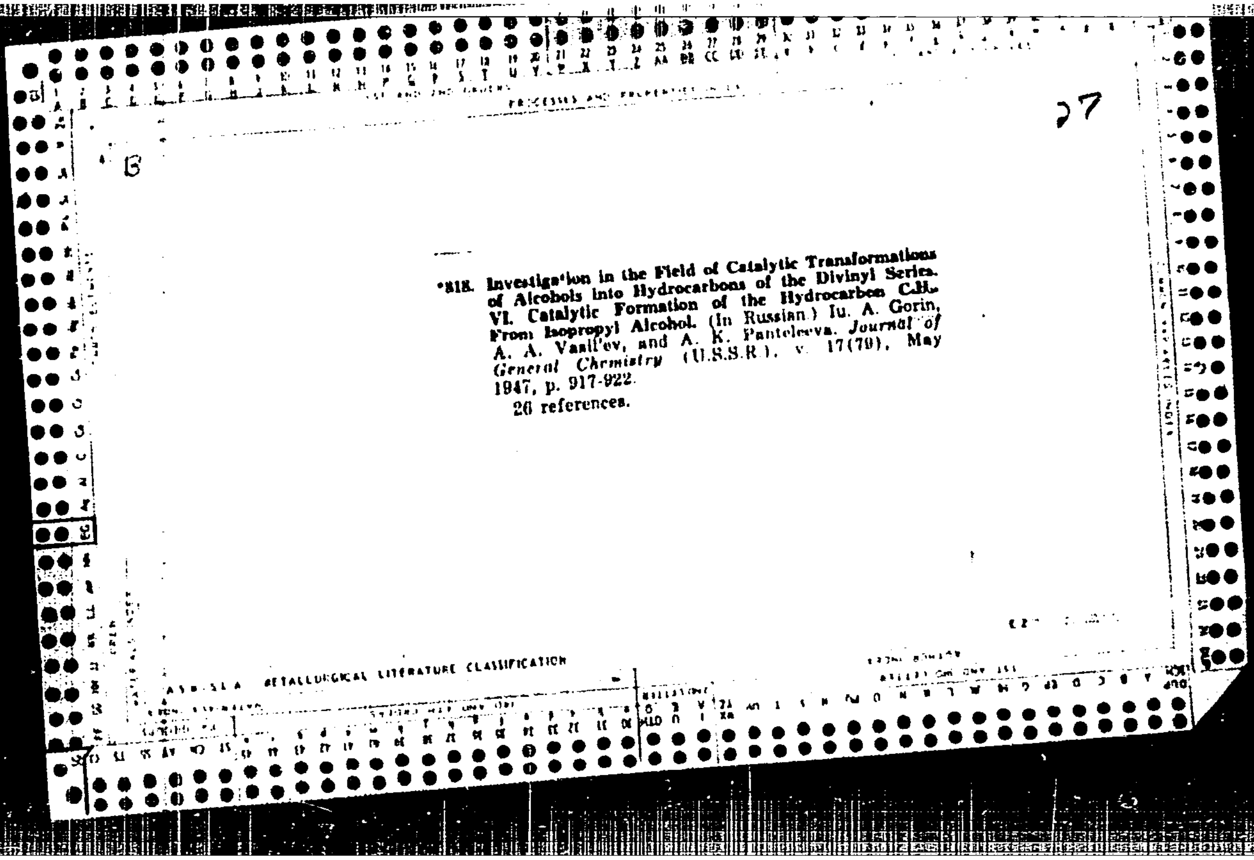
GORIN, U. A.,

Gorin, U. A., and Vasilieva, F. A.-"Investigation in the Field of a Catalytic Conversion of Alcohols into Hydrocarbons of the Divinyl Series. V. Catalytic Formation of Hydrocarbons C_8H_{14} from the n-butyl-alcohol." (p. 702)

SO: Journal of General Chemistry, (Zhurnal Obshchei Khimii), 1947, Vol. 17, No. 4



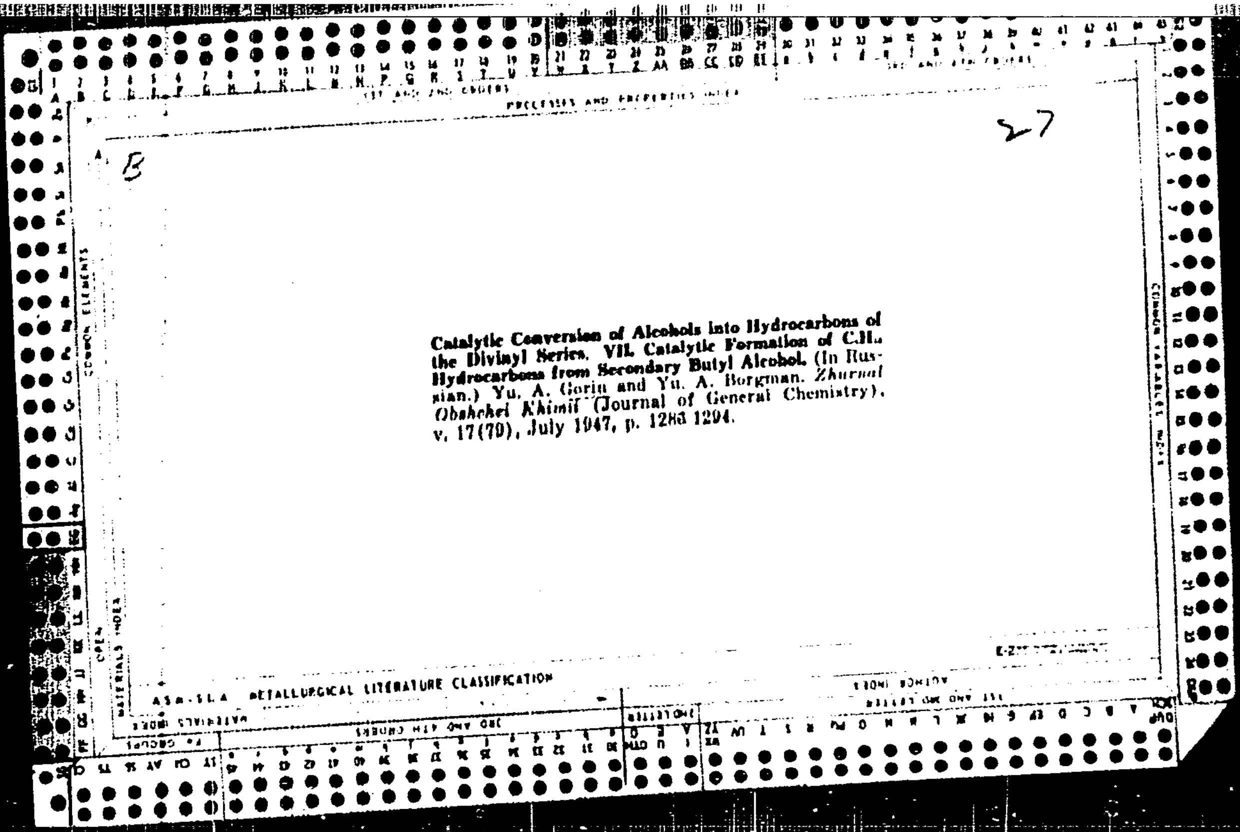
B

27

*818. Investigation in the Field of Catalytic Transformations of Alcohols into Hydrocarbons of the Divinyl Series. VI. Catalytic Formation of the Hydrocarbon C.H. From Isopropyl Alcohol. (In Russian.) Iu. A. Gorin, A. A. Vasil'ev, and A. K. Panteleeva. *Journal of General Chemistry* (U.S.S.R.), v. 17(79), May 1947, p. 917-922.

26 references.

METALLURGICAL LITERATURE CLASSIFICATION



27

B

Catalytic Conversion of Alcohols into Hydrocarbons of the Divinyl Series. VII. Catalytic Formation of C_4H_6 Hydrocarbons from Secondary Butyl Alcohol. (In Russian.) Yu. A. Gorin and Yu. A. Borgman. *Zhurnal Obshchei Khimii* (Journal of General Chemistry), v. 17(79), July 1947, p. 1283-1294.

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

CA

Catalytic conversion of alcohols into bivinyl hydrocarbons. VIII. Catalytic transformation of isobutyl alcohol on catalysts used in the production of bivinyl from ethanol. Yu. A. Gorin and M. I. Danilina. *J. Gen. Chem.* (U.S.S.R.) 17, 2080-94(1947)(in Russian); cf. C.A. 42, 2573g. — (1) Iso-BuOH was passed over a 30-cm. layer of a 2-component Lebedev catalyst (C.A. 28, 3050^9) at a rate of 1 ml./min., 100 ml. (80.3 g.) per run. The typical compn. of the gas obtained (at 375°) was (in vol. %) H$_2$ 24.0, CO 0.21, C$_2$H$_4$ 0.0, C$_3$H$_6$ 0.92, C$_4$H$_8$ 72.1, residue + CO$_2$ 1.7; the C$_4$H$_8$ is mainly Me$_2$C:CH$_2$. The condensates were extd. with H$_2$O and iso-PrCHO was detd. in the ext.; the oily layers were fractionated into b. 60-80°, 80-100° (insignificant amt.), and 100-8° (mainly unreacted iso-BuOH); the 60-80° fraction is 93-95% iso-PrCHO. Examples of the balance are: at 380°, gas 10.78 l. (C$_4$H$_8$ 84.15, H$_2$ 12.5 vol. %), condensate 30.52 l., insol. compds. 1.07 g., unreacted iso-BuOH 8.1%; yields (with respect to iso-BuOH reacted), insol. compds. 1.45%, iso-PrCHO 1.47%, Me$_2$C:CH$_2$ 58.3%; with catalysts characterized by the wt. ratio of the dehydrogenating and dehydrating component, the corresponding figures were: catalyst 95/5, at 380°, 10.80 (66.8, 29.6), 60.0, 1.09, 40.93, 2.3, 7.60, 38.2; catalyst 90/10, at 380°, 0.7 (82.6, 36.1), 67.72, 1.98, 53.4, 5.29, 8.17, 23.5; at 400°, 19.21 (79.23, 10.23), 34.2, 0.93, 12.16, 1.90, 4.01, 54.4. The yield of water-insol. compds. was mostly 1.5-2.5%; only in 1 case did it attain 5.3%. The main products are always Me$_2$C:CH$_2$ and iso-PrCHO. No C$_8$H$_{14}$ hydrocarbons are formed at all. (2) On the same catalysts, at 375°, iso-PrCHO (79 g.), passed at 1 ml./min., gave 2.5 l. gas and 4.5 g. liquid products b. above 100°; the main liquid fraction, b. 54-80°, was 97.4% unreacted iso-PrCHO. thus, iso-PrCHO is transformed to a much lesser extent than AcH or PrCHO (C.A. 41, 2689f). (3) The observed transformation of iso-BuOH, in particular the failure to produce, in analogy to EtOH, PrOH, and BuOH, diethylenic hydrocarbons with a conjugate double bond and a double no. of C atoms, is comprehensible on the basis of the known [Lieben, *Monatsh.* 22, 289(1901)] inability of isobutyraldol, Me$_2$CHCH(OH)CMe$_2$CHO, to "crotonize" by splitting off H$_2$O and forming a double bond either in the position α-β or β-γ, in contrast to propionaldol or butyraldol; consequently, if, following the step Me$_2$CHCH$_2$OH → 2H + Me$_2$CHCHO, two mols. of the latter should condense into isobutyraldol, the reaction will be reversed, and no C$_8$H$_{14}$ products will be formed.

IX. Catalytic transformation of a mixture of isobutyl alcohol with acetaldehyde. Yu. A. Gorin, M. I. Danilina, and F. A. Vasil'eva. *Ibid.* 2095-2100(in Russian). (1) On the same catalysts, formation of a diethylenic hydrocarbon with conjugate double bonds does take place if the iso-BuOH is mixed with AcH, in the mole ratio 2:1. With 5 l. catalyst, at 365-75°, at a rate of 300 ml./10 min., 3407 g. iso-BuOH + 1010 g. AcH gave 400 l. gas, H$_2$ 11.4, CO 3.1, CH$_4$ 0.6, C$_2$H$_6$ 3.7, C$_3$H$_6$ 1.9, C$_2$H$_4$ 12.4, iso-C$_4$H$_8$ 57.0, residue + CO$_2$ 6.4, losses 3.5 vol. %. From the aq. ext. of the condensate, 63 g. AcH, 243 g. iso-PrCHO, 35 g. EtOH, and 402 g. iso-BuOH were sepd.; the insol. condensate, 619 g. (18.1% with respect to iso-BuOH reacted, 13.95% with respect to the sum iso-BuOH + AcH passed, 16.0 with respect to the sum reacted) was fractionated into gases condensed at -78° (12.85%), b. 35-50° (10.2%), 0.50-100° (32.5%), residue 42.7%, losses 1.75%. The middle fraction (201 g.) was refractionated, in N$_2$ and over Na, into b. < 60° (4.15%), 60-70° (2.96), 70-3° (2.95), 73-5° (5.46), 75-7° (38.18), residue 37.0%, losses 9.3%; the fraction b. 75-7°, narrowed down to b. 76-76.1°, analyzed

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

C_6H_{10} and, by hydrogenation over Pt black, by addn. of maleic anhydride, and by oxidation with $KMnO_4$, was identified as $Me_2C{:}CHCH{:}CH_2$. In the fractions b. 70-3°, 73-5°, and 76.1-7°, the contents of the diethylenic hydrocarbons were 68.9, 77.5, and 85.4%, resp., of ethylenic hydrocarbons, 31.1, 22.5, and 14.6%, resp. The total content of dienes C_6H_{10} was 83.7 g., i.e. a yield of 5% with respect to AcH reacted. (2) The reaction scheme is $Me_2CHCH_2OH \rightarrow 2\ H + Me_2CHCHO$, or $Me_2CHCH_2OH + AcH \rightarrow EtOH + Me_2CHCHO$; $Me_2CHCHO + AcH \rightarrow [Me_2CHCH(OH)CH_2CHO] \rightarrow H_2O + Me_2CHCH{:}CHCHO$; $Me_2CHCH{:}CHCHO + 2\ H \rightarrow Me_2CHCH{:}CHCH_2OH$; $Me_2CHCH{:}CHCH_2OH \rightarrow H_2O + Me_2C{:}CHCH{:}CH_2$.

N. Thon

PA 8/49T38

USSR/Chemistry - Alcohols, Dehydration of Apr 48
Chemistry - Alcohols, Dehydrogenation of

"Studies in the Field of Catalytic Conversion of Alcohols Into Divinyl-Type Hydrocarbons: X, Study of the Reaction of the Formation of Piperylene in the Process for Obtaining Divinyl From Alcohol," Yu. A. Gorin, I. K. Gorn, Sci Res Lab, Experimental Factory imeni Acad S. V. Lebedev, 10 pp

"Zhur Obshch Khim" Vol XVIII (LXXX), No 4

Investigates decomposition of an equimolecular mixture of acetaldehyde and crotonaldehyde on S. V. Lebedev's modified catalyst, on its dehydrogenating and dehydration components, and on a

[redacted] 8/49T38

USSR/Chemistry - Alcohols, Dehydration of Apr 48
(Contd)

70:30 mixture of them. Shows that under these conditions, formation of piperylene is very small. Suggests scheme of piperylene and amylene formation in Lebedev's process, based on the concept of condensation of acetone and acetaldehyde into ethylidentacetone with subsequent reduction and dehydration. Submitted 4 Feb 1947.

GORIN, YU. A.

[redacted] 8/49T38

GORIN, Yu. A.

IA 9/49 T13

USSR/Chemistry - Alcohols
Chemistry - Catalysis

Jun 48

"Studies in the Field of Catalytic Conversion of Alcohols Into Divinyl Series Hydrocarbons," Yu. A. Gorin, M. I. Danilina, N. P. Andreyev, All-Union Sci Res Inst imeni ~~Acad N. P. Andreyev,~~ S. V. Lebedev 7½ pp

"Zhur Obshch Khim" Vol XVIII (LXXX), No 6

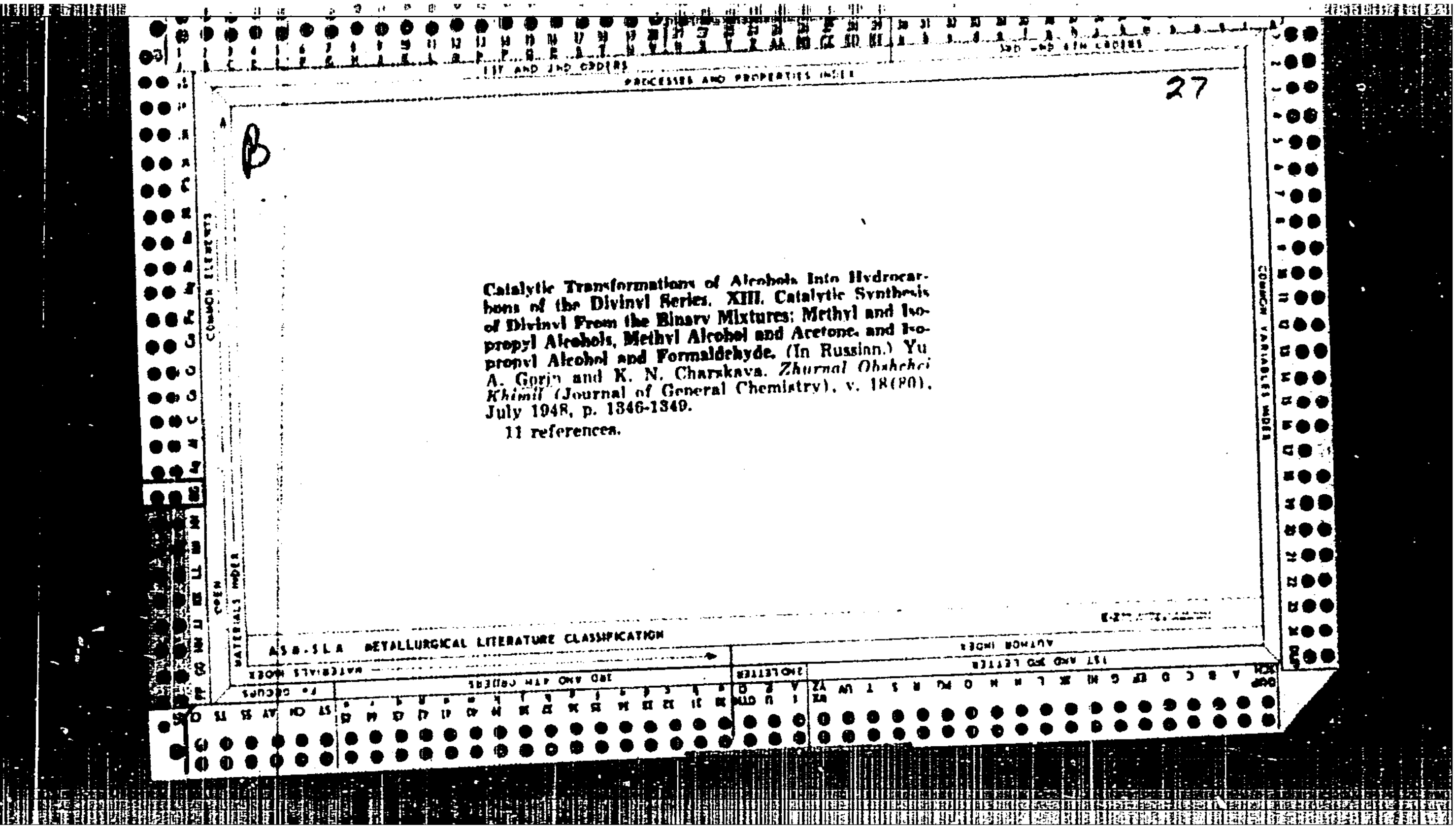
Series, 12th article. Investigates reaction of a 2:1 mixture of ethyl alcohol and methylethylketone on S. V. Lebedev's modified catalyst. Shows that diethylene and ethylene hydrocarbons with six

9/49T13

USSR/Chemistry - Alcohols (Contd) Jun 48

carbon atoms are formed. The diethylene hydrocarbon has a conjugate system and is hexadiene-2,4. The ethylene hydrocarbon is hexene-2. Pseudobutylene and insoluble condensation products are also formed. Suggests scheme of formation of hexadiene-2,4 based on principles of formation of piperylene from a mixture of alcohol and acetone. Submitted 9 Apr 1947.

9/49T13



27

B

Catalytic Transformations of Alcohols Into Hydrocarbons of the Divinyl Series. XIII. Catalytic Synthesis of Divinyl From the Binary Mixtures: Methyl and Isopropyl Alcohols, Methyl Alcohol and Acetone, and Isopropyl Alcohol and Formaldehyde. (In Russian.) Yu. A. Gorin and K. N. Charskaya. *Zhurnal Obshchei Khimii* (Journal of General Chemistry), v. 18(80), July 1948, p. 1346-1349.

11 references.

GORIN, Yu. A. I PIOTROVSKIY, K. B.

29541

Trudy Akadyemika S. V. Lyebyeva v oblasti Sintyetichyekogo Kauchuka. (K 75 - Lyetiyu so Dnya Rozhdyeniya). Uspyekhi Khimii, 1949, Vyp. 5, S. 616-22, S. Portr.

SO LETOPIS' NO. 40

L. of C. T.

Synthetic Rubber and
allied Products

Work of academician S. V. Lebedev in the field of synthetic rubber. Y. A. GORIN and K. B. PIOTROVSKY. *Uspekhi Khimii*, 1949, **18**, 618: *Translated Contents Lists of Russian Periodicals*, **1949**, No. 7, 52. 3S

1950

10

Catalytic conversion of alcohols into hydrocarbons of the bivinyl series. XIV. Catalytic transformation of tertiary butyl alcohol and its binary mixtures with methyl alcohol and formaldehyde. Yu. A. Gorin and I. K. Gorin. *J. Gen. Chem.* (U.S.S.R.) 19, 825-9(1949)(English translation).—See *C.A.* 44, 1006e.
E. J. C.

PA 65/49T21

USSR/Chemistry - Alcohols Apr 49
Catalysts

"Research in the Field of the Catalytic Conversion
of Alcohols Into Hydrocarbons of the Divinyl Series:
XIV, Contact Conversion of Tertiary Butyl Alcohol
and Its Binary Mixtures by Methyl Alcohol and Form-
aldehyde," Yu. A. Gorin, I. K. Gorn, All-Union Sci
Res Inst imeni S. V. Lebedev, 4½ pp

"Zhur Obshch Khim" Vol XIX, No 4

Investigated contact conversion of tertiary butyl
alcohol on the dehydrating component of the cata-
lyst, and on a converted S. V. Lebedev catalyst

65/49T21

[redacted]

USSR/Chemistry - Alcohols (Contd) Apr 49

at 300° and 380°, showing that products of conden-
sation of higher alcohols or hydrocarbons were not
formed in these cases. Investigated catalytic con-
version of the binary mixtures of tertiary butyl al-
cohol by methyl alcohol and formaldehyde on mixed
S. V. Lebedev catalysts with 95:5 and 98:2 as the ra
tios of the components at 300° and 380°, showing that
complex products of condensation were not formed in
these cases. Submitted 28 Jan 48.

65/49T21

[redacted]

GORIN, Yu. A.

GORIN, YU. A.

PA 67/49T53

USSR/Chemistry - Alcohols May 49
Hydrocarbons

"Research in the Field of Catalytic Conversion of Alcohols Into Hydrocarbons of the Divinyl Series; XV, General Rules for the Formation of Diethylene Hydrocarbons With Conjugate Bonds," Yu. A. Gorin, All-Union Ord of Labor Red Banner Sci Res Inst of Synthetic Rubber imeni S. V. Lebedev, 6½ pp

"Zhur Obshch Khim" Vol XIX, No 5

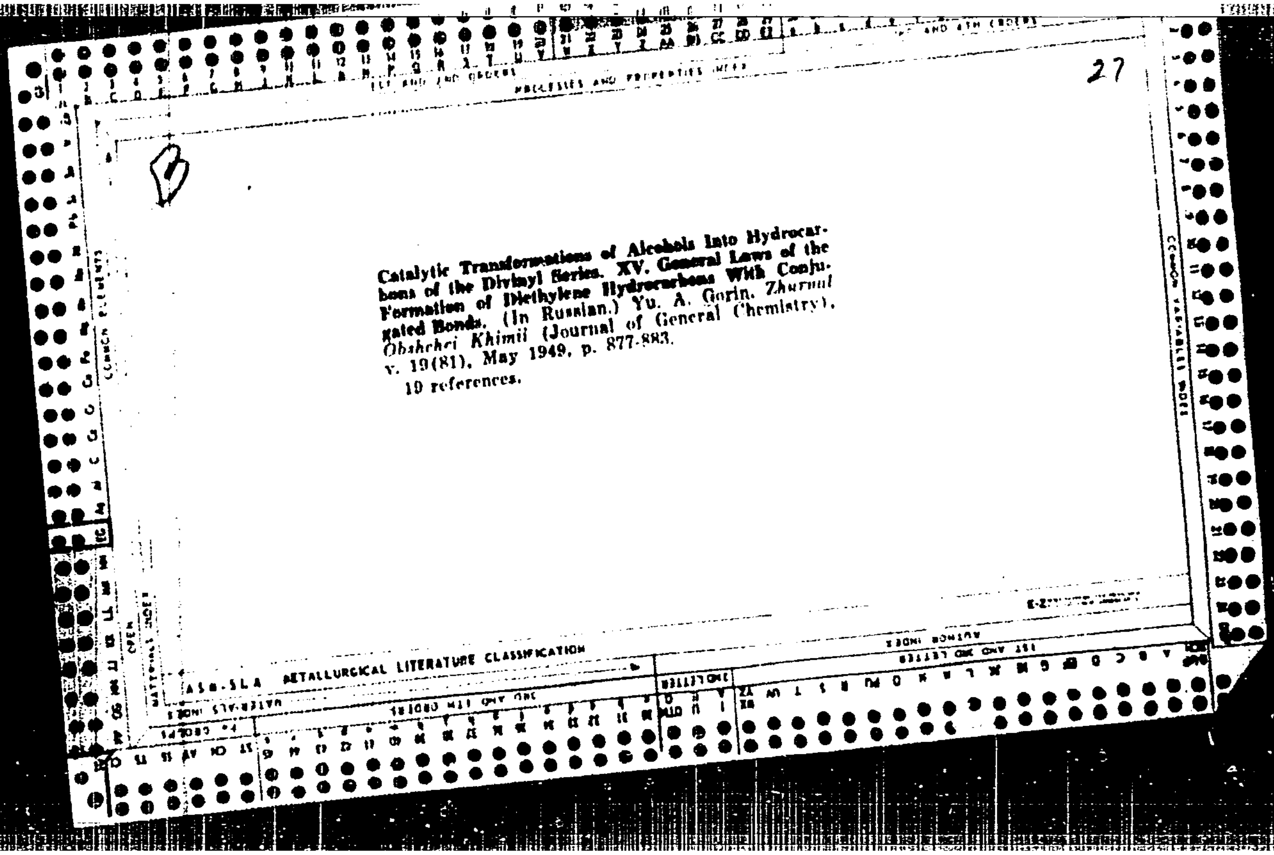
Suggests a diagram for the catalytic conversion of ethyl alcohol into divinyl: (1) ethyl alcohol →

[redacted] 67/49T53

USSR/Chemistry - Alcohols (Contd) May 49

acetaldehyde, (2) acetaldehyde → (aldol) → crotonaldehyde, (3) crotonaldehyde → crotyl alcohol, and (4) crotyl alcohol → divinyl. Submitted 20 Jan 48.

[redacted] 67/49T53



27

B

Catalytic Transformations of Alcohols Into Hydrocarbons of the Divinyl Series. XV. General Laws of the Formation of Diethylene Hydrocarbons With Conjugated Bonds. (In Russian.) Yu. A. Gorin. *Zhurnal Obshchei Khimii* (Journal of General Chemistry), v. 19(81), May 1949, p. 877-883.

10 references.

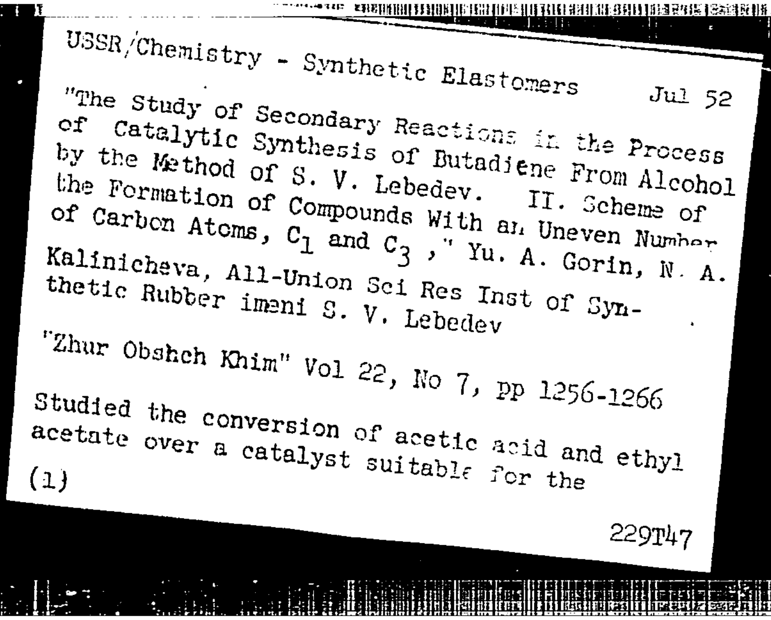
ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

CA

10

Side reactions in the catalytic synthesis of divinyl from alcohol by the S.V. Lebedev method. I. Reactions of formation of aldehydes, alcohols, and hydrocarbons of the aliphatic series with an even number of carbon atoms. Yu. A. Gorin. *Zhur. Obshchei Khim.* (J. Gen. Chem.) 20, 1506–1614(1950).—The causes of the formation of by-products in the catalytic conversion of EtOH to butadiene are discussed in detail in the light of the literature (38 references). Passage of EtOH with MeCH:CHCHO over the Lebedev catalyst increases the output of crotyl and butyl alcs. in comparison with the results obtained from pure EtOH. Also, catalytic treatment of EtOH-MeCH:CHCHO and EtOH-PrCHO mixts. on the dehydrogenating component of the catalyst results in formation of crotyl and butyl alcs. as well as 1-hexanol and 2-hexen-1-ol, resp. The following reaction schemes appear to explain the by-product formation. Butadiene forms via: EtOH = AcH + H; 2AcH = MeCH(OH)CH$_2$CHO = H$_2$O + MeCH:CHCHO; MeCH:CHCHO + 2H = MeCH:CHCH$_2$OH = H$_2$O + (CH$_2$:CH)$_2$. C$_2$H$_4$ forms by dehydration of EtOH and takes no part in the butadiene formation, since its yield bears no relation to the butadiene yield. Crotyl alc. forms by hydrogenation of the aldehyde, and BuOH by continued hydrogenation of either MeCH:CHCHO or PrCHO, possibly by H transfer from EtOH, giving addnl. AcH. PrCHO may form by dehydrogenation of BuOH. The small amt. (1-2%) of MeEtCO may arise from isomerization of crotyl alc. to MeCH(OH)CH:CH$_2$, or by hydrogenation of aldol to 1,3-butanediol, its dehydration to MeCH(OH)CH:CH$_2$, and isomerization of the latter; isomerization of PrCHO is not excluded. (:CHMe)$_2$ may form by isomerization of 1-butene formed by dehydration of BuOH, or by hydrogenation-dehydration of MeEtCO. The higher alcs. and aldehydes arise by condensation (aldol type) of the aldehydes present, followed by dehydration to unsatd. aldehydes, then hydrogenation to satd. aldehydes and alcs. with 6 C atoms, while C$_8$ compds. form by continued reaction of the C$_6$ unsatd. aldehydes with AcH; 2-hexene and 2,4-hexadiene arise by dehydration-hydrogenation of the unsatd. C$_6$ alcs. or carbonyl derivs. G. M. Kosolapoff

Cf. L., C.A. 28, 3050.



USSR/Chemistry - Synthetic Elastomers Jul 52

"The Study of Secondary Reactions in the Process of Catalytic Synthesis of Butadiene From Alcohol by the Method of S. V. Lebedev. II. Scheme of the Formation of Compounds With an Uneven Number of Carbon Atoms, C_1 and C_3," Yu. A. Gorin, N. A. Kalinicheva, All-Union Sci Res Inst of Synthetic Rubber imeni S. V. Lebedev

"Zhur Obshch Khim" Vol 22, No 7, pp 1256-1266

Studied the conversion of acetic acid and ethyl acetate over a catalyst suitable for the

(1)

229T47

Card 1 of 2

GORIN, Yu. A.

GORIN, Yu. A.

Card 2 of 2

synthesis of butadiene from alc Examd effects of the addn of acetic acid and ethyl acetate to ethyl alc on the latter's conversior to butadiene over that particular catalyst (contg dehydrating components.) Found that under those conditions there was a ketonic decompn of acetic acid, with the formation of carbon dioxide and acetone (the yield of the latter comprising about 70% of the theoretical). States that the decompn of ethyl acetate under these same conditions resulted in the formation, on the one hand, of carbon dioxide, acetone and propylene, and on the other of ethyl alc, ethylene, aldehyde and a small amt of butadiene. The neg effect of addn of acetic

(2) 229T47

acid or ethyl acetate to alc on the yield of butadiene was explained by the changes to which these substances could be subjected under the conditions of the studied reaction. The possibility was assumed of the formation of carbon dioxide, acetone, and propylene in the process of catalytic synthesis of butadiene from alc by the S. V. Lebedev method, by means of a chain of successive reactions: alc → acetaldehyde → ethyl → acetate → acetic acid → acetone → isopropyl alc → propylene.

(3) 229T47

GORIN, YU A.

Chemical Abst.
Vol. 48 No. 5
Mar. 10, 1954
Organic Chemistry

Side reactions in the contact synthesis of bivinyl from alcohol by the S. V. Lebedev method. II. The schemes of formation of compounds with an odd number of carbon atoms (C_1 and C_3). Yu. A. Gorin and N. A. Kalinicheva. *J. Gen. Chem. U.S.S.R.* 22, 1303–10(1952)(Engl. translation).—See C.A. 47, 6336c. H. L. H.

GORIN, YU A

7

CZECH

2

Catalytic transformation of alcohols into hydrocarbons of the divinyl series. XVI. The possibility of catalytic formation of divinyl from ethyl alcohol through 1,3-butanediol. Yu. A. Gorin, K. N. Charskaya, and A. V. Bochkareva (A. A. Zhdanov State Univ., Leningrad). Sbornik Statei Obshchei Khim. 2, 818-22(1953); cf. C.A. 44, 7218g. —The formation of (CH:CH$_2$)$_2$ (I) in the passage of 1,3-butanediol (II) over the Lebedev catalyst or over its separate dehydrogenating and dehydrating components was studied at 250-400°. The greatest yield of I, 15-19.5%, was attained on the dehydrating component, while the yield of I from the complete catalyst was only 7-9%. II is rather unstable at 300-390° in contact with these catalysts and is totally decompd.; at 250° some of it remains undecompd. on the dehydrogenating catalyst. The main course of the reaction over the complete catalyst and over its dehydrative component is the formation of C$_4$H$_8$. When II is added to EtOH during the reaction over the catalyst, the yield of I (in comparison with that formed from EtOH alone) declines and the yield of C$_4$H$_8$ rises. Among the reaction products of mixts. of EtOH and AcH over the dehydrogenative component of the catalyst it is possible to detect alone II if the reaction temp. is relatively low. The course of the catalytic formation of I from EtOH does not appear to utilize II as an intermediate step (Ostromyslenski, C.A. 10, 3173). G. M. Kosolapoff

Gorin Yu. P.

1,3-Hexadiene in products of [illegible] Yu. A. Gorin, N. C. [illegible]
tions of ethyl and butyl alcohols. [illegible]
[illegible] V. S. Ivanov, and A. I. [illegible]
25, [illegible] (1955) [illegible] C.A. 50, 4766

GORIN, YU. A.

USSR/Chemistry - Catalytic conversion

Card 1/1 Pub. 151 - 17/37

Authors : Gorin, Yu. A., and Vasilyeva, F. A.

Title : Catalytic conversion of alcohols into hydrocarbons of the divinyl series. Part. 17.- Heptadiene-1,3 and heptadiene-2,4 from a n-butyl alcohol-acetone mixture.

Periodical : Zhur. ob. khim. 24/10, 1795-1802, Oct 1954

Abstract : The conversion an n-butyl alcohol-acetone mixture into C_7H_{12} hydrocarbons with conjugated system of double bonds was investigated in the presence of a mixed Lebedev catalyst usually used for the derivation of divinyl from ethyl alcohol. A method for catalytic conversion of n-butyl alcohol-acetone mixtures into diethylene hydrocarbons, based on condensation of butyrous aldehyde with acetone into butyldiacetone, is described. The formation of heptadiene, as a secondary product of catalytic conversion of ethyl alcohol into divinyl, is explained. Thirty-two references: 23-USSR; 5-USA; 3-German and 1-French. (1915-1953). Graph.

Institution : State University, Leningrad

Submitted : April 24, 1954

Gorin Yu. A.

b2 Catalytic transformation of alcohols into hydrocarbons of the divinyl series. XVIII. Contact transformation of butyraldehyde into 2-ethyl-2-hexenal. Yu. A. Gorin, K. N. Charskaya, and V. P. Litvinovskaya. *Zhur. Obshchei Khim.* 24, 2132-6(1954); cf. *C.A.* 42, 2572i; 49, 12283d.—The transformation of PrCHO was studied over the Lebedev catalyst and over its individual dehydrogenating and dehydrating components (L., *C.A.* 28, 3050(p)) at 250-400°. It was shown that PrCHO is converted to 2-ethyl-2-hexenal over this catalyst, with the yield declining with higher temp. At the same temp. the dehydrogenating catalyst gives a higher yield than does the dehydrating component. Thus at 250° the yield of the ethylhexenal is 63.2% and 54.1%, resp., over the 2 components of the catalyst, as calcd. on the catalyzate, of 17.1% and 11.8%, based on PrCHO introduced. G. M. Kosolapoff

②

GORIN, YU. A.

7

Catalytic transformation of alcohols into hydrocarbons of divinyl series. XIX. 1,3-Hexadiene in products of transformation of mixtures of ethyl and butyl alcohols. Yu. A. Gorin, N. G. Belen'kaya, V. S. Ivanov, and A. P. [illegible] (State Univ., Leningrad). *Zhur. Obshchei Khim.* 25, 1500-1(1955); cf. *C.A.* 41, 2689*f*; 50, 1652.—Passage of 1:1 and 1:2 mixts. of EtOH and BuOH at 380° over the Lebedev catalyst (*C.A.* 28, 3050³) gave 2,4-hexadiene and 1,3-hexadiene in a 3:1 ratio. The latter was identified by phys. constants, its tetrabromide, and by hydrogenation. The conjugation was proved by formation of polymeric sulfones with SO_2 and formation of adducts with maleic anhydride and naphthoquinone. The presence of 1,3-isomer is shown by the formation of C_6H_6 hydrocarbons among the products of the butadiene process devised by Lebedev.

G. M. Kosolapoff

CH

(2)

Gorin, Yu. A.

5

3

Hydropolymerization of acetylene to butadiene with palladium [illegible] catalyst. Yu. A. Gorin and [illegible]

[illegible]

Gorin, Yu. A

Category: USSR B-9

Abs Jour: Zh--Kh, No 3, 1957, 7591

Author : Gorin, Yu. A. and Deryevyagina, N. L.
Inst : Not given
Title : Investigation of the Catalytic Hydropolymerization of Acetylene to Divinyl over a Paladium Catalyst

Orig Pub: Zh. Obshch. Khimii, 1956, Vol 26, No 4, 1087-1097

Abstract: The hydropolymerization of acetylene has been investigated in a flow system at temperature of 180-450°, using contact times of 0 24-3.4 sec, H_2 concentrations of 0-80 vol%. The catalyst consisted of paladium-coated clay (0. 1-10% Pd). In the absence of H_2, C_2H_2 does not react on passage over the catalyst; in the presence of H_2, C_2H_2 reacts to form ethylene, ethane, divinyl, n-butylene, as well as isobutylene, methane, 2-4-hexadiene, and benzene. The reaction achieves considerable proportions

Card : 1/2

Category: USSR B-9

Abs Jour: Zh--Kh, No 3, 1957, 7591

at an H_2 concentration of 12%; at higher H_2 concentrations, the conversion and the yield of C_4H_8 are increased, whereas the yield of C_4H_6 decreases. The curves showing the conversion to C_2H_4 and $C_4H_8 + C_4H_6$ as a function of the initial H_2 concentration are of similar shape and go through a maximum at an H_2 concentration of ~ 50%. A reduction in contact time leads to an increase in the yield of C_4H_6 and a drop to zero in the yield of C_4H_8. The yield of $C_4H_8 + C_4H_6$ is increased when the Pd content in the catalyst is raised to 1%. The addition of polymerization agents (H_3PO_4, copper phosphate, cobalt chloride, and synthetic alumina silicates) has no effect on the reaction. The authors are of the opinion that divinyl is the primary product of the catalytic hydropolymerization and C_4H_8 is secondary. Following the theory of the semihydrogenated state, it is assumed that the reaction proceeds by the intermediate formation of adsorbed vinyl radicals with the subsequent reaction and hydrogenation of those radicals.

Card : 2/2

USSR/Kinetics - Combustion. Explosions. Topochemistry. Catalysis. B-9

Abs Jour : Referat Zhur - Khimiya, No 6, 1957, 18635

Author : Yu.A. Gorin, G.A. Sergicheva.
Title : Study of Reaction of Acetaldehyde under Influence of Some Solid Catalysts. I. Transformation of Acetaldehyde and Its Mixture with Water on S.V. Lebedev's Catalyst.

Orig Pub : Zh. obshch. khimii, 1956, 26, No 9, 2444-2452

Abstract : CO, CH_4, H_2, CO_2, C_2H_4, C_3H_6, C_4H_8, CH_3COCH_3, divinyl, crotonaldehyde, benzaldehyde, o-toluylene aldehyde and o-xylene were separated from a complex mixture of products of acetaldehyde cracking and condensation forming at 400° on S.V. Lebedev's catalyst. It was found that if acetaldehyde had been diluted with water, the formation of cracking products (CO, CH_4) decreased and the content of crotonaldehyde increased (at a simultaneous decrease of the amount of higher condensation products);

Card 1/2

GORIN, YU. A.

Present and future prospects for the development of syntheses of the principal monomers of synthetic [illegible] production. Yu. A. Gorin. Khim. [illegible] Methods of production of [illegible] [illegible] are reviewed.

GORIN, YU. A.

V 4686. Basic and [illegible]
problems in production of [illegible]
thetic rubber. [illegible]
No 11, 65, in English [illegible]
The need for a large [illegible]
rubber industry [illegible]
with the [illegible]
ation of the [illegible]
Much work has been done [illegible]

its production [illegible] obtainable from petroleum, by catalytic dehydrogenation. Rubbers are being developed in which the content of styrene or α-methylstyrene in butadiene copolymers is being raised. Methods used for the production of [illegible]

Gorin, Yu, A,

79-11-4/56

AUTHORS: Sinayskiy, G. M., Ratner, T. V., Makarova, V. P., Gorin, Yu. A., Ivanov, V. S., Alferova, L. V.

TITLE: An Investigation of the Composition of the Hydrocarbons C_6 - the By-Products of the Catalytic Synthesis of Divinyl From Alcohol (Izucheniye sostava uglevodorodov C_6 - pobochnykh produktov kataliticheskogo sinteza divinila iz spirta).

PERIODICAL: Zhurnal Obshchey Khimii, 1957, Vol. 27, Nr 11, pp. 2927-2931 (USSR).

ABSTRACT: The investigation of ethyl alcohol in divinyl over a catalyst represents a complicated catalytic process which is accompanied by a considerable amount of side reactions. In spite of the informative papers by S. V. Lebedev and Ya. A. Gorin in the field of the catalytic formation of the combined dienes (CnH_2n-2) from alcohols, their binary mixtures, and the mixtures of the alcohols with aldehydes and ketones with regard to the by-products, their composition is by far not sufficiently investigated. Of the insufficiently investigated by-products obtained on rectification of hydrocarbons the so-called hexylene-hexadiene fraction (boiling point 60-90°C) is the object of the authors' investigation. On further rectification the following were obtained beside other by-products. 1) hexadiene-1,3. 2) 3-

Card 1/2

methylpentadiene 1,3. 3) cyclohexadiene-1,3. Thus the presence of the combined dienes. 1) hexadiene-1,3. 2) 3-methylpentadiene-1,3 and 3) cyclohexadiene-1,3 was determined in the hexylene-hexadiene fraction of the hydrocarbons, the by-products of the catalytic synthesis of divinyl from alcohol according to Lebedev, and the way of their formation was partially suggested.
There are 19 references, 9 of which are Slavic.

ASSOCIATION: The Laboratory of the Factory SK and the Leningrad State University (Laboratoriya zavoda SK i Leningradskiy gosudarstvennyy universitet).

SUBMITTED: November 23, 1956.

AVAILABLE: Library of Congress.

1. Divinyl-Synthesis 2. Diene syntheses 3. Ethanol-Catalysis 4. Hydrocarbons-Analysis

Card 2/2

64-1-1/19

AUTHORS: Gorin, Yu. A., Vasil'yev, A. A., Makashina, A. N.

TITLE: Development of a Two-Stage-Process for the Production of Isopren From Isopentane (Razrabotka dvukhstadiynogo protsessa polucheniya izoprena iz izopentana)

PERIODICAL: Khimicheskaya Promyshlennost', 1958, Nr 1, pp. 1 - 4 (USSR)

ABSTRACT: In the All Union Scientific Research Institute imeni Member of the Academy S. V. Lebedev for Synthetic Rubber isopentane was catalytically dehydrated into isoamylene and then the latter into isopren in order to obtain isopren. For the first dehydration stage a catalyst (somewhat improved) was used which was developed by S. M. Monozon in the above-mentioned institute for the dehydration of butane into butylene. The experiments were conducted with a steady catalyst layer of 40 ml at a temperature of 515 - 525°C and a transit velocity of 1 - 2 l of liquid isopentane for 1 l of catalyst per hour. The obtained liquid reaction products consisted mainly (80,6%) of a mixture of isoamylenes, i. e. isopropylethylene, unsymmetrical methylethylethylene and trimethylethylene in the

Card 1/4

ratio 1 : 4 : 10. A precise table of all reaction products is given. The second dehydration stage was carried out on a catalst developed by A. T. Menyaylo for the dehydration of butylene into divinyl. The experiments were conducted with a mixutre consisting of (1 : 10 volume) isoamylenes (mainly trimethylethylene) and steam, at normal pressure and 520 - - 580°C. The results obtained show that the optimum temperature interval is between 540 - 560°C, and that a prolongation of the duration of the reaction cycle improves the dehydration process. The reaction product consists of 27 - 29% of isopren. In a dehydration, where each of the above-mentioned isoamylenes was dehydrated separately the results showed that the trimethylethylene and the unsymmetrical methylethylethylene are dehydrated with equal velocity, isopropylethylene, however, more slowly. In the investigation of the catalysate it was found that the isomerization and formation of an isomeric mixture takes place simultaneously with the dehydration of the isoamylenes. In order to simplify the working method which was complicated by the separation of the different reaction products of the first operational stage with adjacent

64-1-1/19

Development of a Two-Stage-Process for the Production of Isopren From Isopentane

boiling points, a dehydration was carried out without a previous separation of the mixture. A mixture of isopentane and isoamylene (60 : 40) was dehydrated on the conditions of the above-mentioned second stage. The results show that only the isoamylenes are considerably dehydrated. In the course of the further investigations the same mixture was dehydrated in vacuum and with the catalyst for isopren (first stage). It was found that a catalysate with 15 - 18 % isopren can be obtained at 580 °C and 190 mm of mercury column, whereby the catalysate can be dehydrated a second time after the separation from isopren and a new mixture with a corresponding quantity of isopentane. Another variant of dehydration was carried out with an isopentane-isoamylene mixture with benzene. The investigations are carried on, however, pilot plant experiments of dehydrations of this kind are already carried out in one of the competent experiment stations. There are 9 tables, and 1 reference, 1 of which is Slavic.

Card 3/4

64-1-1/19

Development of a Two-Stage-Process for the Production of Isopren From Isopentane

ASSOCIATION: All-Union Scientific Research Institute of Synthetic Rubber imeni S.V. Lebedev, Academician (Vsesoyuznyy nauchno-issledovatel'skiy institut sinteticheskogo kauchuka imeni akademika S. V. Lebedeva)

AVAILABLE: Library of Congress

1. Isoprene (Polymerized)-Preparation 2. Isopentane-Catalysis
3. Isoamylene-Catalysis 4. Hydrocarbons-Pyrolysis
5. Isopentane-Catalytic dehydration 6. Synthetic rubber-Preparation

Card 4/4

GORIN, Yu.A.,

AUTHORS: Gorin, Yu. A., Ivanov, V. S., Tereshenkova, V. K. 54-1-13/17

TITLE: **Study of the Reaction of the Formation of Croton Aldehyde From Acetaldehyde** (Izucheniye reaktsii obrazovaniya krotonovogo al'degida iz uksusnogo)

PERIODICAL: Vestnik Leningradskogo Universiteta Seriya Fiziki i Khimii (Nr 1), 1958, Nr 4,

ABSTRACT: The development of a simple method of obtained croton aldehyde is of practical importance for the synthesis of important products. It is formed as an intermediate product during the process of the synthesis of divinyl from alcohol by the method developed by S. V. Lebedev (refs. 1 and 2), and in the catalytical production of divinyl from the mixture ethyl alcohol - acetaldehyde (ref. 3). According to data published (refs. 4 and 5) the croton aldehyde is obtained from acetaldehyde in two stages. According to M. Ya. Kagan, G. D. Lyubarskiy and S. P. Fedorov (ref. 5) the yield of croton aldehyde attained 64% of the initial substance. It may also be obtained as paraldehyde in the presence of sulphuric acid with a yield of 43 % (ref. 6). It may also be formed in a

Card 1/3

54-1-13/17

Study of the Reaction of the Formation of Croton Aldehyde From Acetaldehyde

single stage from the gaseous phase under the action of solid catalyzers at increased temperature (refs. 7 - 13). As further initial substances for the production of Croton aldehydes by the catalytic method from the gaseous phase butanediol - 1 $(250^0$ ni - catalyzer, yield 50%) (ref. 14), transbutanediol - 1,4 (yield 80%) (ref. 15), erythrol (refs. 16 and 17) are mentioned. These methods have, however, no practical importance. In order to find out the possibilities of obtaining Croton aldehyde immediately from acetaldehyde with a high yield the authors carried out an approximative thermodynamical calculation of the forming reaction of croton aldehyde. As no exact thermodynamical characteristics are available for the majority of organic compounds, the free energies of the formation of aldehydes were calculated according to the method developed by V. B. Fal'kovskiy (ref. 18). Similar results were obtained also when calculating according to the data supplied by Bremner - Tomas (ref. 19). The values of free energies were taken from the tables (ref. 20). Calculation was carried out for the gaseous state at: 298, 500, 700 and 900^0K. The equilibrium constant of the reaction (K_p) was calculated according to the equation $RT\ln K_p = -$ [illegible] (table 1)

Card 2/3

Study of the Reaction of the Formation of Croton Aldehyde From Acetaldehyde 54-1-13/17

The approximated thermodynamical calculation showed that the increase of reaction temperature and a less diluted acetaldehyde must promote the formation of croton aldehyde. A still greater increase of temperature and a still lesser degree of dilution with water caused the forming of still stronger condensation products of the acetaldehyde. Compared to these products, croton aldehyde must be considered as an intermediate product. Calculations carried out are confirmed by experiments. There are 5 tables and 22 references, 9 of which are Slavic.

SUBMITTED: October 25, 1957

AVAILABLE: Library of Congress

1. Acetaldehyde 2. Aldehyde croton-Analysis

Card 3/3

GORIN, Yu.A.; IVANOV, V.S.; TERESHENKOVA, V.K.

Formation of croton aldehyde from acetaldehyde [with summary in English]. Vest.LGU 13, no.4:134-140 '58. (MIRA 11:4)
(Acetaldehyde) (Crotonaldehyde)

GORIN, YU. A.

79-1-36/63

AUTHORS: Gorin, Yu. A., Ivanov, V. S., Bogdanova, Ye. S., Pyayvinen, E. A.

TITLE: Dienic Hydrocarbons From Unsaturated Alcohols (Diyenovyye uglevodorody iz nepredel'nykh spirtov) I. The Catalytic Dehydration of Crotyl Alcohol to Dinvinyl (I. Kataliticheskaya degidratatsiya krotilovogo spirta v divinil)

PERIODICAL: Zhurnal Obshchey Khimii, 1958, Vol. 28, Nr 1, pp. 169-176 (USSR)

ABSTRACT: The subject of the present paper was the dehydration of crotyl alcohol according to S. V. Lebedev. The authors used various components of a catalyst which permitted to model the process in its last stage, the formation of divinyl from crotyl alcohol by dehydration. Moreover, it was their task to perform the reactions under different conditions and with the best contact action of catalysts which might supposedly lead to high yields. First of all it was of practical interest to calculate the dehydration of crotyl alcohol thermodynamically, as nothing was hitherto known on it with regard to free energy, entropy, modification of the heat capacity by temperature. For this reason the calculations were only made approximately, based on

Card 1/2

79-1-36/63

Dienic Hydrocarbons From Unsaturated Alcohols. I. The Catalytic Dehydration of Crotyl Alcohol to Divinyl

the additive thermodynamic functions for organic molecules. The authors calculated the equilibrium constants of the dehydration reaction of crotyl alcohol in divinyl and according to them also the yield of reaction products in a temperature range of 300 - 890°K. From the approximate thermodynamic calculation follows that there exists not thermodynamic limitations for the given reaction. At a higher temperature the yield of divinyl increases. The best dehydration results were obtained with Lebedev's catalyst - B_2. In the liquid products of the catalysis over this catalyst the authors found a methylvinylcarbinol which is produced by the isomerization of crotyl alcohol. The investigation results correspond to the conceptions existing on the formation scheme of divinyl from ethyl alcohol according to Lebedev's method, according to which this alcohol is an intermediate product of this process. There are 3 tables, and 22 references, 6 of which are Slavic.

ASSOCIATION: **Leningrad State University** (Leningradskiy gosudarstvennyy universitet)

SUBMITTED: December 30, 1956

AVAILABLE: Library of Congress

Card 2/2 1. Chemistry 2. Hydrocarbons 3. Alohols 4. Dehydration

AUTHORS: Gorin, Yu. A., Bogdanova, L. P. 79-28 3-20/61

TITLE: Investigation Within the Field of Catalytic Hydration of Acetylene and its Derivatives in the Vapor Phase State (Issledovaniye v oblasti parofaznoy kataliticheskoy gidratatsii atsetilena i yego proizvodnykh).
I. Hydration of Vinylacetylene to Methylvinylketone (I. Gidratatsiya vinilatsetilena v metilvinilketon)

PERIODICAL: Zhurnal Obshchey Khimii, 1958, Vol. 28, Nr 3, pp. 657-661 (USSR)

ABSTRACT: The present work shows that the hydration process of vinylacetylene into methylvinylketone in the vapor phase can be successfully carried out with zinc oxide, cadmium-tungstenate, the cadmium-calciumphosphate catalyst and tungsten oxide. The process takes place with a solution in a tenfold volume of steam. The formed methylvinylketone in the reaction products is partly contained in aqueous solutions and partly in the upper oil layer from which it can be separated by rectification. Besides this, ketone polymerization products of vinylacetylene as well as the

Card 1/3

Investigation Within the Field of Catalytic Hydration of Acetylene and its Derivatives in the Vapor Phase State. I. Hydration of Vinylacetylene to Methylvinylketone

79-28-5-20/61

2-acetyl-6-methyl-2,3-dihydropyran are obtained. The results of the temperature influence and of the spatial velocity of vinylacetylene on its hydration process in the presence of various catalysts are mentioned in a table. From the data of the table it can be concluded that cadmium tungstenate has the greatest activity and selectivity with respect to the yield in methylvinylketone. The maximum yields in methylvinylketone which had been obtained by the most effective conditions above the mentioned catalysts are not less than those of the hydration of vinylacetylene in the liquid phase by means of mercury catalysts, as mentioned in publications. The investigation on the lengthiness of a contact reaction cycle showed that after 3 operation hours the activity of the catalysts drops in consequence of the deposition of polymers and resins on their surfaces. The contact action of the catalysts can be regenerated in the flow of a mixture of air and steam at from 400-450°C. There are 1 table and 17 references, 8 of which are Soviet.

Card 2/3

Investigation Within the Field of Catalytic Hydration of 79-28-3-20/61
Acetylene and its Derivatives in the Vapor Phase State. I. Hydration
of Vinylacetylene to Methylvinylketone

ASSOCIATION: Vsesoyuznyy nauchno-issledovatel'skiy institut sinteticheskogo kauchuka (All-Union Scientific Research Institute for Synthetic Rubber)

SUBMITTED: March 27, 1957

Card 3/3

79-28-5-4/69

AUTHORS: Gorin, Yu. A., Bogdanova, L. P.

TITLE: Investigation in the Field of the Catalytic Hydration of Acetylene and its Derivatives in the Vapor Phase (Issledovaniye v oblasti parofaznoy kataliticheskoy gidratatsii atsetilena i yego proizvodnykh). II. Hydration of Phenylacetylene of Tertiary Butylacetylene of Dimethylacetylene, of Methylethylacetylene and of Ethylvinylacetylene (II. Gidratatsiya fenilatsetilena, tret--butil-atsetilena, dimetilatsetilena, metiletilatsetilena i etilvinilatsetilena)

PERIODICAL: Zhurnal Obshchey Khimii, 1958, Vol. 28, Nr 5, pp. 1144-1150 (USSR)

ABSTRACT: In the previous paper (Reference 6) results were described which had been obtained in the hydration of vinylacetylene on solid catalysts which contained no mercury compounds. In this paper the authors tried to hydrate other mono- and disubstituted derivatives of acetylene on the cadmium-calciumphosphate catalyst. It was shown that this way ketones of different structure can be obtained from acetylene derivatives. Hydration in the vapor phase takes

Card 1/3

Investigation in the Field of the Catalytic Hydration of Acetylene and its Derivatives in the Vapor Phase. II. Hydration of Phenylacetylene of Tertiary Butylacetylene of Dimethylacetylene, of Methylethylacetylene and of Ethylvinylacetylene

79-28-5-4/69

especially effectful a course for the monosubstituted acetylene derivatives, this is less the case with disubstituted ones; these latter do apparently not react as quickly, and only with small yields of the hydration products consisting of ketones; this is probably because of their structure. Thus the hydration conversions of some mono- and disubstituted homologs of acetylene on cadmium-calciumphosphate catalysts in the vapor phase were investigated. In comparing the depth of conversion of mono- and disubstituted acetylene homologs in the hydration process in the vapor phase on a catalyst it was found that on the same conditions their activity depends on the nature of the radical at the triple-bond. Disubstituted acetylene derivatives do not hydrate as quickly as the monosubstituted ones on these conditions. Schemes were proposed which demonstrate the course of hydration of acetylene and of its derivatives in the vapor phase on solid catalysts. There is 1 table and 19 references, 13 of which are Soviet.

Card 2/3

79-28-5-4/69

Investigation in the Field of the Catalytic Hydration of Acetylene and its Derivatives in the Vapor Phase. II. Hydration of Tertiary Butylacetylene of Dimethylacetylene, of Methylethylacetylene and of Ethylvinylacetylene

ASSOCIATION: Vsesoyuznyy nauchno-issledovatel'skiy institut sinteticheskogo kauchuka (All-Union Scientific Research Institute for Synthetic Rubber)

SUBMITTED: April 24, 1957

Card 3/3

SOV/79-28-6-1/63

AUTHORS: Gorin, Yu. A., Ivanov, V. S., Khrennikova, Ye. K.

TITLE: Diene-Hydrocarbons of Unsaturated Alcohols (Diyenovyye uglevodorody iz nepredel'nykh spirtov) II. The Catalytic Dehydration of Tiglic Alcohol and of 2-Ethylhexene-2-ol-1 in Diene-Hydrocarbons (II. Kataliticheskaya degidratatsiya tiglinovogo spirta i 2-etilgeksen-2-ola-1 v diyenovyye uglevodorody)

PERIDICAL: Zhurnal obshchey khimii, 1958, Vol. 28, Nr 6, pp. 1421-1426 (USSR)

ABSTRACT: Already earlier the authors found (Ref 1) that the use of the components of the catalyst according to S. V. Lebedev (B_2) and of the phosphate catalyst makes possible the synthesis of the divinyl of crotyl alcohol in a goodyield. It was of interest to investigate, whether these catalysts could also be used in the dehydration of other α,β-unsaturated alcohols in order to obtain hydrocarbons consisting of a system of double bonds. The catalytic dehydration of tiglic alcohol to isoprene by means of the above mentioned catalysts was investigated. The phosphate catalyst is already

Card 1/3

SOV/79-28-6-1/63

Diene-Hydrocarbons of Unsaturated Alcohols. II. The Catalytic Dehydration of Tiglic Alcohol and of 2-Ethylhexene-2-ol-1 in Diene-Hydrocarbons

used in the industrial synthesis of the divinyl of butylene-glycol-1,3. The isoprene yield with the above mentioned catalysts is 67 %, calculated for the tiglic alcohol. The catalytic dehydration of 2-ethylhexene-2-ol-1 was investigated the same way. The yield of hydrocarbons (calculated for C_8H_{14}) for either catalyst was also very good. The hydrocarbons C_8H_{14} obtained by means of the one or the other are identical and mainly consist of 2-ethylhexadiene-1,3 which has to be regarded as initial product in the hydration. As the catalytic dehydration of crotyl alcohol and of the α,β-unsaturated alcohols having an alkyl group in the α-position, obviously takes the same course under the formation of bound dienes, the assumption by Ostromyslenskiy, that in the intermediate stage of the reaction compounds with an allene group can occur, must be regarded as unfounded, as the authors maintain. There are 2 tables and 29 references, 12 of which are Soviet.

Card 2/3

SOV/79-28-6-1/63

Diene-Hydrocarbons of Unsaturated Alcohols. II. The Catalytic Dehydration of Tiglic Alcohol and of 2-Ethylhexene-2-ol-1 in Diene-Hydrocarbons

ASSOCIATION: Leningradskiy gosudarstvennyy universitet
(Leningrad State University)

SUBMITTED: May 20, 1957

1. Alcohols--Dehydration

Card 3/3

GORIN, Yu.A.; GORN, I.K.

Vapor phase catlytic hydration of acetylene and its derivatives. Part 3: Catalytic hydration of acetylene over various solid catalysts. Zhur.ob.khim. 28 no.9:2328-2333 S '58. (MIRA 11:11)

1. Vsesoyuznyy nauchno-issledovatel'skiy institut sinteticheskogo kauchuka.
(Hydration) (Acetylene)

SOV/64-59-3-3/24

5(1)

AUTHOR: Gorin, Yu. A.

TITLE: Vapour Phase Hydration of Acetylene Into Acetaldehyde on Mercury-free Catalysts (Parofaznaya gidratatsiya atsetilena v uksusnyy al'degid na nertutnykh katalizatorakh)

PERIODICAL: Khimicheskaya promyshlennost', 1959, Nr 3, pp 8 - 14 (USSR)

ABSTRACT: A considerable drawback of mercury-containing catalysts for the hydration of acetylene into acetaldehyde, is their poisonousness and the high price of Hg as well as the corrosion protection which has to be provided because of the aggressive medium necessary (HNO_3 and H_2SO_4). A number of patents, mainly foreign, therefore suggests other catalysts, an industrial application of which did not seem to have been carried out up to now. The various catalysts mentioned in publications, are given in the present paper, and they are explained in detail, the corresponding data are given (Tables 1-8). The following conclusions are arrived at: catalysts containing free phosphorous acid and copper- or zinc salts, lack the stability necessary for an industrial application. The application of combustible catalyst carriers (coal, cuprene), prevents a regeneration of

Card 1/2

the corresponding catalysts in the air- or air-steam current. Zinc phosphate with or without activation by means of copper phosphate (0.4%) possesses good activity, selectivity and stability, and it can be regenerated as mentioned above, but exhibits the drawback of allowing only a short period of contact (3-4 hours). Copper-calcium phosphate catalysts with 0.1-0.2% of copper phosphate show the drawback of possessing only insufficient stability (300-600 hours). Cadmium-calcium phosphate catalysts completely fulfill the requirements; they were used during 2600 hours in the Karagandinskiy zavod SK (Karaganda Works for Synthetic Rubber) without losing their activity in the test, and they can also be regenerated with nitric acid in case of a disactivation. (Results of laboratory tests are graphically given in a table). There are 1 figure, 8 tables, and 30 references, 24 of which are Soviet.

Card 2/2

AUTHORS: Gorin, Yu. A., Bogdanova, L. P. SOV/79-29-2-4/71

TITLE: Investigation of the Vapor-phase Hydration of Acetylene and Its Derivatives (Issledovaniye v oblasti parofaznoy gidratatsii atsetilena i yego proizvodnykh). IV. Affiliation of Ethyl and Butyl Alcohol to Vinyl Acetylene Under the Influence of Solid Catalysts (IV. Prisoyedineniye etilovogo i butilovogo spirtov k vinilatsetilenu pod vliyaniyem tverdykh katalizatorov)

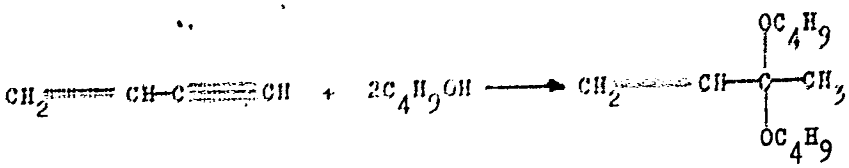
PERIODICAL: Zhurnal obshchey khimii, 1959, Vol 29, Nr 2, pp 365-366 (USSR)

ABSTRACT: The reaction of vinyl acetylene with alcohols is of great interest, as it leads to the formation of various products, depending on the catalyst and the reaction conditions chosen (Refs 1-5). Gorin showed (Ref 6) that by using zinc oxide as a catalyst at 325° in the vapor phase, ethyl and butyl alcohol affiliate to acetylene, forming vinyl ethyl and vinyl butyl ether. On comparing the affiliation of these alcohols to acetylene by a solid catalyst with the same affiliation of water under equal conditions, the authors assume the first product forming from the affiliation of water to acetylene to be vinyl alcohol (in analogy with vinyl ether), which in its turn isomerizes to acetic aldehyde. An attempt is made in the present

Card 1/3

Investigation of the Vapor-phase Hydration of SOV/79-29-2-4/71
Acetylene and Its Derivatives. IV. Affiliation of Ethyl and Butyl Alcohol to
Vinyl Acetylene Under the Influence of Solid Catalysts

paper (in analogy with the affiliation of water to vinyl acetylene) to affiliate alcohols to vinyl acetylene under the influence of solid catalysts, zinc oxide being employed in the first place. On attempting the reaction of vinyl acetylene with ethyl and butyl alcohol, two molecules of butyl alcohol were found to affiliate to the hydrocarbon at the acetylene bond, under formation of a ketal:



$$CH_2=CH-C\equiv CH + 2C_4H_9OH \longrightarrow CH_2=CH-\underset{OC_4H_9}{\overset{OC_4H_9}{C}}-CH_3$$

The yield of ketals was up to 20 %.
The yield of the reaction products of vinyl acetylene with ethyl alcohol was low, only up to 20 %, most probably because

Card 2/3

Investigation of the Vapor-phase Hydration of Acetylene and Its Derivatives. IV. Affiliation of Ethyl and Butyl Alcohol to Vinyl Acetylene Under the Influence of Solid Catalysts

SOV/79-29-2-4/71

of their low stability under the reaction conditions. There are 8 references, 4 of which are Soviet.

ASSOCIATION: Vsesoyuznyy nauchno-issledovatel'skiy institut sinteticheskogo kauchuka (All-Union Scientific Research Institute for Synthetic Rubber)

SUBMITTED: December 16, 1957

Card 3/3

5 (3)

AUTHORS: Gorin, Yu. A., Ivanov, V. S., Pushnova, T. G., Zlatogurskaya, V. V.

SOV/79-29-4-13/77

TITLE: Diene Hydrocarbons From Unsaturated Alcohols (Diyenovyye uglevodorody iz nepredel'nykh spirtov). III.Catalytic Cleavage of Allyl Carbinol (III.Kataliticheskoye razlozheniye allilkarbinola)

PERIODICAL: Zhurnal obshchey khimii, 1959, Vol 29, Nr 4, pp 1104 - 1108 (USSR)

ABSTRACT: On the strength of previous investigations of the authors (Ref 9) and other chemists (Refs 1-8) it is shown in the present paper that under conditions under which an α, β-unsaturated alcohol (crotyl alcohol) readily **splits** off water and yielding divinyl with 85-88 mole%, the allyl carbinol primarily undergoes cleavage, thus yielding propylene and formaldehyde. The authors investigated the process of the catalytic transformation of allyl carbinol on some dehydrating components of the catalyst of S. V. Lebedev at 350° as well as on the silicagel-tantalum catalyst at 370°. Under these conditions divinyl is formed from allyl carbinol in small quantities only. It was found that on the dehydrating components of the cata-

Card 1/2

Diene Hydrocarbons From Unsaturated Alcohols. III.Catalytic Cleavage of Allyl Carbinol SOV/79-29-4-13/77

lysts B and B_2 of Lebedev chiefly a cleavage of the allyl carbinol takes place to give propylene and formaldehyde. The data obtained do not support the assumption that the formation of divinyl via the allyl carbinol is possible in the process of Lebedev. In order to complete the above-mentioned data it must be said that the transformation of butanediol-1.3 on the dehydrating component of the catalyst of Lebedev takes place under the formation of a considerable quantity of propylene (Ref 15). In the liquid cleavage products of butanediol -1.3 on the Lebedev catalyst methyl alcohol was found (Ref 16). Comparing the data obtained by Lebedev and those of the present paper it may be assumed that butanediol -1.3 splits off in the beginning one molecule of water and is converted to allyl carbinol which is cleft under the influence of the dehydrating component to give propylene and formaldehyde. The latter is reduced to methyl alcohol (Scheme). There are 1 table and 26 references, 17 of which are Soviet.

ASSOCIATION: Leningradskiy gosudarstvennyy universitet (Leningrad State University)
SUBMITTED: February 10, 1958
Card 2/2

5 (3)

AUTHORS: Gorn, I. K., Gorin, Yu. A. SOV/79-29-7-4/83

TITLE: Investigation in the Field of Catalytic Hydration of Acetylene and Its Derivatives in the Vapor Phase (Issledovaniye v oblasti parofaznoy kataliticheskoy gidratatsii atsetilena i yego proizvodnykh). V. On the Influence of the Anions of Solid Catalysts (V. O vliyanii anionov tverdykh katalizatorov)

PERIODICAL: Zhurnal obshchey khimii, 1959, Vol 29, Nr 7, pp 2125 - 2129 (USSR)

ABSTRACT: In order to investigate the influence exerted by anions upon the catalytic hydration of acetylene and its derivatives, the authors chose cadmium- and calcium salts of various acids. Cadmium served as an active cation, calcium, on the other hand, as an inactive cation (Ref 2). The latter was intended not to mask the catalytic properties of the anions. The simultaneous effect of some of these anions was investigated on catalysts with acid character, viz. phosphoric and tungstic acid and the anhydrides of molybdic and vanadic acid; these are compounds which are sufficiently stable and not volatile at high temperatures. All catalysts were tested at the same temperature, the same rate of flow of acetylene and its dilution with steam so that the ex-

Card 1/3

Investigation in the Field of Catalytic Hydration of Acetylene and Its Derivatives in the Vapor Phase. SOV/79-29-7-4/83
V. [illegible]

periments differed only by their duration. Tungstate and the phosphates of cadmium proved to be the most active ones. The influence exercised by the anions of the salts on the hydration of acetylene in the vapor phase becomes manifest only in the case in which the catalyst contains a cation which is capable of activating acetylene or a hydrogen ion (proton). In the presence of an inactive cation the anions have hardly any effect (e.g. $Ca^{••}$). The nature of the anion in cadmium salts seems to exercise no influence on the primary activation processes of acetylene and on the formation of polar complexes. The effect of the anion on the hydration of acetylene results only in a variable capability of transforming acetic anhydride into by-products. In table 1 the results of the catalytic activity of Cd- and Ca-salts are compared with those of the corresponding salts. There are 3 tables and 21 references, 17 of which are Soviet.

Card 2/3

Investigation in the Field of Catalytic Hydration of Acetylene and Its Derivatives in the Vapor Phase. V. On the Influence of the Anions of Solid Catalysts SOV/79-29-7-4/83

ASSOCIATION: Vsesoyuznyy nauchno-issledovatel'skiy institut sinteticheskogo kauchuka imeni S. V. Lebedeva (All-Union Scientific Research Institute of Synthetic Rubber imeni S. V. Lebedev)

SUBMITTED: July 2, 1958

Card 3/3

5(1,3)

AUTHORS: Gorin, Yu. A., Sokolova, S. G., Panteleyeva, A. K. SOV/20-125-1-20/67

TITLE: Determination of the Role Played by Methanol in the Contact Process of Divinyl Production From Alcohol by Using Methanol Marked With Radioactive Carbon C^{14} (Vyyasneniye roli metanola v kontaktnom protsesse polucheniya divinila iz spirta s primeneniyem metanola, mechennogo radioaktivnym uglerodom C^{14})

PERIODICAL: Doklady Akademii nauk SSSR, 1959, Vol 125, Nr 1, pp 79-82 (USSR)

ABSTRACT: Methanol is one of the products of catalytic transformation of ethanol in divinyl (method devised by S. V. Lebedev). Methanol forms as a by-product and is no admixture of the initial ethanol. Its separation from unreacted ethanol in the reaction products ("reclaimed" alcohol) is very difficult so that methanol partly enters again the production process and accumulates up to ~2.5%. Methanol may form also by reaction from possibly formed formaldehyde (Refs 1, 2). The first author (Ref 3) expressed the assumption that formaldehyde may separate the acetic and crotonic aldehyde (intermediate products in the

Card 1/4

divinyl formation) by condensation from the reaction sphere and thus, it may reduce the divinyl yield (Refs 4, 5). For the solution of the problem mentioned in the title a series of experiments were carried out at 400° on the Lebedev industrial catalyst by a transformation of an alcohol - aldehyde mixture (4% acetic aldehyde) with an addition of 2.5% marked methanol. The fractions obtained from fractional distillation are characterized in table 1. They correspond to hydrocarbons with 4, 5, 6, 7 and 8 C atoms. The residue after the distillation of divinyl corresponds to fraction C_5. The nature of these substances has not yet been determined. Among others amylene, piperylene, and isoprene (Refs 1, 7) were found in the C_5 substances. The results of radiometric determinations are shown in figure 1. It may be concluded from it that the C_5 fraction as well as fraction C_7, i.e. the fractions with an odd atomic number have the highest activity. Fraction C_4 (divinyl) contains no C^{14}. The activity of fraction C_6 is

Determination of the Role Played by Methanol in the Contact Process of Divinyl Production From Alcohol by Using Methanol Marked With Radioactive Carbon C^{14} SOV/20-125-1-20/67

hardly a quarter of that of C_5, C_8 lags considerably behind C_7. The occurrence of a certain radioactivity in the fractions with an equal number of C atoms may be explained by an insufficient fractionation. However, C_6 hydrocarbons might have formed partly in the reaction $C_7^+ \longrightarrow C_6^+ + C$ (a partial cracking). This may hold also for the C_8 fraction. In any case, these by-processes are of no great importance and cannot eliminate the above regularity. On the basis of the results the authors give hypothetical schemes which indicate that methanol participates in the formation of hydrocarbons of the odd series. The assumptions made by Lebedev (Ref 1) on the possible participation of formaldehyde in this process are the most probable ones. The C_7 hydrocarbons may form as condensation products of formaldehyde with C_6 aldehydes which are by-products of the Lebedev process. It may be seen from scheme 1 that formaldehyde forms the crotonic aldehyde and thus,

Card 3/4

Determination of the Role Played by Methanol in the SOV/20-125-1-20/67
Contact Process of Divinyl Production From Alcohol by Using Methanol Marked
With Radioactive Carbon C^{14}

reduces the divinyl yield. For this reason the removal of methanol possibly may increase this yield. There are 1 figure, 1 table, and 7 Soviet references.

ASSOCIATION: Vsesoyuznyy nauchno-issledovatel'skiy institut sinteticheskogo kauchuka im. S. V. Lebedeva (All-Union Scientific Research Institute for Synthetic Rubber imeni S. V. Lebedev)

PRESENTED: November 15, 1958, by B. A. Kazanskiy, Academician

SUBMITTED: July 28, 1958

Card 4/4

GORIN, Yu. A.

PHASE I BOOK EXPLOITATION SOV/5153

Garmonov, I.V., and B. S. Kortkevich, Resp. eds.

Sintez monomerov dlya proizvodstva sinteticheskogo kauchuka (Synthesis of Monomers for the Production of Synthetic Rubber) Leningrad, Goskhimizdat, 1960. 250 p. Errata slip inserted. 4,500 copies printed.

Sponsoring Agencies: Gosudarstvennyy komitet Soveta Ministrov SSSR. Upravleniye khimii i neftekhimii. Giprokauchuk i VNIISK.

Eds.: S.A. Louis and Ya. I. Shur; Tech. Ed.: T.A. Fomkina.

PURPOSE: This book is intended for scientists, engineers, and technicians working in the synthetic rubber, plastics, and petroleum refining industries, and in scientific research institutes affiliated with these industries.

COVERAGE: The book contains articles which report on research carried out at the Nauchno-issledovatel'skiy institut sinteticheskogo kauchuka imeni Akademika S.V. Lebedeva (Scientific Research Institute for Synthetic Rubber imeni Academician S.V. Lebedev) and the Gosudarstvennyy proyektnyy i nauchno-issledovatel'skiy institut promyshlennosti sinteticheskogo kauchuka (State Scientific Research and Design Institute of the Synthetic Rubber Industry) in the synthesis of isoprene, styrene, acetylenes, acetaldehyde, and other initial products for synthetic rubber production. The articles also discuss methods of extracting these products from their preparatory media. No personalities are mentioned. References accompany individual articles.

TABLE OF CONTENTS:

Synthesis of Monomers (Cont.) SOV/5153

~~Card~~ 3/6

S/079/60/030/011/020/026
B001/B055

AUTHORS: Gorin, Yu. A., Svetozarova, V. M., Gorn, I. K., and Krupysheva, T. A.

TITLE: Investigation on the Catalytic Hydration of Acetylene and Its Derivatives in the Gas Phase. VII. Study on Copper-phosphate/ Calcium-phosphate Catalysts

PERIODICAL: Zhurnal obshchey khimii, 1960, Vol. 30, No. 11, pp. 3817-3822

TEXT: Basing on the publications Refs. 1-8, the authors of the present work studied the action of copper phosphate and various other copper salts as agents for bringing about the hydration of acetylene. Calcium phosphate was used as second component, since Ref. 9 mentions the greater stability of catalysts prepared with this carrier. The authors tested the copper phosphate catalyst, and its mixtures with calcium phosphate. Calcium phosphate, which is inactive itself, is activated by addition of 0.01% copper phosphate, this activation increasing with higher percentages of copper phosphate up to a maximum at 0.3%. Higher percentages reduce the

Card 1/3

Investigation on the Catalytic Hydration of Acetylene and Its Derivatives in the Gas Phase. VII. Study on Copper-phosphate/Calcium-phosphate Catalysts

S/079/60/030/011/020/026
B001/B055

activity. The authors were interested to find out how a variation in calcium-phosphate composition would affect the copper-phosphate/calcium-phosphate catalyst. Several catalysts were prepared which contained 0.1% copper phosphate applied to mixtures of secondary- and tertiary calcium phosphate of various compositions. It was shown that the application of 0.1 - 0.3% copper phosphate onto calcium phosphate leads to highly active and selective catalysts for the hydration of acetylene. It was found that the activity of the copper-phosphate/calcium-phosphate catalyst depends on its content of neutral and acid calcium phosphates. Catalysts of a composition approaching neutral tertiary phosphate have the highest activity. Addition of 0.1 - 0.3% of other copper (II) salts to the calcium phosphate has about the same effect as addition of the same amount of copper phosphate. The activity of catalysts prepared with metallic copper and copper (I) chloride is low. By applying the copper-phosphate/calcium-phosphate catalyst, prepared in the required manner, the hydration process of acetylene can be carried out in a 100 h working cycle at an average catalyst working life of 600 h. There are 1 table and 14 references:

Card 2/3

Investigation on the Catalytic Hydration of Acetylene and Its Derivatives in the Gas Phase. VII. Study on Copper-phosphate/Calcium-phosphate Catalysts

S/079/60/030/011/020/026
B001/B055

11 Soviet, 2 US, 1 French, and 1 German.

SUBMITTED: October 24, 1959

Card 3/3

S/079/60/030/011/021/026
B001/B055

AUTHORS: Gorin, Yu. A. and Gorn, I. K.

TITLE: Investigation on the Catalytic Hydration of Acetylene and Its Derivatives in the Gas Phase. VIII. On the Role of the Carrier in Two-component Catalysts During the Hydration of Acetylene to Acetaldehyde

PERIODICAL: Zhurnal obshchey khimii, 1960, Vol. 30, No. 11, pp. 3822-3826

TEXT: It is evidently still assumed by researchers that in the catalytic hydration of acetylene and its derivatives in the gas phase, the catalyst has no effect on the water molecule during its addition to the acetylenic bond. The authors of the present work, however, studied the activity of various two-component phosphate catalysts and obtained experimental results which indicate that the catalyst is actively involved in this stage of the reaction. In an earlier paper (Ref. 8), the authors found that the copper-phosphate/calcium-phosphate catalyst, among others, is very active and that the calcium phosphate itself is inactive, its only effect being that of

Card 1/3

Investigation on the Catalytic Hydration of Acetylene and Its Derivatives in the Gas Phase. VIII. On the Role of the Carrier in Two-component Catalysts During the Hydration of Acetylene to Acetaldehyde

S/079/60/030/011/021/026
B001/B055

increasing the surface development of the active phosphate. In order to increase the surface of the catalyst by means of other carriers, activated carbon, burnt silica gel, and pumice were used in combination with active phosphates. The authors studied two types of catalysts, using copper sulfate as active agent for the one, and cadmium phosphate for the other type. The experimental data obtained for phosphate catalysts composed of two components, with different carriers, are listed in a table. These data show that not only calcium phosphate but other alkaline-earth phosphates also give active catalysts in combination with copper- and cadmium phosphates. The use of activated carbon, silica gel, and pumice as carrier for the phosphate gave catalysts with greatly reduced activity, and caused side-reactions as well. It is concluded from these data that the role of the catalyst in acetylene hydration in the gas phase is more complex than appears on first sight. It is thus shown that activated carbon, burnt silica gel, and pumice, the surfaces of which are seemingly electroneutral,

Card 2/3

Investigation on the Catalytic Hydration of Acetylene and Its Derivatives in the Gas Phase. VIII. On the Role of the Carrier in Two-component Catalysts During the Hydration of Acetylene to Acetaldehyde

S/079/60/030/011/021/026
B001/B055

cannot be used as carriers for the above processes. Alkaline earth phosphates with their ionic crystal structure, however, prove to be good carriers for these catalysts. It was also found that the activity of the catalysts in the gas-phase hydration of acetylene is determined not only by their ability to activate acetylene, but is probably also determined by the effect of the catalyst on the reacting water molecules. This effect apparently consists of an additional polarization of the adsorbed water molecules under the influence of the ionic lattice of the catalyst or the carrier, thus easening the reaction of water with the activated acetylene molecules. There are 1 table and 11 references: 8 Soviet, 2 US, and 1 German.

SUBMITTED: October 24, 1959

Card 3/3

S/081/63/000/004/014/051
B166/B186

AUTHORS: Gorin, Yu. A., Ivanov, V. S.

TITLE: Explanation of the reaction of the formation of certain by-products in the process of catalytic divinyl synthesis by S. V. Lebedev's method

PERIODICAL: Referativnyy zhurnal. Khimiya, no. 4, 1963, 221, abstract 4Zh62 (In collection: Kataliz v vyssh. shkole. Tr. I Mezhvuz. soveshchaniya. no. 1, part 2. M., Mosk. un-t, 1962, 258-274)

TEXT: The authors present diagrams for the formation of CH_3OH, allyl carbinol, hexadiene-1,3,3-methylpentadi-1,3-ene and cyclohexadi-1,3-ene, which are obtained as by-products from the contact synthesis of divinyl from C_2H_5OH by the method of S. V. Lebedev. [Abstracter's note: Complete translation.]

Card 1/1

GAYEV, G.P.; GORITSKIY, Yu.A.

Oxyhemometer for infants and young children. Trudy MEI no.49:96-110 '63. (MIRA 17:3)

GORIN, Yu.A.; TROITSKIY, A.N.; TERESHCHENKO, L.M.; SHATOVA, M.M.

Development of the process of the gas phase hydration of acetylene to acetaldehyde on nonmercury catalysts.
Khim. prom. no. 4:265-267 Ap '64. (MIRA 17:7)

CHARSKAYA, K.F.; RODINA, E.I.; [illegible], Yu.A.

Studying the composition of by-products formed in obtaining isoprene by the dehydrogenation of isopentane and isopentene. Neftekhimiia 4 no.2:194-199 Mr-Ap'64 (MIRA 17:8)

1. Vsesoyuznyy nauchno-issledovatel'skiy institut sinteticheskogo kauchuka imeni Lebedeva.

GORIN, Yu.A.; GORN, I.K.

Vapor phase catalytic hydration of acetylene and its derivatives. Part 10: n-Pentenes, by-products of the hydration of acetylene to acetaldehyde on cadmium-calcium phosphate catalysts. Zhur. org. khim. 1 no. 12:2090-2094 D '65 (MIRA 19:[illegible])

1. Vsesoyuznyy nauchno-issledovatel'skiy institut sinteticheskogo kauchuka imeni Lebedeva. Submitted October 29, 1964.

ACC NR: AP7000336 SOURCE CODE: UR/0413/66/000/022/0094/0094

INVENTOR: Gorin, Yu. A.; Charskaya, K. N.; Rodina, E. I.; Kropachev, V. A.; Alferova, L. V.; Kuren'gina, T. N.

ORG: none

TITLE: Preparative method for elastic tetrahydrofuran copolymers. Class 39, No. 188670 [announced by the All-Union Sceintific Research Institute of Synthetic Rubber im. Akademician S. V. Lebedev (Vsesoyuznyy nauchno-issledovatel'skiy institut sinteticheskogo kauchuka); Institute of Macromolecular Compounds AN SSSR (Institut vysokomolekulyarnykh soyedineniy AN SSSR])

SOURCE: Izobreteniya, promyshlennyye obraztsy, tovarnyye znaki, no. 22, 1966, 94

TOPIC TAGS: elastic copolymer, bulk copolymerization, tetrahydrofuran copolymer, readily curable copolymer, copolymer, copolymerization

ABSTRACT: An Author Certificate has been issued for a method of preparing elastic copolymers of tetrahydrofuran with oxacyclobutane or organic oxides by bulk copolymerization in the presence of diethyl zinc hydrolyzates or of a system, consisting of aluminumalkyl hydrolyzates and oxacyclobutane derivatives. To produce vulcanization, the method provides for the copolymerization of the above-mentioned monomers in the presence of unsaturated epoxy compounds (e.g., alkyl-1-propanol or butadiene epoxide) as the third monomer. 5107

SUB CODE: 11, 07/ SUBM DATE: 05Jul65/ ATD PRESS:

Card 1/1 UDC: 678.83:66. .062.785

ACC NR: AP6025628 SOURCE CODE: UR/0413/66/000/013/0079/0079

INVENTORS: Gorin, Yu. A.; Rodina, E. I.; Charskaya, K. N.

ORG: none

TITLE: A method for obtaining rubber-like copolymers of tetrahydrofurane. Class 39, No. 183396 /announced by All-Union Scientific Research Institute of Synthetic Rubber imeni Academician S. V. Lebedev (Vsesoyuznyy nauchno-issledovatel'skiy institut sinteticheskogo kauchuka)/

SOURCE: Izobreteniya, promyshlennyye obraztsy, tovarnyye znaki, no. 13, 1966, 79

TOPIC TAGS: rubber, synthetic material, copolymer, copolymerization, monomer, catalyst, aluminum compound, ethyl

ABSTRACT: This Author Certificate presents a method for obtaining rubber-like copolymers of tetrahydrofurane with the derivatives of oxycyclobutane by copolymerizing monomers in the mass. The products of aluminum alkyls hydrolysis are used as catalysts. To obtain easy-to-vulcanize copolymers, 3-methyl-3-allyloxymethyloxycyclobutane or its mixture with the derivatives of oxycyclobutane (such as 3-ethyl-3-chlormethyloxycyclobutane) is used as the derivative of oxycyclobutane.

SUB CODE: 11/, 07/ SUBM DATE: 06Aug65

Card 1/1 UDC: 678.83.074:66.062.785+547.513

AUTHORS: Gorina, A. A., Kargin, V. A., Kozlov, P. M., 54-8-2/19
Kotrelev, V. N.

TITLE: Production of Goods From Fluoroplast-4 (Pererabotka ftoroplasta-4 v izdeliya).
Investigation of the Preforming Process (Issledovaniye protsessa tabletirovaniya).

PERIODICAL: Khimicheskaya Promyshlennost', 1957, Nr 8, pp. 5-9 (USSR)

ABSTRACT: The investigations concerning the detection of processes for the production of goods from fluoroplast-4 were started in 1949. Foreign references (references 3-6) and the original variants of the laboratories of L. V. Chereshkevich (NIIPP) and of L. F. Vereshchagin (IOKh AN) were at the disposal of the NIIPM where they were produced. The production method was divided into the following 4 stages:

1) preparation of the pulverulent fluoroplast-4 for preforming: a) thermal treatment of the powder, b) aeration of the powder.
2) Preforming
3) Caking together
4) Cooling of the finished product. In the investigation of the production method the papers of P. P. Balandin

Card 1/3

Production of Goods From Fluoroplast-4. Investigation of the Preforming Process

64-8-2/19

(reference 9) about the computation of the press process of dry refractory materials as well as the papers about the preforming process in press powders were taken into consideration (reference 10). The purpose of present paper was the detection of the optimum specific pressure in the preforming from the pulverulent fluoroplast-4, as well as the detection of the optimum thermal retardation of the tablets at this pressure. As criteria for the optimum pressures and preforming times the variations of the linear dimensions and of the specific weight of the pressed samples were chosen. It is shown that the preforming from the pulverulent fluoroplast-4 at specific pressures of not below 300 kg/cm^2 and not above 750 kg/cm^2 is to be carried out. It is shown that a thermal retardation under pressure is necessary in the preforming. For the investigated dimensions of the unworked pieces a formula

$$T = A \frac{H}{D}$$

Card 2/3 was found. This determined the dependence of the amount

Production of Goods From Fluoroplast-4. 64-8-2/19
Investigation of the Preforming Process

of the thermal retardation of the height and diameter of the unworked pieces. T - optimum thermal retardation of the unworked pieces of fluoroplast-4 under the preforming pressure, in minutes. A - constant (in the polymers investigated here it amounted to 7,7 - 9,1) H- the height of the unworked piece. D - diameter of the unworked piece.
There are 4 figures, 2 tables, and 11 references, 2 of which are Slavic.

AVAILABLE: Library of Congress

Card 3/3

GORINA, A.A.; KARGIN, V.A.; KOZLOV, P.M.; KOTRELEV, V.N.

Processing polytetrafluoroethylene into industrial articles. Khim. prom. no.8:453-457 D '57. (MIRA 11:2)
(Ethylene) (Plastics--Molding)

KARGIN, V.A.; GORINA, A.A.; KORETSKAYA, T.A.

Electron microscope study of the mechanism of sintering of polytetrafluoroethylene (fluoroplast-r). Vysokon.soed. 1 no.8:1143-1147 Ag '59. (MIRA 13:2)

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

5(3), 15(8)

AUTHORS: Gorina, A. A., Kargin, V. A., Kozlov, P. M. SOV/64-59-2-9/23

TITLE: Preparation of Phtoroplast-4 in Finished Products (Pererabotka ftoroplasta-4 v izdeliya)
(Investigations on the Sintering Process of Semifinished Products)
(Issledovaniya protsessa spekaniya zagotovok)

PERIODICAL: Khimicheskaya promyshlennost', 1959, Nr 2, pp 134-139 (USSR)

ABSTRACT: The process of pelleting was discussed in the preceding paper (Ref 1). The investigations of the sintering of semifinished phtoroplast-4 (polytetrafluoroethylene) (PF)-products was carried out in two stages; first, the optimum conditions for the sintering were examined, and second, the mechanism of the process was investigated. Volume- and linear shrinkage are regarded as criteria for the evaluation of the summation processes in sintering. Since the proportion by volume between the crystalline and the amorphous component of the polymer is a function of temperature, corresponding X-ray analyses were made, and it was found that at a temperature of up to 300^0 no considerable changes in the degree of crystallization are to be observed. Only at 340^0 the polymer loses its crystal structure (Ref 2). The sintering of semifinished products should

Card 1/2

Preparation of Phtoroplast-4 in Finished Products SOV/64-59-2-9/23
(Investigations on the Sintering Process of Semifinished Products)

therefore take place at 375±5°. The experiments were made within a large range of pelleting pressure (50-500 kg/cm^2) and at sintering temperatures of 340, 360, 380, and 400° at two different heating velocities of the tablets to the sintering temperature, and at three different cooling velocities of the semifinished products after the sintering. The change in the linear dimension and in the density of the sample was examined for the evaluation of the sintering process. The results obtained are graphically represented (Figs 1-6). Optimum pressure in pelleting was determined to be 350-500 kg/cm^2. In the case of small products of (PF) the heating velocity to the sintering temperature is of no importance, the optimum temperature range for sintering is 375±15° (lower limit for low thermostability, upper one for highly thermostable polymers). Sintering takes place until the complete clarification of the polymer. There are 6 figures and 9 references, 4 of which are Soviet.

Card 2/2

5(4) SOV/69-21-3-5/25

AUTHORS: Gorina, A.A., and Kargin, V.A.

TITLE: A Study of the Sintering Mechanism of Fluoroplast-4 Stocks - 1. A Study of the Sorption Process

PERIODICAL: Kolloidnyy zhurnal, 1959, Vol XXI, Nr 3, pp 276-282 (USSR)

ABSTRACT: The authors report on a study of the sorption of low-molecular matter by fluoroplast-4 (polytetrafluoroethylene) and the diffusion of dyes in fluoroplast-4. The foremost task to be accomplished was the evaluation of the molecular packing and the microporosity of the material, particularly during the sintering process. The investigation has shown, that pressed stocks (tablets) of fluoroplast-4 under specific pressures of 500 kg/cm^2 do not exhibit macroporosity. At an increase of the sintering temperature the sorption capacity of fluoroplast-4 diminishes, reaching its minimum value at temperatures between 327° C and 390°C. At higher sintering temperatures, the sorption

Card 1/3

SOV/69-21-3-5/25

A Study of the Sintering Mechanism of Fluoroplast-4 Stocks -
1. A Study of the Sorption Process

capacity increases. This shows that the sintering process can be realized between 327°C and 390°C. Between 327°C and 360°C, however, this process proceeds very slowly, so that practically it will not be realized in this interval. At temperatures above 390°C destructive and relaxing processes can be observed. The latter result in higher porosity and, consequently, in an increase in the sorption capacity of the material. The optimum temperature interval for the sintering of fluoroplast-4 tablets is 375±15°C. The fact that dyes identically permeate polyethylene and fluoroplast-4 testifies, that in both cases, the dyes diffuse in the mass of the polymeric substance and do not penetrate through its pores. In polyethylene, the rate of diffusion is considerably higher than in fluoroplast-4. During the sintering of the tablets, a closer packing of the polymer

Card 2/3

SOV/69-21-3-5/25

A Study of the Sintering Mechanism of Fluoroplast-4 Stocks - 1. A Study of the Sorption Process

macromolecules can be observed. This is due to the greater mobility of the molecules at high temperatures, which leads to the destruction of the molecular interfaces. The authors mention the Soviet scientist I.F. Kanavets [Ref 1]. There are 5 graphs, 5 tables and 3 Soviet references.

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

SUBMITTED: 24 May, 1958

Card 3/3

82077
S/190/60/002/01/05/021
B004/B061

15.5570

AUTHORS: Glukhov, Ye. Ye., Gorina, A. A., Shelion, A. V.

TITLE: Deformation Properties of Polymers

PERIODICAL: Vysokomolekulyarnyye soyedineniya. 1960, Vol. 2, No. 1, pp. 38-45

TEXT The authors discuss equation (1) $\varepsilon = \varepsilon_o . \ln[(\tau + \tau_o)/\tau_o]$ (where ε = the deformation, τ the time, ε_e and τ_o constants) and equation (2) $\sigma = \sigma_e . \ln[(\varepsilon_e + \varepsilon_o)/\varepsilon_o]$ (σ = stress, σ_e and ε_o are constants). They establish that only the value of ε_e for the relevant stress and temperature need be known to calculate deformation at constant stress. For a quantitative examination it is sufficient to know the function $\varepsilon_e = f(\sigma, T)$, for which equation (7) is given on the basis of results of two measurements. It is further explained that the conception of an elastic modulus is not usable for the initial section of the creep

Card 1/3

82077

Deformation Properties of Polymers

S/190/60/002/01/05/021
B004/B061

curve when the coefficient ε_0 values are between $5\cdot10^{-3}$ and $5\cdot10^{-2}$. That is proved by experiments on Ftoroplast 4 and polyethylene (Table 1). The authors' experiments were carried out with an apparatus which made it possible to record the deformation - time curve at constant stress and temperature under pure shear stress conditions (Fig. 1). The effect of the temperature on the deformation properties of some polymers is given in Table 2, Fig. 2 shows the temperature dependence of the coefficient σ_e for Ftoroplast-4. The deformation properties of this polymer after cooling in various ways are given in Table 3. Table 4 gives the deformation properties of high-density polyethylene, low density polyethylene, and polypropylene; Table 5 the deformation properties of various samples of Ftoroplast 40. The experiments confirm the theoretical conclusions, which are therefore useful for practical purposes. The constants T_0 and σ_0 characterize the nature of the polymer, the constants ε_0 and τ_0 its structure. When these values are known, the deformation in a given time at given stress and temperature can be calculated. There are 2 figures, 5 tables, and 4 references: 2 Soviet and 2 US.

Card 2/3

Deformation Properties of Polymers

82077
S/190/60/002/01/05/021
B004/B061

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

SUBMITTED: July 16, 1959

Card 3/3

ca

30

Rubber as an anticorrosive material. M. Farberov and A. Gorina. *J. Rubber Ind.* (U. S. S. R.) 1936, 280 97.—Tests of various types of vulcanizates, including reclaimed rubber, synthetic rubbers, Thiokol, etc., in air, water, 19 and 35% aq. HCl, 5 60% H_2SO_4, 85% H_3PO_4, 4, 8 and 17% HNO_3, 10 and 70% AcOH, 15 and 50% NaOH, HF and NH_4OH, for 8, 10 and 35 weeks are described. The tests included tensile strength, elongation, hardness and swelling. Na butadiene rubber withstood the acids better than did natural rubber. Thiokol had no resistance to NaOH. Seven references. A. Pestoff

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

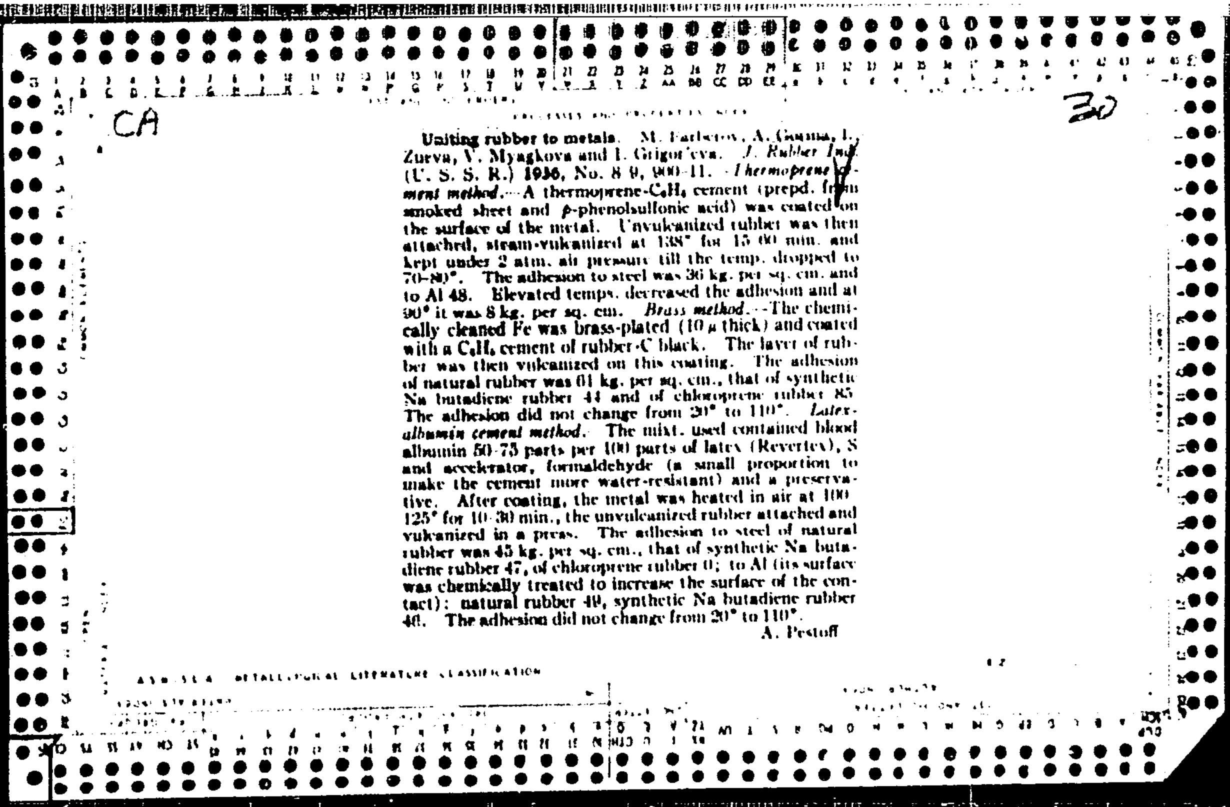
30

CA

Rubber as an anticorrosive material. Chemical resistance of ebonite and the coefficient of vulcanization. M. Farberov and A. Gorina. *J. Rubber Ind.* (U.S.S.R.) 1936, 568-70; cf. C. A. 30, 5454¹. Tests of various types of ebonite contg. 25-55 parts of S per 100 parts of rubber, contg. different fillers, reclaimed rubber and Na butadiene rubber, in 36% aq. HCl, 23.5 and 30% H_2SO_4, 85% H_3PO_4, 8 and 17% HNO_3, 25, 50 and 75% AcOH, 62% citric acid, 38% lactic acid and 30% NaOH at 70°, for 8, 10 and 40 weeks are described. (In HNO_3 the tests were made at 25° and 40°.) Ebonite withstood the chemicals better than did soft rubber. The tests were made to det. the relation between the coeff. of vulcanization and resistance of soft rubber and ebonite. Six references.

A. Pestoff

METALLURGICAL LITERATURE CLASSIFICATION



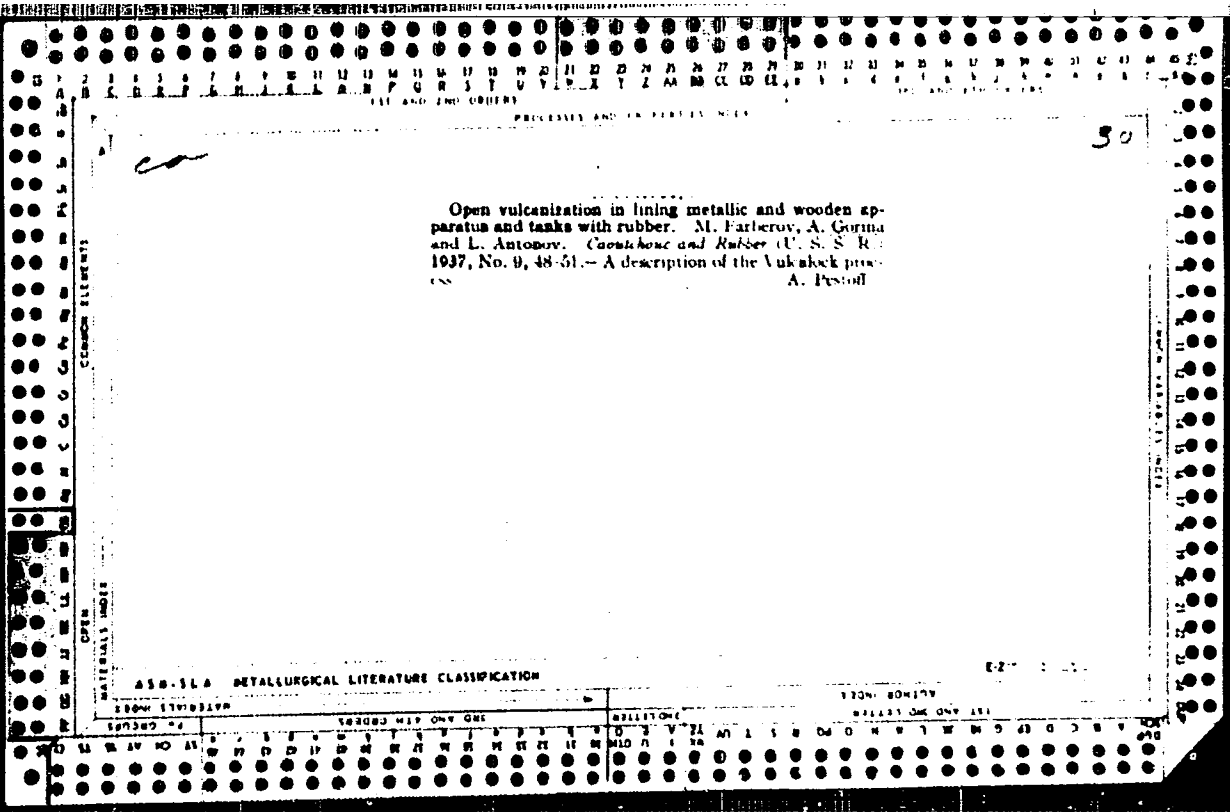
CA

30

Uniting rubber to metals. M. Farberov, A. Gusma, I. Zueva, V. Myagkova and I. Grigor'eva. *J. Rubber Ind.* (U. S. S. R.) 1936, No. 8-9, 900-11.—*Thermoprene cement method.*—A thermoprene-C_6H_6 cement (prepd. from smoked sheet and *p*-phenolsulfonic acid) was coated on the surface of the metal. Unvulcanized rubber was then attached, steam-vulcanized at 138° for 15-60 min. and kept under 2 atm. air pressure till the temp. dropped to 70-80°. The adhesion to steel was 36 kg. per sq. cm. and to Al 48. Elevated temps. decreased the adhesion and at 90° it was 8 kg. per sq. cm. *Brass method.*—The chemically cleaned Fe was brass-plated (10 μ thick) and coated with a C_6H_6 cement of rubber-C black. The layer of rubber was then vulcanized on this coating. The adhesion of natural rubber was 61 kg. per sq. cm., that of synthetic Na butadiene rubber 44 and of chloroprene rubber 85. The adhesion did not change from 20° to 110°. *Latex-albumin cement method.* The mixt. used contained blood albumin 50-75 parts per 100 parts of latex (Revertex), S and accelerator, formaldehyde (a small proportion to make the cement more water-resistant) and a preservative. After coating, the metal was heated in air at 100-125° for 10-30 min., the unvulcanized rubber attached and vulcanized in a press. The adhesion to steel of natural rubber was 45 kg. per sq. cm., that of synthetic Na butadiene rubber 47, of chloroprene rubber 0; to Al (its surface was chemically treated to increase the surface of the contact): natural rubber 49, synthetic Na butadiene rubber 40. The adhesion did not change from 20° to 110°.

A. Pestoff

METALLURGICAL LITERATURE CLASSIFICATION



1ST AND 2ND ORDERS

PROCESSES AND PROPERTIES INDEX

ca

50

Open vulcanization in lining metallic and wooden apparatus and tanks with rubber. M. Farberov, A. Gorina and L. Antonov. *Caoutchouc and Rubber* (U. S. S. R.) 1937, No. 9, 48-51.—A description of the Vulkalock process. A. Pestoff

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

1ST AND 2ND ORDERS

PROCESSES AND PROPERTIES INDEX

Ca

30

Adhesives from synthetic rubber. A. I. Gorina. *Caoutchouc and Rubber* (U. S. S. R.) 1940, No. 8, 37-8. Various synthetic rubber adhesives contg. oxidizing agents were tested. The best characteristics were shown by adhesives contg. no antioxidants after 4-11 days at ordinary temp. Adhesives contg. crude rubber showed a resistance to stripping of about 200 g. per cm. Addn. of C black and whiting improved the strength. B. Z. Kamich

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION