

Paushkin, Ya. M.

Alkylation of benzene with amines with the aid of a catalyst based on boron trifluoride. M. V. Kurashev, A. V. Topchilev, and Ya. M. Paushkin. Proc. Acad. Sci. U.S.S.R., Sect. Chem. 107: 203-8 (1956) (Sov. translation). See C.A. 50, 14591i.

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Paushkin Ya. M.

Alkylation of benzene by butylene, using a boron fluoride catalyst.
 A. V. Topchiy, M. Y. Krivshy and Ya. M. Paushkin (Dokl. Akad. Nauk SSSR, 1966, 167, 769-770). The yields of *tert.* butylbenzene (I) obtained from 2 : 1 C₄H₈ : n-C₄H₁₀ mixtures at 50° with various catalysts are: BF₃·H₂O, 43; AlCl₃, 50; AlCl₃·H₂SO₄, 41; and H₂SO₄, 51%. The yields of I rise, and of *p*-t-butylbenzene and polymers fall, as the [C₄H₈]/[C₄H₁₀] rises from 1 to 4, as the content of catalyst in the C₄H₈ is raised up to 15%, and as the rate of introduction of C₄H₈ is diminished. *iso*-C₄H₁₀ gives *tert.* butylbenzene in somewhat higher yields than *n*-C₄H₁₀ under similar conditions, and less *di-tert.* butylbenzene and polymers.
 R. Tauskas

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1 PM

PM 957

Paushkin, Ya. M.

Alkylation of benzene by pentylenes, using a boron fluoride catalyst, M. V. Glinchev, A. V. Turchik and Ya. M. Paushkin (Dokl. Akad. Nauk SSSR, 1959, 107, 839-842). Pentylenes (transformed into C_5H_{12} solutions of $BF_3 \cdot H_2O$, at 50° , to give mono- and di-*tert*-pentylbenzenes. The same products are obtained from 2-methylbut-2-ene and 3-methylbut-1-ene; the latter undergoes conversion into the former under the conditions of the experiment, although 2-phenyl-2-methylbutane is stable when thus treated. The yields of monopentyl deriv. rise, and of dipentyl deriv. fall, with rising temp. from 0 to 80° , with rising $C_4H_8 : C_5H_{12}$ proportion from 1 : 1 to 8 : 1, with rising concn. of catal. at from 10 to 25%, and with increasing rate of introduction of pentylenes.

R. THUSCON

PM

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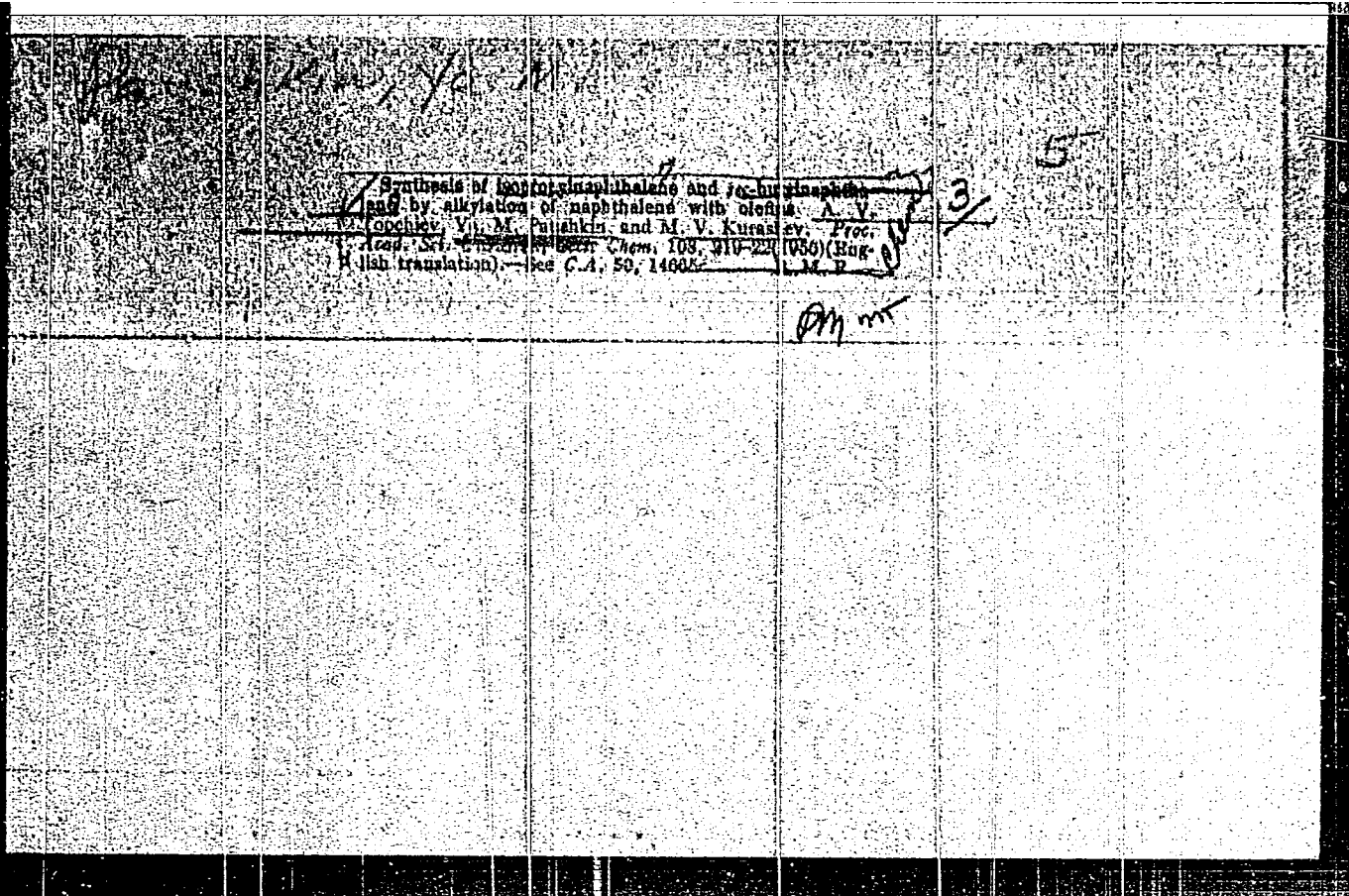
PAUSHKIN, VA. M.

7
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✓ Synthesis of isopropyl- and sec-butyl-naphthalene by alkylation of naphthalene with olefins. V. Tolstoy, Ya. M. Panyakin and M. V. Kurnachev. Dokl. Akad. Nauk SSSR, 1960, 166, 6 (1960). Monoalkylnaphthalenes are obtained in good yield (~10%) by passing C_3H_6 or C_4H_8 into solutions of $C_{10}H_8$ in CCl_4 containing 10-15% of $BF_3 \cdot Et_2O$ catalyst, at 50°. The yields of monoalkyl deriv. rise, and of polyalkyl deriv. fall, with rise in rate of introduction of alkenes and in the ratio of $C_{10}H_8$ to alkene from 1 to 4.

R. TUREKOV

DM MT



Faushkin, Ya. M.

7
Formation of ~~butene~~ ^{butene} homologs and the special role of surface in the thermocatalytic transformations of isobutylene in the presence of boron trifluoride. ~~Ya. M. Faushkin and A. G. Ktil'senrat. Dok. Akad. Sci. U.S.S.R., Sect. Chem. 109, 612-3 (1965) (English translation). B.M.R. 4974c.~~

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PAUSHKIN Ya. M.

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

Abs Jour : Referat Zhur - Khimiya, No 6, 1957, 18640

Author : Ya.M. Paushkin, A.G. Khil'zenrat.

Inst : Academy of Sciences of USSR.

Title : Formation of Benzene Homologues and Special Part of Surface in Thermo-Catalytic Transformations of Isobutylene in Presence of Boron Fluoride.

Orig Pub : Dokl. AN SSSR, 1956, 109, No 5, 958-961

Abstract : Studied were the catalytic transformation of isobutylene in presence of boron fluoride adsorbed on activated carbon BA¹ (I), on Al₂O₃ (II), on silicagel (III) or on an aluminosilicate (IV) in a flowing system at 100 to 500° and a volumetric speed of 60 to 65 hours⁻¹. Mainly the polymerization of C₄H₈ together with the formation of 15 to 20% saturated products in presence of II, III and IV was observed at 100 to 200°. The reaction did not proceed at 400° in presence of I, but in presence of II the

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PAUSHKIN, Ye. M.

Synthesis of acetone from pentane and ammonia.
Yu. M. Paushkin and I. V. Osipova (Petrochemical Inst.,
Moscow). Doklady Akad. Nauk S.S.S.R. 111, 117-20
(1958); cf. U.S. 2,460,688 and 2,460,841 (C.A. 43, 8489de).
Pentane with NH_3 over 90:10 $Al_2O_3-MoO_3$ catalyst
yields 43.8% MeCN, best at 520° with space velocity of
pentane 0.16 and molar ratio of pentane to NH_3 1:2. The
products include n-cetylphloroglucinol, some EtCN, CO, H,
O, N, and alkanes and alkenes.
G. M. Kabanoff

Chm

PAUSHKIN, YA. M.

7

The production of acetonitrile from paraffin hydrocarbons and ammonia in the presence of oxidizing catalysts. Ya. M. Paushkin and I. V. Dolnova. *Khim. i Tekhnol. Topichesk. 1957, No. 7, 33-9*; cf. Denton, et al., *C.A. 44, 8886*; 48, 1244; U.S. 2,460,632, *C.A. 43, 3439b*. Studies to det. optimum conditions for the reaction of hydrocarbons with NH_3 to form nitriles included work on butane, pentane, isopentane, amylene, and hexane. For pentane at 510° , a vol. space velocity of 0.16/hr. and a vol. ratio of C_5H_{12} to NH_3 of 4, the nitrile yield was 44.5%. Optimum reaction temp. for the hexanes was 650° . H. J. Olin.

4-11-57
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YI
Distr: 4E4j/4E2c(j)/4E3d

[Handwritten signature]

PAUSHKIN, YA M

PA - 2764

AUTHOR:
TITLE:

PAUSHKIN, YA.M., OSIPOVA, L.B., KHERSHKOVETS, N.
The Synthesis of Nitrils from Alcohols and Ammonia on Oxide Catalysts.
(Sintez nitrilov iz spirtov i ammiaka na okisnykh katalizatorakh,
Russian)

PERIODICAL:

Doklady Akademii Nauk SSSR, 1957, Vol 113, Nr 4, pp 832 - 835
(U.S.S.R.)
Received: 6 / 1957

Reviewed: 7 / 1957

ABSTRACT:

In the course of recent years materials are produced by the ton which hitherto have been difficult to obtain. This is also the case with nitrils. Thus, acrylonitril and dinitryl of adipin acid are already being used for industrial purposes, and the same is the case with acetonitril and other nitrils of fatty acids. In addition there are inexpensive raw materials such as gaseous hydrocarbons obtained from mineral oil cracking as well as low-molecular paraffins. Several patents concern the nitril production from ammonia and alcohols. The authors investigate the reaction of ethal- and isoamyl alcohol in the presence of the alumo-molybdenum-oxide catalyzer. Acetone nitril was identified by a series of qualitative reactions, by physical-chemical constants, and by the production of the condensation product with floroglucine. In the course of experiments carried out with ethanol the influence exercised by temperature on the acetone nitril yield was studied. It begins to form at temperatures of more than 350° and the yield increases with growing temperature

Card 1/3

The Synthesis of Nitryls from Alcohols and Ammonia on Oxide Catalysts.
PA - 2764
(4 tables, 2 Slav citations from Slav publications)

ASSOCIATION: Institute for Mineral Oil of the Academy of Science of the U.S.S.R.
PRESENTED BY: A.V.TOPCHIEV, Member of the Academy
SUBMITTED: 12.10.1956
AVAILABLE: Library of Congress

Card 3/3

62-58-3-23/3

AUTHORS: Topchuyev, A. V. , Prokhorova, A. A. , Pauskin, Ya. ...
Kurashev, M. V.

TITLE: Investigations in the Field of Boron-Compounds (Issledovaniya
v oblasti soyedineniy bora) 1. The Synthesis of Triallyl-
boron (Soobshcheniye 1. Sintez triallilbora)

PERIODICAL: Izvestiya Akademii Nauk SSSR, Otdeleniye Khimicheskikh Nauk,
1958, Nr 3, pp. 370 - 371 (USSR)

ABSTRACT: Boron compounds are most detailed investigated. As regards
the unsaturated compounds the description of their chemical-
and physical properties (as well as the methods for their
production) became known relatively late. With respect to
triallylboron there is only one reference. In the present
work the methods for the synthesis of triallylboron on bo-
ron fluoride, magnesiumbromoallyl, and boron trichloride
are described. In order to prevent the formation of reaction
side products the reaction of the synthesis of triallyl-
boron in preparing the Grignard reagent (allylhalide and
magnesium) was carried out in one stage; that is to say,

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62-58-3-23/30

Investigation in the Field of Boron-Compounds

without preceding synthesis of allylmagnesiumbromide.
There are 6 references, 3 of which are Soviet.

ASSOCIATION: Institut nefti Akademii nauk SSSR
(Petroleum Institute, AS USSR)

SUBMITTED: October 16, 1957

Card 2/2

SOV/65-58-11-2/15

AUTHORS: Mazitova, F. N. and Paushkin, Ya. M.

TITLE: New Oxidation Inhibitors for Fuels and Additives for Increasing the Thermal Stability of Reactive Fuels (Novyye ingibitory okisleniya topliv i prisadki dlya povysheniya termicheskoy stabil'nosti reaktivnykh topliv)

PERIODICAL: Khimiya i Tekhnologiya Topliv i Masel, 1958, Nr 11, pp 10 - 12 (USSR)

ABSTRACT: Standard additives such as α -naphthol, parahydroxydephenylamine and ionol are not entirely satisfactory. Aminophenols are very effective as anti-oxidants and are practically insoluble in the fuels. Aminalkyl phenols were described in various publications (Refs.2-4). The authors describe the synthesis of aminoalkyl phenols, alkyl phenols and their esters and tabulate the anti-oxidant properties of these substances (see Table). Monoaminoalkyl phenols, especially 2,6-diamino-4-tert.butyl phenol were found to be more satisfactory than the standard additives. Tests on the inhibition of tar formation in kerosine, which contained cracking components, were carried out on the apparatus LSA. The chemical stability

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SOV/65-58-11-2/15

New Oxidation Inhibitors for Fuels and Additives for Increasing the Thermal Stability of Reactive Fuels

of cracking petroleum was defined according to the induction period. All aralkyl phenols were more effective than α -naphthol. The effect of these additives on the formation of deposits in the standard fuel T-1 was also investigated (see Figure). The addition of o-amino-p-tert-butyl phenol reduces the formation of deposits to 1/3rd. There are 1 Figure, 1 Table and 5 References: 3 Soviet and 2 English.

ASSOCIATION: Institut nefti AN SSSR (Institute of Petroleum, AS USSR)

Card 2/2

PAUSHKIN, Ya.M.; OSIPOVA, L.V.

Production of acetonitrile by the reaction of paraffin hydrocarbons
with ammonia in the presence of oxide catalysts. Trudy Inst.nefti
12:304-320 '58. (MIRA 12:3)
(Acetonitrile) (Paraffins) (Ammonia)

ZHOMOV, A.K.; PAUSHEIN, Ya.M.

Catalytic gasification of petroleum residue to gases contain-
ing olefines. Izv.vys.ucheb.zav.; neft' i gaz 1 no.11:
85-90 '58. (MIRA 12:5)

1. Moskovskiy institut neftekhimicheskoy i gazovoy promyshlennosti im. akad. I.M. Gubkina.
(Petroleum industry--By-products)

BAKHMIN, M. I., BASHENIN, V. I., KALININA, A. I., LITVINOV, V. I.
KALININ, A. A. (U.S.S.R.)

"Principal Regularities of High-Temperature Thermal and Catalytic
Analysis of Hydrocarbons in Alkenes and Alkynes."

Report submitted at the Fifth World Petroleum Congress, 30 May -
5 June 1969. New York.

11(4), 5(3)

AUTHORS:

Paushkin, Ya. M., Mazitova, F. N.,
Kurashev, M. V.

SOV/52-59-3-4/25

TITLE:

The Principles and Some Results in the Field of the
Development of Antioxidant Additions to Fuels (Osnovnyye
napravleniya i nekotoryye rezul'taty v oblasti razrabotki
antiokislitel'nykh prisadok k toplivam)

PERIODICAL:

Izvestiya vysshikh uchebnykh zavedeniy. Neft' i gaz, 1959,
Nr 3, pp 67-73 (USSR)

ABSTRACT:

The increasing utilization of the products of thermal cracking
as fuels and the raised demands as to stability require the
investigation and production of new oxidation inhibitors.
Especially important is the thermal stability in flying at
supersonic speed. From foreign publications and patents the
additions of alkylated phenols in the amino group of alkylated
phenols and phenylene diamines are well-known. The authors
examined the efficiency of :

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The Principles and Some Results in the Field of the Development of Antioxidant Additions to Fuels SCV/152-59-3-14/25

period of stability in min

4-propyl-2-aminophenol	(not given)
4-tertiary butyl-2-aminophenol	270
4-tertiary amyl-2-aminophenol	240
4-tertiary butyl-2,6-aminophenol	540
dimethylphenyl-m-amino-n-oxyphenyl methane	240
dimethyl tertiary butylphenol	120

An addition of 0.04% of the inhibitor to ethylated gasoline B-95/130 was investigated. The period of stability was determined at 110°C on the basis of a beginning turbidity, i. e. the beginning of the formation of decomposition- and oxidation products of tetraethyl lead. The monoamines of the alkyl phenols secure the preservation of gasoline for at least 1 1/2 years. Diaminobutyl phenol shows the highest stabilizing effect. The effect with respect to resinification and formation of precipitation was also investigated. Aminoalkyl phenols showed a good stabilizing effect the best, however, exhibited 2-amino-4-tertiary amyl phenol. A prolongation of the alkyl chain increases the efficiency. Synthetically produced

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The Principles and Some Results in the Field of the Development of Antioxidant Additions to Fuels SOV/152-59-3-14/25

aminoalkyl phenols have a high antioxidant effect on ethylated gasoline, cracking gasoline and jet fuels. B. L. Kozik, Ye. N. Kornilova, Z. A. Sablina and Ye. G. Chudinova assisted in the investigation of the synthetically produced compounds. There are 1 figure, 6 tables, and 11 references, 2 of which are Soviet.

ASSOCIATION: Moskovskiy institut neftekhimicheskoy i gazovoy promyshlennosti im. akad. I. M. Gubkina (Moscow Institute of Petroleum Chemical and Gas Industry imen: **akad.** I. M. Gubkin)

SUBMITTED: September 29, 1958

Card 3/3

TOPCHIIYEV, A.V.; PAUSHKIN, Ya.M.; BAYEV, I.F.; KURASHEV, M.V.; SHULESHOV, O.I.

Present status of the synthesis of benzene homologs and their chemical processing. Trudy MINKHIGP no.24:269-285 '59.

(MIRA 13:3)

(Benzene)

PAUSEKIN, Ya.M.; ORLOV, Kh.Ya.; KATSOBASHVILI, Ya.R.

Isomerization of n-paraffinic hydrocarbons (C₁₅-C₁₈). Izv.
vys.ucheb.zav.; neft' i gaz ? no.9:57-62 '59.
(MIRA 13:2)

1. Monkovskiy institut neftekhimicheskoy i gazovoy promyshlennosti
imeni akademika I.M.Gubkina, Institut neftekhimicheskogo sinteza
AN SSSR.

(Isomerization) (Hydrocarbons)

5(3)

AUTHORS: Paushkin, Ya. M., Osipova, L. V., SOV/74-28-3-2'6
(Moscow)

TITLE: Properties, Production and Use of Acetonitrile (Svoystva, polucheniye i primeneniye atsetonitrila)

PERIODICAL: Uspekhi khimii, 1959, Vol 28, Nr 3, pp 237-264 (USSR)

ABSTRACT: Gases of thermal and catalytic cracking as well as paraffin-hydrocarbons with a low octane number are increasingly used as chemical raw materials. The industrial production of acetonitrile is only delayed because there are at present no cheap and simple methods available for its production. In the present paper only those properties of acetonitrile are listed which are in some relation with its practical use. Also its physical properties are of interest: it is a colorless liquid with a melting point of -45.72° , boiling point 80.06° , d_4^{20} 0.7857 (Ref 1) 0.7828 (Ref 2) and n_D^{20} 1.3441 (Ref 3). It has a high dipole moment, 3.44D (Ref 3) and a high dielectric constant: 35.8 (Refs 4,5). The latter might be the cause of its considerable dissolving effect. Acetonitrile is frequently used as solvent, as component in azeotropic distillations and

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Properties, Production and Use of Acetonitrile

SOV/74-28-3-2/6

as chemical raw material. Presently mainly the interaction of oxygen-containing compounds, preferably acetic acid and ammonia, is used for its production in industry. Instead of acetic acid ethyl ether may be also used. On the interaction of aldehydes and ketones with ammonia in the presence of fluorine-containing catalysts alkyl pyridines are obtained (Ref 176). Primary alcohols with ammonia in the presence of zinc sulfide (Ref 183), molybdenum (Refs 184, 185) and some other catalysts yield the corresponding nitriles. At temperature increase the yield in the corresponding nitriles is reduced and the yield in acetonitrile increases owing to the cracking of highest nitriles. Promising is the synthesis of acetonitrile from olefin-hydrocarbons and ammonia (Table 1). Until quite recently the communications on the reaction of paraffin-hydrocarbons with ammonia were confined to some patents (Table 2). As can be seen from them, on the interaction of alkylnaphthene hydrocarbons with ammonia both acetonitrile and aromatic nitriles are formed. The authors thoroughly investigated the reaction of n-butane, n-pentane, i-pentane, n-hexane, n-heptane and n-octane with ammonia in the presence of oxide catalysts in a system with continuous

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Properties, Production and Use of Acetonitrile

SOV/74-26-3-2,6

flow at atmospheric pressure (Refs 165,259). It was found that the yield in acetonitrile depends on temperature, volume rate of the supply of initial hydrocarbon and the molecular ratio of the reagents. Most promising for industrial purposes is the alumo-molybdenum catalyst by means of which high yields in acetonitrile were obtained at lowest temperatures (Table 3). It is possible to synthesize successfully acetonitriles from ammonia and a cheap raw material such as the low-molecular paraffin-hydrocarbons. At present, the opinions regarding the reaction mechanism of olefin- and paraffin-hydrocarbons with ammonia are rather at variance. According to the authors' opinion the addition of ammonia to the double olefin bond takes place in consequence of a chain reaction under participation of free radicals (in contradiction with the formula by Markovnikov). The investigation of the reaction of isoamyl alcohol with ammonia also suggests an addition of ammonia to the double bond in contradiction with the formula by Markovnikov. Corresponding highest nitriles are formed there which are the principal products of reaction at low temperatures. At high temperatures they decompose and form acetonitrile (Ref 266). In the reaction of acetic acid and

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Properties, Production and Use of Acetonitrile

SOV/74-28-3-2/1

hydrocarbons with ammonia acetonitrile is separated in the form of an azeotropic mixture with water. The water can be eliminated from acetonitrile in several ways: by means of combined distillations, by refrigeration and separation of the liquid layer (Ref 268), by saturation of the azeotrope with carbonic anhydride and ammonia and subsequent separation of the upper layer (Ref 188), by means of passage of the azeotropic mixture over the activated aluminum oxide at high pressure (Ref 269), or its distillation at low pressure (Ref 270). If cheap and simple methods for the production of acetonitrile are found, it will play a leading part in organic synthesis due to its manifold possibilities of transformation. There are 3 tables and 275 references, 26 of which are Soviet.

Card 4/4

5(3)

AUTHORS: Mazitova, F. N., Paushkin, Ya. M. SOV/29-125-5-22/61

TITLE: The Influence of the Structure of Nitro-compounds of the Aromatic Series on the Rate of Catalytic Reduction (Vliyaniye stroyeniya nitrosoyedineniy aromaticheskogo ryada na skorost' kataliticheskogo vosstanovleniya)

PERIODICAL: Doklady Akademii nauk SSSR, 1959, Vol 125, Nr 5, pp 1033-1036 (USSR)

ABSTRACT: The reaction mentioned in the title has been known since 1872 (Ref 1). Other research workers (Refs 3, 4) showed that the existence of such substituents as OH, Cl, CH₃ and COOH at the nucleus do not influence the rate of hydrogenation of the compounds mentioned in the title at room temperature and atmospheric pressure. There are, however, no publications available on the nitroalkyl-phenols under the conditions mentioned. The authors synthesized several nitro-compounds with alkyl groups at the nucleus (Table 1) in order to investigate the problem mentioned in the title. Furthermore, purified o-nitrophenol (melting point 47°) and nitrobenzene (boiling point 209°) were reduced. Previously purified

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The Influence of the Structure of Nitro-compounds
of the Aromatic Series on the Rate of Catalytic Reduction

SO7/20-125-5-22/5

hydrogen was blown through the alcoholic solution of the compound to be reduced, which contained a certain quantity of platinum catalyst. The experiment lasted until the hydrogen absorption ceased. The hydrogen consumption agreed in all experiments with the theoretically calculated quantity. The reaction products - corresponding aromatic amines - were isolated from the filtrate under vacuum after the solvent had been distilled off. They did not contain by-products (Table 2). Figure 1 shows the rates of hydrogen absorption in the reduction of the individual nitro-products. This rate is constant for each compound until the reduction of the main mass of the substance concerned has taken place (85 - 90 %). Table 3 shows the values of the average rates in each individual case. They characterize indirectly the rates of reduction. This indicates that these rates are practically equal for nitrobenzene and nitrophenol (Fig 1, Curves 1 and 2) (corresponds to Ref 4). However, the rate is reduced by approximately 42 % during the transition from nitrobenzene to nitrobutyl-benzene. In the case of nitrophenol and its alkyl derivatives the alkyl group acts

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The Influence of the Structure of Nitro-compounds SOV/20-125-5-22/6
of the Aromatic Series on the Rate of Catalytic Reduction

in a similar manner upon the rate of reduction. The rate mentioned is still more reduced by introducing another alkyl group into the nucleus. This is still more increased by replacing one of the hydrogen atoms of the nitroalkyl-phenol nucleus by a phenyl group. Thus, the rate of reduction in the series of nitro-alkyl-phenols decreases with the increase and complication of the structure of the alkyl-substituting group. The authors try to explain this phenomenon by the resulting steric inhibitions. There are 1 figure, 3 tables, and 4 references, 3 of which are Soviet.

ASSOCIATION: Institut neftekhimicheskogo sinteza Akademii nauk SSSR
(Institute of Petroleum-chemical Synthesis of the Academy of Sciences, USSR)

PRESENTED: November 3, 1958, by A. V. Topchiyev, Academician

SUBMITTED: November 3, 1958

Card 3/3

5 (3)

AUTHORS: Topchiyev, A. V., Academician, Orlov, SOV/20-127-6-25/51
Kh. Ya., Paushkin, Ya. M.

TITLE: Isomerization of Normal Paraffin Hydrocarbons of the Composition
C₁₅-C₁₈ on Sulphide Catalysts

PERIODICAL: Doklady Akademii nauk SSSR, 1959, Vol 127, Nr 6, pp 1235-1238
(USSR)

ABSTRACT: The authors have been concerned for years with the isomerization of the higher paraffins of the petroleum- and diesel-oil fractions. This is of considerable interest since the isoparaffins have a low melting point (-40-60°) (Refs 1-3). The investigation of this isomerization is complicated by an intense cracking and other secondary reactions. The authors found, however, catalysts and conditions which make possible an isomerization practically without cracking and with satisfactory yields. The isomerization proceeded at 20 atm. The mixture of the n-paraffins with hydrogen was heated up to 160-180°. Industrial catalysts were used: WS₂, WS₂-NiS-Al₂O₃, WS + alumosilicate. 3% benzene was added to inhibit the cracking. The principal results are shown in tables 1 and 2. The optimum reaction conditions were found for WS₂:

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Isomerization of Normal Paraffin Hydrocarbons of the
Composition C₁₅-C₁₈ on Sulphide Catalysts

SOV/20-127-6-25/51

380-400°. Volume velocity of the raw material: 1.5 l/l-h. At a molar ratio of 1:7.5 between hydrogen and paraffins, the catalyzate contained: about 30% isoparaffins, 26% untransformed n-paraffins, and 44% cracking products (the fraction boiling out up to 240°). with an increase in the molar ratio between hydrogen and paraffins up to 15.8, the content of isoparaffins in the catalyzate rose to 35%, whereas the cracking products fell to 30%. A further increase in the said molar ratio inhibited both the cracking and the isomerization (Tables 1, 2; Figure 1). The isomerization on WS₂-NiS-Al₂O₃ is accompanied by much less

cracking. This makes possible an isomerization at higher temperatures with satisfactory (nearly double the) yields (Fig 2) of isoparaffins. Table 3 shows that the isomerization on sulphide catalysts brings about the formation of mono- and dimethyl-substituted isomers. Mainly the former are produced if the reaction is inhibited by high molar ratios (Experiment Nr 4).- There are 2 figures, 3 tables, and 7 references, 3 of which are Soviet.

Card 2/7

2

Instr. Petroleum Chemicals Synthesis AS 1556

5 (3)

AUTHORS:

Topchiyev, A. V., Academician, SOV/20-128-1-29/58
Paushkin, Ya. M., Prokhorova, A. A., Kurashov, M. V.

TITLE:

Investigations of Boron Compounds. Reactivity of Triallyl Boron

PERIODICAL:

Doklady Akademii nauk SSSR, 1959, Vol 128, Nr 1, pp 110-112 (USSR)

ABSTRACT:

The present paper investigates the reactivity of triallyl boron. Its preparation methods were previously described (Ref 3). Triallyl boron was subjected to the action of carboxylic acids, alcohols, and aldehydes. At room temperature, triallyl boron vigorously reacts with the above compounds, thus causing that the reaction mixture is strongly heated. By interaction between triallyl boron and glacial acetic acid, diallyl boron acetate and propylene are formed. Triallyl boron forms diethyl esters of the allyl boron acid and diallyl ester of the allyl boron acid, respectively, together with ethyl- or allyl alcohol. By interaction with acetaldehyde, ethyl ester of diallyl boron acid is obtained. Triallyl boron reacts readily with bromine. However, the addition of bromine at room temperature takes place only gradually. At present, only few references are made in publications to unsaturated complex compounds of boron with amines. The authors obtained the triallyl boron pyridine complex. Properties of synthesized boron-organic compounds are given in table 1. There are 1 table and 3 references, 2 of which are Soviet.

~~CONFIDENTIAL~~SUBMITTED,
JUNE 1959

PHASE I BOOK EXPLOITATION

SOV/3734

Paushkin, Yaroslav Mikhaylovich, and Tamara Petrovna Vishnyakova

Proizvodstvo olefinsoderzhashchikh i goryuchikh gazov iz neftyanogo syr'ya.
(Producing Olefinic and Fuel Gases From Crude Oil) Moscow, Izd-vo
AN SSSR, 1960. 233 p. Errata slip inserted. 1,800 copies printed.

Sponsoring Agency: Akademiya nauk SSSR. Institut neftekhimicheskogo sinteza

Repp. Ed.: A.V. Topchiyev, Academician; Ed. of Publishing House: A.L.
Bankvitser; Tech. Ed.: I.F. Kuz'min.

PURPOSE: This book is intended for technicians interested in the gasification and conversion of oil stock.

COVERAGE: This book deals with the gasification of heavy oil stock (fuel oil, cracking residues, and bottoms) and the conversion of natural gasoline and condensing gases into gases with propylene, ethylene, and hydrogen content. Modern units and processes for the gasification of liquid fuels are described. The authors point out Soviet interest in propylene and ethylene as raw

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23

PAUSHKIN, V. M.

53830

81938
S/062/60/000/06/11/011
B020/B061

AUTHORS: Topchiyev, A. V., Paushkin, Ya. M., Kurashev, M. V.,
Polak, L. S., Tverskaya, L. S.

TITLE: Polymerization of Cyclo-olefins

PERIODICAL: Izvestiya Akademii nauk SSSR. Otdeleniye khimicheskikh nauk,
1960, No. 6, p. 1140

TEXT: In a short report, the polymerization reactions examined by the authors (cyclohexene, cyclohexadiene-1,3, cyclohexadiene-1,4, 1-methyl-cyclohexadiene-1,4, 1,2-dimethylcyclohexadiene-1,4, 1,4-dimethylcyclohexadiene-1,4, and 1,5-dimethylcyclohexadiene-1,4) are characterized, and their properties and the possibility of the use of the synthesized polymers in various special fields are given. The polymerization of the above hydrocarbons was carried out in different solvents, at various temperatures, contact times, with the use of different catalysts, and under the action of β - and γ -radiation. The polymers obtained with organo-metallic catalysts $TiCl_4$, and BF_3 , as well as with β - and γ -radiation are listed, and their most important properties, together with analytical results are given.

Inst. of Petroleum-chemical Synthesis of the Acad. Sci. USSR
Submitted, March 1960

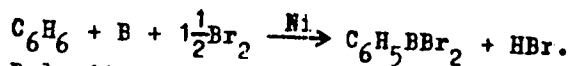
S/062/60/000/008/011/012
B004/B054

AUTHORS: Frenkin, E. I., Prokhorova, A. A., Paushkin, Ya. M., and Topchiyev, A. V.

TITLE: Production of Dibromo-phenyl Boron by Direct Synthesis

PERIODICAL: Izvestiya Akademii nauk SSSR. Otdeleniye khimicheskikh nauk, 1960, No. 8, pp. 1507-1508

TEXT: The authors conducted the synthesis according to the following equation:



Out of a Balandin burette, benzene and bromine in a purified nitrogen current were led into a quartz tube (length 600 mm, diameter 22 mm) which was filled with 75% of powdered boron and 25% of nickel on kieselguhr. The reaction temperature was 500 - 520°C. The reaction products were collected in vessels cooled with dry ice. The yield in dibromo-phenyl boron was 21%. Due to side reactions, also BBr_3 , $\text{C}_6\text{H}_5\text{Br}$, $\text{C}_6\text{H}_4\text{Br}_2$, and traces of bromo-diphenyl boron were found. Dibromo-phenyl boron is a colorless liquid

Card 1/2

S/192/60/000/009/003/004/XX
B024/B076

AUTHORS:

Zhcmov A K Vishnyakova T P. and Panchkov Ya M

TITLE:

Kinetics of High-Temperature Pyrolysis of Crude Oil
to Gas With a High Olefin Content

PERIODICAL:

Izvestiya vysshikh uchebnykh zavedeniy. Neft' i gaz,
1960, No. 9, pp. 103 - 107

TEXT:

The authors consider the possibility of applying
G.M. Panchenkov's theory on the kinetics of thermal cracking of
petroleum hydrocarbons to the description of the pyrolysis of crude
oil residues in the presence of steam. In cooperation with
V. S. Tret'yakova (Ref 3) G. M. Panchenkov obtained an equation
from which the velocity constants of the first and second stages of
a continuous first-order reaction in the cracking process can be
determined:

✓

Card 1/3

Kinetics of High-Temperature Pyrolysis
of Crude Oil to Gas With a High Olefin
Content

S/52/60/000/009/003/004/XX
B024/B076

$$n_0 \frac{dx}{dl} = \frac{k_1 (1-x)}{v_2 x + \frac{v_5}{v_2} \left[v_3 x + \frac{v_3 (1-x)}{1-k} + v_3 \frac{(1-x)^k}{1-k} \right]} \quad (2)$$

where x denotes the degree of conversion; l the distance from the beginning of the reaction zone; v₁, v₂, v₃, v₅ are the stoichiometric coefficients; n₀ is the number of gram-moles of the initial cracking residue; k, k₁ are the reaction constants. By means of a graphic solution of this transformed equation the authors ascertained that the equation obtained for thermal cracking is also applicable to high-temperature pyrolysis. There are 4 figures and 5 Soviet references.

Card 2/3

*Moscow Inst Petrochemical and Gas Industry
by I. M. Gubkin*

84857

S/062/50/000/010/010/018
B015/B064

11.1210

AUTHORS:

Topchiyev, A. V., Paushkin, Ya. M., Nepryakhina, A. V.,
Anan'yev, P. G., and Dmitrevskiy, N. N.

TITLE:

Reactions of Hydrocarbons in Metallic Melts. Information 1.
Acceleration and Inhibition of the Cracking of n-Heptane
in Molten Aluminum and Sodium 17

PERIODICAL:

Izvestiya Akademii nauk SSSR. Otdeleniye khimicheskikh nauk.
1960, No. 10, pp. 1838-1843

TEXT: Conversions of n-heptane in molten sodium and aluminum were investigated by means of a continuously operating apparatus (Fig. 2). The metal was introduced into the reaction vessel, after which it was molten and n-heptane vapor was continuously let through. The experimental results obtained (Table 1) show that the widest possible conversion of n-heptane takes place in aluminum, and that the conversion rises with temperature and contact time; at 700°C, for example, it is 65.3%, and at 800°C it approaches 100%. Sodium has an inhibitory effect upon n-heptane

Card 1/3

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Reactions of Hydrocarbons in Metallic Melts.
Information 1. Acceleration and Inhibition
of the Cracking of n-Heptane in Molten
Aluminum and Sodium

S/062/60/000/010/010/018
B015/B064

pyrolysis. The composition of the gases (Tables 2,3) also indicates the different character of the effects of sodium and aluminum. While the composition of the pyrolysis gas obtained by the contact with aluminum does not greatly differ from that of the gas produced by thermal pyrolysis (40-44% olefins, 12.22% hydrogen), the gas obtained after the contact with the sodium melt does not contain any unsaturated hydrocarbons, and consists chiefly of hydrogen (75-85%). Cracking is inhibited in the pyrolysis of n-heptane in the presence of sodium; this is explained by the fact that first (300-800°C) organo-sodium compounds are formed while hydrogen is separated. The latter reacts immediately with the olefins, thus inhibiting cracking (which is a chain reaction accelerated by olefins). No liquid reaction products are formed in the pyrolysis of n-heptane in molten sodium, and the n-heptane emerging from the reaction vessel remains unchanged (Table 4). Liquid reaction products are obtained by the contact with the aluminum melt. At 700°C these products consist of unsaturated aromatic compounds, which, at 800°C, are replaced

Card 2/3

84857

Reactions of Hydrocarbons in Metallic Melts.
Information 1. Acceleration and Inhibition
of the Cracking of n-Heptane in Molten
Aluminum and Sodium

S/062/60/000/010/010/018
B015/B064

by highly aromatized compounds. There are 5 figures, 4 tables, and 12
references: 7 Soviet, 3 US, 1 British, and 1 German.

ASSOCIATION: Institut neftekhimicheskogo sinteza Akademii nauk SSSR
(Institute of Petrochemical Synthesis of the Academy of
Sciences USSR)

SUBMITTED: May 23, 1959

4

Card 3/3

5 3300

29440

S/081/61/000/017/130, 131
B117/B118

AUTHORS: Topchiyev, A. V., Paushkin, Ya. M., Nepryakhina, A. V.,
Anan'yev, P. G., Dmitriyevskiy, N. N.

TITLE: Acceleration and retardation of n-heptane cracking in
molten aluminum and sodium at 300 - 800°C

PERIODICAL: Referativnyy zhurnal. Khimiya, no. 17, 1961, 465; abstract
17M153 (Tr. In-ta nefti. AN SSSR, v. 14, 1960, 5-11)

TEXT: The pyrogenic conversion of n-heptane (I) in molten Al and Na was
found to take place selectively, depending on the metal used. Al promotes
the cracking of I: The degree of conversion amounts to 95 %, as compared
to 57 % in pyrolysis. The thermal decomposition of I is strongly retarded
by Na: At 600 - 800°C, the degree of conversion reaches 5-6 % only. The
gas obtained by pyrolysis of I in Al contains 40 - 44 % of olefins and
12 - 22 % of H₂. Conversion of Na yields gas containing 75 - 85 % of H₂,
which contains virtually no olefins. A diagram of the device is enclosed.
[Abstracter's note: Complete translation.]

Card 1/1

3 8690

S/510/60/014/000/005/006
D244/D307

5 2470

AUTHORS: Topchiyev, A.V., Prokhorova, A.A., Paushkin, Ya.M., and Kurashev, M.V.

TITLE: Investigations in the field of unsaturated organoboron compounds

SOURCE: Akademiya nauk SSSR. Institut nefti. Trudy, v. 14, 1960, Khimiya nefti, 85 - 89

TEXT: The authors developed a method of synthesizing triallylboron in 90 % yield and studied its chemical properties and those of its polymeric derivatives. The reaction for the preparation was as follows: $3\text{CH}_2 = \text{CH} - \text{CH}_2\text{MgBr} + \text{BF}_3 \rightarrow (\text{CH}_2 = \text{CH} - \text{CH}_2)_3\text{B} + 3\text{MgBr F}$. It was found that triallylboron reacts readily with acetic acid, ethyl and allyl alcohols, acetaldehyde and bromine. Some physical properties of the following derivatives were obtained for the first time: diallylboroacetate, diethylester of allylboric acid, ethyl ester of diallylboric acid, tri-(1,2-dibromopropyl) boron and a complex of pyridine with triallylboron. It was established that the polymeriza-
Card 1/2

Investigations in the field of ...

S/510/60/014/000/005/006
D244/D307

tion of triallylboron occurs in the presence of oxygen. Triallylboron was found to be an active catalyst for the polymerization of methacrylate and an inhibitor in the polymerization of vinylacetate and acrylonitrile.

Card 2/2

ZHCOMOV, A.K.; VISHNYAKOVA, T.P.; PAUSHKIN, Ya.M.

Kinetics of the high temperature pyrolysis of crude petroleum
to a gas of high olefin content. *Izv. vys. ucheb. zav.; neft'*
i gaz 3 no.9:103-107 '60. (MIRA 14:4)

1. Moskovskiy institut neftekhimicheskoy i gazovoy promyshlennosti
imeni akademika I.M.Gubkina.
(Pyrolysis) (Olefins) (Petroleum)

5.3400

67914

5(3)

S/020/60/130/03/021/065
BO11/BO16

AUTHORS: Topchiyev, A. V., Academician, ~~Paushkin, Ya. M.~~, Kurashev, M. V.

TITLE: Investigation of the Reaction of Phenol¹ Alkylation by Amylenes¹
by Means of Catalysts¹ on the Basis of Boron Fluoride

PERIODICAL: Doklady Akademii nauk SSSR, 1960, Vol 130, Nr 3, pp 559-561
(USSR)

ABSTRACT: In the present paper, the authors used the same methods as in reference 1, but liquid amylenes were directly introduced by means of a glass capillary tube into a mixture of phenol and catalyst, which had been heated to 100°. The method of amylene preparation is then described. The first alkylation experiments were made separately with 3-methyl-butene-1 and 2-methyl-butene-2. In both cases alkylates of equal composition were found to result. At a molar ratio of phenol : amylene = 1 : 1 p-tert-amyl-phenol is formed as the main product. Its formation from 3-methyl-butene-1 is possible only in consequence of the isomerization of the latter to 2-methyl-butene-2 during the reaction. An analogous phenomenon is known to occur in the alkylation of benzene by 3-methyl-butene-1. Table 1 gives

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67914

Investigation of the Reaction of Phenol Alkylation
by Amylenes by Means of Catalysts on the Basis of
Boron Fluoride

S/020/60/130/03/021/065
B011/B016

general data on the alkylation of phenol with amylenes in the presence of various catalysts. Herefrom it may be seen that the highest yields of p-tert-amyl-phenol are obtained in the presence of boron fluoride and catalysts containing boron fluoride (experiments Nr 1, 2, 3, yields of 95, 90, and 89% of theory). Less effective is 75% H_2SO_4 (81%), and the least effective is aluminum chloride (64%). Table 2 shows the influence exercised by the quantity of the catalyst (boron fluoride) upon yield and composition of the reaction products. This influence is small at 100° and with a catalyst content of between 1.8% and 26%. The process mentioned in the title develops better under the same conditions than phenol alkylation with isobutylene (Ref 1); it gives higher yields and less by-products with the lowest catalyst amounts applied (0.9%). An increase of the catalyst quantity to 1.7% increases the yield of p-tert-amyl-phenol up to 95% and decreases the quantity of by-products to 3%. The optimum catalyst quantity was 1.7%. Furthermore, the composition of the crude alkylate at a molar ratio of phenol :

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Investigation of the Reaction of Phenol Alkylation
by Amylenes by Means of Catalysts on the Basis of
Boron Fluoride

67914

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B011/B016

amylenes = 1 : 1 and 1 : 2 as well as the constants of the end
products are given. There are 2 tables and 1 Soviet reference. 4

SUBMITTED: July 13, 1959

Card 3/3

5.1190 5.3400

57.12

~~5(3)~~

AUTHORS: Paushkin, Ya. M., Topchiyev, A.V., 3/020/60/130/05/022/061
Academician, Kurashev, M. V. BC11/B005

TITLE: Alkylation¹ of Phenol¹ by Isobutylene With Homogeneous and
Heterogeneous Catalysts¹

PERIODICAL: Doklady Akademii nauk SSSR, 1960, Vol 130, Nr 5, pp 1033-1036
(USSR)

ABSTRACT: The purpose of this paper is a comparison of the efficiency of acidic catalysts and of several granulated heterogeneous oxide catalysts in the alkylation mentioned in the title at a molar ratio of phenol: isobutylene = 1:1 and at 100°. The homogeneous catalysts were either soluble in phenol or powdery. The alkylate obtained formed an oily crystalline mass from which the liquid part was filtered off. Table 1 shows the results. The solid part of the alkylate consists of pure p-tert.-butyl phenol. Di-tert.-butyl phenol (up to 75-85%) with an admixture of o-tert.-butyl phenol and other products prevail in the liquid products (Table 4). The liquid products obtained by alkylation with $H_3PO_4 \cdot BF_3$, BF_3 , H_3PO_4 ,

Card 1/3

68612

Alkylation of Phenol by Isobutylene With
Homogeneous and Heterogeneous Catalysts

S/020/60/130/05/022/061
B011/B005

AlCl_3 and $\text{Al}_2\text{O}_3 \cdot 4\text{SiO}_2 \cdot n\text{H}_2\text{O}$ consist of alkyl phenols only (see Diagram). From table 1, the authors draw the following conclusions: Catalysts containing BF_3 are most efficient for phenol alkylation. The yields obtained show that the BF_3 complex with orthophosphoric acid and particularly BF_3 itself are most efficient for the formation of p-tert.-butyl phenol. The industrial aluminosilicate catalyst also yielded good results. Its use will also cheapen and simplify the process. At a ratio of phenol:isobutylene = 1:1, phenol is fully converted. The resultant di-tert.-butyl phenol is no waste product but is used in various ways. The catalyst offers further advantages. For these reasons, the authors also tried to determine the optimum temperature. The amount of catalyst was 69.3 g, and was used in 8 successive experiments. Table 2 shows the results. The amount of catalyst was chosen in such a way that a satisfactory absorption rate of isobutylene is ensured. Table 2 shows 130° to be the optimum temperature at

Card 2/3

Alkylation of Phenol by Isobutylene With
Homogeneous and Heterogeneous Catalysts

68612

S/020/60/130/05/022/061
B011/B005

atmospheric pressure. In this case, the yield in p-tert.-butyl phenol is 56% of the theoretical one representing a maximum while the liquid products are formed in a minimum quantity. In further experiments, the catalyst was periodically regenerated for 3 h between working cycles of 90 h (at 500°, then blown through with air for 3 h). Table 3 shows the activity of the catalyst under these conditions. It changed relatively slightly. There are 4 tables. 4

SUBMITTED: July 13, 1959

Card 3/3

53831
5.3700(C)

~~5(2), 5(3)~~
AUTHORS:

Topchiyev, A. V., Academician,
Prokhorova, A. A., Paushkin, Ya. M., Kurashev, M. V.

68815
S/020/60/131/01/029/060
B011/B006

TITLE: Investigations in the Field of Boron Compounds. Oxidative Polymerization of Triallylboron

PERIODICAL: Doklady Akademii nauk SSSR, 1960, Vol 131, Nr 1, pp 105-108 (USSR)

ABSTRACT: The authors investigated the polymers formed on the basis of triallylboron (Ref 5) and tested the catalytic activity of triallylboron in the polymerization of unsaturated hydrocarbons. If triallylboron is prepared in a nitrogen current insufficiently purified from oxygen, solid yellowish polymers are formed. As can be seen from table 1, the latter contain boron and oxygen. The authors systematically tested the polymerization of triallylboron by atmospheric oxygen at room temperature, as well as in isopropylbenzene and in tert-butylbenzene at 130° by N₂+O₂. The polymer was also obtained by addition of benzoyl peroxide or H₂O₂. The oxidation by N₂+O₂ was intended to explain the polymerization mechanism of tri-

Card 1/3

Investigations in the Field of Boron Compounds.
Oxidative Polymerization of Triallylboron

68815
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B011/B006

allylboron (see scheme). A similar scheme was suggested by S. N. Danilov and O. P. Koz'mina (Ref 6). The authors' scheme fully confirmed the conclusions of these investigations. It is known that the threedimensional polymers formed are insoluble, non-swelling and infusible products. The properties of the polymers prepared by the authors were of this type. The polymer can be separated into a soluble and an insoluble component by treatment with 10% KOH. This can also be effected by heating with CCl_4 or with tetrahydrofuran. The analyses of the polymer

fractions are given in table 2. The authors found that triallylboron is an active catalyst for the polymerization of methyl methacrylate. The reaction proceeds under intense liberation of heat, yielding a solid transparent block after only 1 - 1.5 h. Polymer yield is 86%. Since boron was not detected in the analysis (Table 3), triallylboron does evidently not give copolymers. Figure 1 shows the dependence of polymethylmethacrylate viscosity on the concentration. Triallylboron has no noticeable effect on the polymerization of styrene, except that it somewhat inhibits the process. The

Card 2/3

68815

Investigations in the Field of Boron Compounds.
Oxidative Polymerization of Triallylboron

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B011/B006

polystyrene yields obtained on adding various amounts of catalyst are shown in figure 2. The viscosity of the polystyrene prepared in this manner decreases considerably (Fig 3). Triallylboron is (5 mol%) inactive in the polymerization of acrylonitrile and vinyl acetate (Table 3). The authors mention G. S. Kolesnikov, L. S. Fedorova (Ref 4). There are 3 figures, 3 tables, and 6 references, 3 of which are Soviet.

ASSOCIATION: Institut neftekhimicheskogo sinteza Akademii nauk SSSR
(Institute of Petroleum-chemical Synthesis of the Academy of Sciences, USSR)

SUBMITTED: October 1, 1959

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Card 3/3

TOPCHIIYEV, A.V., akademim; PAUSHKIN, Ya.M.; NEFRIYAKHINA, A.V.;
ANAN'YEV, P.G.; DMITREVSKIY, N.N.

Inhibition of hydrocarbon cracking in fused sodium and in
potassium hydroxide. Dokl.AN SSSR 133 no.1:134-137
Jl '60. (MIRA 13:7)
(Cracking process) (Hydrocarbons)

TOPCHYEV, A.V., akademik; PAUSHKIN, Ya.M.; PROKHOROVA, A.A.; PRENKIN,
E.I.; KURASHEV, M.V.

Studies in the field of boron compounds. New derivatives of
triallylborane. Dokl.AN SSSR 134 no.2:364-367 S '60.
(MIRA 13:9)

1. Institut neftekhimicheskogo sinteza Akademii nauk SSSR.
(Boron compounds)

84666

53700 2209, 1275, 1312

S/020/60/135/001/019/030
B016/B067

11/250

AUTHORS: Prokhorova, A. A. and Paushkin, Ya. M.

TITLE: Investigations in the Field of Boron Compounds. Synthesis and Properties of the Cyclopentadienyl Boron Compounds ^{||}

PERIODICAL: Doklady Akademii nauk SSSR, 1960, Vol. 135, No. 1, pp.84-86

TEXT: No data exist in literature on cyclopentadienyl boron compounds. Tricyclopentadienyl boron (a) could be easily produced by reacting cyclopentadienyl magnesium bromide with boron fluoride etherate. The yield in (a) was 72.5%. At a molar ratio of $C_5H_5MgBr : BF_3 = 1 : 1$, cyclopentadienyl boron difluoride (b) was obtained (yield 69.8%). The reactions were made in an ether medium in a current of purified nitrogen. Both compounds (a) and (b) are oxidized on air, (b) turning black and being dissolved, (a) changing into a white powder. With pyridine, compound (a) forms a white crystalline complex 1:1. The elementary analysis for boron was made by the method of B. M. Mikhaylov and T. A. Shchegoleva (Ref. 2). (a) is difficultly soluble in organic solvents. From heptane, tetrahydrofurane, chloroform, and isooctane, it is precipitated as light-yellow flakes. X

Card 1/3

Investigations in the Field of Boron Compounds. S/020/60/135/001/019/030
Synthesis and Properties of the Cyclopenta-
dienyl Boron Compounds B016/B067

B1666

N. L. Galanina took a spectrum of (a) in the ultraviolet (Fig. 1). This spectrum confirmed the presence of cyclopentadienyl rings in this compound. Fig. 2 shows the picture of a tricyclopentadienyl boron crystal. In the ether solutions of (a) and (b), a heavier layer was precipitated under the action of air, which gradually became harder forming a polymer. On removal of the ether in vacuo, both compounds readily polymerized. The ultraviolet spectrum of the polymer of (a) in chloroform (Fig. 1) showed that polymerization takes place as a result of the rupture of one of the double bonds. The high oxygen content in the polymer indicates that oxygen takes part in the polymerization. This confirms the mechanism of the oxidative polymerization of unsaturated organoboron compounds described in an earlier paper (Ref. 3). The authors further studied the effect of (a) on the polymerization of styrene. An addition of 1 mole% of (a) widely influenced the polymerization, i.e., it had an inhibiting effect. The polymer yield and the viscosity of the polystyrene obtained were reduced (Fig. 4). By this method, also tris-(dicyclopentadienyl)-boron was obtained from dicyclopentadienyl magnesium bromide and from boron trifluoride etherate. There are 4 figures and 3 references: 2 Soviet and 1 British.

Card 2/3

84666

Investigations in the Field of Boron Compounds. S/020/60/135/001/019/030
Synthesis and Properties of the Cyclopenta-
dienyl Boron Compounds BO16/BO67

ASSOCIATION: Institut neftekhimicheskogo sinteza Akademii nauk SSSR
(Institute of Petrochemical Synthesis of the Academy of
Sciences, USSR)

PRESENTED: June 8, 1960, by A. V. Topchiyev, Academician

SUBMITTED: June 8, 1960

X

Card 3/3

S/152/61/000/002/002/005
B*24/B203

AUTHORS: Paushkin, Ya. M., Yuzvyak, A. G.
TITLE: Cyclopolymerization of butadiene with production of vinyl cyclohexene
PERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy. Neft' i gaz, no. 2, 1961, 69-74

TEXT: The authors studied the cyclopolymerization of butadiene and the further chemical conversion of the dimer. In the thermal polymerization at 400-500°C, the reaction may proceed to the dimer or trimer. The dimer yield attained by S. V. Lebedev was 85-86% at 150°C after 5 days. A dimer yield of about 80% was attained in an experiment in an enameled bomb at 150°C after 120 hr (S. V. Lebedev and S. R. Sergeyenko (Ref. 4)) Vinyl cyclohexane is produced in the hydrogenation of vinyl cyclohexene, and vinyl decalin in the hydrogenation of vinyl decalene, whereas styrene and vinyl naphthalene are produced in the dehydrogenation of the compounds mentioned. The cyclopolymerization was conducted in a flow reactor made of quartz glass with a central canal for the thermocouple (Fig. 1). The reactor tube was filled

Card 1/3

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Cyclopolymerization of

S/152/61/000/002/002/005
B124/B203

with the charge to be investigated or with the catalyst. The liquid polymer was collected in a receptacle, and the gas in a gasometer. The polymer was distilled in a laboratory column, the fraction obtained at 128-133°C, and its physicochemical constants were determined. The following catalysts were used: phosphoric acid on kieselguhr, and chromium oxide on aluminum oxide. Experiments without a catalyst were also made, first with glass packing, then with activated carbon. The effect of temperature on yield and properties of polydivinyl at constant volume velocity was studied. At constant volume velocity, the liquid-polymer yield as well as the specific gravity and the refractive index increase. The amount of unsaturated compounds in the liquid polymer drops with rising temperature, whereas in the presence of the fraction 128-133°C, which also contains the vinyl cyclohexene, it rises with temperature, and drops after reaching a certain maximum (Fig. 3). The polymer yield increases both with respect to the initial butadiene and to the polymer with the volume velocity of the supply of raw material at constant temperature (400°C) (Figs. 4, 5); a supplying rate of the raw material of 12 h⁻¹ is optimum. The dimerization was conducted under equal conditions (temperature, volume velocity) on activated carbon

✓

Card 2 3

Cyclopolymerization of . . .

S/152/61/000/002/002/005
B124/B203

and glass packing; the yield of the fraction 128-133°C was higher with activated carbon; the same applies to the polymer yield (Fig. 6). Butadiene polymerized in the presence of H_3PO_4 on kieselguhr only at 400°C, the polymer yield after one passage being 39.4% of the initial butadiene, and the dimer yield 8% of the liquid polymer. At 450°C, the polymer yield was 31.6%. The formation of all three xylenes can be assumed on the basis of the specific gravity, the refractive index at 20°C, and the aniline point. In the presence of a Ni-Cr catalyst, the degree of conversion was 13.2% at 400°C, and 17.7% at 490°C. The product mainly consisted of aromatic hydrocarbons (xylenes). The fraction 128-133°C distilled in a laboratory column delivered almost pure vinyl cyclohexene (up to 95% yield). The resulting cyclohexene was selectively hydrogenated (Ref. 6) on a catalyst (10% Pt on activated carbon); here, a product was obtained whose constants corresponded perfectly to those of vinyl cyclohexane. There are 6 figures, 2 tables, and 6 references: 4 Soviet-bloc and 2 non-Soviet-bloc. ✓

ASSOCIATION: Moskovskiy institut neftekhimicheskoy i gazovoy promyshlennosti im. akad. I. M. Gubkina (Moscow Institute of the Petrochemical and Gas Industry imeni Academician I. M. Gubkin)

Card 3/3

TOPCHIYEV, A.V.; KURASHEV, M.V.; PAUSHKIN, Ya.M.

Effectiveness of various catalysts in the alkylation of phenol by
isobutylene. Izv. AN SSSR. Otd. khim. nauk no.2:307-311 F '61.
(MIRA 14:2)

1. Institut neftekhimicheskogo sinteza AN SSSR.
(Phenol) (Catalysts) (Propene)

PAUSHKIN, Ya.M.; ORLOV, Kh.Ya.

Isomerization of higher n-paraffins, C₁₅-C₁₈. Izv.AN SSSR Otd.khim.
nauk no.4:657-663 Ap '61. (MIRA 14:4)

1. Institut neftekhimicheskogo sinteza AN SSSR.
(Paraffins) (Isomerization)

53300

2109 only

23486

S/152/61/000/005/001/002

B126/B219

AUTHORS: Paushkin, Ya. M., Vishnyakova, T. P., and Chernukhina, V. G.

TITLE: Catalytic reforming of naphthenic hydrocarbons to aromatic hydrocarbons from benzene fractions using a catalyst with 0.1 - 0.3% nickel

PERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy. Neft' i gaz, no. 5, 1961, 69 - 73

TEXT: For petrochemical synthesis the problem of aromatic hydrocarbons obtaining from crude oil is of current importance. The dehydrating effect of nickel catalysts has already been carefully examined by A. D. Zelinskiy and his school. Ciapetta (Ref. 2, Ciapetta F., Hanter I., Ind. Eng. Chem., 45, 147, 1953) showed that isomerization of normal pentane, hexane, heptane, and octane to isoparaffins is possible with a catalyst containing 5% of nickel on aluminum silicate and at 407°C, 25 atm pressure; (yield 55 - 65%). Kh. M. Minayev, N. I. Shuykin, L. M. Feofanova and Yu. P. Yegorov isomerized normal decane and hendecane with a catalyst containing 8% of nickel on aluminum oxide. The authors
Card 1/6

Catalytic reforming of...

23486
S/152/61/003/005/001/002
B126/B219

of the present paper experimented with nickel catalysts containing 0.1 - 0.3% of nickel on aluminum oxide. The catalyst was prepared from the active form of aluminum oxide, obtained by calcining ordinary aluminum oxide at 700°C, whereupon the γ -form Al_2O_3 is achieved. The aluminum oxide obtained was soaked with a nickel nitrate solution of $Ni(NO_3)_2 \cdot 6H_2O$ in such quantities as to obtain the necessary concentration of metallic nickel on Al_2O_3 after evaporation. The best experimental results were obtained with catalysts containing 0.1 to 0.3% of nickel. They are given in Tables 3 and 4. A catalyst with 0.1 - 0.3% of Ni on Al_2O_3 works without any noticeable decrease in activity for 10 - 12 hr at a volume rate of 0.2 hr^{-1} , then the activity drops as a result of coking. Regeneration was effected by burning the coke at 400 - 500°C. In Table 5, a comparison between reforming by nickel and reforming by platinum is given. The experiments thus proved that a catalyst on a nickel basis only differs slightly in its activity from a catalyst on Pt-basis, but it is much cheaper. There are 5 tables and 3 references: 2 Soviet-bloc and 1 non-Soviet-bloc. The reference to the English-language publication reads as follows: Ciapetta P., Hanter I., Ind. Eng. Chem., 45, 147, 1953.

Card 2/6

23486

S/152/61/000/005/001/002
B126/B219

Catalytic reforming of...

ASSOCIATION: Moskovskiy institut neftekhimicheskoy i gazovoy promyshlennosti im. akad. I. M. Gubkina (Moscow Institute of Petrochemical and Gas Industry imeni Acad. I. M. Gubkin)

SUBMITTED: February 26, 1961

1) Показатели	2) Температура опыта, °C			3) 0,1% Ni на Al ₂ O ₃ при 550°
	450	500	550	
4) Плотность D ₄ ²⁰	0,7360	0,751	0,768	0,782
5) Молекулярный вес	110,5	118	128	139
6) Групповое число	5,5	10,5	13	10,2
7) Групповой состав, % вес:				
8) ароматические углеводороды	6,1	13,3	21,5	31,1
9) нафтеновые	—	36,7	30	20,2
10) парафиновые	—	42,3	38	39,8
11) непредельные	3,9	7,7	10,5	8,9
12) Состав газа (% объема)				
13) водорода	58	73	66,7	70-80
14) непредельные	3,3	7,5	8,8	—

Table 3

Card 3/6

S/062/61/000/012/005/012
B118/B147

AUTHORS: Paushkin, Ya. M., Topchiyev, A. V., Nepryakhina, A. V.,
Anan'yev, P. G., and Dmitrevskiy, N. N.

TITLE: Acceleration and slowing down of hydrocarbon cracking in
various media

PERIODICAL: Akademiya nauk SSSR. Izvestiya. Otdeleniye khimicheskikh
nauk, no. 12, 1961, 2204 - 2209

TEXT: The authors studied the effect of various metallic media on the thermal cracking of hydrocarbons. These media were intended to inhibit the thermal instability. The conversion of n-heptane in the presence of Na, KOH, Al, and Sn at atmospheric pressure was studied and, for comparison, the results of n-heptane cracking without metals and on activated KAD (KAD) and BAU (BAU) charcoal are listed. At a given temperature and rate, n-heptane vapors were continuously passed through molten metal or coal saturated with KOH. Results are presented in Figs. 1, 2. The mechanism of action of inhibiting additions may be explained as follows: Chain rupture is apparently due to a conversion of alkali metals with

Card 1/4

Acceleration and slowing...

S/062/61/000/012/005/012
B118/B147

ASSOCIATION: Institut neftekhimicheskogo sinteza Akademii nauk SSSR
(Institute of Petrochemical Synthesis of the Academy of
Sciences USSR)

SUBMITTED: May 9, 1961

Fig. 1. Dependence of n-heptane conversion on temperature and medium:
(1) Na; (2) KOH on KAD activated charcoal; (3) KAD; (4) without metal;
(5) Al; (6) Sn; (a) conversion, % by weight.

Fig. 2. Dependence of n-heptane conversion at 700°C on time of contact
with: (1) BAU; (2) BAU + KCH; (3) KAD + KOH; (4) tin; (a) conversion,
% by weight.

Card 3/0

Z/011/62/019/001/009/017
E073/E136

AUTHORS: Pauskin, J.M., and Yuzbyak, A.G.

TITLE: Production of vinylcyclohexane and styrene from butadiene

PERIODICAL: Chemie a chemická technologie. Přehled technické a hospodářské literatury, v.19, no.1, 1962, 32, abstract Ch 62-450. (Neftekhimiya, v.1, no.1, 1961, 60-64)

TEXT: The authors studied the influence of various factors on the yields of butadiene polymerization; the composition of catalysts, the volume, speeds and temperatures. The optimum temperature of formation of vinylcyclohexane is 400 °C. Selective hydrogenation of vinylcyclohexene to vinylcyclohexane on platinum catalysts is at atmospheric temperature. The possibility of conversion of vinylcyclohexene to styrene was proved by means of the mechanism described. 2 figures, 6 tables, 10 references.
[Abstractor's note: Complete translation.]

Card 1/1

S/065/61/000/012/003/005
E075/E135

AUTHORS: Vishnyakova, T.P., Paushkin, Ya.M., Bondarenko, L.V.
and Smirnov, A.P.

TITLE: Influence of the chemical composition of hydrocarbon
feedstock and aqueous vapours on the dynamics of
formation of olefines during high temperature pyrolysis

PERIODICAL: Khimiya i tekhnologiya topliv i masel, no.12, 1961,
11-14

TEXT: The aim of this work was to study dynamics of
gasification of n-cetane, α -methyldecalin and a middle kerosene
fractions (b.pt.200-300 °C) leading to the formation of ethylene
and propylene. The gasification process was carried out in a
laboratory apparatus, a diagram of which is shown in Fig.1, where:
1 - reactor; 2 - electric furnace; 3 - flow meters, 4 - receiver
for condensate, 5 - water pump; 6 - feedstock pump, 7 - burettes.
8 - receiver for condensate; 9 - condenser; 10 - water washer,
11 - oil washer; 12 - gas meter; 13 - beater for feedstock,
14 - heater for steam; 15 - sprayer. The feedstock was preheated
to 300 °C, sprayed into the reactor with steam preheated to

Card 1/43

Influence of the chemical

S/065/61/000/012/003/005
E075/E135

450-500 °C (feedstock-steam ratio 1:1). The mixture was heated in the reactor to 800 °C, the temperature being controlled electrically. The total material balance and the balance for each section of the reactor are obtained as a function of the place of gas take-off. The time of contact of feedstock in the reaction zone was determined to obtain the speed of gasification of the different types of hydrocarbons along the length of the reactor. For the n-octane fraction the formation of olefines passes through a maximum and reaches about 40% of the total gas for the reaction times of 0.5 to 0.6 sec. Subsequently the concentration of olefines begins to fall rapidly and for 1.5 - 2.0 sec reaction times it is as low as 5-7%. The extent of gasification after 2 sec reaches 90% of the feedstock but at the time of maximum olefine yield, only 50% of the feedstock is gasified. Gasification of α -methyldecalin fraction gives less olefines and a maximum yield of 24% is reached for the reaction time of 0.6 sec. The kerosene fraction, which consisted mainly of naphthenes and paraffins, gave a maximum yield of 27% after 0.3-0.5 sec. The composition of gases formed during the pyrolysis is different for each hydrocarbon fraction investigated.

Card 2/4g

Influence of the chemical

S/065/61/000/012/003/005,
E075/E135

There are 4 figures and 1 table.

ASSOCIATION: MINKh and GP imeni I.M. Gubkin

Card 3/A

38703

S/ 52/62/000/002/002/004
B126/B138

53300

AUTHORS: Paushkin, Ya. M., Mirgaleyev, I. G.

TITLE Kinetics of benzene alkylation with propylene and effects of some physical factors

PERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy. Neft' i gaz, no. 2, 1962. 77-80

TEXT. Alkylation of benzene with propylene in the liquid phase was carried out to ascertain whether diffusion effects, such as the physical process of gas decomposition, can retard the reaction rate. The special thermostatic reactor used for the tests was adapted for sampling during the reaction. Aluminum chloride was used as a catalyst. It was found that a feed ratio of propylene from 0.216 to 1.16 mole per mole of benzene per hour accelerated the reaction considerably. A higher ratio no longer has this effect as the concentration of dissolved propylene reaches equilibrium. Acceleration of stirring from 0 to 1500 r. p. m. also accelerates the reaction, but further increase of the speed lessens the effect. The optimum quantity of catalyst is 10%. By determining the
Card 1/2

33703

S/152/62/000/002/002/004

B126/B138

Kinetics of benzene alkylation with

changes in reaction rate in dependence on temperature, using the same benzene concentration, an activation energy of 4.3 kcal/mole for a conversion degree of 0.3 molar parts, and of 5.4 kcal/mole for 0.7 molar parts was determined. These results show the predominant influence of diffusion effects on the alkylation of benzene with propylene. Ye. I. Babin, I. M. Rodigin, and V. G. Plyushin are mentioned. There are 5 figures, 2 tables, and 3 references. 6 Soviet and 3 non-Soviet bloc.

ASSOCIATION. Moskovskiy institut neftekhimicheskoy i gazovoy promyshlennosti im akad I. M. Gubkina (Moscow Institute of Petrochemical and Gas Industry imeni Academician I. M. Gubkin)

SUBMITTEL October 5, 1961

Card 2/2

S/152/62/000/007/002/002
B126/B144

AUTHORS: Yusri-Zakhra, Paushkin, Ya. M.

TITLE: Use of cobalt on aluminum oxide as catalyst for the
synthesis of petroleum-derived aromatic hydrocarbonsPERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy. Neft' i gaz, no. 7,
1962, 57-63

TEXT: The article is a study of the catalytic reforming of gasoline fractions with Al_2O_3 catalysts containing 0.5 to 1.0% of Co. The tests were made with straight-run gasoline, boiling range 70 to 140°C, and the best results were achieved at a temperature of 570°C, volume velocity 0.2 hr⁻¹, using 1.0% Co on Al_2O_3 ; the products of this catalysis contained 59.1% by weight of aromatic hydrocarbons. Comparison tests were made with 0.5% Pt on Al_2O_3 as catalyst; at a volume velocity of 1 hr⁻¹ the results were better with platinum, whereas at 0.2 hr⁻¹ they were analogous with cobalt and platinum, however cobalt should be used when the catalyst

Card 1/2

S/020/62/144/003/023/030
B124/3101

AUTHORS: Paushkin, Ya. M., Yuzvyak, A. G., and Rubinsateyn, A. T.

TITLE: Synthesis of dimethyl cyclohexadiene and vinyl cyclohexene by dimerization of butadiene

PERIODICAL: Akademiya nauk SSSR. Doklady, v. 144, no. 3, 1962, 591-594

TEXT: Optimum conditions for the cyclopolymerization of butadiene to cyclic dimers of various compositions were studied in a stainless-steel reactor with activated-carbon packing. The polymer obtained was subjected to fractional distillation, and cuts with boiling-point intervals from 5 to 70°C were collected and examined. Maximum yields of dimeric fractions were obtained at 400-420°C, with a feeding velocity of 11 hrs⁻¹, and 3 atm pressure, corresponding to 10% 1,3-dimethyl cyclohexadiene and 45% vinyl cyclohexene. The yield of dimers decreases with increasing reaction temperature, and increases with increasing pressure. In addition to the dimethyl cyclohexadienes and vinyl cyclohexene, long-chain aromatic compounds and both cyclooctadiene- and cyclodecene-type hydrocarbons were shown to be present. The thermodynamics of the reactions:

Card 1/3

Synthesis of dimethyl cyclohexadiene ...

S/O20/62/144/003/023/030
B124/B101

divinyl $\xrightleftharpoons{K_p}$ vinyl cyclohexene (I); divinyl $\xrightleftharpoons{K'_p}$ vinyl cyclohexene (I);
 $\xrightleftharpoons{K_p^{(2)}}$ dimethyl cyclohexadiene (II) were calculated in the gas phase from
 the equations (1) $K_p = p_{vin}/p_{div}^2$ for reaction I, and both (2)
 $K_p^{(1)} = p_{vin}/p_{div}^2$ and (3) $K_p^{(2)} = p_{dimethyl}/p_{div}^2$ for reaction (II), where
 K_p , $K_p^{(1)}$ and $K_p^{(2)}$ are equilibrium constants of the two reactions at con-
 stant pressure, and p_{vin} , p_{div} , and $p_{dimethyl}$ are the equilibrium partial
 pressures of vinyl cyclohexene, divinyl, and dimethyl cyclohexadiene,
 respectively. If $z \cdot 100$ is the percentage of vinyl cyclohexadiene in reac-
 tion, I, $x \cdot 100$ that in reaction II, $y \cdot 100$ the percentage of dimethyl
 cyclohexadiene in reaction II, and if P_0 is the pressure required, we have
 (1") $K_p = (1/2)z [1 - (1/2)z] / (1-z)^2 \cdot P_0$ for reaction I,
 (2") $K_p^{(1)} = x [1 - (1/2)x - (1/2)y] / (1 - x - y)^2 \cdot P_0$ and
 (3") $K_p^{(2)} = y [1 - (1/2)x - (1/2)y] / (1 - x - y)^2 \cdot P_0$ for reaction II. At

Card 2/3

ACC NR: AP7005630 (AN) SOURCE CODE: UR/0413/67/000/002/0087/0087

INVENTOR: Paushkin, Ya. M.; Omarov, O. Yu.; Mkrtychan, V. R.; Lunin, A. F.;
Liakumovich, A. G.; Michurov, Yu. I.; Golubovskaya, L. P.

ORG: none

TITLE: Method of preparing polyoxyphenylenes. Class 39, No. 190566

SOURCE: Izobreteniya, promyshlennyye obraztsy, tovarnyye znaki, no. 2, 1967, 87

TOPIC TAGS: phenol, diatomic phenol, polyoxyphenylene, inert gas

ABSTRACT: This Author Certificate introduces a method of obtaining polyoxypheny-
lenes. To simplify the process of synthesis, the diatomic phenol is heated at
200—300 C in the presence of zinc chloride in an inert-gas atmosphere. [Transla-
tion of abstract] [NT]

SUB CODE: 11/SUBM DATE: 21Jul65/

Card 1/1

UDC: 678.644'14

L 14204-66 EWP(j)/EWT(m)/T RM

ACC NR: AP6003429

SOURCE CODE: UR/0190/66/008/001/0181/0185

AUTHOR: Vishnyakova, T. P.; Golubeva, I. A.; Paushkin, Ya. M.

41
40
B

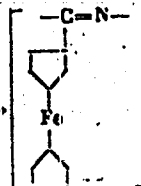
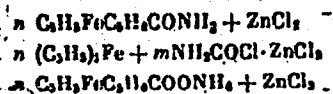
ORG: Moscow Institute of the Petrochemical and Gas Industry im. I. M. Gubkin
(Moskovskiy institut neftekhimicheskoy i gazovoy promyshlennosti)

TITLE: Synthesis of ferrocene and nitrogen-containing polymers with a conjugated bond system

SOURCE: Vysokomolekulyarnyye soyedineniya, v. 8, no. 1, 1966, 181-185

TOPIC TAGS: organic semiconductor, semiconducting polymer, polynitrile

ABSTRACT: New ferrocene- and nitrogen-containing polymers—polyferrocenylnitriles—have been prepared by polycondensation of amides or ammonium salts of ferrocenecarboxylic acids. The reaction was conducted in an autoclave in the absence of atmospheric oxygen and in the presence of $ZnCl_2$ catalyst. Polyferrocenylnitrile was prepared at 170—200C from ferrocenecarboxamide, ammonium ferrocenecarboxylate, as well as from ferrocene proper:



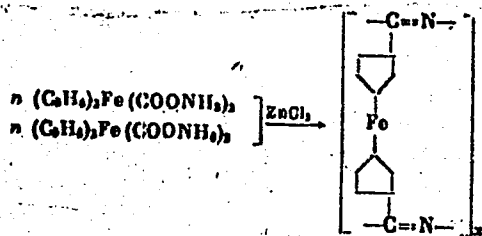
Cord 1/3

UDC: 541.64+678.86

L 14204-66

ACC NR: AP6003429

In the case of ferrocenecarboxamide, P_2O_5 and $TiCl_4$ catalysts were used in addition to $ZnCl_2$. The simplest and most effective method was the second (yield, 87% on the ferrocene). Polyferrocenyldinitrile was also prepared at 200C from 1, 1'-ferrocenedicarboxamide and from diammonium 1, 1'-ferrocenedicarboxylate.



The best method was the second (yield, 44.5% on the ferrocene). All the polymers were black to brown powders; their physical and electrical properties are shown in Table 1. Structures were confirmed by IR spectroscopy. The temperature dependence

Card 2/3

L 14204-61

ACC NR: AP6003429

Table 1. Properties of ferrocenylnitriles

	M.p., °C		Mol. wt	N, spin/g	σ_{50} , mho/cm	ΔE , ev
	DMF* soluble	DMF insoluble				
Polyferrocenylnitrile	350-400	>500	1200-1600	10^{17} - 10^{19}	10^{-11} - 10^{-8}	0.724-0.09
Polyferrocenyldinitrile	None	>500	-	10^{10}	10^{-12} - 10^{-14}	0.93-1.28

*Dimethylformamide

of conductivity of the polymers was exponential in character. Orig. art. has: 4 tables and 1 figure.

[SM]

SUB CODE: 07/ SUBM DATE: 10Mar65/ ORIG REF: 007/ OTH REF: 002/ ATD PRESS:

4193

Card 3/3

Lo

PANIDI, I.S.; PAUSHKIN, Ya.M.

Simple method of preparing bis (diethylamino) boron chloride
and syntheses based on it. Dokl. AN Arm. SSR 41 no. 4:226-229
'65 (MIRA 19:1)

1. Moskovskiy institut neftekhimicheskoy i gazovoy promysh-
lennosti imeni Gubkina.

PAUSHKIN, Ya.M.; VISHNYAKOVA, T.P.; SOKOLINSKAYA, T.A.; PATAIAKH, I.I.;
MACHUS, F.F.; KURASHEVA, I.D.

New iron-containing monomers and polymers form five-membered
naphthenes. Trudy MINKHIGP no.44:15-26 '63.

(MIRA 18:5)

PAUSIKIN, Ya.M.; NIZOVA, S.A.; GAYEVAYA, V.S.

Synthesizing macromolecular hydrocarbons with conjugate double bonds by a dehydrohalopolymerization reaction. Trudy MINKHIGP no.44:43-47 '63. (MIRA 18:5)

INVESTIGATION: PAGE 11, YR 11

Investigation a reaction of the halogenation of benzene and its homologs with aldehydic compounds with a catalyst in a base of boron fluoride. Trudy MINKHGP no. 24192-86 173.

1973

PAUSHKIN, Ya.M.; VISHNYAKOVA, T.P.; SMIRNOV, A.P.; ANAN'YEV, P.G.;
NEPRYAKHINA, A.V.

Recent developments in the cracking of hydrocarbons; cracking
with heat given off and cracking cut off at high temperatures.
Trudy MINKHIGP no.44:118-128 '63. (MIRA 18:5)

L 4579-66 EWT(m)/EPA(s)-2/EPF(c)/EJP(j)/T RM

ACC NR: AP5026987

SOURCE CODE: UR/0020/65/164/005/1065/1068

AUTHOR: ^{44.55} Paushkin, Ya. M.; ^{44.55} Polak, L. S.; ^{44.55} Lunin, A. F.; ^{44.55} Patalakh, I. I.

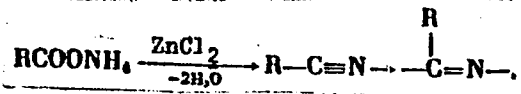
ORG: ^{44.55} Moscow Institute of the Petrochemical and Gas Industry im. I. M. Gubkin (Moskovskiy institut neftekhimicheskoy i gazovoy promyshlennosti); ^{44.55} Institute of Petrochemical Synthesis im A. V. Topchiyev, Academy of Sciences, SSSR (Institut neftekhimicheskogo sinteza Akademii nauk SSSR)

TITLE: ^{44.55} New synthesis method for nitrogen-containing polymers with conjugated bonds and their electrical properties

SOURCE: AN SSSR. Doklady, v. 164, no. 5, 1965, 1065-1068

TOPIC TAGS: ¹⁵ organic semiconductor, semiconducting polymer, polynitrile, polymerization, electric property

ABSTRACT: A new preparative method has been developed for polynitriles. The method involves the heating of amides or ammonium salts of mono- and di-basic organic acids with a dehydrating agent (ZnCl₂):



Card 1/3

UDC: 541.64.67

09010812

L 4579-66

ACC NR: AP5026987

The method makes it possible to prepare polynitriles without resorting to such scarce starting materials as hydrocyanic acid. The polynitriles shown in Table 1 were pre-

Table 1. Structure and chemical and physical properties of polynitriles

No. Starting material	Polymer structure	Yield		IR spectrum		Solubility
		g/g	%	cm ⁻¹	cm ⁻¹	
1		0.25	0.2	2100	2200	-
2		0.25	0.2	2100	2200	-
3		0.25	0.2	2100	2200	-
4		0.25	0.2	2100	2200	-
5		0.25	0.2	2100	2200	-
6		0.25	0.2	2100	2200	-
7		0.25	0.2	2100	2200	-
8		0.25	0.2	2100	2200	-
9		0.25	0.2	2100	2200	-
10		0.25	0.2	2100	2200	-
11		0.25	0.2	2100	2200	-
12		0.25	0.2	2100	2200	-
13		0.25	0.2	2100	2200	-
14		0.25	0.2	2100	2200	-
15		0.25	0.2	2100	2200	-
16		0.25	0.2	2100	2200	-
17		0.25	0.2	2100	2200	-
18		0.25	0.2	2100	2200	-
19		0.25	0.2	2100	2200	-
20		0.25	0.2	2100	2200	-

Card 2/3

L 4579-6j

ACC NR: AP:026937

0

pared. The optimum preparative conditions were determined. The polymers were dark-brown to black powders, infusible and insoluble in the common solvents, and exhibiting high thermal stability. Weight losses at 800C were 7-12%. IR spectra and elemental analysis data of the polymer were identical to those of polynitriles prepared by polymerization of the nitriles, confirming the proposed reaction mechanism and structures. X-ray structural analysis indicated the high crystallinity of the polymers. Table 1 shows the electrical properties of the polymers measured for pressed pellet samples. A correlation was found between activation energy for conduction and chemical structure of polymer repeat unit. This correlation is interpreted in terms of probability of disruption of conjugation. Orig. art. has: 1 figure and 2 tables. [SM]

SUB CODE: 01, EN/ SUBM DATE: 16Mar65/ ORIG REF: 003/ OIR REF: 002/ ATD PRESS:

4136

Cont 3/3 DP

L 65214-65 EWT(m)/EPT(c)/EWT(j)/T RM

ACCESSION NR: AP5022587

UR/0190/61/007/009/1481/1483
541.64-671.76

AUTHOR: Paushkin, Ya. M.; Markov, Yu. Ya.

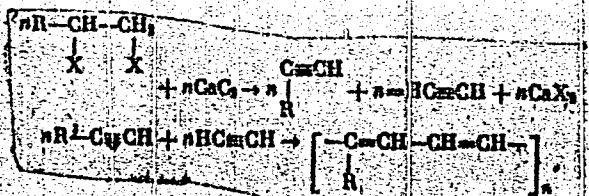
33
30

TITLE: Preparation of polyvinylenes by the reaction of dibromethylbenzene with calcium carbide B

SOURCE: Vysokomolekulyarnyye soyedineniya, v. 7, no. 9, 1965, 1481-1483

TOPIC TAGS: semiconducting polymer, polyvinylene, polymerization

ABSTRACT: Recently a new preparative method for polyvinylenes has been proposed involving dehydrohalopolymerization of 1,2-dihalo compounds with calcium oxide at 200-300C. Now an attempt has been made to substitute calcium carbide for the oxide:

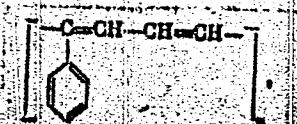


Card 1/3

L 65214-45

ACCESSION NR: AP5022587

The new method was investigated in detail using (1,2-dibromoethyl)benzene with calcium carbide at 200--400C and the optimum preparative conditions were determined (given in the source). The highest overall polymer yield (58--60%) and the highest soluble polymer fraction yield (80--90% of the overall yield) were obtained under a single set of conditions. The soluble polymer fraction, a yellow-brown powder, is a mixture of oligomeric polyvinylenes 400--1200 in molecular weight, which is soluble in benzene, CCl₄, etc. Based on IR data, the following structure was assigned to it:



where $n = 3-10$. Electrical measurements with pellet samples showed: $\log \sigma_{300} = -6$, $E = 0.27$ ev. The insoluble fraction was a black powder infusible up to 500C. IR data suggested that it has a cross-linked structure. Orig. art. has: 2 figures, 1 table, and 2 formulas. [SM]

ASSOCIATION: Institut neftekhimicheskoy i gazovoy promyshlennosti im. I. M. Gubkina
(Institute of the Petrochemical and Gas Industry)

Card 2/3

L 65211-65			
ACCESSION NO:	AP5022587		
SUBMITTED:	29 Jun 64	ENCL: 00	
NO REF SOV:	002	OTHER: 003	
			SUB CODE: MT, GC
			ATD PRESS: 4089
dm			
Card	3/3		

PAUCHAN, YA.M., VIL'NYANSKIY, I.I., VIKHAROVA, I.I.

Preparation of acetylenes and their properties
Zhur. ob. khim. 35 no.9:1682-1684, 1965.

BELOV, V.F.; VISHNYAKOVA, T.P.; GOL'DANSKIY, V.I.; MAKAROV, Ye.F.;
PAUSHKIN, Ya.M.; SOKOLINSKAYA, T.A.; STUKAN, R.A.; TRUKHTANOV,
V.A .

Study of ferrocene copolymers by means of the Mössbauer effect.
Dokl. AN SSSR 159 no.4:831-834 D '64 (MIRA 18:1)

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neftkhimicheskoy i gazovoy promyshlennosti i . I.M. Gubkina.
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L 51397-65	EWT(m)/EPF(c)/EPR/EWP(j)/I	Pc-4/Pr-4/Ps-4	RPL	NH/RII
ACCESSION NR	AP5011254	UR/0190/65/007/004/0713/0716		
AUTHORS:	Vishnyakova, T. P.; Golubeva, I. A.; Paushkin, Ya. M.			4/1 4/6 B
TITLE:	Synthesis and study of polyferrocenylnitrile			1
SOURCE:	Vysokomolekulyarnyye soyedineniya, v. 7, no. 4, 1965, 713-715			
TOPIC TAGS:	organic synthesis, nitrile group, ferrocene, IR absorption spectrum, electric conductivity, temperature dependence			
ABSTRACT:	This article discusses the synthesis of polyferrocenylnitrile and some of the properties of this compound, obtained by polycondensation of carbonylferrocene in the presence of zinc chloride and phosphorus pentoxide catalysts. It is a powder, ranging from black to light brown, depending on conditions of the reaction, and it is partially soluble in dimethylformamide. None of the insoluble products will fuse below 500C, and the soluble part decomposes in the interval from 420 to 500C. The molecular weight of this latter part is about 1200. IR absorption spectra show an absorption band at 820 cm^{-1} characteristic of ferrocene, and absorption maximums at 1000 and 1100 cm^{-1} characteristic of free cyclopentadienyl rings of ferrocene. The dependence of electrical conductivity on temperature was measured in the temperature range 20-300C. Temperature of reaction, reaction time, ratio			
Card	1/2			

L 51397-45

ACCESSION NR: AP5011254

of monomer to catalyst, and yield of polymer are indicated in a table. Measured composition indicates 63.56% C, 4.41% H, and 6.87% N as against computed values of 62.60, 4.27, and 6.63. The formula is given by $C_{11}H_9FeN$. Orig. art. has: 2 figures and 1 table.

ASSOCIATION: Moskovskiy institut neftekhimicheskoy i gazovoy promyshlennosti im. I. M. Gubkina (Moscow Institute of the Petrochemical and Gas Industry)

SUBMITTED: 01Jul64

ENCL: 00

SDB CODE: OC, MT

NO REF SOV: 007

OTHER: 004

JD
Card 2/2

ACCESSION NR: AT4020712

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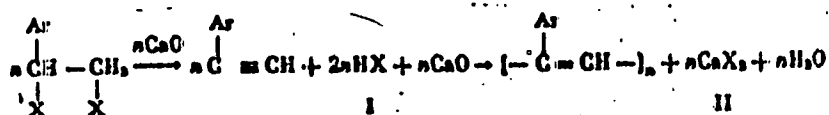
AUTHOR: Paushkin, Ya. M.; Nizova, S. A.; Gayevaya, V. S.

TITLE: Preparation of polyvinylene hydrocarbons by a dehydrogenation-dehalogenation-polymerization reaction

SOURCE: Karbotsepnyye vyssokomolekulyarnyye soyedineniya (Carbon-chain macromolecular compounds); sbornik statey. Moscow, Izd-vo AN SSSR, 1963, 227-230

TOPIC TAGS: polymerization, polyvinylene, polyvinylene hydrocarbon, polyphenylacetylene, dehydrohalogenation, acryl halide

ABSTRACT: A new method is proposed for the preparation of polyphenylacetylene hydrocarbons in which, in the presence of metallic oxides or hydroxides, acryl halides are dehydrogenated, dehalogenated and polymerized according to the reaction:



where I and II denote the products of dehydrohalogenation and immediate polymerization, respectively. The procedure is described in detail for the preparation, from Card 1/2

ACCESSION NR: AT4008696

S/2982/63/000/044/0027/0032

AUTHOR: Paushkin, Ya. M.; Yuzvyak, A. G.

TITLE: Synthesis of new monomers from (1,3) -butadiene

SOURCE: Moscow. Institut neftekhimicheskoy i gazovoy promyshlennosti. Trudy*, no. 44, 1963. Neftekhimiya, pererabotka nefli i gaza, 27-32

TOPIC TAGS: 1,3-butadiene, 1,3-butadiene polymerization, 1,3-butadiene dimerization, cyclohexene. vinyl-, cyclohexane. vinyl-, 1,3-butadiene thermal dimerization, monomer

ABSTRACT: The authors first studied the thermal cyclodimerization of 1,3-butadiene to vinylcyclohexene and 1,3-dimethylcyclohexadiene over activated charcoal at 350-500C and 2-3 atmospheres. After dimerization, the liquid polymer was fractionated and the fractions boiling at 124-128 and 128-132C were collected. It was found that the yield of total polymer increases with the temperature, but that the yield of dimer decreases, so that the optimal temperature is 400C. At this temperature, the yield increases with a decrease in the rate of flow of the monomer. The authors then studied the selective catalytic hydrogenation of vinylcyclohexene over Pt at room temperature, yielding vinylcyclohexane, as well as its chlorination with Cl₂ in CCl₄ at -60C, yielding vinylchlorocyclohexane, and its

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hydrochlorination with HCl in the presence of anhydrous SnCl₄ in CCl₄ at -65C, yielding vinylchlorocyclohexane, chlorethylcyclohexene and vinylcyclohexene dihydrochloride; the latter reaction did not take place in any solvent in the absence of a catalyst and was not catalyzed by TiCl₄, ZnCl₂ or FeCl₃. Orig. art. has: 3 figures, 5 tables and 2 structural formulas.

ASSOCIATION: Institut neftekhimicheskoy i gazovoy promy*shlennosti, Moscow (Institute of Petroleum Chemistry and the Gas Industry)

SUBMITTED: 00

DATE ACQ: 16Jan64

ENCL: 00

SUB CODE: GC,FP

NO REF SOV: 007

OTHER: 007

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Card