. [illegible] of 5-aminobenz , [illegible] thiodiazole [illegible] -thiodiazole forms, in the chlorination with [illegible] 5-amino-6-chlorobenz-2,1,3-thiodiazole. Under the influence of hydrocyanic acid upon 4(5)-aminobenz-2,1,3-thiodiazole [illegible] benz-2,1,3-thiodiazole-4 [illegible] urea and [illegible] 1,3-thiodiazole 5 [illegible] are produced which are in [illegible] tion converted to the corresponding [illegible] derivatives. A [illegible] thesis of 5,6-(2-aminothiazole)-benz-2,1,3-thiodiazole [illegible] realized by the influence of [illegible] cyanic acid upon [illegible] -bromobenz 2,1,3-thiodiazole as well as by bromination of [illegible] benz-2,1,3-thiodiazole-5 thiourea. There are 1[illegible] references, 15 of which are Slavic.

ASSOCIATION: **Leningrad Chemical-Pharmaceutical Institute** (Leningradskiy [illegible] institut)

Card 2/3

Investigation in the Field of the Chemistry of 2,1,3-Thiodiazoles. VI. Chlo- [illegible]/63
rination and Bromination of 4- and 5 Aminobenz-2,1,3-Thiodiazoles

SUBMITTED: January 17, 1957

AVAILABLE: Library of Congress

Card 3/3

1. Acylation 2. Chlorination-Reaction 3. Bromine-Reaction
4. Chemistry

PESIN V G

AUTHORS: Pesin, V. G., Khaletskiy, A. M. [illegible]

TITLE: Investigations in the Field of the Chemistry of 2,1,3-Thiodiazole (Issledovaniya v oblasti khimii 2,1,3-tiodiazola) VII. The Thiocyanogenation of 4- and 5-Aminobenz-2,1,3-Thiodiazoles (VII. Rodanirovaniye 4- i 5-aminobenz-2,1,3-tiodiazolov)

PERIODICAL: Zhurnal Obshchey Khimii, 1956, Vol. 26, Nr 2, pp. 5[illegible]3 - 5[illegible] (USSR)

ABSTRACT: In the preceding report (reference 1) it was shown that 4-amino-5,7-dihalogenbenz-2,1,3-thiodiazoles are formed by the chlorination and bromination of 4-aminobenz-2-1-3-thiodiazole. By the chlorination and bromination of 5-aminobenz-2-1-3-thiodiazole, however, 5-amino-6-halogenbenz-2-1-3-thiodiazoles form. The thiocyanogenation takes place quite analogously. The thiocyanogenation was performed according to Kaufman (reference 2) with thiocyanogen which formed in the interaction of bromine with ammonium thiocyanate (potassium) in the presence of ammonium bromide ([illegible]) in the medium of an inert solvent (methanol) at 0 - 2°C. Conclusions: 1) The authors found that 4-amino-5-7-dithiocyanogenbenz-2,1,3-thiodiazole with a large yield (95 %) forms in the thiocyanogenation of 4-aminobenz-2,1,3-thiodiazole. On heating with diluted hydrochloric acid it is (probably) converted to 7-thiocyanogen-4,5-(2-

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Investigations in the Field of the Chemistry of 2,1,3-Thiodiazole. VII. The Thiocyanogenation of 4- and 5-Aminobenz-2,1,3-Thiodiazoles 7-2-[illegible]

aminothiazole)-benz-2,1,3-thiodiazole. 2) It was found that 4-amino-5-thiocyanogenbenz-2,1,3-thiodiazole with a high yield (90 %) forms in the thiocyanogenation of 4-aminobenz-2,1,3-thiodiazole. On heating with diluted hydrochloric acid the former is isomerized to 4,5-(2'-aminothiazole)-benz-2,1,3-thiodiazole. 3) It was found that 6-thiocyanogen-4-nitro-1,3-diaminobenzole with an almost quantitative yield forms in the thiocyanogenation of 4-nitro-1,3-diaminobenzene. On heating with diluted hydrochloric acid it isomerizes to 2,5-diamino-6-nitrobenzthiazole. 4) An accessible method for the synthesis of 2,5,6-triaminobenzthiazole with a high yield was found. 5) It was shown that 5,6-(2'-aminothiazole)-benz-2,1,3-thiodiazole forms in the interaction of the chlorhydrate of 2,5,6-triaminobenzthiazole with thionylaniline (in the presence of potassium acetate). 6) It was shown that the thiodiazole cycle is under identical conditions considerably easier formed than the thiazole cycle. 7) The reaction of the interaction of thionylaniline with o-diamines of the aromatic series was extended to the o-diamines of the benzthiazole series, which contain an amino group in position 2. Besides it was shown that under certain conditions the diamines can enter into a reaction with thionylaniline, not only in the form [illegible] but also as salts. There are 5 references,

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Investigations in the Field of the Chemistry of 2,1,3-Thiodiazole. VII. The Thio- 79-2-23/64
cyanogenation of 4- and 5-Aminobenz-2,1,3-Thiodiazoles

2 of which are Slavic.

ASSOCIATION: **Leningrad Chemical and Pharmaceutical Institute**
(Leningradskiy khimiko-farmatsevticheskiy institut)

SUBMITTED: January 17, 1957

AVAILABLE: Library of Congress

Card 3/3

AUTHOR: Pesin, V. G., Khaletskiy, A. M., Chzhou, Tsin' SOV/79-28-8-13/66

TITLE: Investigations Concerning the Chemistry of the 2,1,3-Thiodiazoles (Issledovaniya v oblasti khimii 2,1,3-tiodiazolov) VIII. Oxidation of Benzo-2,1,3-Thiodiazole and Its Derivatives (VIII. Okisleniye benz-2,1,3-tiodiazola i yego proizvodnykh)

PERIODICAL: Zhurnal obshchey khimii, 1958, Vol. 28, Nr 8, pp. [illegible] (USSR)

ABSTRACT: Since they were not successful in previous attempts in carrying out some of the reactions characteristic of ethylene compounds (addition of HCl, diene synthesis) with benzo-2,1,3-thiodiazole, the authors were interested in further studying the unsaturation properties of this compound and its derivatives in regard to oxidation. In oxidizing the benzo-2,1,3-thiodiazole and its 5-methyl, 5-chloro, and 4,7-dichloro derivatives the organic molecule was decomposed and the sulfur could be recovered only as ammonium sulfate. In the oxidation of 5-chlorobenzo-2,1,3-thiodiazole a small amount of 2,4-dinitrophenylhydrazone (probably as the glycol aldehyde) separated out in addition to the ammonium sulfate.

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Investigations Concerning the Chemistry of the 2,1,3-Thiodiazoles. SOV/79-28-6-[illegible]/66
[illegible] Oxidation of Benzo-2,1,3-Thiodiazole and Its Derivatives

In the oxidation of benzo-2,1,3-thiodiazole the [illegible] groups could be determined only qualitatively. No reaction could be observed when perbenzoic acid was added to this com- [illegible] at 0°. In the oxidation of benzo-2,1,3-thiodiazole with potassium permanganate, however, two products resulted. One of them probably was an [illegible] oxide of 2,1,3-thiodiazole-4,5-dicarboxylic acid (Formula 1), as was indicated [illegible] analysis and by its tendency to form double metallic derivatives. An analysis of the second showed it to have the composition [illegible] and probably the structure illustrated in Formula [illegible]. Benzo-2,1,3-thiodiazole oxidizes with ozone to form ammonium sulfate; 1,2,5-thiodiazole-4,5-dicarboxylic acid; 1,2,5-thiodiazole-4,5-dialdehyde; and glyoxalate. There are 3 references, 2 of which are Soviet.

ASSOCIATION: Leningradskiy khimiko-farmatsevticheskiy institut (Leningrad Chemical-Pharmaceutical Institute)

June [illegible]

Investigations Concerning the Chemistry of the 2,1,3-Thiodiazoles. SOV/79-28-8-[illegible]/66
VIII. Oxidation of Benzo-2,1,3-Thiodiazole and Its Derivatives

SUBMITTED: July 15, 1957

Card 3/3

AUTHORS: Pesin, V. G., Khaletskiy, A. M., Chzhao Chzhi-[illegible] [illegible]

TITLE: Investigations Concerning the Chemistry of the 2,1,3-Thiodiazoles (Issledovaniya v oblasti khimii 2,1,3-tiodiazolov) IX. The Decomposition Reaction of o-Benzoquinonedioxime With Sulfur Dichloride (IX. O vzaimodeystvii o-benzokhinondioksima s dvukhloridom sery)

PERIODICAL: Zhurnal obshchey khimii, 1958, Vol. 28, Nr 9, pp. [illegible] (USSR)

ABSTRACT: The authors undertook the synthesis of compounds which in earlier investigations (Refs 1, 2) had shown the properties of benzo-2,1,3-thiodiazole (Formula 1) and its derivatives. Compounds about whose quinoidal structure there could be no doubt were used as starting materials. According to the literature (Ref 3) benzofurazan (II) does not react with phosphorous pentasulfide, so it was assumed that the acid in the benzofuroxan cyclic diazole (III) is less strongly bound to the nitrogen atoms than it is in the benzofurazan (see the formula diagram). It was thus attempted to synthesize benzo-2,1,3-thiodiazole (I) or its oxide (IV) by reacting

Card 1/3

Investigations Concerning the Chemistry of the 2,1,3-Thiodiazoles. SOV 79-29-9-[illegible]/66
IX. The Decomposition Reaction of o-Benzoquinonedioxime With Sulfur Dichl

benzofuroxan (III) with phosphorous pentasulfide or with hydrogen sulfide. This attempt was not successful, nor were the desired results achieved by reacting o-benzoquinonedioxime with H_2S in the presence of sodium acetate. In both instances benzofurazan (II) was produced instead of (I) (a dehydration reaction occurred). These results led to the assumption that with the introduction of compounds which permit [illegible] conditions, i.e. the compounds which prevent dehydration, the formation of the thiodiazole ring is not prevented. Therefore, reactions between o-benzoquinonedioxime and thionyl chloride, thionyl aniline, and sulfur dichloride were carried out. These studies showed that thionyl chloride and thionyl aniline do not react with o-benzoquinonedioxime. Only a derivative of the benzo-2,1,3-thiodiazole was obtained by the reaction of this oxime with sulfur dichloride. The structure of this derivative is that shown in formula (IV) or (V). There are 5 references, 1 of which is Soviet.

Card 2/3

Investigations Concerning [illegible]
IV. The decomposition [illegible]

ASSOCIATION: Leningradskiy [illegible]
(Leningrad Chemi[illegible]

SUBMITTED: July 15, 1957

KHALETSKIY, A.M.; PESIN, V.G.; CHZHOU TSIN' [Chou Ch'in]

Synthesis and study of N-oxides of heterocyclic compounds. Part 1: N-oxides of morphine derivatives of tetrahydro isoquinoline and quinoline. Zhur.ob.khim. 28 no.9:2348-2355 S '58. (MIRA 11:11)

1. Leningradskiy khimiko-farmatsevticheskiy institut.
(Quinoline) (Isoquinoline) (Morphine)

KHALETSKIY, A.M.; PESIN, V.G.; DEN ZHUN'-SYAN [Teng Jun-hsiang]

Pyrazolidine. Part 1: Synthesis and properties of mono and di substituted 1,2-diphenyl-3,5-dioxypyrazolidine. Zhur.ob.khim. 28 no.9:2355-2359 S '58. (MIRA 11:11)

1. Leningradskiy khimiko-farmatsevticheskiy institut.
(Pyrazolidine)

AUTHORS: Pesin, V. G., Khaletskiy, A. M., Den' Zhun'-syan

SOV/79-28-10-[illegible]

TITLE: Investigations in the Field of the Chemistry of Pyrazolidine (Issledovaniya v oblasti khimii pirazolidina) II. Halogenation and Thiocyanation of 1,2-Diphenyl-3,5-Dioxo Pyrazolidine and Its Derivatives (II. Galogenirovaniye i rodanirovaniye 1,2-difenil-3,5-dioksopirazolidina i yego proizvodnykh)

PERIODICAL: Zhurnal obshchey khimii, 1958, Vol 28, Nr 10, pp 2816 - 2820 (USSR)

ABSTRACT: In contrast to pyrazolones, pyrazolidines which are structurally closely related to them are insufficiently investigated. The authors succeeded in easily bringing 1,2-diphenyl-3,5-dioxo pyrazolidine (Compound I) into reaction with chlorine, bromine and thiocyanate under the formation of the corresponding monochloro, bromo and thiocyano derivatives (II); this was achieved without catalysts (Scheme 1). The gaseous chlorination and bromination in the chloroform medium were carried

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Investigations in the Field of the Chemistry of Pyrazolidine. II. Halogenation and Thiocyanation of 1,2-Diphenyl-3,5-Dioxo Pyrazolidine and Its Derivatives

SOV/79-28-[illegible]

out under cooling. The treatment with thiocyanate formed by the reaction of bromine and thiocyano ammonium in methanol saturated with ammonium bromide was carried out at 0-2°. The corresponding 4-chloro-, 4-bromo-, 4-thiocyano derivatives of 1,2-diphenyl-3,5-dioxo pyrazolidine were separated. It was demonstrated that on the action of a double amount of halogen or thiocyanate (pseudohalogen) on this pyrazolidine its 4,4-dibromo, and 4,4-dithiocyano derivatives (III) and (IV) are formed. The 4,4-dichloro-1,2-diphenyl-3,5-dioxo pyrazolidine could not be obtained. In the chlorination, bromination and thiocyanation of 4-n-butyl-1,2-diphenyl-3,5-dioxo pyrazolidine the corresponding 4-chloro-, 4-bromo, and 4-thiocyano derivatives of 4-n-butyl-1,2-diphenyl-3,5-dioxo pyrazolidine are formed. The 4-bromo-4-n-butyl-1,2-diphenyl-3,5-dioxo pyrazolidine reacts with thiocyano potassium under the formation of 4-thiocyanate-4-n-butyl-1,2-diphenyl-3,5-dioxo

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Investigations in the Field of the Chemistry of Pyrazolidine. II. Halogenation and Thiocyanation of 1,2-Diphenyl-3,5-Dioxo Pyrazolidine and Its Derivatives SOV/79-28-10-39/60

pyrazolidine (V). There are 4 references, 0 of which is Soviet.

ASSOCIATION: Leningradskiy khimiko-farmatsevticheskiy institut (Leningrad Chemical and Pharmaceutical Institute)

SUBMITTED: July 15, 1957

Card 3/3

AUTHORS: Khaletskiy, A. M., Pesin, V. G., Chzhou Tsin' SOV/79-28-10-40/60

TITLE: Synthesis and Investigation of the N-Oxides of Heterocyclic Compounds (Sintez i issledovaniye N-okisey geterotsiklicheskikh soyedineniy) II. N-Oxides of Acridine Derivatives (II. N-Okisi proizvodnykh akridina)

PERIODICAL: Zhurnal obshchey khimii, 1958, Vol 28, Nr 10, pp 2821-2825 (USSR)

ABSTRACT: Some N-oxides of the acridine series are described. These oxides are of great importance for medicine and are significant as intermediate products of syntheses of all types. The oxidation of the acridine derivatives has been investigated only slightly. The authors investigated the following acridine derivatives: 2-ethoxy-6-nitro-9-chloro acridine (I), 2-ethoxy-6,9-diamino acridine (II), 2-ethoxy-6,9-diacetyl diamino acridine (III), 3,6-diamino acridine (IV), and 3,6-diacetyl diamino acridine (V). In the oxidation of (I) with perbenzoic acid in chloroform the N-oxide (VI) (89% yield) was obtained which was transformed by ammonia in phenol solution into the N-oxide of 2-ethoxy-6-nitro-9-amino acridine (VII); this points to the fact that the

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Synthesis and Investigation of the N-Oxides of Heterocyclic SOV/79-28-10-40/60
Compounds. II. N-Oxides of Acridine Derivatives

N-oxide group does not effect the movability of the chlorine. Perbencoic acid does not act on (II), whereas peracetic acid causes compouhd (III) to be formed (18,6% yield) with a subsequent chromatography of the reaction products on aluminum oxide. By the oxidation of this compound with perbencoic acid the N-oxide (VIII) is formed, which with $NaHSO_3$ in alcohol diluted with water is transformed into (II). Compound (IV) reacts in a similar way. In the reaction of the two peracids with (IV) only an acylation but no oxidation to the N-oxide is the result. In the oxidation of (V) with perbencoic acid their N-oxide (IX) is obtained. This proves that the two peracids used cannot be taken for a direct transformation of the amino acridines into the N-oxides. In their oxidation in peracetic acid an acylation first of all takes place and only then the formation of N-oxides of the acyl derivatives. There are 3 references, 1 of which is Soviet.

ASSOCIATION: Leningradskiy khimiko-farmatsevticheskiy institut (Leningrad Chemical and Pharmaceutical Institute)

Card 2/3

Synthesis and Investigation of the N-Oxides of Heterocyclic Compounds. II. N-Oxides of Acridine Derivatives SOV/79-28-10-40/60

SUBMITTED: July 15, 1957

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SOV/79-28-11-2/55

AUTHORS: Khaletskiy, A. M., Pesin, V. G.,
Teng Jun-hsiang

TITLE: Investigations in the Field of the Chemistry of Pyrazolidine (Issledovaniya v oblasti khimii pirazolidina). III. Investigation of the Reactivity of 1,2-Diphenyl-3,5-Dioxopyrazolidine (Nitration, Sulfonation etc.) (III. Izucheniye reaktsionnoy sposobnosti 1,2-difenil-3,5-dioksopirazolidina.(Nitrovaniye, sul'firovaniye i dr.))

PERIODICAL: Zhurnal obshchey khimii, 1958, Vol 28, Nr 11, pp 3027 - 3030 (USSR)

ABSTRACT: In the further investigation of the reactivity of the methylene group of the 1,2-diphenyl-3,5-dioxopyrazolidine (I) its nitration and sulfonation were carried out. The nitration with the nitration mixture under cooling yielded the mononitro derivative (II). The assumption that the nitro group is at the C_4 atom (II) is concluded from the fact that the hydrogen at C_4 is highly mobile, and that in the case of the introduction of the NO_2 group into the benzene nucleus a dinitro derivative had to be formed. The amino

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Investigations in the Field of the Chemistry of Pyrazolidine. III. Investigation of the Reactivity of 1,2-Diphenyl-3,5-Dioxopyrazolidine (Nitration, Sulfonation etc.) SOV/79-28-11-2[illegible]/55

compound formed from it by reduction forms after the diazolization and combination with β-naphthene an unstable dye that could not be separated, as was the case with the 4-aminopyrazole. The sulfonation of the compound (I) after the analysis of the barium salt yields the trisulfo derivative (III), which had to be assumed according to the data given in reference 3, as the latter point to the fact that in the sulfonation of the 1-phenyl-3-methyl pyrazolone-5 (IV) which is similar in structure, the compounds (V), (VI) and (VII) are obtained; the latter have the sulfo groups at the C_4 in the pyrazolone nucleus and in the para-position in the benzene nuclei. In the further reactions of the mentioned sulfo acids with nitrous acid and aryl diazonium compounds the structures (VIII) and (IX) could be attributed to the barium salts of the sulfo acid (VI) and the disulfo acid (VII). In checking these data (Ref 2) with respect to the

Card 2/4

Investigations in the Field of the Chemistry of Pyrazolidine. III. Investigation of the Reactivity of 1,2-Diphenyl-3,5-Dioxopyrazolidine (Nitration, Sulfonation etc.) SOV/[illegible]

sulfonation products of the 1,2-diphenyl-3,5-dioxopyrazolidine the observations made were very similar, so that the structure (II') could be ascribed to it. Thus, the pyrazolidine cycle in the nitration and sulfonation behaves in much the same way as the pyrazolone cycle. Compound (I) easily reacts with n-nitroso-dimethyl aniline and phenyl diazonium chloride according to the mentioned reaction scheme. This fact points to the reactivity of the methylene group. There are 2 Soviet references.

ASSOCIATION: Leningradskiy khimiko-farmatsevticheskiy institut (Leningrad **Chemopharmaceutic** Institute)

SUBMITTED: J [illegible]

Card 3/4

AUTHORS: Pesin, V. G., Khaletskiy, A. M., SOV/79-28-11-21/55
Teng Jun-hsiang

TITLE: Investigations in the Field of the Chemistry of Pyrazolidine (Issledovaniya v oblasti khimii pirazolidina) IV. Synthesis and Investigation of the Sulfides and Disulfides of the 1,2-Diphenyl and 4-n.Butyl-1,2-Diphenyl-3,5-Dioxopyrazolidines (IV.Sintez i issledovaniye sul'fidov i disul'fidov 1,2-difenil-i 4-n.-butil-1,2-difenil-3,5-dioksopirazolidinov)

PERIODICAL: Zhurnal obshchey khimii, 1958, Vol 28, Nr 11, pp 3030 - 3036 (USSR)

ABSTRACT: In the present paper the results of the investigations of the reactivity of chloro, bromo, and thiocyano derivatives of the 1,2-diphenyl and 4-n.-butyl-1,2-diphenyl-3,5-dioxopyrazolidine are described. The 4-bromo-1,2-diphenyl-3,5-dioxopyrazolidine (I) in the reaction with sodium sulfide leads to the formation of the sulfide (I) as main product, and to the compound (III) as secondary product. The

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SOV/79-28-11-29/55

Investigations in the Field of the Chemistry of Pyrazolidine. IV. Synthesis and Investigation of the Sulfides and Disulfides of the 1,2-Diphenyl and 4-n.-Butyl-1,2-Diphenyl-3,5-Dioxopyrazolidines

4-bromo-4-n.-butyl-1,2-diphenyl-3,5-dioxopyrazolidine (VI) reacts with sodium sulfide under the formation of the sulfide (VII), as well as with triethyl ammonium diethyl phosphate (IV) under the formation of compound (VIII) and (IX), i.e. of thione and thiol structure. It was found that the 4-thiocyano-1,2-diphenyl-3,5-dioxopyrazolidine (X) easily enters reaction with alcoholic alkali liquor and yields the disulfide (XI). In the reaction of the 4-thiocyano-4-n.-butyl-1,2-diphenyl-3,5-dioxopyrazolidine with alcoholate a product without sulfur is obtained as final product. 4-bromo-4-n.-butyl-1,2-diphenyl-3,5-dioxopyrazolidin (VI) with sodium disulfide yields the disulfide of the di-4-n.-butyl-1,2-diphenyl-3,5-dioxopyrazolidine (XII). In the reaction of the bis-malonic ester with hydrazo benzene the bis-1,2-diphenyl-3,5-dioxopyrazolidine (III) (structural proof of the

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Investigations in the Field of the Chemistry of Pyrazolidine. IV. Synthesis and Investigation of the Sulfides and Disulfides of the 1,2-Diphenyl and 4-n.-Butyl-1,2-Diphenyl-3,5-Dioxopyrazolidines SOV/79-28-11-29/55

compound (III) by the other synthesis according to scheme 1) is formed. The experimental results show that in the series of the reactions the n.-butyl group at the C_4 atom exerts a mainly hampering influence on the reaction process. There are 5 references, 4 of which are Soviet.

ASSOCIATION: Leningradskiy khimiko-farmatsevticheskiy institut (Leningr[illegible] **Chemopharmaceutic** Institute)

SUBMITTED: July 1[illegible], 1[illegible]

Card 3/3

PESIN, V.G.; BELEN'KAYA-LOTSMANENKO, I.A.; KHALETSKIY, A.M.

2,1,3-Thia- and selenadiazole. Part 34: Alkylation, acylation, nitration, nitrosation of hydroxy derivatives of benz-2,1,3-thiadiazole. Zhur. ob. khim. 34 no.11:3763-3768 N '64
(MIRA 18:1)

1. Leningradskiy khimiko-farmatsevticheskiy institut.

AUTHORS: Pesin, V. G., Khaletskiy, A. M., SOV/79-28-12-25/41
[illegible]

TITLE: Investigations in the Field of Pyrazolidine Chemistry (Issledovaniya v oblasti khimii pirazolidina) V. On Some Anomalous Reactions of 1,2-Diphenyl-3,5-Dioxo Pyrazolidine and Its Halogen and Thiocyane Derivatives (V. O nekotorykh anomal'nykh reaktsiyakh 1,2-difenil-3,5-dioksopirazolidina i yego galogen- i rodanproizvodnykh)

PERIODICAL: Zhurnal obshchey khimii, 1958, Vol 28, Nr 12, pp 3274-3277 (USSR)

ABSTRACT: 1,2-diphenyl-and 4-n.-butyl-1,2-diphenyl-3,5-dioxo pyrazolidine sometimes react in an anomalous way. The authors showed already earlier (Ref 1) that in the reaction of 4-n.-butyl-4-thiocyano-1,2-diphenyl-3,5-dioxo pyrazolidine with alcoholic alkali a sulfur-free product, but no disulfide is formed. In this paper some anomalous reactions of 1,2-diphenyl-3,5-dioxo pyrazolidine and of its 4-bromo derivative are mentioned. 4-bromo-1,2-diphenyl-3,5-dioxo pyrazolidine (I) reacts, for instance, with potassium thiocyanate under the formation of compound (II), and not, as expected, of 4-thiocyano-1,2-diphenyl-3,5-dioxo pyrazolidine. Compound (II) is formed as by-product

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Investigations in the Field of Pyrazolidine Chemistry. SOV/79-28-12-25/41
V. On Some Anomalous Reactions of 1,2-Diphenyl-3,5-
Dioxo Pyrazolidine and Its Halogen and Thiocyane
Derivatives

according to reference 1, besides the main product (III), in the reaction of compound (I) with sodium sulfide, or with diethyl thiophosphate of triethyl ammonium (Scheme 1). Based on these reactions it may be assumed that the formation of compound (II) takes place radical-like. Thus, a number of anomalous reactions of 4-bromo-1,2-diphenyl-3,5-dioxo pyrazolidine with potassium thiocyanate, pyridine, p-chlorophenol and others were described; in this reaction products are formed which do not contain any sulfur or halogen. In the reaction of methylene-bis-malonic ester with hydrazo benzene the methylene-bis-1,2-diphenyl-3,5-dioxo pyrazolidine is formed. The anomalies mentioned corresponded probably to the irregular reaction of bromo malonyl chloride with excess hydrazo benzene (Scheme 3) as mentioned in publications (Ref 2). There are 4 references, 2 of which are Soviet.

ASSOCIATION: Leningradskiy khimiko-farmatsevticheskiy institut (Leningrad Chemo-Pharmaceutical Institute)

Card 2/3

PESIN, V.G.; KHALETSKIY, A.M.; KAUKHOVA, L.A.

Chemistry of 2,1,3-thiodiazole. Part 11: Chlorination and bromination of 1',2'-naphtho-2,1,3-thiodiazole. Zhur.ob. khim. 30 no.7:2187-2192 Jl '60. (MIRA 13:7)

1. Leningradskiy khimiko-farmatsevticheskiy institut.
(Thiadiazole)

PESIN, V.G.; SERGEYEV, V.A.; KHALETSKIY, A.M.

2,1,3-Thia- and selenadiazole. Part 32: Behavior of benz-2,1,3-thiadiazole and its derivatives toward chromic acid. Zhur. ob. khim. 34 no.11:3753-3756 N '64 (MIRA 18:1)

1. Leningradskiy khimiko farmatsevticheskiy institut.

PESIN, V.G.; D'YACHENKO, S.A.; KHALETSKIY, A.M.

2,1,3-Thia- and selenadiazole. Part 33: di(β-chlotoethyl) amino derivatives. Zhur. ob. khim. 34 no.11:3757-3763 N '64
(MIRA 18:1)

1. Leningradskiy khimiko-farmatsevticheskiy institut.

[illegible]

[illegible] Pharmaceutical Institute

"Salts of [illegible] Dithiophosphoric Acids. VIII. Reaction of Salts of Diethylthio and Dithiophosphoric Acids with Aromatic and Heterocyclic Halo-Derivatives"

Moscow, Zhurnal Obshchey Khimii, Vol 36, No 7, 1966, pp 1266-1271

TOPIC TAGS: [illegible], halogenated organic compound

Abstract: In the reaction of potassium diethylthiophosphate with 2,4-dinitrofluorobenzene, diethylfluorophosphate and 2,4-dinitro-thiophenolate were formed. A mechanism of their formation was proposed. Potassium diethyldithiophosphate was found to react analogously with 2,4-dinitrochlorobenzene and 2,4-dinitrofluorobenzene. Potassium diethylthiophosphate reacted with picryl chloride, 2-chlorobenzothiazole, 2-chloro-6-nitrobenzothiazole, 4-chloro-7-nitrobenz-2,1,3-thiadiazole, 2-chloro-5-nitropyridine, and 2-chloro-3,5-dinitropyridine, forming sulfides R-S-R. o-Nitrochlorobenzene, p-nitrochlorobenzene, 2-bromopyridine, and 8-chlorocaffeine do not take part in this reaction with potassium diethylthiophosphate. Potassium diethylthiophosphate reacted with benzoyl chloride and p-nitrobenzoyl chloride to form the corresponding thiol derivatives: O,O-diethyl-S-benzoyl thiophosphate and O,O-diethyl-S-p-nitrobenzoyl thiophosphate, respectively. Orig. art. has: 2 figures and 1 table. [JPRS: 38,970]

SUB CODE: 07 / SUBM DATE: 15Jun65 / ORIG REF: 015 / OTH REF: 024

Card 1/1

UDC: 547.26'118

PESIN, V.G.; VITENBERG, I.G.

Reaction of aromatic and heterocyclic thiocyano derivative with diethyl and triethyl phosphite. Zhur. ob. khim. 35 no.5:930 My '65. (MIRA 18:6)

1. Leningradskiy khimiko-farmatsevticheskiy institut.

PESIN, V.G.; D'YACHENKO, Ye.K.

Chloromethylation of 2,1,3-benzothiadiazole and its derivatives. Zhur. ob. khim. 34 no.7:2475 Jl '64 (MIRA 17:8)

1. Leningradskiy khimiko-farmatsevticheskiy institut.

L 17957-65 EWT(m)/EPF(c)/EWP(j) Pc-4/Pr-4 RM S/0079/64/034/008/2769/2773
ACCESSION NR: AP5002623

AUTHOR: Pesin, V. G.; Vitenberg, I. G.; Khaletskiy, A. M. 6

TITLE: Salts of dialkyl- and diarylmonothio- and dithiophosphoric acids. VIII. Interaction of salts of dialkyl-and diphenyl-dithiophosphoric acids with aromatic and heterocyclic halo derivatives

SOURCE: Zhurnal obshchey khimii, v. 34, no. 8, 1964, 2769-2773

TOPIC TAGS: phosphoric acid, sulfide, halogenated organic compound, ester, ammonium salt, elemental halogen

Abstract: Halogen derivatives that form chiefly sulfides with alkali salts of dialkyl- and diphenylthiophosphoric acids also react with alkali salts of diphenyldithiophosphoric acid, to form sulfides with the structure R-S-R; with sals of dialkyldithiophosphoric acids, the corresponding esters of dithiophosphoric acids, with the structure $RSP(S)(OAlk)_2$ are principally formed. The nature of the aromatic and heterocyclic halogen derivatives and that of the solvent influence the course of the reaction: 2,4-dinitrochlorobenzene reacts with the potassium or ammonium salt of diethyldithiophosphoric acid in alcohol to form a mixture of 2,4,2',4'-tetranitrodiphenyl sulfide and 2,4,2',4'-tetranitrodiphenyl disulfide; in acetone, 40% of the

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ACCESSION NR: AP5002623

sulfide, 2-3% of the disulfide, and some 0,0-diethyl-S-2,4-dinitrophenyl dithiophosphate were formed. When the reaction is conducted with 4-nitro-5-bromobenz-2,1,3-thiadiazole, both in alcohol and in acetone, a mixture of the sulfide and the dithiophosphoric acid ester is formed. The reaction was also studied with the chloro derivatives: 2,4-dinitrochloronaphthalene, 2-ethoxy-5-nitro-9-chloroacridine, 4-bromo-4-butyl-1,2-diphenyl-3,5-dioxo-pyrazolidine, and 4-bromoantipyrine. Orig. art. has 1 formula and 2 tables.

ASSOCIATION: Leningradskiy khimiko-farmatsevticheskiy institute (Leningrad Chemicopharmaceutical Institute)

SUBMITTED: 19Jun63
ENCL: 00
SUB CODE: OC, GC

NO REF SOV: 007
OTHER: 005
JPRS

Card 2/2

BALONOVA, E.M.; KHALETSKIY, A.M.; PESIN, V.G.

Esters of β-sitosterol. Zhur. ob. khim. 34 no.7:2157-2158
Jl '64
(MIRA 17:8)

1. Leningradskiy khimiko-farmatsevticheskiy institut.

PESIN, V. G.; SERGEYEV, V. A.; KHALETSKIY, A. M.

2,1,3-Thia-and selenadiazoles. Part 30: Nitration of mono- and dimethyl derivatives of benzo-2,1,3-thiadiazole. Zhur. ob. Khim. 34 no.6:1986-1992 Je '64. (MIRA 17:7)

1. Leningradskiy khimiko-farmatsevticheskiy institut.

PESIN, V.G.; ZOLOTOVA-ZOLOTUKHINA, L.V.; KHALETSKIY, A.M.

2,1,3,-Thiadiazoles and selenadiazole. Part 24: Synthesis and study of 2-mercapto[3,4-e]thiazolo- and [4,5-e]benzo-2',1',3'-thiadiazoles. Zhur.ob.khim. 34 no.1:255-260 Ja '64. (MIRA 17:3)

1. Leningradskiy khimiko-farmatsevticheskiy institut.

PESIN, V.G.; KHALETSKIY, A.M.; SERGEYEV, V.A.

2,1,3-Thiadiazoles and selenadiazoles. Part 25: Direct amination of 2,1,3-benzothiadiazole derivatives. Zhur.ob.khim. 34 no.1:261-272 Ja '64. (MIRA 17:3)

1. Leningradskiy khimiko-farmatsevticheskiy institut.

ZONIS, L.S.; KHALETSKIY, A.M.; PESIN, V.G.

Synthesis and study of 1-[p-β-diethylaminoethoxyphenyl)-p-tolyl-2-p-chlorophenyl] ethanol. Zhur.ob.khim. 33 no.10:3141-3142 0 '63. (MIRA 16:11)

1. Leningradskiy khimiko-farmatsevticheskiy institut.

PESIN, V.G.; KHALETSKIY, A.M.; SERGEYEV, V.A.

2,1,3-Thiodiazole. Part 22: Nitration of derivatives of benzo-2,1,3-thiodiazole. Zhur.ob.khim. 33 no.6:1759-1766 Je '63. (MIRA 16:7)

1. Leningradskiy khimiko-farmatsevticheskiy institut.
(Benzothiadiazole) (Nitration)

PESIN, V.G.; KHALETSKIY, A.M.; LOTSMANENKO, I.A.

2,1,3-Thiodiazole. Part 21: Chlorination, bromination, and nitration of 4- and 5-hydroxybenzo-2,1,3-thiodiazoles. Zhur.ob.khim. 33 no.6:1752-1759 Je '63. (MIRA 16:7)

1. Leningradskiy khimiko-farmatsevticheskiy institut.
(Benzothiadiazole) (Halogenation) (Nitration)

PESIN, V.G.; KHALETSKIY, A.M.; LOTSMANENKO, I.A.

2,1,3-Thiodiazole. Part 20: Bucherer reactions and diazotization involving amino derivatives of benzo-2,1,3-thiodiazole. Zhur.ob.khim. 33 no.6:1746-1752 Je '63. (MIRA 16:7)

1. Leningradskiy khimiko-farmatsevticheskiy institut.
(Benzothiazole) (Amino compounds)

PESIN, V.G.; KHALETSKIY, A.M.; LOTSMANENKO, I.A.

Chemistry of 2,1.3-thiodiazole. Part 18: Esters and amides of
5,7-dihalobenzo-2,1,3-thiodiazole-4-hydroxyacetic acids. Zhur. ob.
khim. 33 no.4:1096-1101 Ap '63. (MIRA 16:5

1. Leningradskiy khimiko-farmatsevticheskiy institut.
(Thiadiazole) (Acetic acid)

PESIN, V.G.; KHALETSKIY, A.M.; ZOLOTOVA-ZOLOTUKHINA, L.V.

Chemistry of 2,1,3-thio- and selenodiazoles. Part 19:
Synthesis of 2-methylthiazolo (5,4-g)- and 2-methylthiazolo
(4,5-g) benzo-2', 1',3'-thiodiazoles and their seleno analogs.
Zhur.ob.khim. 33 no.4:1101-1104 Ap '63. (MIRA 16:5)

1. Leningradskiy khimiko-farmatsevticheskiy institut.
(Thiazole) (Thiadiazole) (Selenium organic compounds)

PESIN, V.G.; KHALETSKIY, A.M.; SERGEYEV, V.A.

Chemistry of 2,1,3-benzothiadiazole. Part 17: Halogenation
of 2,1,3-benzothiadiazole and its halo derivatives. Zhur.ob.khim.
33 no.3:949-952 Mr '63. (MIRA 16:3)

1. Leningradskiy khimiko-farmatsevticheskiy institut.
(Benzothiadiazole) (Halogenation)

PESIN, V.G.; KHALETSKII, A.M.; VITENBERG, I.G.

Salts of dialkyl phosphorothioic acids. Part 5: Interaction of slats of dialkyl phosphorothioic acids with aromatic halogen derivatives. Zhur.ob.khim. 33 no.2:388-391 F '63. (MIRA 16:2)

1. Leningradskiy khimiko-farmatsevticheskiy institut.
(Phosphorothioic acid) (Halogen compounds)

PESIN, V. G.; KHALETSKIY, A. M.; SERGEYEV, V. A.

Chemistry of 2,1,3-thiodiazole. Part 16: Chlorination, bromination and thiocyanation of 5-aminobenzo-2,1,3-thiodiazole. Zhur. ob. khim. 33 no.1:230-233 '63. (MIRA 16:1)

1. Leningradskiy khimiko-farmatsevticheskiy institut.

(Thiadiazole)

PESIN, V.G.; KHALETSKIY, A.M.; D'YACHENKO, Ye.K.

Chemistry of 2,1,3-thiodiazole. Part 15: Oxidation of benzo-2,1,3-thiodiazole by potassium permanganate. Zhur.ob.khim. 32 no.11:3505-3510 N '62. (MIRA 15:11)

1. Leningradskiy khimiko-farmatsevticheskiy institut.
(Thiadiazole) (Oxidation)

PESIN, V.G.; KHALETSKIY, A.M.

Chemistry of 2,1,3-thio and selenodiazoles. Part 14:
Reactivity of bromine in derivatives of 2,1,3-benzothiadiazole.
Zhur.ob.khim. 32 no.10:3284-3290 O '62. (MIRA 15:11)

1. Leningradskiy khimiko-farmatsevticheskiy institut.
(Benzothiadiazole) (Bromine)

KHALETSKIY, A.M.; PESIN, V.G.; VITENBERG, I.G.

Synthesis of amides of β-phenylisopropylamine and of some carboxylic acids. Zhur.ob.khim. 32 no.4:1068-1071 Ap '62. (MIRA 15:4)

1. Leningradskiy khimiko-farmatsevticheskiy institut.
(Isopropylamine) (Amides)

PESIN, V.G.; KHALETSKIY, A.M.; ZOLOTOVA-ZOLOTUKHINA, L.V.

Chemistry of 2,1,3-thio- and selendiazole. Part 12: Synthesis and study of derivatives of pyrimidine-2,1,3-thio and selendiazole. Zhur.ob.khim. 31 no.9:3000-3003 S '61. (MIRA 14:9)

1. Leningradskiy khimiko-farmatsevticheskiy institut.
(Pyrimidine) (Selenium organic compounds)

ZONIS, L.S.; KHALETSKIY, A.M.; PESIN, V.G.

Synthesis and study of some 5,5'-dialkylaminoalkyl derivatives of barbituric and thiobarbituric acids. Zhur.ob.khim. 31 no.9:3004-3006 S '61. (MIRA 14:9)

1. Leningradskiy khimiko-farmatsevticheskiy institut.
(Barbituric acid)

PESIN, V.G.; KHALETSKIY, A.M.

Salts of dialkylthiophosphoric acids. Zhur. ob khim. 31 no.8:2508-2515 Ag '61. (MIRA 14:8)

1. Leningradskiy khimiko-farmatsevticheskiy institut.
(Phosphorothioic acid)

PESIN, V.G.; KHALETSKIY, A.M.

Salts of dialkylthiophosphoric acids. Part 2: Properties of di-(β-chloroethyl)-phosphorous acid. Zhur. ob. khim. 31 no.8: 2515-2518 Ag '61. (MIRA 14:8)

1. Leningradskiy khimiko-farmatsevticheskiy institut.
(Phosphorous acid)

PESIN, V.G.; KHALETSKIY, A.M.

Salts of dialkylthiophosphoric acids. Part 3: Reactivity and structure of diethylthiophosphoric acid salts. Zhur. ob. khim. 31 no.8:2518-2522 Ag '61. (MIRA 14:8)

1. Leningradskiy khimiko-farmatsevticheskiy institut.
(Phosphorothioic acid)

PESIN, V.G.; KHALETSKIY, A.M.; VITENBERG, I.G.

Salts of dialkylthiophosphoric acids. Part 4: Reactions of dialkylthiophosphoric acid salts with aromatic and heterocyclic halogen derivatives. Zhur. ob. khim. 31 no.8:2522-2526 Ag '61.
(MIRA 14:8)

1. Leningradskiy khimiko-farmatsevticheskiy institut.
(Phosphorothioic acid) (Halogen compounds)

PESIN, V.G.; KHALETSKIY, A.M.; SERGEYEV, V.A.

2,1,3-Thio- and selendiazoles. Part 13: Nitration of 4- and 5-aminobenz-2,1,3-thiodiazoles. Zhur. ob. khim. 32 no.1:181-186 Ja '62. (MIRA 15:2)

1. Leningradskiy khimiko-farmatsevticheskiy institut.
(Thiadiazole) (Nitration)

PESIN, V.G.; VITENBERG, I.G.; KHALETSKIY, A.M.

Salts of dialkyl- and diarylphosphorothioic and diaryl-
phosphorodithioic acids. Part 7: Interaction of the salts
of dialkyl- and diphenylphosphorodithioic acids with aromatic
and heterocyclic halo derivatives. Zhur. ob. khim. 34 no.8:
2769-2773 Ag '64. (MIRA 17:9)

1. Leningradskiy khimiko-farmatsevticheskiy institut.

ACCESSION NR: AP5011028 UR/0079/64/034/011/3753/3756

/B

AUTHOR: Pesin, V. G.; Sergeyev, V. A.; Khaletskiy, A. M.

TITLE: Investigations in the field of 2, 1, 3-thia- and -selenadiazole. XXXII. Behavior of benz-2, 1, 3-thiadiazole, and its derivatives toward chromic acid

SOURCE: Zhurnal obshchey khimii, v. 34, no. 11, 1964, 3753-3756

TOPIC TAGS: chromic acid, organic nitrogen compound, organic azo compound, organic sulfur compound

Abstract: Under the action of chromic anhydride in sulfuric acid on benz-2,1,3-thiadiazole, its 4- and 5-methyl- and 5,6-dimethyl derivatives, 2,1,3-thiadiazole-4,5-dicarboxylic acid was formed in satisfactory yield. In the case of 5-bromobenz-2,1,3-thiadiazole, in addition to the latter, 4,5-dibromobenz-2,1,3-thiadiazole was formed. 5-Chloro-, 4,7-dichloro-, 4,7-dibromi-, 4-nitro-, and 5-nitrobenz-2,1,3-thiadiazoles manifested high stability toward this oxidizing agent. In the reaction of 2,1,3-thiadiazole-4,5-dicarboxylic acids with organic bases (aniline, isomeric toluidines, pyridine, p-anisidine, p-phenetidine, and piperazine, the corresponding acid salts were produced; with beta-phenyl-isopropylamine, dimethylaminoethylamine, and piperidine, neutral salts were formed. Orig. art. has 7 formulas and 3 tables.

Card 1/2

ACCESSION NR: AP5011028

ASSOCIATION: Leningradskiy khimiko-farmatsevticheskiy institut (Leningrad Chemicopharmaceutical Institute)

SUBMITTED: 26Jun63 ENCL: 00 SUB CODE: OC, GC

NO REF SOV: 010 OTHER: 015 JPRS

Card 2/2

ACCESSION NR: AP5011029 UR/C079/64/034/011/3757/3762

1
B

AUTHOR: Pesin, V. G.; D'yachenko, S. A.; Khaletskiy, A. M.

TITLE: Investigation in the field of 2,1,3-thia-and -selenadiazole. XXXIII. Di (beta-chloroethyl) amino derivatives

SOURCE: Zhurnal obshchey khimii, v. 34, no. 11, 1964, 3757-3762

TOPIC TAGS: organic azo compound, organic nitrogen compound, organic sulfur compound

Abstract: 4- and 5-Aminobenz-2,1,3-thiadiazoles were found to react with ethylene oxide, forming 4- and 5-beta-hydroxyethyl)aminobenz-2,1,3-thiadiazoles. The reaction of 5-methyl-4-amino, 4-methyl-5-amino-, and 4-methyl-7-aminobenz-2,1,3-thiadiazoles with ethylene oxide produced the corresponding di(beta-hydroxyethyl)amino derivatives of benz-2,1,3-thiadiazole. 5-Methyl-4-aminobenz-2,1,3-selenadiazole formed 5-methyl-4-di(beta-hydroxyethyl)aminobenz-2,1,3-selenadiazole. The reaction of 4- and 5-bromoethylbenz-2,1,3-thiadiazoles, 5-bromo-4-nitro- and 5-methoxy-4-nitrobenz-2,1,3-thiadiazoles with diethanolamine produced the corresponding di(beta-hydroxyethyl)amino derivatives of benz-2,1,3-thiadiazole. 5-Bromo-4-nitrobenz-2,1,3-selenadiazole formed 4-nitro-5-

Card 1/2

ACCESSION NR: AP5011029

(beta-hydroxyethyl)aminobenz-2,1,3-selenadiazole in the reaction with diethanolamine. The reaction of the di(beta-hydroxyethyl)-amino derivatives of benz-2,1,3-thia- and -selenadiazoles with thionyl chloride produced the corresponding di(beta-chloroethyl)amino derivatives of benz-2,1,3-thia- and -selenadiazoles. Orig. art. has 1 table.

ASSOCIATION: Leningradskiy khimiko-farmatsevticheskiy institut (Leningrad Chemicopharmaceutical Institute)

SUBMITTED: 26Jun63 ENCL: 00 SUB CODE: OC, GC

NO REF SOV: 006 OTHER: 003 JPRS

Card 2/2

ACCESSION NR: AP5011030 UR/0079/64/034/011/3763/3768

1
B

AUTHOR: Pesin, V. G.; Belen'kaya-Lotsmanenko, I. A.; Khaletskiy, A. M.

TITLE: Investigations in the field of 2,1,3-thia- and -selenadiazole. XXXIV. Alkylation, acylation, nitration, and nitrosylation of hydroxy derivatives of benz-2, 1, 3-thiadiazole

SOURCE: Zhurnal obshchey khimii, v. 34, no. 11, 1964, 3763-3768

TOPIC TAGS: organic azo compound, organic nitrogen compound, alkylation, nitration, nitrification, organic sulfur compound

Abstract: Alkylation and acylation of 4- and 5-hydroxybenz-2,1,3-thiadiazoles produced 4- and 5-methoxy-, -ethoxy, and -acetoxybenz-2,1,3-thiadiazoles, respectively. In the nitration of 4- and 5-ethoxybenz-2,1,3-thiadiazoles, 4-ethoxy-5,7-dinitro- and 5-ethoxy-4-nitrobenz-2,1,3-thiadiazoles were produced, respectively. Nitration of 4-hydroxy-7-nitrobenz-2,1,3-thiadiazole, as well as hydrolysis of 4-chloro-5,7-dinitro- and 4-ethoxy-5,7-dinitrobenz-2,1,3-thiadiazole produced 4-hydroxy-5,7-dinitrobenz-2,1,3-thiadiazole; the latter was reduced with sodium hyposulfite to 4-hydroxy-5,7-diaminobenz-2,1,3-thiadiazole. In the nitrosylation of 4- and 5-hydroxybenz-2,1,3-thiadiazoles, 4-hydroxy-7-nitroso- and 5-hydroxy-4-nitrosobenz-2,1,3-thiadiazoles were

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ACCESSION NR: AP5011030

obtained, respectively. 4-Hydroxy-7-amino- and 5-hydroxy-4-aminobenz-2,1,3-thiadiazoles, were produced by reducing the corresponding nitro- and nitroso-derivatives. 4-Hyrdoxy-7-aminobenz-2,1,3-thiadiazole readily formed 4-hydroxy-7-acetaminobenz-2,1,3-thiadiazole when treated with acetic anhydride. Treatment of the product with ethyl iodide resulted in the formation of a black mass, from which 4-theoxy-7-acetaminobenz-2,1,3-thiadiazole could not be isolated. A study of the methylation of 4- and 5-hydroxybenz-2,1,3-thiadiazoles according to Friedel-Krafts showed that the reaction does not take place under normal conditions, evidently as a result of the deactivating influence of the thiadiazole ring. Oxazolo /4,5-e7benz-2,1,3-thiadiazole was produced by the action of 5-hydroxy-4-aminobenz-2,1,3-thiadiazole with orthoformic ester.

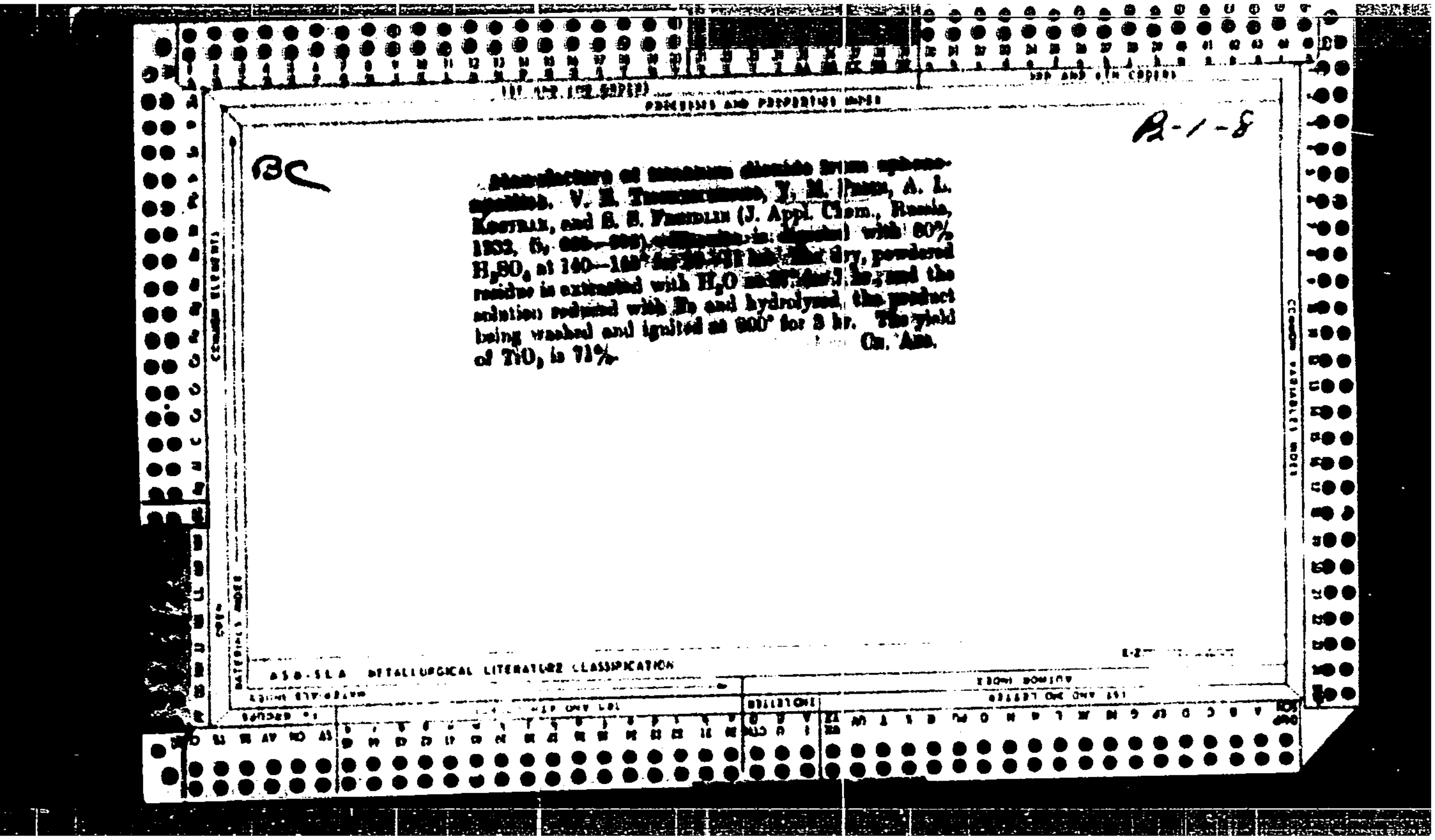
Orig. art. has 2 formulas.

ASSOCIATION: Leningradskiy khimiko-farmatsevticheskiy institut (Leningrad Chemico-pharmaceutical Institute)

SUBMITTED: 11Jul63 ENCL: 00 SUB CODE: OC, GC

NO REF SOV: 010 OTHER: 001 JPRS

Card 2/2



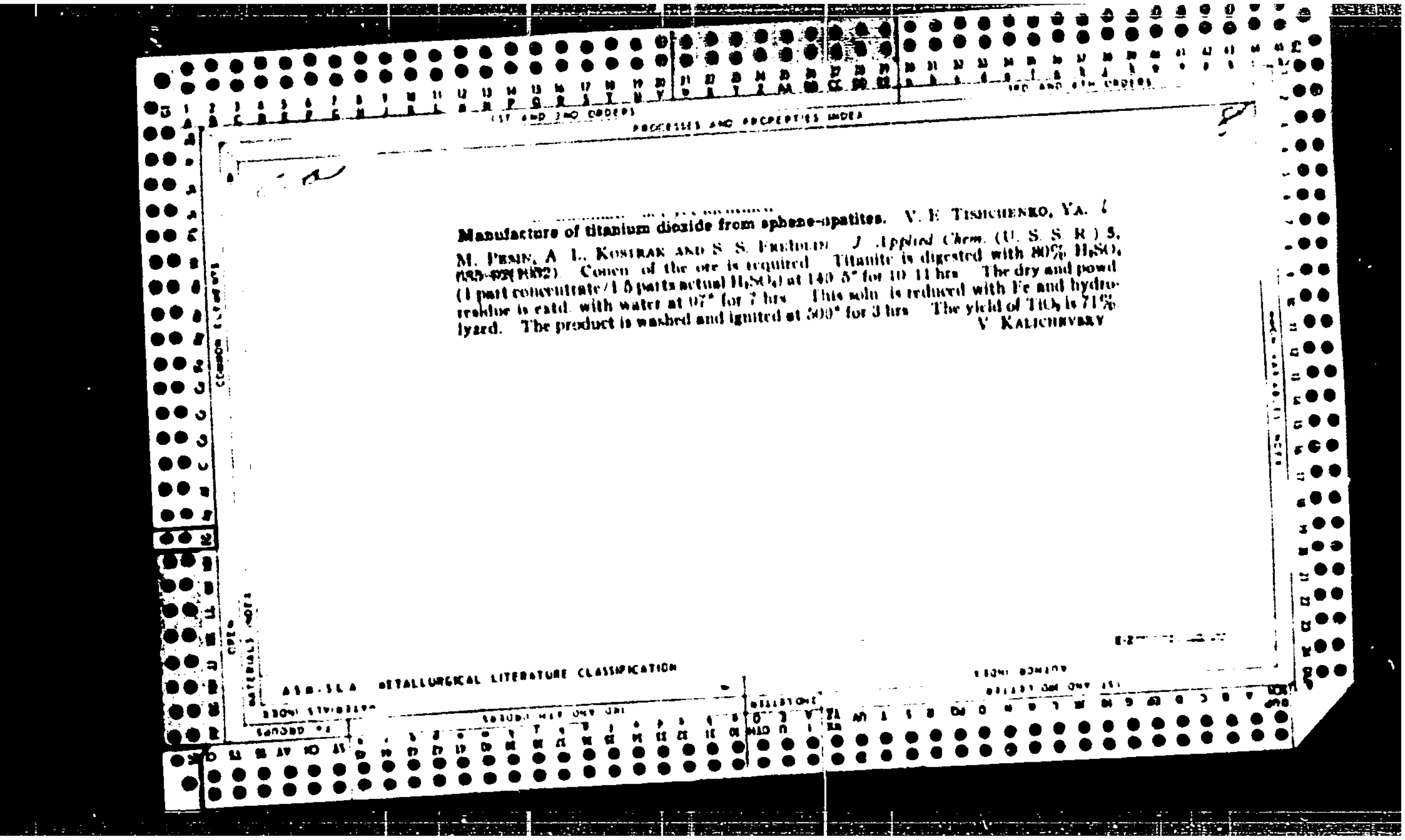
PROCESSES AND PROPERTIES INDEX

BC

B-1-8

Manufacture of [illegible] dioxide from [illegible] [illegible]. V. I. T[illegible], Y. M. [illegible], A. L. K[illegible], and B. S. Freidlin (J. Appl. Chem., Russia, 1932, 5, [illegible]).—[illegible] with 60% H_2SO_4 at 140—160° [illegible] dry, powdered residue is extracted with H_2O [illegible] hr., and the solution reduced with Fe and hydrolysed, the product being washed and ignited at 900° for 3 hr. The yield of TiO_2 is 71%. Ch. Abs.

ASB-SLA METALLURGICAL LITERATURE CLASSIFICATION



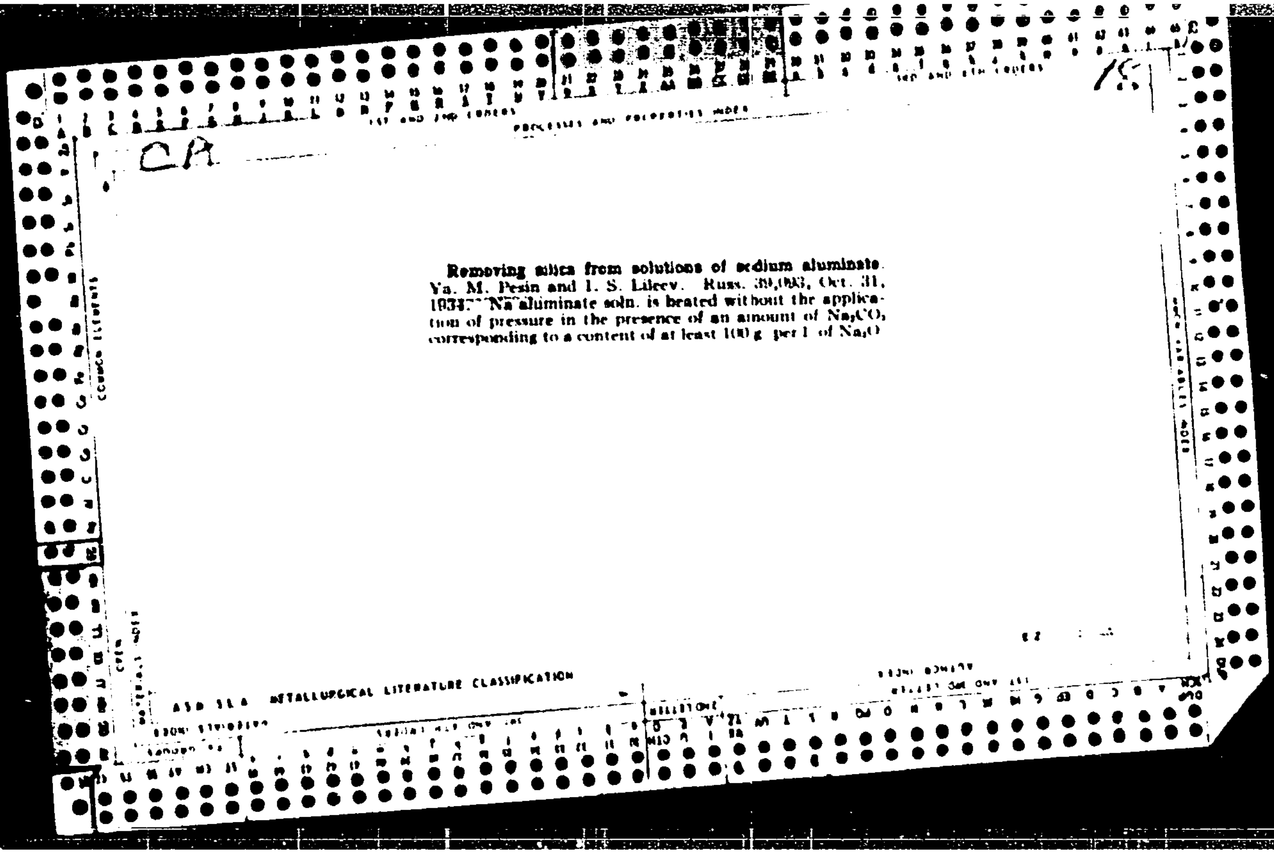
V. E. Tishchenko, Ya. I.
Manufacture of titanium dioxide from sphene-apatites. J. Applied Chem. (U. S. S. R.) 5,
M. Pesin, A. L. Kostrak and S. S. Freidlin
985-92(1932). Concn. of the ore is required. Titanite is digested with 80% H_2SO_4 (1 part concentrate/1.5 parts actual H_2SO_4) at 140-5° for 10-11 hrs. The dry and powd. residue is extd. with water at 97° for 7 hrs. This soln. is reduced with Fe and hydrolyzed. The product is washed and ignited at 500° for 3 hrs. The yield of TiO_2 is 71%.

V. Kalichevsky

ZUBOV, V.Ya.; GRACHEV, S.V.; PESIN, Ya.A.

Stress relaxation during martensite transformations of residual austenite. Izv.vys.ucheb.zav.; chern.met. no.5:115-120 '60. (MIRA 13:6)

1. Ural'skiy politekhnicheskiy institut.
(Steel--Metallography) (Strains and stresses)



CA

15

PROCESSES AND PROPERTIES INDEX

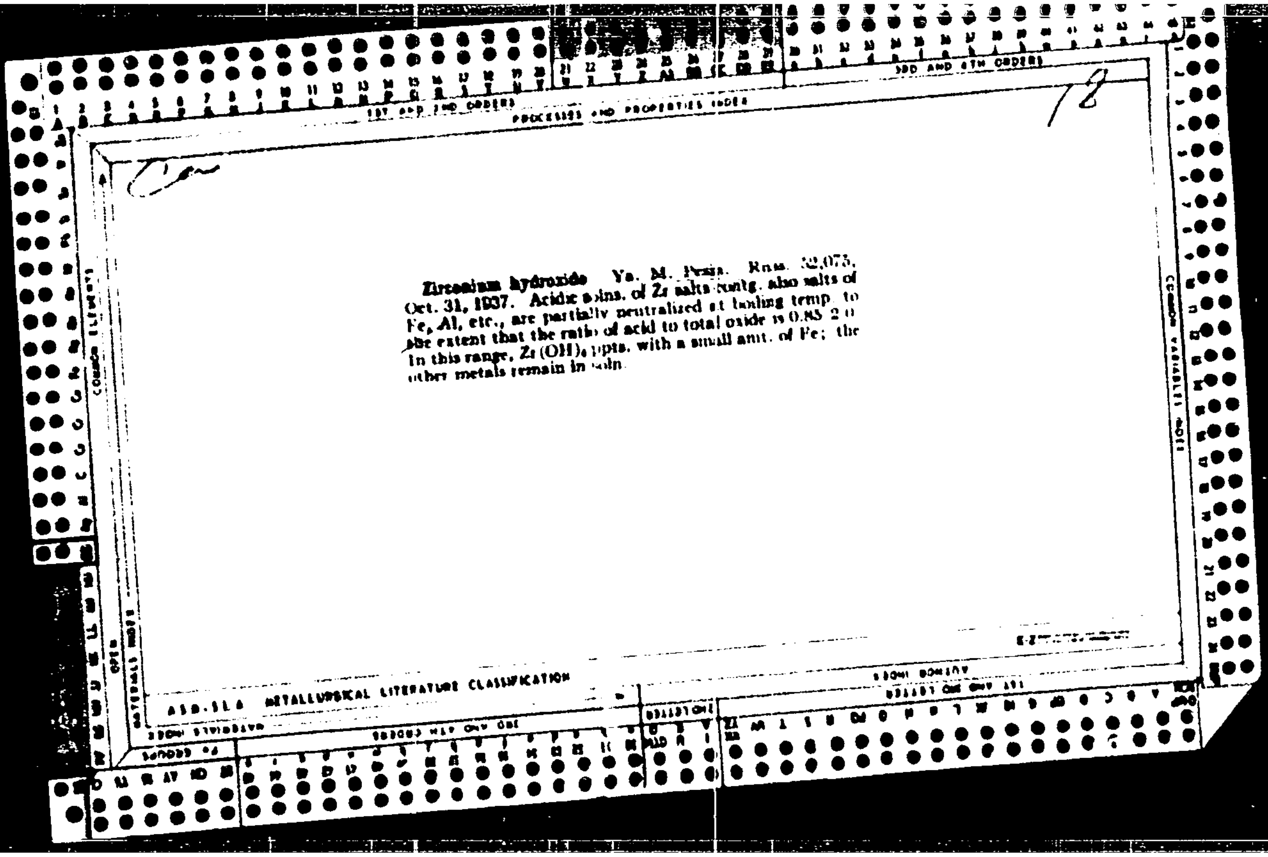
Removing silica from solutions of sodium aluminate. Ya. M. Pesin and I. S. Lileev. Russ. 39,093, Oct. 31, 1934. Na aluminate soln. is heated without the application of pressure in the presence of an amount of Na_2CO_3 corresponding to a content of at least 100 g. per l. of Na_2O

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

6a

Zirconium oxide and calcium nitrate. D. I. Vol'fkovich and Ya. M. [illegible]. Russ. 40,259, March 31, 1935. Eudialyte concentrate is dissolved in HNO_3 and Zr is pptd. as phosphate by means of apatite.

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION



1ST AND 2ND ORDERS

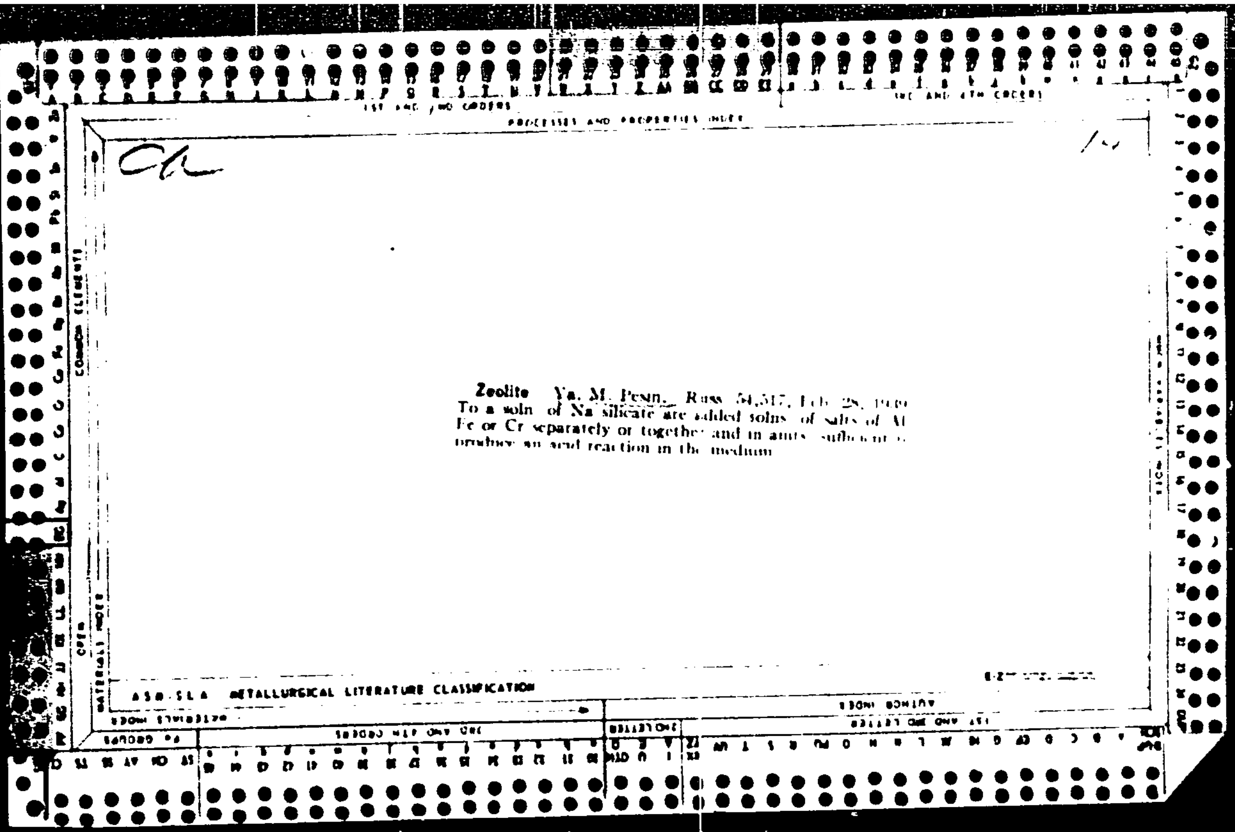
PROCESSES AND PROPERTIES INDEX

3RD AND 4TH ORDERS

18

Zirconium hydroxide. Ya. M. Pesin. Russ. 52,075, Oct. 31, 1937. Acidic solns. of Zr salts contg. also salts of Fe, Al, etc., are partially neutralized at boiling temp. to the extent that the ratio of acid to total oxide is 0.85-2.0. In this range, $Zr(OH)_4$ ppts. with a small amt. of Fe; the other metals remain in soln.

ASB-SLA METALLURGICAL LITERATURE CLASSIFICATION



Ch

PROCESSES AND PROPERTIES INDEX

Zeolite. Ya. M. Pesin. Russ. 54,517, Feb. 28, 1939. To a soln. of Na silicate are added solns. of salts of Al, Fe or Cr separately or together and in amts. sufficient to produce an acid reaction in the medium.

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

1ST AND 2ND ORDERS

3RD AND 4TH ORDERS

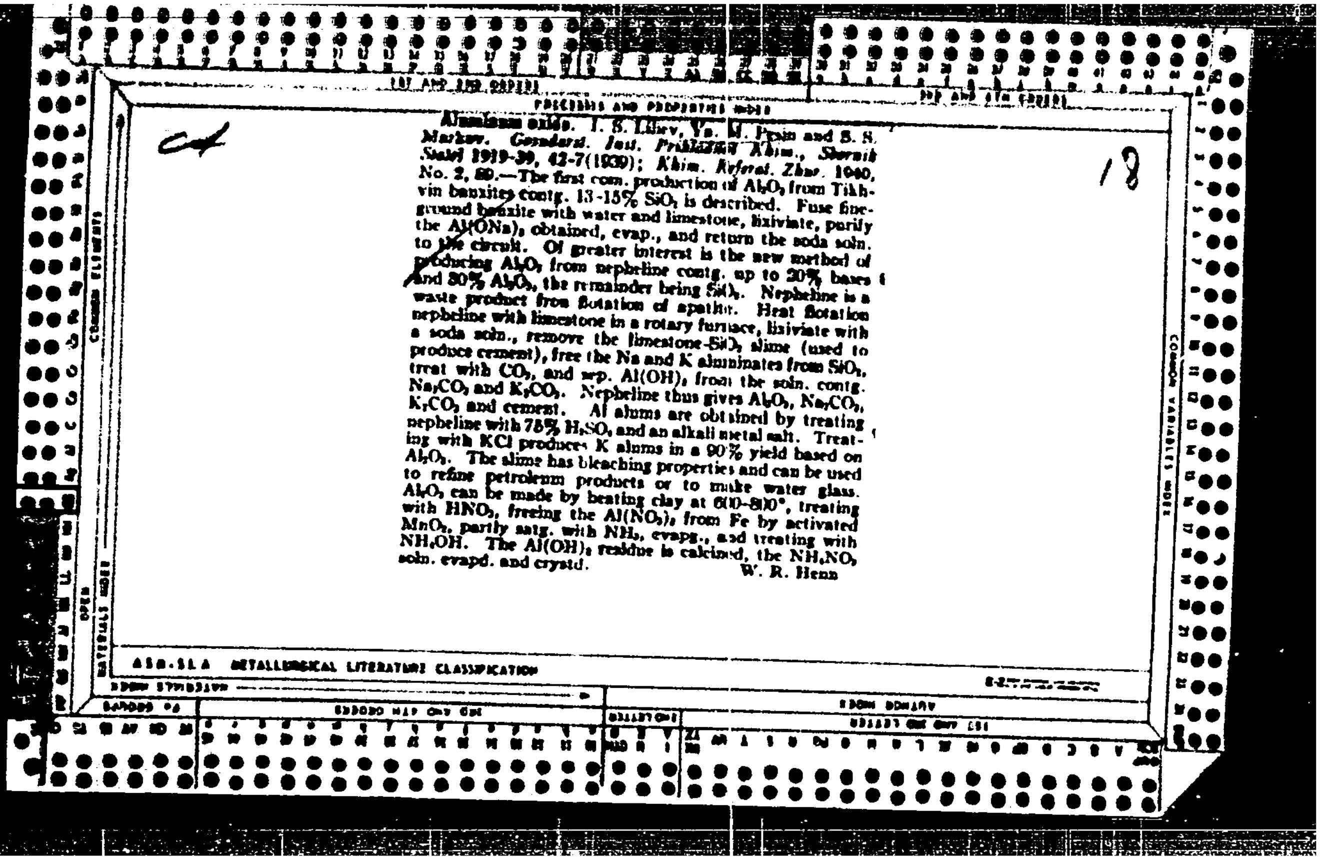
PROCESSES AND PROPERTIES INDEX

18

Alkalies. Ya. M. Pesin. Russ. 55,943, Oct. 31, 1939. Alkali permutite is treated with a soln. of NH_4OH and the NH_4 permutite is regenerated by known methods by means of the chloride of the corresponding alkali metal.

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

Lileev, I. S., Pesin, Ya. M., and Markov, S. S. ALUMINUM OXIDE. *Gosudarst. Inst. Prikladnoi Khim., Sbornik Statei,* 1919-39, 42-47 (1939).—The first commercial production of Al_2O_3 from Tikhvin bauxites containing 13 to 15% SiO_2 is described. The steps are as follows: fuse fine-ground bauxite with water and limestone, lixiviate, purify the $Al(ONa)_3$ obtained, evaporate, and return the soda solution to the circuit. Of greater interest is the new method producing Al_2O_3 from nepheline containing up to 20% bases and 30% Al_2O_3, the remainder being SiO_2. Nepheline is a waste product from the flotation of apatite. The method consists in heating flotation nepheline with limestone in a rotary furnace, lixiviating with a soda solution, removing the limestone-SiO_2 slime (used to produce cement), freeing the Na and K aluminates from SiO_2, treating with CO_2, and separating $Al(OH)_3$ from the solution containing Na_2CO_3 and K_2CO_3. Nepheline thus gives Al_2O_3, Na_2CO_3, K_2CO_3, and cement. Al alums are obtained by treating nepheline with 75% H_2SO_4 and an alkali metal salt. Treating with KCl produces K alums in a 90% yield based on Al_2O_3. The slime has bleaching properties and can be used to refine petroleum products or to make water glass. Al_2O_3 can be obtained by heating clay at 600° to 800°, treating with HNO_3, freeing the $Al(NO_3)_3$ from Fe by activated MnO_2, partly saturating with NH_3, evaporating, and treating with NH_4OH. The $Al(OH)_3$ residue is calcined, and the NH_4NO_3 solution is evaporated and crystallized.



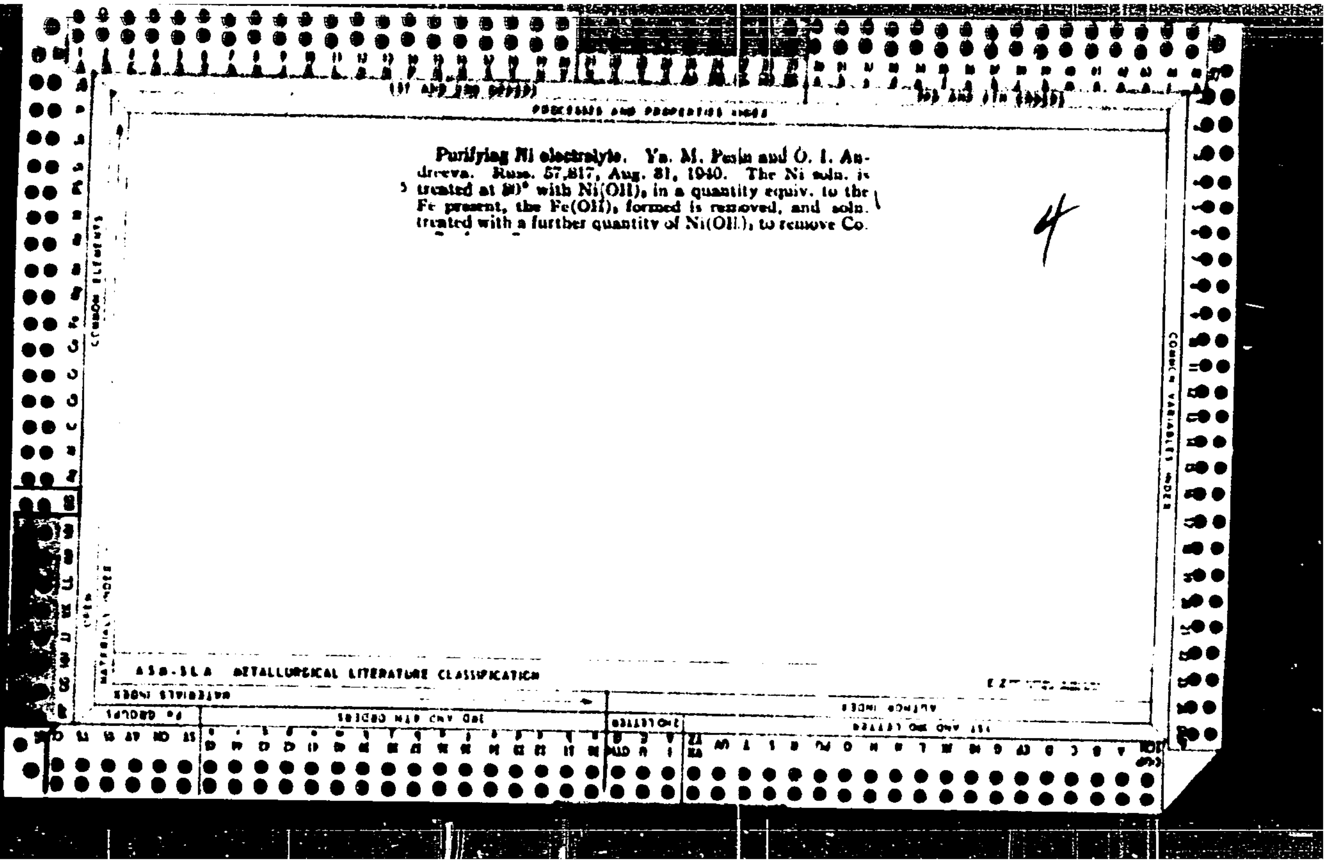
PROCESSES AND PROPERTIES INDEX

cof 18

Aluminum oxide. I. S. Lilev, Ya. N. Pesin and S. S. Markov. *Gosudarst. Inst. Prikladnoi Khim., Sbornik Statei* 1919-39, 42-7(1939); *Khim. Referat. Zhur.* 1940, No. 2, 80.—The first com. production of Al_2O_3 from Tikhvin bauxites contg. 13-15% SiO_2 is described. Fuse fine-ground bauxite with water and limestone, lixiviate, purify the $Al(ONa)_3$ obtained, evap., and return the soda soln. to the circuit. Of greater interest is the new method of producing Al_2O_3 from nepheline contg. up to 20% bases and 30% Al_2O_3, the remainder being SiO_2. Nepheline is a waste product from flotation of apatite. Heat flotation nepheline with limestone in a rotary furnace, lixiviate with a soda soln., remove the limestone-SiO_2 slime (used to produce cement), free the Na and K aluminates from SiO_2, treat with CO_2, and sep. $Al(OH)_3$ from the soln. contg. Na_2CO_3 and K_2CO_3. Nepheline thus gives Al_2O_3, Na_2CO_3, K_2CO_3 and cement. Al alums are obtained by treating nepheline with 75% H_2SO_4 and an alkali metal salt. Treating with KCl produces K alums in a 90% yield based on Al_2O_3. The slime has bleaching properties and can be used to refine petroleum products or to make water glass. Al_2O_3 can be made by heating clay at 600-800°, treating with HNO_3, freeing the $Al(NO_3)_3$ from Fe by activated MnO_2, partly satg. with NH_3, evapg., and treating with NH_4OH. The $Al(OH)_3$ residue is calcined, the NH_4NO_3 soln. evapd. and crystd.

W. R. Henn

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION



PROCESSES AND PROPERTIES INDEX

Purifying Ni electrolyte. Ya. M. Pesin and O. I. Andreeva. Russ. 57,817, Aug. 31, 1940. The Ni soln. is treated at 80° with $Ni(OH)_2$ in a quantity equiv. to the Fe present, the $Fe(OH)_3$ formed is removed, and soln. treated with a further quantity of $Ni(OH)_3$ to remove Co.

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ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

1ST AND 2ND ORDERS

PROCESSES AND PROPERTIES INDEX

6

Fractional purification of Ni electrolytes for the removal of Fe and Co. Ya. M. Pesin, O. I. Andreeva, A. A. Moreno and M. P. Schmanzar. *Tsvetnye Metal.* 16, No. 8, 29-35(1941); *Chem. Zentr.* 1943, I, 1602.—With NaClO and NiSO$_4$ in the presence of NaOH the reactions Ni(OH)$_2$ + NaClO + H$_2$O = Ni(OH)$_3$ + NaCl and NiSO$_4$ + 2NaOH = Ni(OH)$_2$ + Na$_2$SO$_4$ occur. Increasing the amt. of NaClO from 0.5 to 2.0 equiv., calcd. on the NiO$_2$ content, increased the active O in the black hydrate. Further increase in the amt. of NaClO added had no further effect on the activity of the hydroxide obtained. A max. of 45% of the hypochlorite was used for the oxidation of the Ni, the remainder being decompd. by the catalytic action of the black hydrate. Between 0° and 20° the reaction proceeded quietly. As the temp. was increased to 60° the reaction was more violent, and it was necessary to add the NaClO and NaOH carefully. Increasing the temp. decreased the amt. of active O in the black hydrate. Increasing the amt. of alkali at const. hypochlorite concn. increased the amt. of O in the black hydrate; thus, at 1.15 equiv. NaOH the product was NiO$_{1.44}$ and at 10.0 equiv. it was NiO$_{1.70}$. Varying the concn. of NaClO and that of NiSO$_4$ had no effect on the activity of the black hydrate. Fractional addn. of the NaClO (0.1-0.5 equiv. per mol.) gave a hydrate higher in O than that obtained when the NaClO was added all at once. Fractional addn. of the NaClO likewise increased its utilization coeff. When Na$_2$CO$_3$ was used instead of NaOH the active O content of the hydrate was considerably lower. Optimum conditions for obtaining the black hydrate are: hypochlorite 1.0 equiv. (calcd. on the NiSO$_4$), NaOH 1.1 equiv., room temp. and fractional addn. of the NaClO. The black hydrate thus obtained contained 9.5% active O. Washing the black hydrate with water decreased the activity by an amt. that depended on the temp. of the water and the compn. of the hydrate; ice water caused the least pronounced loss of activity. The loss was greater on washing hydrate that was not freshly prepd. The addn. of alkali (5%) to the wash water stabilized the black hydrate.

M. G. Moore

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

6

cA

Interaction between sulfur dioxide and copper sulfate solutions. Ya. M. Pesin and M. L. Shabashova (Leningrad Technol. Inst.). *Zhur. Priklad. Khim.* (J. Applied Chem.) 23, 278-84(1950).—The solid ppt. formed by the action of 100% SO_2 gas, flowing at a rate of 1.5 l./hr., on a 10% soln. of $CuSO_4.5H_2O$, at 60° and at 80°, was identified (by analysis, crystallography, and x-ray diffraction) as Chevreul's salt $CuSO_3.Cu_2SO_3.2H_2O$ (I). Consequently, the reaction equation at 60 and 80° is $3\ CuSO_4 + 3\ H_2SO_3 + 3\ H_2O = I + 4\ H_2SO_4$. At 100°, the solid is entirely metallic Cu, in conformity with the reaction $CuSO_4 + H_2SO_3 + H_2O = Cu + 2\ H_2SO_4$. Decompn. of I (2 g. in 300-400 ml. H_2O) on boiling, under a stream of CO_2, proceeded according to $3\ I = 5\ SO_2 + CuSO_4 + 4\ Cu_2O$. N. Thon b

cA

The interreaction between sulfur dioxide and copper sulfate solutions. Ya. M. Pozin and M. L. Shalashova (Leningrad Inst. Technol.). *J. Applied Chem. U.S.S.R.* 23, 289-95(1950)(Engl. translation).—See *C.A.* 45, 2300i.
R. M. S.

CA

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The oxidation of $CuSO_3 \cdot Cu_2SO_3 \cdot 2H_2O$ to $CuSO_4$. Ya. M. Pestu and M. I. Shabasheva (Lensovet Technol. Inst.). *Zhur. Priklad. Khim.* (J. Applied Chem.) **23**, 350-6(1950).—The formation of H_2SO_4 in the passage of a mixt. of SO_2 (7%) and air through a soln. of $CuSO_4$ (0.26 and 2.31% Cu) at 60 and 80° is retarded as H_2SO_4 accumulates in the soln., owing to formation of $CuSO_3 \cdot Cu_2SO_3 \cdot 2H_2O$ (I). The soly. of that salt, in H_2O and in 10, 20, and 30% $CuSO_4 \cdot 5H_2O$, was detd., at 25°, to be 0.042, 0.088, 0.090, and 0.100 wt. %, and at 60°, to be 0.140, 0.312, 0.334, and 0.379 wt. %. The increase of the soly. with increasing $CuSO_4$ content of the soln. is distinct, but not sufficient to make practical the process of extn. of Cu by passing SO_2 gas into a $CuSO_4$ soln. The extn. can be effected by oxidation of I to $CuSO_4$. In an aq. suspension of 4 g. I in 100 ml. H_2O, passage of air at 60-5° produced a solid phase of the empirical compn. $2CuO \cdot CuSO_4 \cdot 2H_2O$ (or $2Cu(OH)_2 \cdot CuSO_4$) and a soln. with the mol. ratio Cu : S = 1. The process, consequently, is $2I + 3O_2 = 2Cu(OH)_2 \cdot CuSO_4 + 3CuSO_4 + 2H_2O$. In a 10% H_2SO_4 soln., all of the I was converted to $CuSO_4$. Complete oxidation of I and its soln. in the form of $CuSO_4$ was obtained by passing a mixt. of SO_2 with excess O_2 (air), the overall reaction being $I + SO_2 + 2O_2 = 3CuSO_4 + 2H_2O$. The rate of oxidation of I increases with the O_2 content in the gas and with the $CuSO_4$ content of the soln.; Cu^{++} ions catalyze the oxidation $2SO_2 + O_2 + 2H_2O = 2H_2SO_4$. N. Thon

Cu

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Production of copper sulfate from copper oxide and gases containing sulfur dioxide and oxygen. Ya. M. Frain and M. L. Shatushova (Leningrad Technol. Inst.). *Zhur. Priklad. Khim.* (J. Applied Chem.) 23, 460-9 (1950).—The practical possibility of extn. of Cu, in the form of $CuSO_4$ in soln., from CuO, by contact with SO_2 + O_2, was demonstrated with 3 kinds of CuO, one prepd. by oxidation of Cu_2O at 500-600° (79.8% Cu), the 2nd by oxidation of Cu powder with iron scrap (79.95% Cu), a 3rd by oxidation of Cu at 600-700° (80.2% Cu). With a gas contg. 7% SO_2, passed at the rate of 10 l./hr. at 85-95°, extn. of Cu was complete with all 3 samples; e.g., with the 3rd sample, after 0, 60, 120, and 180 min., the $CuSO_4.5H_2O$ content of the soln. was 9.58, 13.79, 16.41, and 17.99%, the degree of extn. of Cu from CuO, 0, 38.3, 81.3, and 100%, free H_2SO_4, 0, 0.34, 0.22, and 0.10%. The solid phase, originally CuO, undergoes visible changes before it is dissolved. By analyses and x-ray examn., the solid phase is a mixt. of Cu_2O and $CuSO_3.Cu_2SO_3.2H_2O$ (I), the amt. of the latter increasing with time. As an example, after 0, 20, 40, and 60 min., the compn. of the solid phase (CuO, Cu_2O, I) was: 100, 0, 0; 0, 61.93, 38.12; 0, 32.5, 69.06; and 0, 2.30, 97.64%. The 1st product of the reaction between SO_2 and CuO is I which, in H_2O, reacts further along $3I + 15CuO \rightarrow 6CuSO_4 + 9Cu_2O$ + water; the oxidation of I proceeds according to $I + SO_2 + 2O_2 = 3CuSO_4 + 2H_2O$. The overall process involves, simultaneously, direct soln. of CuO in the H_2SO_4 formed by oxidation of SO_2 to SO_3 in the presence of Cu^{++} ions, and formation of I which is further converted to $CuSO_4$. The latter is produced about 2 to 3 times as fast as in the absence of Cu^{++} ions. The tech. process can be conducted with gases contg. as low as 1-4% SO_2, provided the O_2 content is high enough to give a vol. ratio $O_2:SO_2$ not below 4. The coeff. of utilization of Cu is 94-7%.

H. Thon