VASIL'YEV, Yu.N.; MAKSUTOV, R.A.; BASHKIROV A.I.

Experimental study of the structure of oil and gas flow in a flowing well. Neft. khoz. 39 no.4:41-44 Ap '61. (MIRA 14:6)

(Oil reservoir engineering)

VASIL'YEV, [illegible] (Bugul'ma); BASHKIR[illegible], [illegible] (Bugul'ma)

Approximate solution of the problem of the flow toward a well with a horizontal joint. Izv.AN SSSR.Otd.tekh.nauk.Mekh.i mashinostr. no.5:183-185 S-O '61. (MIRA 14:9)
(Hydrodynamics)

BASHKIROV, A.I.; BRISKMAN, A.A.; VASIL'YEV, Yu.N.; MAKSUTOV, R.A.

Propagation of elastic vibrations in oil wells. Trudy VNII no.35:3-10 '61. (MIRA 15:1)

(Oil wells--Vibration)

AUZBAYEV, D.; BASHKIROV, A.I.; VASIL'YEV, Yu.N.; MAKSUTOV, [illegible].A.

Methods and results of the experimental study of the gas-oil mixture flow in a flowing well. Neft. khoz. 39 no.12:38-40 D '61. (MIRA 14:12)

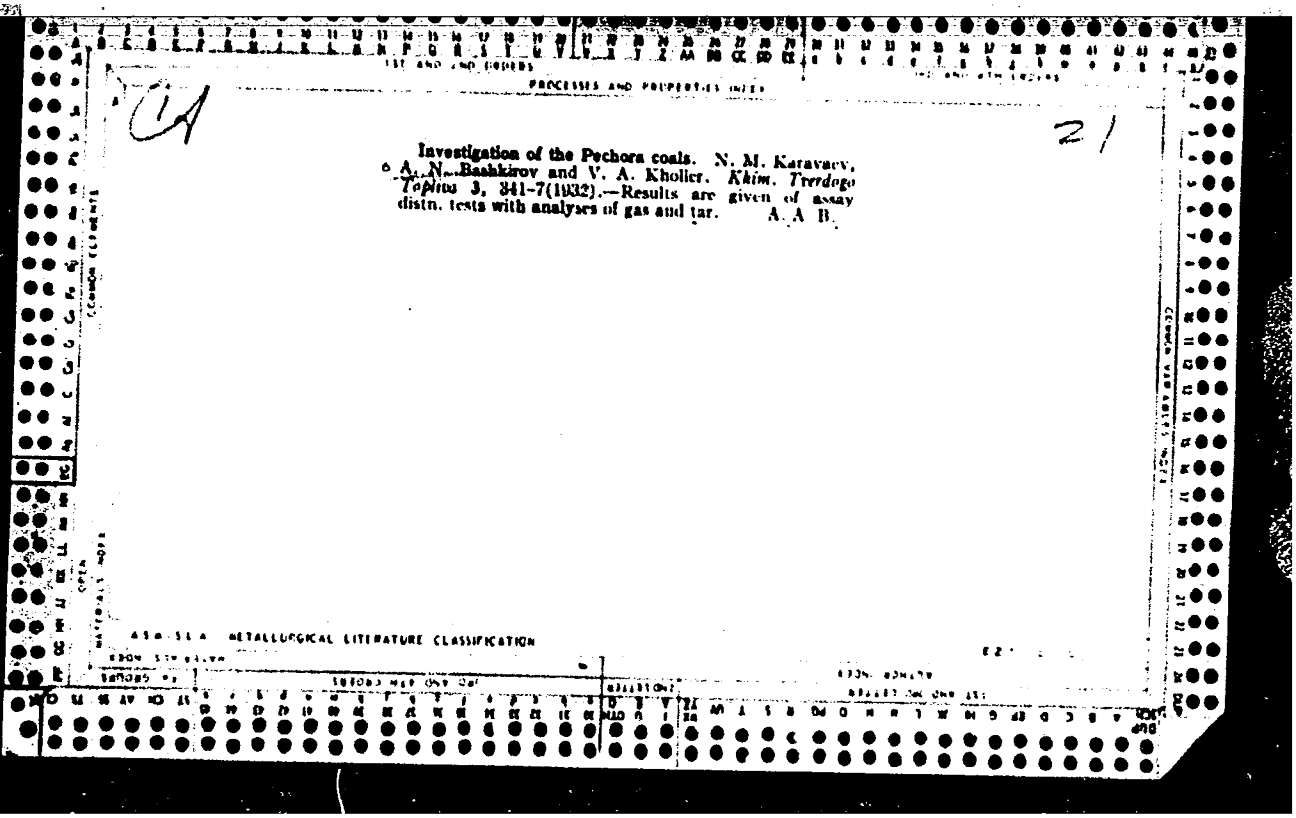
(Oil reservoir engineering)

ARKHANGEL'SKIY, V.A. (Moskva); AUZBAYEV, D. (Bugul'ma); BASHKIROV, A.I.
(Bugul'ma); VAILI'YEV, Yu.N. (Bugul'ma); MAKSUTOV, R.A. (Bugul'ma)

Investigating gas-oil mixture flow in gushers. Inzh.zhur. 2 no.1:55-68 '62. (MIRA 15:3)

1. Institut mekhaniki AN SSSR i Tatarskiy nauchno-issledovatel'skiy institut.

(Oil reservoir engineering)



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Investigation of the Pechora coals. N. M. Karavaev, A. N. Bashkirov and V. A. Kholler. *Khim. Tverdogo Topliva* 3, 341-7(1932).—Results are given of assay distn. tests with analyses of gas and tar. A. A. B.

ASA-SLA METALLURGICAL LITERATURE CLASSIFICATION

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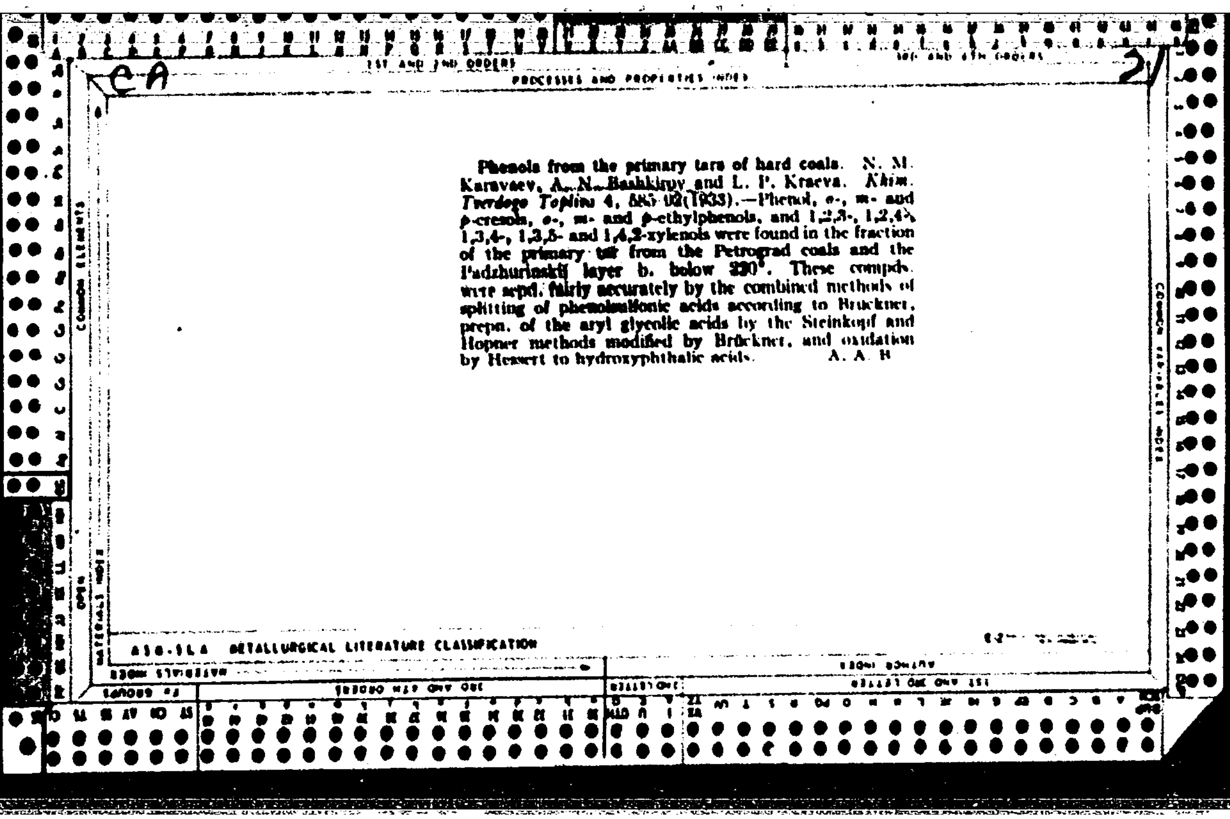
Coals from the Zorinsko-Buikovskii deposit. N. M. Karavaev, A. N. Bashkirov and V. I. Karzhev. *Khim. Tverdogo Topliva* 3, 630-63(1932).—Analytical data are given for the sapropelite and humic coals and for shale, and for their extn. and distn. products. The analytical procedure is discussed. The different mineral fuels were characterised by great variations in their compns.

A. A. Boehtlingk

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION



1ST AND 2ND ORDERS

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Phenols from the primary tars of hard coals. N. M. Karavaev, A. N. Bashkirov and L. P. Kraeva. *Khim. Tverdogo Topliva* 4, 885-92(1933).—Phenol, *o*-, *m*- and *p*-cresols, *o*-, *m*- and *p*-ethylphenols, and 1,2,3-, 1,2,4-, 1,3,4-, 1,3,5- and 1,4,2-xylenols were found in the fraction of the primary tar from the Petrograd coals and the Padzhurinskii layer b. below 230°. These compds. were sepd. fairly accurately by the combined methods of splitting of phenolsulfonic acids according to Brückner, prepn. of the aryl glycolic acids by the Steinkopf and Hopner methods modified by Brückner, and oxidation by Hessert to hydroxyphthalic acids. A. A. B.

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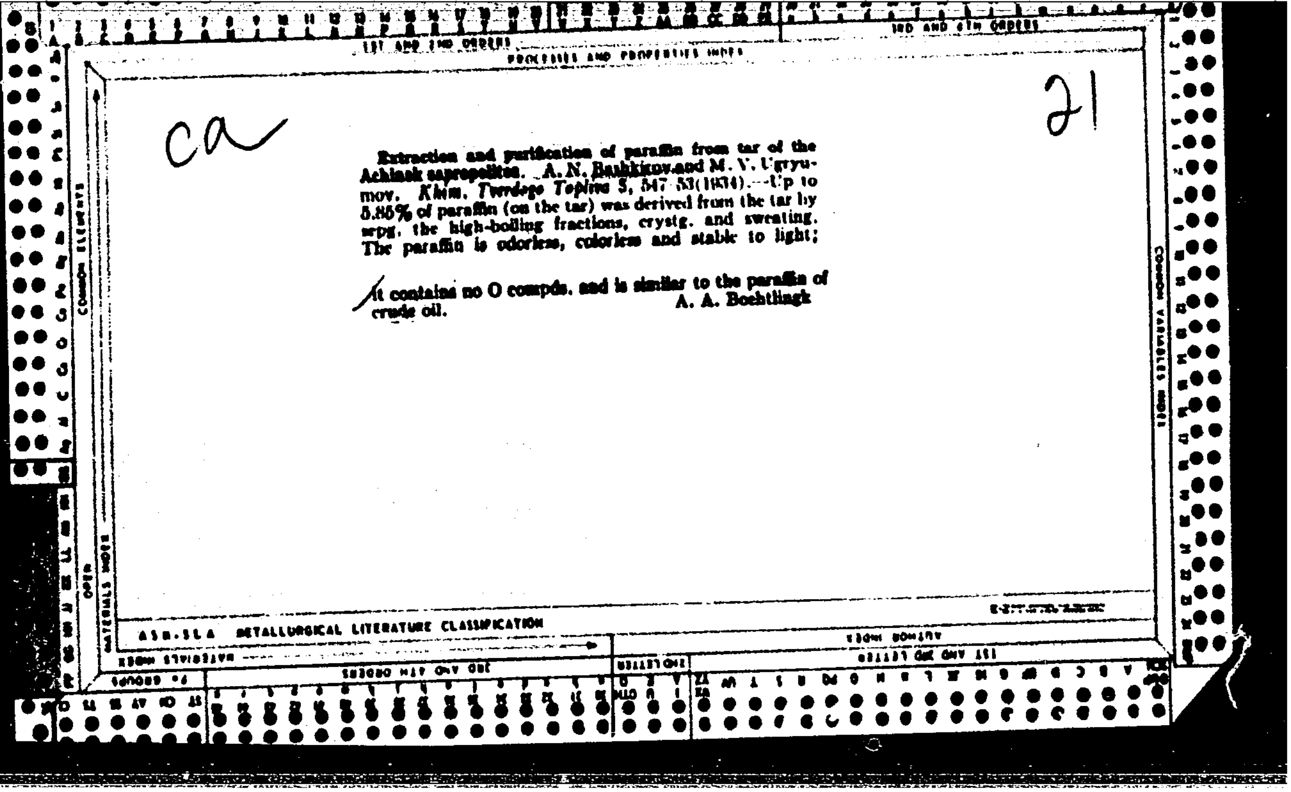
Phenols from the Barzas sapromixite tar. II. A. N. Bochtlingk and B. M. Rapoport. *Khim. Tverdogo Topliva* 5, [illegible] (1934); cf. *C. A.* 28, 8864^{8}.—The acidic substances sepd. from the sapromixite tars by washing with caustic are composed mainly of phenols and carboxylic acids, the latter amounting to 10.8% of the acidic substances. The following substances were detected in the phenolic part of the sapromixite tar: phenol, *o*-, *m*- and *p*-cresols, 1,2,3-, 1,2,4-, 1,3,4- and 1,4,2-xylenols and *p*-EtC_6H_4OH. In the acidic part of the sapromixite tar were found the following fatty acids: $C_9H_{14}O_2$, $C_{11}H_{20}O_2$ and $C_{11}H_{18}O_2$. The Bruckner method of repeated splitting of phenolsulfonic acids permits the sepn. of individual phenols in a purer state. A. A. Bochtlingk

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

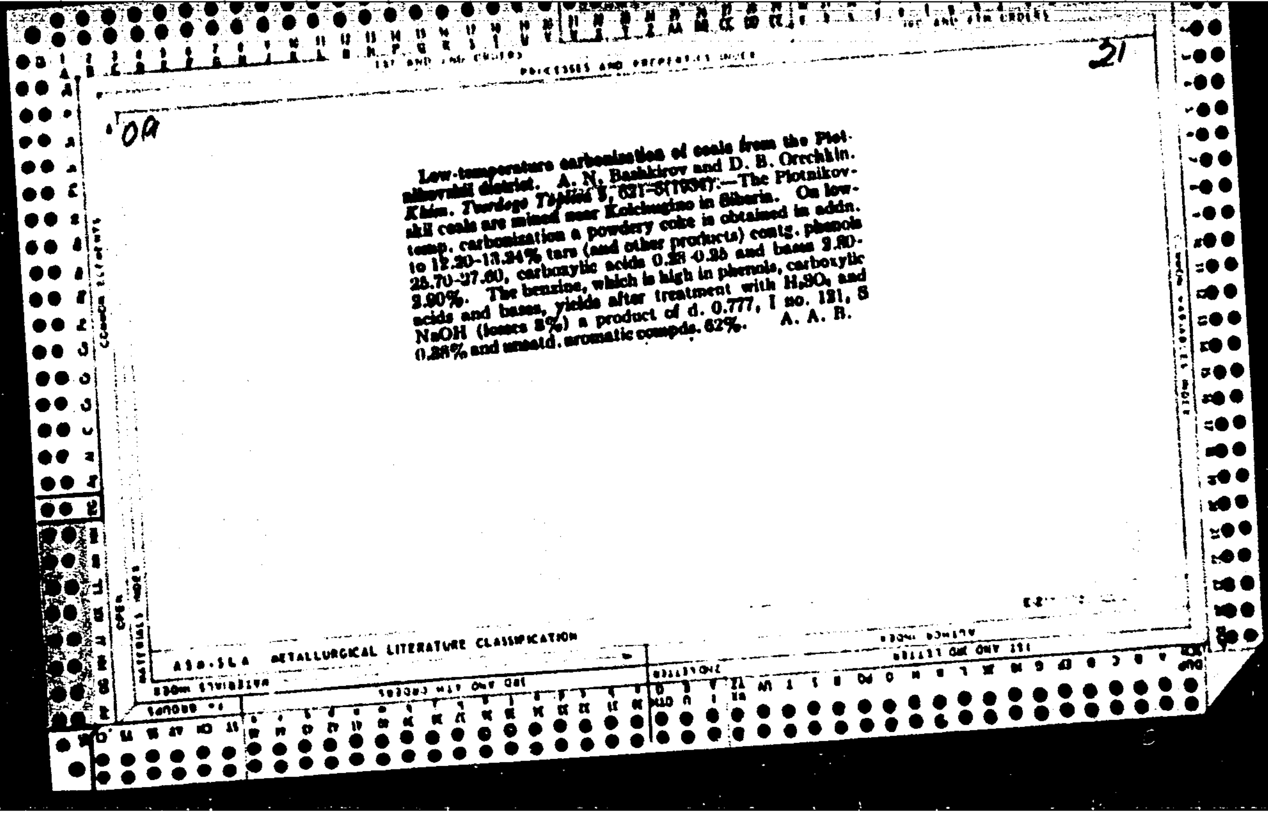


ca

21

Extraction and purification of paraffin from tar of the Achinsk sapropelites. A. N. Bashkirov and M. V. Ugryumov. *Khim. Tverdogo Topliva* 5, 547-53(1934).—Up to 5.85% of paraffin (on the tar) was derived from the tar by sepg. the high-boiling fractions, crystg. and sweating. The paraffin is odorless, colorless and stable to light; it contains no O compds. and is similar to the paraffin of crude oil.

A. A. Boehtlingk



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0A

Low-temperature carbonization of coals from the Plotnikovskii district. A. N. Bashkirov and D. B. Orechkin. *Khim. Tverdogo Topliva* 5, 621-5(1934).—The Plotnikovskii coals are mined near Kolchugino in Siberia. On low-temp. carbonization a powdery coke is obtained in addn. to 12.20-13.24% tars (and other products) contg. phenols 28.70-37.60, carboxylic acids 0.25-0.35 and bases 2.80-2.90%. The benzine, which is high in phenols, carboxylic acids and bases, yields after treatment with H_2SO_4 and NaOH (losses 8%) a product of d. 0.777, I no. 121, S 0.28% and unsatd. aromatic compds. 62%. A. A. B.

ASB-SLA METALLURGICAL LITERATURE CLASSIFICATION

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A simplified method for the determination of carbon in the products of low-temperature carbonization. A. N. Bashkirov and S. G. Kostelyanskaya. *Khim. Tverdogo Topliva* 5, 850-2(1934).—Introduce into a calorimetric bomb 25 or 30 cc. of 2 *N* NaOH soln., avoiding contact of the soln. with the cup; place in the cup 0.1 to 0.2 g. of sample with or without addn. of strong HNO_3. Burn in 25 atm. O_2 pressure, or higher for tar and coals which are difficult to burn. After the combustion let the bomb stand for 15 min. and carefully shake for 10 min. in such manner as to prevent the cup from dropping into the liquid. Transfer the contents of the bomb to a 100-cc. measuring flask, fill to the mark and thoroughly agitate. Place in another 100-cc. flask the same amt. of NaOH as was placed in the bomb, fill the flask to the mark and agitate. Mix 5 cc. of this soln. with 5 cc. of the soln. from the bomb (after diln. to 100 cc.), and titrate with an 0.02 *N* HCl. Results by this method agree with those obtained by the usual method within 0.1%. A. A. Boehtlingk

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

21

The methods of analyzing solid fuels. A. N. Bashkirov, G. A. Zil'berg and I. I. Pavlinov. *Khim. Tverdogo Topliva* 6, 113-15(1935).—Coal lenses known as "sal'niki," found in the Kuznetsk basin, when analyzed in the usual manner showed 38.15% ash and 63.88% C. The same coal sample digested with 10% HCl on a water bath for 6 hrs. evolved CO_2 and left a residue of 32.77%. The ash of the original coal contained SiO_2 2.98, Al_2O_3 0.89, Fe_2O_3 31.27, MgO 17.06, CaO 40.50, SO_3 2.57, P_2O_5 0.99 and $Na_2O + K_2O$ 0.71%; loss on heating was 3.03%. The content of inorg. CO_2 in the original coal was 24.30%. The coal treated in the above manner contained 3.28% ash and the combustible part was composed of C 84.19, H 5.60, N. 1.43 and O 7.18%.

A. A. Boehtlingk

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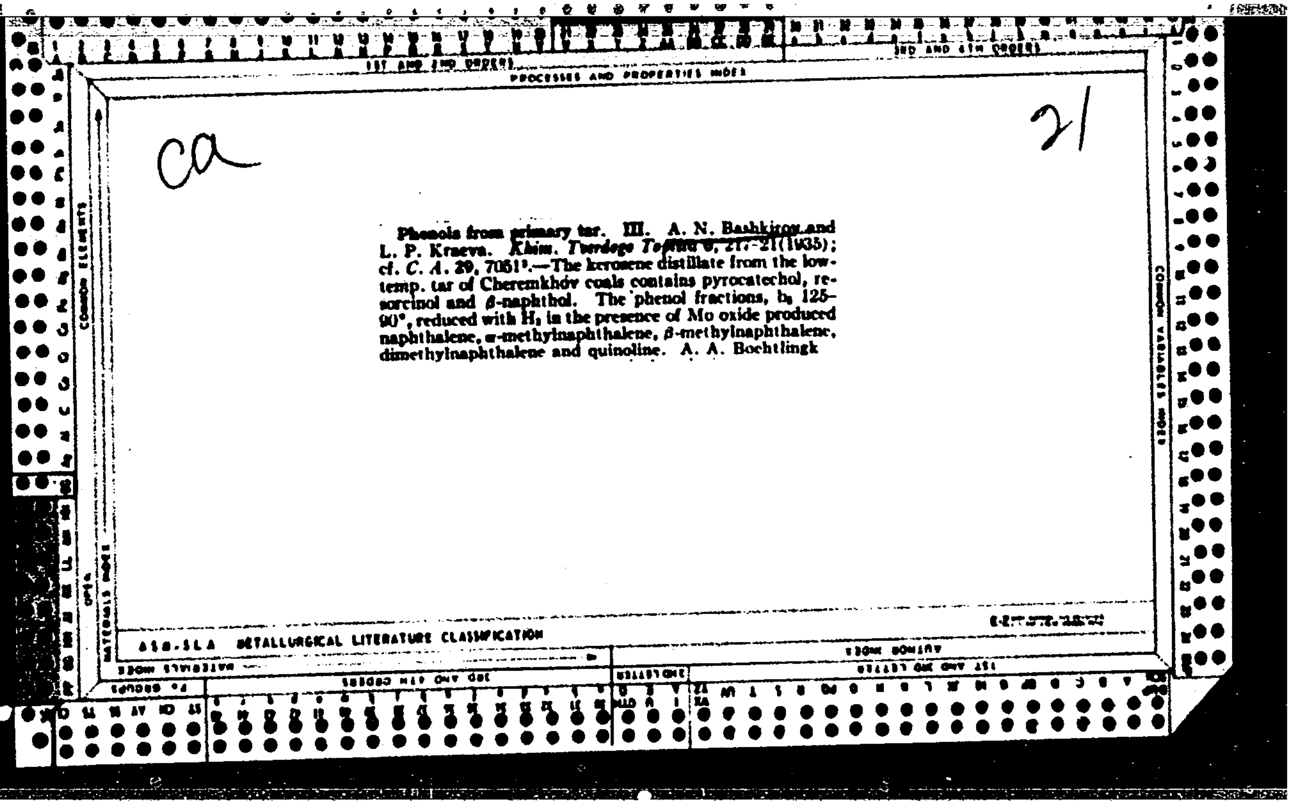
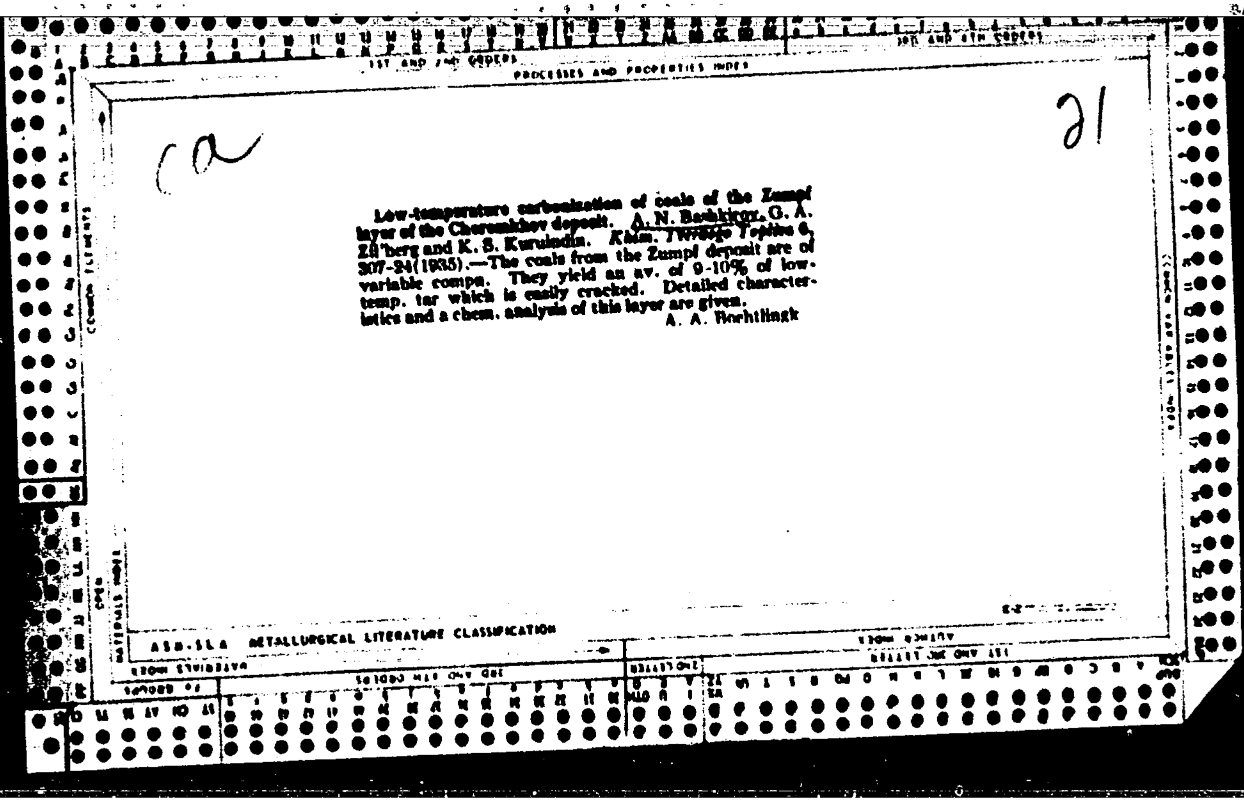


ca

21

Phenols from primary tar. III. A. N. Bashkirov and L. P. Kraeva. *Khim. Tverdogo Topliva* 6, 217-21(1935); cf. *C. A.* 29, 7051^{9}.—The kerosene distillate from the low-temp. tar of Cheremkhóv coals contains pyrocatechol, resorcinol and β-naphthol. The phenol fractions, b_{6} 125-90°, reduced with H_2 in the presence of Mo oxide produced naphthalene, α-methylnaphthalene, β-methylnaphthalene, dimethylnaphthalene and quinoline. A. A. Boehtlingk



1ST AND 2ND ORDERS

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21

Low-temperature carbonization of coals of the Zumpl layer of the Cheremkhov deposit. A. N. Bashkirov, G. A. Zil'berg and K. S. Kuruindin. *Khim. Tverdogo Topliva* 6, 307-24(1935).—The coals from the Zumpl deposit are of variable compn. They yield an av. of 9-10% of low-temp. tar which is easily cracked. Detailed characteristics and a chem. analysis of this layer are given.

A. A. Borhtlingk

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

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The problem in connection with low-temperature carbonization of Barzass coals. A. N. Bashkirov, D. B. Orechkin and V. I. Voevodova. *Khim. Tverdogo Topliva* 6, 530-9(1935).—The caking properties of Barzass coals can be lowered by mixing them with Zhurin coals (40-45%) or Achinsk sapropelites (30-35%). Brown coals can also be used, though in smaller quantities (about 15%), the best effect being observed with highly oxidized coals, the lowest with the low temp. carbonization coke from Barzass coal. The mixt. should in all cases be carefully broken up or briquetted. Among the chem. admixtures, B_2O_3, NaOH, $AlCl_3$ and $ZnCl_2$ cause least decrease in the caking ability. A new app. for testing the caking ability of coal is described. The expts. were carried out for the purpose of finding a suitable method of carbonizing the above coal without excessive caking so as to permit a better distn. of volatile substances.

A. A. Boehtlingk

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

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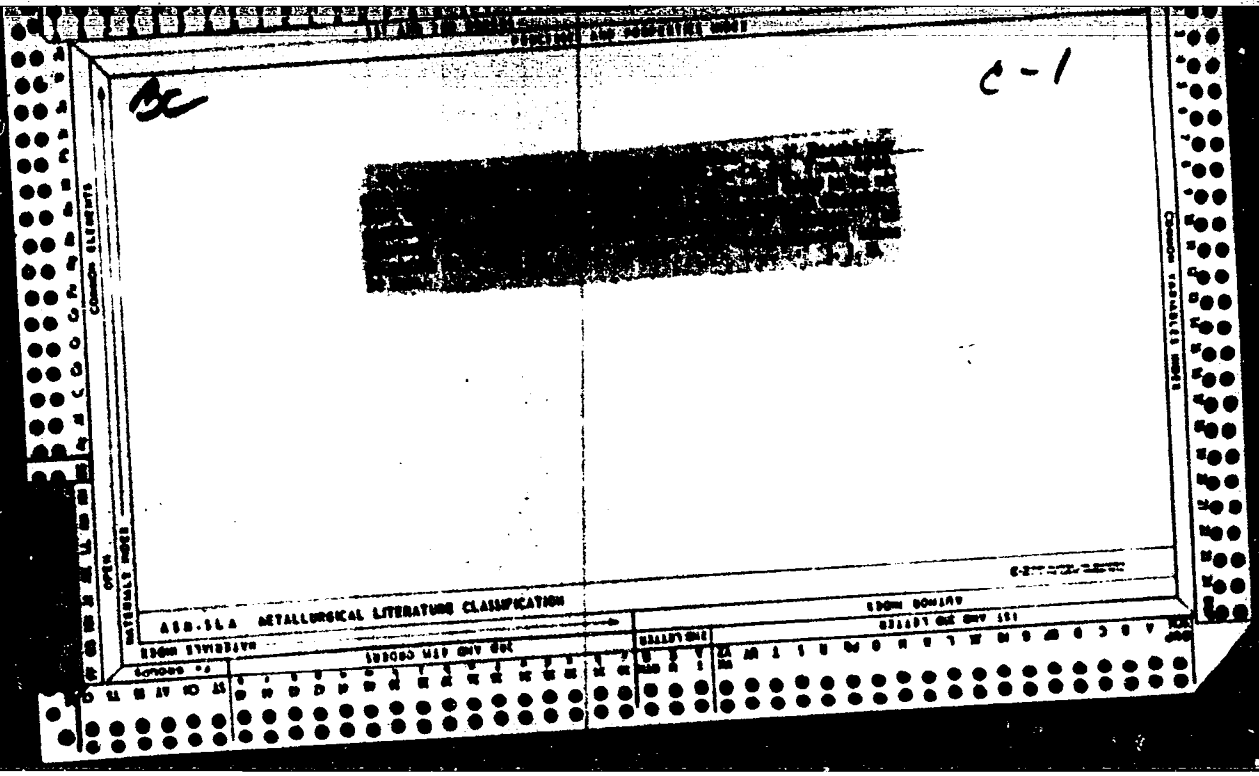
21

Phenols from primary tars IV A. N. Bashkurov and L. P. Kraeva. *Khim. Tverdogo Topliva* [illegible]; cf. *C. A.* **30**, 7618⁹.—Phenols of the tar from the Zhurinsk coals of the Kuznetsk deposit, freed from neutral compds., bases and carboxylic acids and extd. with petr. ether, were vacuum-distd. (3–5 mm. of pressure). The fraction b. 60–145° was treated with Na_2SO_4. The products were fractionated *in vacuo* (12 mm.) and I nos. were detd. The I no. increases with the increase of b. p. All products (I no. = 83) were carefully oxidized by MnO_4^- (in excess) in weakly alk. soln. at 0° (on the assumption that the oxidation occurs only at the double bond). The excess of MnO_4^- was decolorized with $MnSO_4$, and after acidifying with 35% H_2SO_4, the acids formed were steam-distd. The distillate after treatment with ether and Na_2SO_4 was again distd. off on a water bath. The fraction of this distillate (b. 180°) had acid no. 703.8. HCO_2H and CH_3CO_2H were detected in the distillate. The acids of high b. p. crystallize on standing and have acid no. 264.3. Therefore, some of the phenols of primary tars from the Zhurinsk coals have an unsatd. side chain. A. A. Podgorny

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION



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21

Preparation of pure PhOH from the phenols of coal tar. A. N. Bashkirov and I. M. Vener. *Bull. acad. sci. U.R.S.S., Classe sci. tech.* 1944, 48-50.—The phenol-cresol fraction of tar is treated with NaOH-activated Fe prepd. from bog ore and reduced by H or other reducing gas. For vapor-phase purification, the phenol is passed into the contact app. at 250-80°. In the liquid-phase process, the reduced-Fe agent is added directly to the phenol-cresol fraction in amts. of approx. 5%. The reaction mass is heated under a reflux condenser at the b.p. of the liquid (approx. 185°) for 2 hrs. The PhOH obtained m. 39-40°. Thiophenol reacts with the Fe reagent to form benzene, biphenyl, FeS and H. The amt. of benzene obtained was approx. 57%, and of biphenyl approx. 5% of the thiophenol used. The phenols were purified in the vapor phase in a Pyrex tube contg. 100 g. of the Fe reagent, reduced with H for 3 hrs. at 500°; in the liquid phase, in a 250-ml. glass flask with a reflux condenser. The purified product was rectified in a bubbling column with 25 plates, yielding a narrow fraction (18.2%), b_{748} 180.5-181.0°, m. 39.0-40.0. No free S was found. The reaction of thiophenol with the Fe reagent began at 175°; at 230-50° it is violent. Fe reagent (40.0 g. reduced at 500°) reacted at 250°, with 21.4 g. thiophenol passed 21.4 g., introduced at the rate of 20 g./hr. to give 13.2 g. of liquid product and 506 ml. (at 18°) of gas (92% of which was H). The liquid reaction product was rectified to give benzene and biphenyl. Four references.

W. R. Henn

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

Inst. Mineral Fuels, AS USSR

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7N

2998. NEW METHOD FOR SEPARATION OF STYRENE FROM CRUDE BENZOL. Bashkirov A N and Karavaev N M (Bull acad sci U.R.S.S. Cl sci tech, 1944, 763-772; J inst petrol 1945, 31, 217A). Crude benzol from U.S.S.R. coke ovens contains 0.7-1.6% of styrene, which is concentrated in the xylol (135-150°C.) fraction of which it forms approximately 20%. The styrene can be separated by chlorination (at a temperature } 5°C), forming styrene dichloride which boils approximately 100°C. higher than xylol, and from which it may be seperated by vacuum distillation. A 95% yield of the dichloro compound is obtainable. the styrene may be regenerated by dechlorination over a catalyst formed by reduction (at 500-550°C.) of bogiron ore. De chlorination, carried out in the vapour phase (15-20) at 175-180°C., is strongly exothermic and cooling arrangements must be made. Yield of styrene from dichor compound is 90%. The product obtained is of high purity.

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

CA BASHKIROV, A.N.

10

Oxidation of a high-molecular synthetic paraffin. A. N. Bashkirov and Ya. B. Chertkov. *Bull. acad. sci. U.R.S.S., Classe sci. tech.* 1947, 817-24(in Russian).—A paraffin of av. mol. wt. 1007 (by ebullioscopy in C_6H_6), av. formula $C_{72}H_{146}$, white, m. 95-100°, iodine no. 0.6, synthesized by the Fischer-Tropsch process under 10 atm., was oxidized by air fed through a porous glass filter, in the presence of 0.2% $KMnO_4$ as catalyst. The progress of the reaction was detd. in terms of increase of the acid no. *A* and of the ester no. *E* with time, at 110-12°, 115-20°, and 160-5°; at these three temps. *A* attained approx. 45, 95, and 140 (mg. KOH per g. substance), *E* approx. 55, 85, and 250, resp., in about 8 hrs. at the two lower temps. and in about 4 hrs. at the higher temp.; while at both 110-12° and 160-5° *E* remained consistently higher than *A*, at 115-20° this was true only during the 1st 5 hrs., whereafter *E* fell below *A*. In terms of the amt. of $KMnO_4$, the *final A* (after 8 hrs.) is max. with 0.2% catalyst, while the 5-hr. *A* and both the 5-hr. and the 8-hr. *E* increase regularly with further $KMnO_4$ (detd. up to 0.8%). Under the optimum conditions, 115-20°, 0.2% $KMnO_4$, 8 hrs., 200 l. air/hr./100 g. paraffin, 1 kg. paraffin gave 16.5% liquid, 83.5% solid products; the increase in wt. was 15.5%; the solid product had sapon. no. 207, *A* 105, *E* 102, iodine no. 1.5, HO no. (Norman) 24. The liquid contained 66% acids and 34% neutral compds.; the acids were sepd. into fractions b. 105-25°, 125-50°, 150-70°, 170-90°, 190-210°, 210-30°, 230-50°, 250-60°, and residue (including losses), in the amts. 1.80, 4.50, 15.40, 14.80, 14.40, 13.95, 15.00, 12.20, 7.95%; by the b.p., *A*, Ag no., and mol. wt., the fractions correspond to acetic, propionic, butyric, valeric, caproic, enanthic, caprylic, and pelargonic acid, resp. The solid product was subjected to repeated sapon., acidification, and extn., with the result: nonsaponifiable matter 55.2, acids sol. in petr. ether 35.3, insol. acids 8.7, losses 0.8%. The combined liquid and solid products contained 55.8% acids. These were esterified with MeOH and the Me esters fractionated under 10^{-4} mm. Hg, 82% passing below 200°; of the 24 fractions obtained, the 1st six boiled under 110°. All fractions were sapond. and the acids sepd., in some cases nearly pure. The fatty acids C_1, C_2, C_3, C_4, C_5, C_6, C_7, C_8, C_9, C_{10}, C_{14}, C_{15}, C_{20} were isolated and identified. The quant. compn. of the acids was found to be: fatty acids C_1–C_7 17, C_7–C_{10} 10, C_{10}–C_{14} 10, C_{14}–C_{17} 14, C_{17}–C_{20} 16, C_{20}–C_{30} 20, higher than C_{30} 13%. Thus, oxidation of the high-mol. paraffin $C_{72}H_{146}$ gives a much higher yield of low-mol. fatty acids than pure eicosane (Wietzel, *C.A.* 33, 9024⁴) or synthetic $C_{30}H_{62}$ (Jantzen, *et al.*, *C.A.* 33, 1527⁷).

N. Thon

04

3

Use of the differential thermocouple for kinetic measurements. Yu. B. Kagan and A. N. Bashkirov (Inst. Combustible Minerals Acad. Sci. U.S.S.R., Moscow). *Izvest. Akad. Nauk S.S.S.R., Otdel. Tekh. Nauk* **1948**, 349-58.—(1) On the assumption that the temp. difference between a catalyst on which a chem. reaction is taking place, and an inert substance placed in the same tube, is proportional to the rate of evolution (or absorption) of heat of reaction, hence proportional to the rate of the reaction, recording of the deflections φ of the galvanometer connected with the differential thermocouple (Balandin and Patrikeev, *C.A.* **39**, 858^{6}) supplies a method of detn. of the reaction velocity dx/dt, provided the proportionality factor ψ in $\varphi = \psi\,(dx/dt)$ is sufficiently independent of the temp. Fulfillment of the latter condition, involving practical temp. independence of the heat of reaction, of the sum of heat capacities, and of the heat conductance, was tested experimentally on the oxidation of Cu on a Kieselguhr carrier at 245° and at 80°; whereas at 245° oxidation is complete, its degree at 80°, calcd. on the assumption ψ = const. (between 80 and 245°), was 27.37% as against 26.79% by analytical detn., consequently, the assumption ψ = const. is permissible. The general procedure for kinetic measurements involving a solid consists in plotting φ against the time t; the area limited by the axis of abscissas, the curve and the ordinates φ_1 and φ_2 (at times t_1 and t_2) $= \psi\,(x_2 - x_1)$ where x = amt. of solid reacted. Integration from $t = 0$ to t gives the area ψx. The concn. of the gas in the reaction zone being const., the rate of reaction (unless limited by the penetration of O_2 through a surface oxide film) $dx/dt = k\,(a - x)$, or $\varphi = k\psi\,(a - x)$. In the case of a first-order reaction, the plot of φ against ψx is a straight line; its slope gives the rate const. k, the base of the triangle is $= \psi a$ (a = initial amt.). The error due to loss of heat is immaterial provided the temp. difference does not exceed that for which Newton's law of cooling is valid, and the total heat capacity, heat cond., and the heat of reaction are practically const. in the given temp. range. (2) Expts. were made on Cu prepd. by mixing 100 ml. kieselguhr with 2.5 g. Cu (as salt) in 75 ml. H_2O, pptn. with KOH at 100°, washing with hot H_2O, drying and granulating to cylinders 2-3 mm. long, and heating 1.5 hrs. at 700°; the thermocouple was disposed between 5 ml. of the catalyst and 5 ml. of glass cylinders, sepd. by mica, placed in the same tube of 2 cm. diam. The catalyst was reduced to Cu by H_2 at 6.5 l./hr. at 345°. Oxidation at 245° with a dry gas mixt. of 2.5% O_2 + 97.5% N_2, at 6 l./hr., was complete in 46 min.; further passage of air caused no deflection of the galvanometer. On successive oxidations of the same catalyst, following repeated reductions, the integrals corresponding to ψa increased regularly (e.g. 197, 210, 234 sq. cm.), indicating increasing activity of the Cu catalyst. At 80°, in an air stream at 6 l./hr., the reaction came to a halt after 11 min., further passage of air causing no change of φ. From the total area ψx, read on the $\varphi\,(t)$ plot, as compared with the area corresponding to 100% oxidation (at 245°), the degree of oxidation at 80° was 27.37% of the Cu present (that oxidized at 245°). (3) By the linearity of the plot of φ against the ψx detd. by readings at various stages, the reaction at 80° is of the first order, with $k = 0.66$ (time in min.).

N. Thon

BASHKIROV, A. N.

Bashkirov, A. N., Stepanova, V. B., and Sukhotinskaya, T. M. - " A selective method of processing primary tars", (Report 1), Trudy Mosk. in-ta tonkoy khim. tekhnologii im. Lomonosova, Issue 2, 1949, p. 43-58, - Bibliog: 6 items.

SO: U-3042, 11 March 53, (Letopis 'Zhurnal 'nykh Statey, No. 8, 1949).

BASHKIROV, A. N.

Bashkirov, A. N. and Vinkurova, T. D. - "Cracking of kogazin in the presence of aluminum chloride", Trudy Mosk. in-ta tonkoy khim, tekhnologii im. Lomonosova, Issue 2, 1949, p. 66-69.

SO: U-3042, 11 March 53, (Letopis 'Zhurnal 'nykh Statey, No. 8, 1949).

BASHKIROV, A. N.

USSR/Engineering - Gas Analyzers Gas Analysis Nov 49

"Gas Analyzer for Two-, Three-, and Four-Component Mixtures," Yu. B. Kryukov, V. V. Kamzolkin, A. N. Bashkirov, Petroleum Inst, Acad Sci USSR, 11 pp

"Iz Ak Nauk SSSR, Otdel-Tekh Nauk" No 11

Proposes new-type gas analyzer for analysis of two-, three-, and four-component mixtures of CO_2, CO, H_2, and N_2 (or CH_4). Provides for automatic analysis at various rates of gas flow. Apparatus uses rheometers, and calcium chloride and ascarite tubes. Submitted by Acad S. S. Nametkin.

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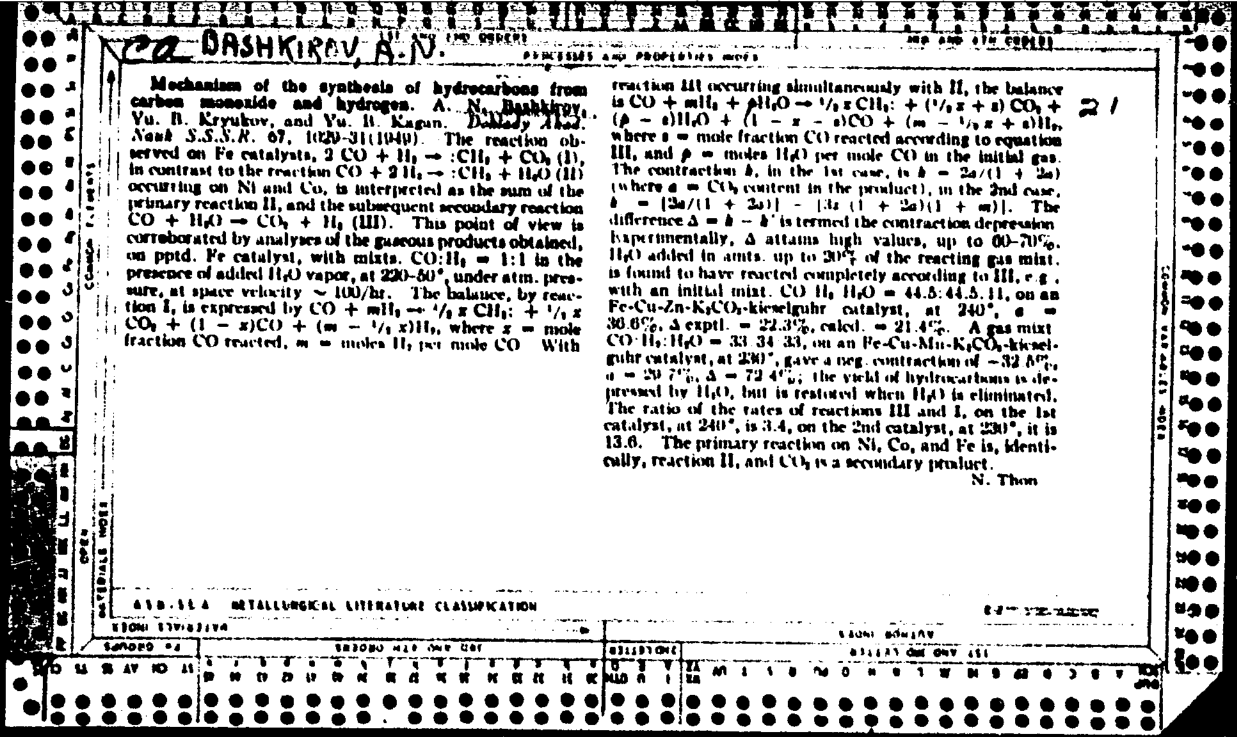

CA BASHKIROV, A.N.

PROCESSES AND PROPERTIES INDEX

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Mechanism of the synthesis of hydrocarbons from carbon monoxide and hydrogen. A. N. Bashkirov, Yu. B. Kryukov, and Yu. B. Kagan. *Doklady Akad. Nauk S.S.S.R.* 67, 1029-31(1949). The reaction observed on Fe catalysts, 2 CO + H_2 → $:CH_2$ + CO_2 (I), in contrast to the reaction CO + 2 H_2 → $:CH_2$ + H_2O (II) occurring on Ni and Co, is interpreted as the sum of the primary reaction II, and the subsequent secondary reaction CO + H_2O → CO_2 + H_2 (III). This point of view is corroborated by analyses of the gaseous products obtained, on pptd. Fe catalyst, with mixts. CO:H_2 = 1:1 in the presence of added H_2O vapor, at 220-50°, under atm. pressure, at space velocity ~ 100/hr. The balance, by reaction I, is expressed by CO + mH_2 → $^1/_2$ x CH_2: + $^1/_2$ x CO_2 + (1 − x)CO + (m − $^1/_2$ x)H_2, where x = mole fraction CO reacted, m = moles H_2 per mole CO. With reaction III occurring simultaneously with II, the balance is CO + mH_2 + pH_2O → $^1/_2$ x CH_2: + ($^1/_2$ x + s) CO_2 + (p − s)H_2O + (1 − x − s)CO + (m − $^1/_2$ x + s)H_2, where s = mole fraction CO reacted according to equation III, and p = moles H_2O per mole CO in the initial gas. The contraction k, in the 1st case, is k = 2a/(1 + 2a) (where a = CO_2 content in the product), in the 2nd case, k' = [2a/(1 + 2a)] − [3s/(1 + 2a)(1 + m)]. The difference Δ = k − k' is termed the contraction depression. Experimentally, Δ attains high values, up to 60-70%. H_2O added in amts. up to 20% of the reacting gas mixt. is found to have reacted completely according to III, e.g., with an initial mixt. CO:H_2:H_2O = 44.5:44.5:11, on an Fe-Cu-Zn-K_2CO_3-kieselguhr catalyst, at 240°, a = 30.6%, Δ exptl. = 22.3%, calcd. = 21.4%. A gas mixt. CO:H_2:H_2O = 33:34:33, on an Fe-Cu-Mn-K_2CO_3-kieselguhr catalyst, at 230°, gave a neg. contraction of −32.6%, a = 29.7%, Δ = 72.4%; the yield of hydrocarbons is depressed by H_2O, but is restored when H_2O is eliminated. The ratio of the rates of reactions III and I, on the 1st catalyst, at 240°, is 3.4, on the 2nd catalyst, at 230°, it is 13.6. The primary reaction on Ni, Co, and Fe is, identically, reaction II, and CO_2 is a secondary product.

N. Thon

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

Chemical Abst.
Vol. 48 No. 4
Feb. 25, 1954
Fuels and Carbonization Products

Separation of indene from crude coal-tar benzene. A. N. Bashkirov and S. A. Lodzik. *Trudy Inst. Nefti, Akad. Nauk S.S.S.R.* 1, No. 2, 328-33(1950).—Crude benzene is distd., and the fraction b. 170-182° is removed and treated with 15% NaOH and with 3% H_2SO_4 to remove phenols and excess alkali. The product is dried and then chlorinated at −3 to −5° while the mixt. is vigorously stirred. The chlorinated mixt. is distd. at 8-10 mm., and the fraction contg. $C_9H_8Cl_2$, indene dichloride (II), is removed at 110-182°. About 90% of indene is converted to II, which is reduced to indene in about 90% yield with Fe and steam. II is dechlorinated in the vapor phase at 15-20 mm. and 175-180°. The reduced material is again vacuum distd. to yield indene, C_9H_8, $b._{760}$ 181.4-182.5, d_4^{20} 0.9998, n_D^{20} 1.5764, mol. wt. 115.8, m. −3.1°, picrate m. 97.0-98.0°.

George G. Bernard

6-4-57

CA

Mechanism of the synthesis of hydrocarbons from carbon monoxide and hydrogen. A. N. Bashkirov, Yu. B. Kagan, and Yu. B. Kryukov. *Doklady Akad. Nauk S.S.S.R* 78, 275-6(1951).—The assumption (cf. *C.A.* 44, 9415h) that the primary act in the Fischer-Tropsch synthesis is $CO + 2H_2 \rightarrow CH_2 + H_2O$, and not $2CO + H_2 \rightarrow CH_2 + CO_2$, and that CO_2 is formed only as a result of the secondary reaction $CO + H_2O \rightarrow CO_2 + H_2$, was confirmed directly by flow expts. in which a very short contact time prevented the secondary reaction from taking place to any appreciable extent in one single pass, and the H_2O formed in each pass was removed by condensation between passes in repeated recirculation. The expts. were conducted with a $CO:H_2 = 1:2$ mixt. at 200° under 20 atm., at a gaseous space velocity of 180,000 l./l. catalyst/hr.; practically complete conversion was ensured by repeated recycling, with the fresh gas admitted at the rate of 44 l./hr. Under these conditions, 200 l. gas gave, after several hrs., liquid hydrocarbons 22.5 g./cu. m., gaseous hydrocarbons ($C_3 + C_4$) 44.3, CH_4 100.0, H_2O 262.2 g./cu. m., and no CO_2. This result excludes the direct reaction $2CO + H_2 \rightarrow CH_2 + CO_2$ and demonstrates that on Co, Ni, and Fe catalysts alike, CO_2 is formed only through a secondary reaction between CO and H_2. N. Thon

USSR/Chemistry - Petroleum

"The Question of the Oxidation of
Hydrocarbons," A. N. Bashkirov, Ya

"Dok Ak Nauk SSSR" Vol LXXVIII, No

Reviews subject on basis of USSR wo
process can be made to proceed in
tion by appropriate choice of cond
of suitable catalysts ($KMnO_4$ or ad
No 2). Cites exptl data showing d
course of oxidation. Describes ef
formed in reaction on course of re
cording to exptl results, oxidatio

USSR/Chemistry - Petroleum (Contd)

phase proceeds with successive spli
terminal C atoms. Describes oxidat
C_{14} alcs and aldehydes and of mixt
isolated from oxidized paraffins.

6

④

Chemical Abst.
Vol. 48 No. 9
May 10, 1954
Organic Chemistry

Role of oxygen-containing compounds in the synthesis of hydrocarbons from carbon monoxide and hydrogen. Yu. B. Kagan, Yu. B. Kryukov, E. V. Kamzolkina, and A. N. Bashkirov. *Bull. Acad. Sci. U.S.S.R., Div. Chem. Sci.* 1952, 601-6(Engl. translation).—See *C.A.* 47, 3216g.
H. L. H.

USSR/Chemistry - Synthetic Liquid Fuels; Jul 5
Catalysts

"Concerning the Problem of the Investigation of Liqu
Catalysts for the Synthesis of Hydrocarbons From
Carbon Monoxide and Hydrogen," Yu. B. Kryukov, A. N.
Bashkirov

"Trudy Inst Nefti" Vol 2, pp 92-109

The present methods for evaluating the performance o
iron catalysts are inadequate. A new method which i
more precise has been developed. This method, which
is described in detail, consists in determination of
the degree of conversion and of all other indices by

243T1

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rational utilization of analytical data on the gase
before and after conversion and of other experiment-
ally found values. The method can be used for othe
catalysts besides iron.

243T1

BASHKIROV, A. N.

USSR/Chemistry - Synthetic Liquid Fuels Jul/Aug 52

"The Role of Oxygen-Containing Compounds in the Synthesis of Hydrocarbons From Carbon Monoxide and Hydrogen," Yu. B. Kagan, Yu. B. Kryukov, Ye. V. Kamzolkina, A. N. Bashkirov, Petroleum Inst, Acad Sci USSR "Iz Ak Nauk SSSR, Otdel Khim Nauk" No 4, pp 649-657

Article states that results of the expts described show that alcs cannot be regarded as intermediate products in the synthesis of hydrocarbons, and that iron catalysts, under the conditions of hydrocarbon synthesis, accelerate the oxidation of alcs and aldehydes. Advances hypotheses explaining the formation of oxygen-contg compds (by-products of hydrocarbons).

PA 229T16

STORCH, H.; KAGAN, Yu.B.[translator]; KRYUKOV, Yu.B.[translator]; LOKTEV, S.M.[translator]; LUK'YANITS, V.G.[translator]; BASHKIROV, A.N., professor, redaktor.

[The Fischer-Tropsch and related syntheses (original title); translated from the English by IU.B.Kagan (and others)] Sintez uglevodorodov iz okisi ugleroda i vodoroda. Perevod s angliiskogo IU.B.Kriukova, S.M.Lokteva i V.G.Luk'ianitsa. Pod red. A.N.Bashkirova, Moskva, Izd-vo inostrannoi lit-ry, 1954. 516 p. (MLRA 7:8)

(Synthine process) (Catalysis)

The Reaction of Pyrophoric Iron XX With 1,2-Dihalogenated Hydrocarbons
Tr. In-ta Nefti AN SSSR, Vol 4, 1954, 159-172

1,2-Dihalogenated hydrocarbons were passed through a heated tube containing pyrophoric iron. The reaction products were olefins when the polymerization and isometrization were inhibited. Using this method, olefins were prepared from 1,2-dibromo substituted n-parfins from C_2 to C_8, cyclopentane, cyclohexane, styrene, indene, and tetrabromocyclopentane. The yield ranged from 80 to 90%. (RZhKhim, No 3, 1955)

SO: Sum-No 845, 7 Mar 56

BASHKIROV, A.N.; KHOTIMSKAYA, M.I.

Condition of the dual relation in olefins obtained in synthesis from carbon monoxide and hydroxide. Trudy Inst.nefti 4:173-175 '54.
(MIRA 8:1)

(Olefins) (Carbon monoxide) (Hydroxides)

"A Study of Certain Oxidated Catalysts in the Synthesis of Hydrocarbons from Carbon Monoxide and Hydrogen" Iz. Ak. Nauk SSSR, Otdel Tekh, Nauk., No. 8, pp. 147-53, 1954.

The composition and characteristic features of certain new catalysts for the synthesis of hydrocarbons from carbon monoxide and hydrogen are described and discussed. These new catalysts contain neither iron, cobalt, nickel, nor ruthenium as their basic component, but one of the poorly reductible metal oxides (ThO_2, MgO_2, Al_2O_3, etc.) and are called, therefore, oxidated catalysts.

Summary - 550423

LFH

[illegible]

Bashkirov, A.N.

27.7%. A contact time of 5 [illegible] results in a yield of almost 60%; decreasing the contact time to half reduces [illegible] 24%; a further decrease of contact time [illegible] 47

USSR [illegible]

Card [illegible]

Authors : [illegible]

Title : [illegible]

Periodical : [illegible]

Abstract : [illegible] gas during the synthesis [illegible] rates [illegible] The synthesis [illegible]

[illegible]

BASKIROV, A.N., professor.

Synthesis of higher alcohols of the fatty series by direct oxidation of paraffins. Khim.nauka i prom. 1 no.3:273-281 '56. (MIRA 9:9)
(Alcohols) (Paraffins)

USSR/Chemical Technology - Chemical Products and Their Application. Treatment of natural gases and petroleum. Motor fuels. Lubricants. I-13

Abs Jour : Referat Zhur - Khimiya, No 4, 1957, 12955

Author : Bashkirov A.N., Loktev S.M., Khotimskaya M.I.

Title : Composition of Synthesis Products from CO and H_2 over Kieselguhr Catalysts

Orig Pub : Khimiya, i tekhnologiya topliva, 1956, No 5, 18-22

Abstract : Presented are the results of investigation of the composition of gaseous and liquid products of the synthesis from

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

Abs Jour : Referat Zhur - Khimiya, No 6, 1957, 18633

opion that the special properties of catalysts reduced in CO are connected with the carbonization of the reduced iron and the formation of cementite Fe_3C.

Card 2/2

Bashkirov, A.N.

USSR/Physical Chemistry - Kinetics. Combustion.
Explosives. Topochemistry. Catalysis. B-9

Abs Jour : Referat Zhur - Khimiya, No 2, 1957, 3852

Author : Bashkirov, A.N., Khotimskaya M.I., Kryukov Yu.B.
Inst : Institute of Petroleum, Academy of Sciences USSR
Title : Synthesis of Hydrocarbons from Carbon Monoxide and Hydrogen over "Sintered" Iron Catalysts

Orig Pub : Tr. In-ta nefti AN SSSR, 1956, 8, 162-167

Abstract : Study of the effects of the conditions of reduction upon the mechanical strength and activity of precipitated activated Fe-catalysts in the process of synthesis of hydrocarbons. After treatment of the catalyst in a current of H_2 at 800-850° and space velocity of 2000 hour^{-1} for 2 hours, the reduced and sintered specimens are of sufficient mechanical durability; they are inactive at atmospheric pressure and are highly active at a pressure of 200 atmospheres, temperature of 300° and space velocities

Card 1/2

BASHKIROV, A. N.

USSR/ Physical Chemistry - Kinetics. Combustion. Explosives. Topochemistry. Catalysis B-9

Abs Jour : Referat Zhur - Khimiya, No 4, 1957, 11286

Author : Bashkirov A.N., Loktev S.M., Sabirova G.V.
Inst : Institute of Petroleum, Academy of Sciences USSR
Title : Study of Catalytic Activity of Some Metal Oxides in the Synthesis from Carbon Monoxide and Hydrogen

Orig Pub : Tr. In-ta nefti AN SSSR, 1956, 8, 168-175

Abstract : Study of catalytic activity of oxides of Pb, Sn, Cd, Mo, W, Cr, Si, Mn, Ti, V, Al, Mg, Sr, Th (with addition 0.5-5% K_2CO_3) in the reaction of synthesis of hydrocarbons from mixture CO : H_2 = 1 : 1 in circulation system at 300-500°, and 30 atm pressure (250 atm in the case of ThO_2 and Al_2O_3) at space velocities 100-150 $hour^{-1}$. Oxides of Pb, Sn, and Cd, under the above-stated conditions are reduced to the metal and their activity is very slight. Catalyst based on oxides of Mo, W. Si, Mn, V, Mg show high activity but produce mostly gaseous hydrocarbons. Catalysts based on oxides of Ti and Sr were found to be inactive. Highest activity is exhibited by SiO_2 + 2% K_2CO_3, the yield of liquid reaction products

1/2

USSR/ Physical Chemistry - Kinetics. Combustion. Explosives. Topochemistry. Catalysis B-9

Orig Pub : Referat Zhur - Khimiya, No 4, 1957, 11286

with this catalyst being of 30-60 g/m^3. Granulated K_2CO_3, and also K_2CO_3 deposited on activated charcoal, are inactive. It is noted that all catalysts of the synthesis based on CO and H_2 must possess the property of activating the CO molecule.

BASHKIROV, A.N.

USSR /Chemical Technology. Chemical Products and Their Application I-17

Industrial organic synthesis

Abs Jour: Referat Zhur - Khimiya, No 9, 1957, 32035

Author : Bashkirov A.N., Novak F.I.

Title : Study of Thermal and Chemical Activation of Talc Catalysts for Synthesis from Co and H_2.

Orig Pub: Khimiya i tekhnol. topliva, 1956, No 10, 32-36

Abstract: The possibility is shown of utilizing in the synthesis from CO and H_2 of catalysts (C) with a talc base (natural magnesium hydrosilicate). In preparing active catalyst from talc a preliminary thermal activation of the latter, by calcination at about 600°, is necessary. It is shown that the formation of liquid products of the

Card 1/3

USSR /Chemical Technology. Chemical Products and Their Application I-17

Industrial organic synthesis

Abs Jour: Referat Zhur - Khimiya, No 9, 1957, 32035

synthesis over talc C, the latter must be activated by compounds containing ions of alkali metals; of the 16 compounds that were studied the most active are carbonates and nitrates, and of the reagents those the anions of which contain atoms of metals (Cr, Mn, W etc) are less active. Substances containing the ions Br^{-1}, Cl^{-1} and SO_4^{-2} deactivate completely the C, but the F-ion was found to be a very active promoter. Taking into account the specific features of the crystallochemical structure of talc, the assumption is made concerning the role of thermal and

Card 2/3

USSR /Chemical Technology. Chemical Products and Their Application I-17

Industrial organic synthesis

Abs Jour: Referat Zhur - Khimiya, No 9, 1957, 32035

chemical activation in the process of formation of liquid products of the synthesis from Co and H_2.

Card 3/3

BASHKIROV, A.N.

USSR/Chemistry - Catalysis

Card 1/2 Pub. 22 - 17/43

Authors : Bashkirov, A. N., [illegible] M. I., [illegible]

Title : [illegible]

Periodical : [illegible]

Abstract : [illegible]

Card [illegible]/2 Sub. [illegible] - 17/43

Periodical : [illegible] No 1, 55-64, Jan [illegible]

Abstract : [illegible]

BASHKIROV, A.N.

AUTHOR: Bashkoriv, A.N., Kamzolkin, V.V., Sokova, K.M., and Andreyeva, T.P. 65-4-2/12

TITLE: Method of determination of primary and secondary higher alcohols of the fatty series in their mixtures. (Metod opredeleniya pervichnykh i vtorichnykh vyssikh spirtov zhirnogo ryada v ikh smesyakh)

PERIODICAL: "Khimiya i Tekhnologiya Topliva i Masel"(Chemistry and Technology of Fuels and Lubricants)1957,No.4,pp.7-11 (U.S.S.R)

ABSTRACT: During studies of higher alcohols produced by a direct oxidation of paraffinic hydrocarbons it was found difficult to determine the content of primary and secondary alcohols, as methods described in the literature (2, 3, 4) were found unsatisfactory when the number of carbon atoms in the molecules exceeds eight. The method is based on some regularities in the oxidation reaction of higher n-aliphatic alcohols with chromic acid in glacial acetic acid. The accuracy of the method on average 5% (Table). There is one table and 6 references including 3 Slavic.

Card 1/1

ASSOCIATION: Petroleum Institute Ac.Sc.U.S.S.R. (Institut Nefti AN SSSR)

AVAILABLE:

BASHKIROV, A.N.

AUTHORS: Krykov, Yu.B., Butyugin, V.K., Liberov, L.G., Stepanova, N.D. and Bashkirov, A.N. 65-6-4/13

TITLE: The use of radioactive carbon for the investigation of the behaviour of methane under conditions of the synthesis of hydrocarbons from CO and H_2 on iron catalysts. (Ispol'zovaniye radioaktivnogo ugleroda dlya issledovaniya povedeniya metana v usloviyakh sinteza uglevodorodov iz CO i H_2 na zheleznykh katalizatorakh).

PERIODICAL: "Khimiya i Tekhnologiya Topliva i Masel" (Chemistry and Technology of Fuels and Lubricants) 1957, No.6, pp.26-33 (USSR).

ABSTRACT: A critical survey of the literature on the problem of the role of methane in the synthesis of hydrocarbons from CO and H_2 is given. An experimental investigation of the above problem was carried out using methane containing radioactive C^{14}. Radioactive methane was obtained by hydrogenating $C^{14}O_2$ over an $Bi-Al_2O_3$ catalyst and $C^{14}O_2$ was obtained by decomposing a mixture of $BaCO_3 + BaC^{14}CO_3$ with sulphuric acid. The apparatus used for the synthesis of hydrocarbons is described and shown in a diagram. The catalyst used was developed in the Petroleum Institute of

Card 1/3

The use of radioactive carbon for the investigation of the behaviour of methane under conditions of the synthesis of hydrocarbons from CO and H_2 on iron catalysts. (Cont.)

65-6-4/13

the Academy of Science of the U.S.S.R., its composition $Fe_3O_4 + 10(AL_2O_3 + SiO_2) + K_2O$ with an addition of chromium (ref 24). It was obtained by the melting of magnetic iron oxide with activators and crushing the mass produced to 2-3 mm size. Before application the catalyst was reduced in a stream of hydrogen at 1000 C for 1.5 hours. In order to obtain a high activity and stability it was also treated for 18-20 hours at 300 C and 20 atm. pressure with the synthesis gas CO + H_2 (1:1) passed with a volume velocity of 1500 hr^{-1}. Some preliminary experiments indicated that a good reproducibility of results was obtained. Typical results are given in tables 2 and 3 and in table 5 results of an experiment with radioactive methane (material balance of the process and the distribution of products obtained) are given. The results of fractional and radiometric analyses are given in table 4. It was established that under experimental conditions (20-25 atm, 310 C, volume velocity 1150 hr^{-1}, $CO:H_2 = 1:1$) methane behaves as an inert substance, it does not participate in the formation of higher hydrocarbons and does not enter into the

Card 2/3

The use of radioactive carbon for the investigation of the behaviour of methane under conditions of the synthesis of hydrocarbons from CO and H_2 on iron catalysts. (Cont.)
65-6-4/13

reaction of isotope exchange with carbon monoxide, carbon dioxide and hydrocarbons.

There are 5 tables, 1 figure and 29 references, including 10 Slavic.

ASSOCIATION: Petroleum Institute of the Academy of Sciences of the U.S.S.R. (Institut Nefti AN SSSR).

AVAILABLE:

Card 3/3

BASHKIROV, A.N.; KAGAN, Yu.B.; LOKTEV, S.M.; MOROZOV, N.G.

Use of iron ore catalysts in the synthesis based on carbon monoxide and hydrogen. Trudy inst. nefti. 10:234-246 '57.
(MIRA 11:4)

(Catalysts) (Hydrocarbons)

BASHKIROV, A.N.; KAGAN, Yu.B.; KOKTEV, S.M.; SHCHEKIN, V.V.; GOL'DIN, S.A.; MOROZOV, N.G.

Activating characteristics of molten iron catalysts used in the synthesis based on carbon monoxide and hydrogen, and reduced at high temperatures. Trudy inst. nefti. 10:247-261 '57.
(MIRA 11:4)

(Catalysts) (Hydrocarbons)

BASHKIROV, A.N.

KAGAN, Yu.B.; BASHKIROV, A.N.; ZVEZDKINA, L.I.; ORLOVA, N.A.; KLIGER, G.A.

Influence of reduction conditions on the properties of molten iron catalysts used in alcohol synthesis from carbon monoxide and hydrogen. Trudy inst. nefti. 10:262-268 '57. (MIRA 11:4)
(Alcohols) (Carbon monoxide) (Hydrogen)

Bashkirov, A.N

62-11-23/29

AUTHORS: Kryukov, Yu. B., Butyugin, V. K., Liberov, L. G., Stepanova, N. D., Bashkirov, A. N.

TITLE: Synthesis of the Butyl Alcohol Containing the Radioactive Carbon Isotope C14 (Sintez butilovogo spirta, soderzhashchego radioaktivnyy izotop ugleroda C^{14})

PERIODICAL: Izvestiya AN SSSR, Otdel.Khim.Nauk, 1957, Nr 11, pp. 1404-1406 (USSR)

ABSTRACT: Here a new method for the synthesis of butyl alcohol,which is tagged by radio-carbon C^{14}, is introduced. This method is characterized by simplicity and a high output of special product. The method consists of two phases: magnesium-organic synthesis of butyric acid with elimination of the latter in the form of sodium-butyrate and the restoration of the salt by lithiumaluminumhydride. The method can be applied for the synthesis of different alcohols containing the radio-carbon C^{14}. It is shown that a synthesis of the tagged butyl alcohol is also possible without preceding elimination of butyric acid by means of immediate restoration of the magnesium-organic complex

$C_3H_7C(=O)-OMgBr$

by lithiumaluminumhydride. There are 2 Slavic references.

ASSOCIATION: Petroleum Institute of the AN USSR (Institut nefti Akademii

Card 1/2

BASHKIROV, A.N., doktor tekhnicheskikh nauk, professor; KAMZOLKIN, V.V., kandidat khimicheskikh nauk; LODZIK, S.A.

Technological elements of the production of higher fatty alcohols by the direct oxidation of paraffinic hydrocarbons. Masl.-zhir.prom. 23 no.7:24-26 '57. (MLRA 10:8)

1.Institut nefti AN SSSR.
(Alcohols) (Hydrocarbons) (Oxidation)

KRYUKOV, Yu. B., BASHKIROV, A. N., BUTYUGIN, V. K., LIBEROV, L. G. and STEPANOVA, N. D.
(Petroleum Institute AS USSR)

"Intermediate Compounds in the Synthesis of Hydrocarbons and Oxygen-Containing Compounds of Carbon Monoxide and Hydrogen on Iron Catalysts." p. 58.

Isotopes and Radiation in Chemistry, Collection of Papers of 2nd All-Union Sci-Tech. Conf. on Use of Radioactive and Stable Isotopes and Radiation in National Economy and Science, Moscow, Izd-vo AN SSSR, 1958, 380pp.

This volume publishes the reports of the Chemistry Section of the 2nd All Sci Tech Conf on Use of Radioactive and Stable Isotopes and Radiation in Science and the National Economy, sponsored by Acad. Sci. USSR and Main Admin for Utilization of Atomic Energy under Council of Ministers USSR, Moscow, 4-12 April 1957.

BASHKIROV, A.N.

5(3); 11(4) PHASE I BOOK EXPLOITATION SOV/2221

Akademiya nauk SSSR. Institut nefti

Trudy, t. 12 (Transactions of the Petroleum Institute, USSR. Academy of Sciences, Vol 12) Moscow, Izd-vo AN SSSR, 1958. 337 p. Errata slip inserted. 1,700 copies printed.

Ed.: S. R. Sergiyenko, Professor; Ed. of Publishing House: K. G. Miyasoyedov; Tech. Ed.: V. V. Golubeva.

PURPOSE: The book is intended for scientists, engineers, and technicians in the petroleum industry.

COVERAGE: This collection of articles describes the results of studies on the chemistry and technology of petroleum and gas conducted in the laboratories of the Petroleum Institute, Academy of Sciences, USSR, in 1956 and 1957. A new section "Petrochemical Synthesis and Technology of Petroleum" has been included in the collection of articles. A list of investigations published by the associates of the Institute in 1956 and 1957 and a list of dissertations for the Doctor's and Candidate's degrees presented in 1956 and 1957 at open sessions of the Academic Council of the Petroleum Institute, Academy of Sciences, USSR, are given.

R. Kh. Iskhakova, F. V. Korenevskaya, I. A. Musayev, and V. V. Shchekin. Change in the Activity of Silica Gel in the Chromatographic Separation of Hydrocarbons 75

III. CATALYSIS AND CATALYSTS

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KAGAN, Yu.B.; BASHKIROV, A.N.; KRYUKOV, Yu.B.; LOKTEV, S.M.

Formation of the active surface of fused iron catalysts for synthesis from CO and H_2. Khim i tekh. topl. i masel 3 no.3: 14-22 Mr '58. (MIRA 11:3)

1.Institut nefti AN SSSR.
(Catalysts) (Iron oxides) (Hydrocarbons)

BASHKIROV, A.N.; KAMZOLKIN, V.V.; SOKOVA, K.M.; ANDREYEVA, T.P.

Position of the hydroxyl group in alcohols produced by liquid phase oxidation of n-paraffin hydrocarbons. Khim. i tekh. topl. i masel 3 no.6:10-16 Je '58. (MIRA 11:6)

1. Institut nefti AN SSSR.
(Hydroxyl group) (Alcohols) (Chemical structure)

BASHKIROV, A.N.

AUTHORS: Bashkirov, A. N., Kagan, Yu. B., Kliger, G. A. 62-58-4-21/32

TITLE: **Composition of Products Obtained by the Synthesis of** Amines of Carbon-, Hydrogen- and Ammonia Monoxide (Sostav produktov sinteza aminov iz okisi ugleroda, vodoroda i ammiaka)

PERIODICAL: Izvestiya Akademii Nauk SSSR, Otdeleniye Khimicheskikh Nauk, 1958, Nr 4, pp. 504-506 (USSR)

ABSTRACT: Already earlier the authors realized the synthesis of the alkyl amines of CO and ammonia in the presence of molten iron catalysts. The synthetizing products obtained contained up to 25% aliphatic amines. Furthermore a perfection of the used catalysts was carried out. A stable, active and rather selective catalyst was found. In the presence of the catalyst the authors synthetized on most favorable conditions: from 1 m^3 12o,o grams of synthesis products (without water). Of these were 54,o% alkylamines (3o% of which in liquid and 21,o% in gas state). Tables 1-4 give information on the results of the elementary analysis of some

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The Composition of the Synthetization Products of the Amines of Carbon-, Hydrogen- and Ammonia Monoxide 62-58-4-21/32

fractions of the destillation and the physical constants of some fractions.
There are 4 tables and 12 references, 3 of which are Soviet.

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

SUBMITTED: November 1o, 1957

AVAILABLE: Library of Congress

1. Catalysts--Synthesis--Study and teaching

Card 2/2

AUTHORS: Kryukov, Yu. B., Bashkirov, A. N., Butyugin, V. K., Liberov, L. G., Stepanova, N. D.

62-58-5-22/27

TITLE: Conversions of Butylene on the Conditions of Synthesis of CO and H_2 by Way of Molten Iron Catalysts (Prevrashcheniya butilena v usloviyakh sinteza iz CO i H_2 nad plavlenymi zheleznymi katalizatorami)

PERIODICAL: Izvestiya Akademii Nauk SSSR, Otdeleniye Khimicheskikh Nauk, 1958, Nr 5, pp. 642-644 (USSR)

ABSTRACT: The present report is a trial of investigating the ways of conversion of the olefins forming in the process of the synthesis of the hydrocarbons and of the oxygen-containing compounds of CO and H_2. Butylene marked by means of the carbon isotope C^{14} in the state (polozhenii) 1 served as indicator of the behavior of olefin under the conditions given by the synthesis. The experiment has shown that butylene does not participate in the formation of alcohols, as well, as in the formation of highest hydrocarbons (by way of C_9) neither and that it is no intermediate product. Butylene can react with CO and H_2 under the investigated conditions by producing a C_5-hydrocarbon. It also submits to dehydration, oxidation and hydro-

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Conversions of Butylene on the Conditions of Synthesis of CO and H_2 by Way of Molten Iron Catalysts 62-58-5-22/27

cracking. There are 1 figures, 1 table, and 11 references, 9 of which are Soviet.

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

SUBMITTED: January 2, 1958

1. Hydrogen isotopes--Synthesis 2. Carbon monoxide--Synthesis
3. Ethylenes--Chemical reactions 4. Butylene--Chemical reactions
5. Carbon isotopes (Radioactive)--Applications

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SOV/65-58-6-3/13

AUTHORS: ~~Bashkirov, A. N.,~~ Kamzolkin, V. V; Sokova, K. M. and Andreyeva, T. P.

TITLE: The Position of Hydroxyl Groups in Alcohols Prepared During the Liquid Phase Oxidation of n-Paraffin Hydrocarbons. (O polozhenii gidroksil'noy gruppy v spirtakh, poluchayemykh pri zhidkofaznom okislenii n-parafinovykh uglevodorodov).

PERIODICAL: Khimiya i Tekhnologiya Topliv i Masel, 1958, Nr.6. pp. 10 - 16. (USSR)

ABSTRACT: When investigating the position of the hydroxyl groups in the alcohol molecule, the authors used the method of oxidizing alcohols with potassium dichromate in a medium diluted with sulphuric acid (Ref.4). During the oxidation of primary alcohols, carboxylic acids, with the same number of C-atoms as contained in the initial alcohol, are obtained. During the oxidation of secondary alcohols, the C-C bonds are split at the hydroxyl groups, and carboxylic acids with a lower number of C atoms in the molecule are formed. Therefore, it is possible to determine the position of the hydroxyl groups according to the composition of the acids. Some side reactions take place when the process is carried out in sulphuric acid at increased temperatures. The authors investigated the

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SOV/65-58-6-3/13

The Position of Hydroxyl Groups in Alcohols Prepared During the Liquid Phase Oxidation of n-Paraffin Hydrocarbons.

oxidation of individual aliphatic alcohols with varying positions of the hydroxyl group (4-tetradecanol and 7-hexadecanol) with subsequent identification of the acids. The method of F. Kraft (Ref.4) was slightly modified, and distillations were carried out according to the method described by L. K. Obukhova (Ref.5). The height of the rectification column was 40 cm and the diameter 1.4 cm. A mixture of hydrocarbons, from which the olefins and aromatic hydrocarbons had been separated, was used as carrier. The content of esters in the fractions was calculated on the basis of the ester number of the fraction. On the basis of the composition of the acids it was possible to conclude that oxidation of the alcohols occurs mainly at the hydroxyl groups. Discrepancies in the rule of Popov occur at increasing distances of the hydroxyl groups from the end hydrocarbon atom. The neutral oxygen-containing compounds (ketones), obtained during the oxidation, were subjected to second oxidation reaction. The total yield of acids = 96%. The investigated fractions of alcohols were concluded to be a mixture of isomers of secondary n-hexadecanols in which the isomers are contained in equal molar

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SOV/65-58-6-3/13

The Position of Hydroxyl Groups in Alcohols Prepared During the Liquid Phase Oxidation of n-Paraffin Hydrocarbons.

quantities. Experimental details on the oxidation of the individual alcohols are given. Tables 1 and 2 give the composition of oxidation products of alcohols and of their distillates; the distribution of acids is shown in Table 3. During experiments on defining the position of the hydroxyl groups in the alcohols, a fraction of alcohols boiling between 125.0 - 126.8, with an hydroxyl number of 229.5, was oxidized The neutral oxygen-containing compounds were subjected to a second oxidation reaction. Results are given in Tables 4 and 5. These experiments showed that during the oxidation of n-paraffin hydrocarbons in the liquid phase, n-secondary alcohols are formed. The hydroxyl groups of these alcohols are situated at different C atoms of the molecule. It was also found that the reactivity of the secondary C atoms of molecules of higher n-paraffin hydrocarbons to oxygen is practically identical. There are 5 Tables and 8 References: 4 Soviet, 2 German, 1 English and 1 Dutch.

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

SOV/ 65-58-7-7/12

AUTHORS: Bashkirov, A. N; Loktev, S. M. and Sabirova, G. V.

TITLE: Hydrogenation of Aldehydes and Ketones in Mixtures With Other Organic Compounds. (Gidrirovaniye al'degidov i ketonov v smesyakh s drugimi organicheskimi soyedineniyami).

PERIODICAL: Khimiya i Tekhnologiya Topliv i Masel, 1958, Nr.7. pp. 39 - 45. (USSR).

ABSTRACT: The authors investigated the selective hydrogenation of compounds containing a carbonyl group to aliphatic alcohols (especially C_5 - C_{20}). Starting materials used were liquid products obtained during synthesis from CO and H_2, fractions of these products, or individual aldehydes and ketones (Table 1). The hydrogenation was carried out in a continuous process. Copper-chrome-barium and nickel-magnesium oxalate, as well as fused iron catalysts, were used (70 - 75 cm^3). Details of the preparation of the above catalysts are given. Table 2 gives results obtained during the hydrogenation over a copper-chrome-barium catalyst at 100 atms, at various temperatures. Experimental conditions during these experiments were those described by H. Adkins (Ref.3) and D. M. Rudkovskiy (Ref.9). Table 3: results obtained during the hydrogenation over nickel-magnesium oxalate catalysts at atmospheric pressure and

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SOV/65-58-7-7/12

Hydrogenation of Aldehydes and Ketones in Mixtures With Other Organic Compounds.

50°C. Iron catalysts were first investigated by V. N. Ipat'yev (Ref.2, 18 and 19). However, the yield of alcohols was low, and the yield of decomposition products high. Very good results were obtained when the hydrogenation was carried out over fused iron catalysts at pressures above 100 atms, and at a temperature of 200°C. Table 4: data on the hydrogenation over $Fe_3O_4 + 1MoO_3$. When lithium-aluminium hydride was used in ether solution (Table 5), it was possible to achieve practically complete reduction of the carbonyl and also of other oxygen-containing compounds to alcohols. Yields of alcohols range between 70%- 80% for copper-chrome-barium and nickel-magnesium-oxalate catalysts and 90% - 98% for fused iron catalysts. There are 5 Tables, 19 References: 11 Soviet, 3 English and 5 German.

ASSOCIATION: Institut nefti AN SSSR (Petroleum Institute of the Academy of Sciences of the USSR).

Card 2/2

1. Aldehydes--Hydrogenation 2. Ketones--Hydrogenation 3. Organic compounds--Hydrogenation

SOV/62-58-10-19/25

AUTHORS: Kagan, Yu. B.~~, Bashkirov, A. N.,~~
Kryukov, Yu. B., Loktev, S. M., Orlova, N. A.

TITLE: On the Mechanism of the Catalytic Efficiency of Fused Iron Catalysts in the Synthesis of CO and H_2 (O mekhanizme kataliticheskogo deystviya plavlenykh zheleznykh katalizatorov sinteza iz CO i H_2)

PERIODICAL: Izvestiya Akademii nauk SSSR. Otdeleniye khimicheskikh nauk, 1958, Nr 10, pp 1274 - 1275 (USSR)

ABSTRACT: In an earlier paper the authors showed that immediately after the reduction (by hydrogen at 1000°) fused iron catalysts in the hydrocarbon synthesis of CO and H_2 are not active any more. Only under the working conditions of the synthesis when the gas mixture $CO+H_2$ is passed through the catalyst gradually becomes active (for 18-20 hours). This phenomenon may be explained by a number of simultaneous reactions competing with each other. Due to the course of these reactions competing with each other the metallic iron regenerates often (under the conditions of the synthesis) from its

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[illegible]

AUTHORS: Kagan, Yu. B., ~~Bashkirov, A. N.,~~
Kryukov, Yu. B., Loktev, S. M., Orlova, N. A.

TITLE: On the Mechanism of the Catalytic Efficiency of Fused Iron Catalysts in the Synthesis of CO and H_2 (O mekhanizme kataliticheskogo deystviya plavlenykh zheleznykh katalizatorov sinteza iz CO i H_2)

PERIODICAL: Izvestiya Akademii nauk SSSR. Otdeleniye khimicheskikh nauk, 1958, Nr 10, pp 1274 - 1275 (USSR)

ABSTRACT: In an earlier paper the authors showed that immediately after the reduction (by hydrogen at 1000°) fused iron catalysts in the hydrocarbon synthesis of CO and H_2 are not active any more. Only under the working conditions of the synthesis when the gas mixture $CO+H_2$ is passed through the catalyst gradually becomes active (for 18-20 hours). This phenomenon may be explained by a number of simultaneous reactions competing with each other. Due to the course of these reactions competing with each other the metallic iron regenerates often (under the conditions of the synthesis) from its

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On the Mechanism of the Catalytic Efficiency of Fused Iron Catalysts in the Synthesis of CO and H_2 SOV/62-58-10-19/25

compounds, and at the surface of the operating catalyst the dynamic equilibrium of the surface phases of different chemical structure is obtained. As a consequence of these processes the activation of the catalyst occurs. Neither the iron itself nor compounds that might be formed from it are the reason for the activation of the catalyst surface. The hypothesis formed for the chain mechanism of the catalytic efficiency of iron catalysts (according to which the synthesis of CO and H_2 is caused by the reactions of carbon and hydrogen monoxide with iron and its compounds on the surface of the operating catalyst) was described in detail by the authors. There are 1 table and 1 reference, which is Soviet.

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

SUBMITTED: April 8, 1958

Card 2/2

KAGAN, Yu.B.; BASHKIROV, A.N.; ZVEZDKINA, L.I.; ORLOVA, N.A.

Fused iron catalysts in the synthesis of higher alcohols from carbon monoxide and hydrogen. Trudy Inst.nefti 12:200-212 '58.

(Alcohols) (Catalysts) (MIRA 12:3)

BASHKIROV, A.N.; KAMZOLKINA, Ye.V.; KAGAN, Yu.B.

Particular aspects of the decomposition reaction of carbon monoxide to C and CO_2 in the presence of fused iron catalysts. Trudy Inst.nefti 12: 213-227 '58. (MIRA 12:3)

(Carbon compounds) (Catalysts) (Chemical reaction, Rate of)

KAGAN, Yu.B.; BASHKIROV, A.N.; LOKTEV, S.M.; MOROZOV, N.G.; ORLOVA, N.A.

Effect of the introduction of ferroalloys on the activity and stability of fused iron catalysts for synthesis based on CO and H_2. Trudy Inst. nefti 12:228-239 '58. (MIRA 12:3)

(Catalysts) (Iron alloys) (Chemistry, Organic--Synthesis)

BASHKIROV, A.N.; NOVAK, F.I.

Studying conditions of synthesis from carbon monoxide and hydrogen on talc catalysts. Trudy Inst.nefti 12:240-245 '58. (MIRA 12:3)
(Catalysts) (Chemistry, Organic--Synthesis)